



SAFETY ASSESSMENT  
FEDERATION

# Welding Procedure and Welder Approval Testing

## Interpretations

TC 4 Welding and  
Maintenance Committee  
(WMC)

Issued: - 16/01/2023

### Interpretation number 01

<b>Status</b>	Issue 05
<b>Issue date</b>	21 March 2019
<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614 Parts 1 to 14 'Introduction'
<b>Subject</b>	Previous Approvals

### Situation

The introductory sections of these Standards state, "This document does not invalidate previous welding procedure tests made to former National Standards or Specifications or previous issues of this document". How will this be interpreted by SAFed Member Companies?

### Interpretation

Subject in all cases to technical correctness, existing BS 4870, BS EN 288-3 & 4, and BS EN ISO 15614 Series certification will normally continue to be accepted by SAFed Member Companies in accordance with the following guidance:

For welding procedure approvals, requests for acceptance under the equivalent clause should be accompanied by all original certification/documentation including laboratory test reports. The SAFed Member Company will then review the certificate and if deemed necessary additional testing may be requested to comply with the requirements of current standards.

If previous certification is considered technically equivalent, SAFed Member Companies will issue an additional certificate E1 showing the new range of approval. The Certificate E1 will be endorsed with the following statement: "In our opinion the attached welding procedure approval is considered to satisfy the intent of the technical requirements of BS EN ISO 15614 Series". A charge may be made for this review.

For example, if a BS EN 288-3 certificate has no macrophotograph image this will be considered unacceptable. Similarly, a 120° bend will not be considered technically equivalent to a 180° bend. However, if the EN standard calls for a test which has not been carried out on the previous approval, e.g., Impact tests or Hardness survey, additional testing or re-approval will be required (see Interpretation 15). To encompass the additional test requirements, an additional sample welded in accordance with the original welding parameters and witnessed by a SAFed member company and subsequent issuing of the supporting documentation, will be required.

NOTE: BS EN ISO 15613 has replaced EN288-8 for Procedure Qualification based on Pre-Production welding test. Since this document requires the Testing and Range of Qualification to be in accordance with the relevant part of EN ISO 15614 a similar technical review of documents should be undertaken.

**NOTE:** These Interpretations are solely based the current issue of BS EN ISO 15614 Series and therefore does not consider any design codes, application standards or contractual requirements.

### Interpretation number 02

<b>Status</b>	Issue 05
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<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference:</b>	BS EN 287-1, sub clause 9.3 & National Foreword, BS EN ISO 9606 Parts 1 to 5, BS EN ISO 14732
<b>Subject</b>	Confirmation of Validity

### Situation

The sub clause requires “prolongation/revalidation” of welder approvals by the examiner/examining body at two yearly/three yearly periods. What criteria must be satisfied for “prolongation/revalidation”?

### Interpretation

In order to prolong/revalidate a welder's qualification test certificate, SAFed Member Companies consider it good practice for the following variables to be confirmed and traceable to demonstrate that the welder has carried out welding representative of the original qualification test:

- welding process(es)
- product type (pipe, plate, branch)
- type of weld
- material group
- welding consumable - (designation), (filler material group)
- material thickness (can vary providing it is within the original range of qualification)
- outside pipe diameter as per applicable standard
- welding position
- weld details

The following conditions will need to be satisfied before the SAFed Member Company can prolong a welder approval:

- The employer/welding coordinator has signed the approval certificate at six monthly intervals in accordance with relevant part of Clause 9 – Period of validity

- Records of volumetric testing on production or test welds within the range of approval are provided. This will generally involve results of radiography, ultrasonic testing or fracture/bend testing and macro section\* in the form of reports which must be readily traceable to the welder's approval and identifies the WPS(S) that have been used in production.

\* for fillet welds only

SAFed recommends that the radiograph/test reports covering each six-month period in the preceding two years (i.e. the basis for employer updating) are provided for review. However, as a minimum two reports must be available for prolongation purposes which must have been completed in the last six months.

**NOTE:** Surface crack detection only is not acceptable.

### Interpretation number 03

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<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN 287 1, Annex C, BS EN ISO 9606 Parts 1 to 5
<b>Subject</b>	Job Knowledge Test

### Situation

BS EN 287 and the BS EN ISO 9606 Series provide for an optional 'Job Knowledge Test, will SAFed Member Companies insist on this test or offer it as an option?

### Interpretation

SAFed Member Companies will not insist on the 'Job Knowledge Test' but may offer the test as an option.

The test will comprise of a minimum of twenty multiple choice questions given by the Engineer Surveyor, usually at the time of welding of a test piece. The questions will cover safety requirements, parent materials, consumables, welding defects, approvals and the welding process in question. Only one test will be needed per welding process with additional questions required if a second welding process is introduced. Job Knowledge will not normally be re-examined at the two-yearly prolongation unless there is reason to question the welder's knowledge.

It should be noted that whilst the Job Knowledge Test will not be a mandatory SAFed requirement, it will be mandatory in some other European countries. It is therefore recommended for manufacturers/companies hoping to export to European Community (EC) or European Free Trade Area (EFTA) countries.

### Interpretation number 04

<b>Status</b>	Issue 05
<b>Issue date</b>	21 March 2019
<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614-1, sub clause 8.3.1.1 and Table 3/5
<b>Subject</b>	Procedure Tests Applicability for Austenitic Stainless Steels

### Situation

All austenitic stainless steels are included in Group 8 of CR ISO 15608. Does this mean that a procedure test in one austenitic stainless steel covers all other austenitic stainless steels?

### Interpretation

No. BS EN ISO 15614-1 Table 3 Note c/Table 5 Note b allows approval for steels in the same sub-group. For example, ASTM A312 TP 316L conforms to Group 8.1. Table 3/5 therefore gives approval for all other Group 8.1 steels e.g. ASTM A312 TP 304L but does not give approval for Group 8.2. E.g. ASTM A312 TP 310.

**NOTE 1:** This interpretation is contrary to that given in Issue 01.

**NOTE 2:** With respect to filler materials, the approval range covers other filler materials with equivalent mechanical properties, same type of covering, core or flux, same nominal composition and the same or lower hydrogen content according to the designation in the appropriate European standard.

It is important that all parts of Note 2 are adhered to.

Thus, while parent materials may be covered by the same material group/ sub group used for the procedure test, the consumable used for the procedure test may not be suitable for these other parent materials.

**NOTE 3:** As per Table 3 – BS EN ISO 15614-1 : A2 : 2012, Table 5 – BS EN ISO 15614-1 : 2017

### Interpretation number 06

<b>Status</b>	Issue 04
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<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN 287-1, sub clause 5.4.d and BS EN ISO 15614-1 : 2004 + A2 : 2012 sub clause 8.4.3.b or c BS EN ISO 9606 - 1 to 5
<b>Subject</b>	Branch Connections

### Situation

How are welders and welding procedure approvals for branch connections to be approved and tested to the Standards referenced above.

### Interpretation

In EN 287-1 sub clause 5.4.d and BS EN ISO 15614-1 : 2004 + A2 : 2012 sub clause 8.4.3.b or c, a butt weld in pipe also qualifies branch connections with an angle  $\geq 60^\circ$ .

The material grade/thickness, weld metal thickness and diameter of the branch will be as the approval range of the pipe butt weld joint.

If a procedure qualification for branch connection with full penetration is to be approved this should be examined and tested in accordance with Table 1 of BS EN ISO 15614-1 : 2004 + A2 : 2012. For pressure applications the branch connection approval should be supplemented by a butt welded test piece using the same welding variables to ascertain the mechanical properties (see Table 1 note 'f')

For a branch connection welder approval, the test methods are detailed in Table 11 of BS EN 287-1 and Table 13 of BS EN ISO 9606-1\*. Following visual testing the requirements are for fracture test or 2 macro section or radiographic testing. SAFed Member Companies believe Fracture testing is not a practical option for branch connections. In the absence of details on radiography in EN 287-1 and BS EN ISO 9606 the radiographic examination requirements of BS EN ISO 15614-1 : 2004 + A2 : 2012 Table 1 should be applied, i.e. for outside diameter  $>50\text{mm}$  provided that the joint configuration will allow meaningful results.

Similarly, ultrasonic examination may replace radiography for outside diameters  $>50\text{mm}$  and material thickness's equal to or greater than 8 mm provided the material grouping and the joint configuration will allow meaningful results i.a.w BS EN ISO 17635.

\*For additional parts of BS EN ISO 9606 series, refer to specific standards.

### Interpretation number 07

<b>Status</b>	Issue 05
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<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614-1, BS EN 287-1 and BS EN ISO 9606-1
<b>Subject</b>	Pipe and Plate Qualifications

### Situation

Will all qualifications on pipe cover qualification for plate?

### Interpretation

BS EN 287-1 and BS EN ISO 9606-1

Sub clause 5.3a states: Test piece welds with outside diameter  $D > 25\text{mm}$  cover welds in plates.

BS EN ISO 15614-1 + A2 : 2012

Sub clause 8.3.2.3 states: Qualification given for plates also covers pipes when the outside diameter is  $> 500\text{mm}$  or when the diameter is  $> 150\text{mm}$  welded in the PA or PC rotated position. SAFed Member Companies believe that qualification on pipes covers welding on plates.

BS EN ISO 15614-1: 2017

Sub clause 8.3.3 states: A butt weld qualification for pipes covers butt welds in plates.

\*For additional parts of BS EN ISO 9606 series and BS EN ISO 15614 series refer to specific standards.



### Interpretation number 10

<b>Status</b>	Issue 05
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<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614-1 +A2 : 2012 Table 3 Note a and BS EN ISO 15614-1 : 2017 Table 5 Note a
<b>Subject</b>	Yield Strength Criteria

### Situation

Some steels such as BS EN 10025 S355JR, have varying yield strengths for a range of thicknesses. Would the yield strength criteria apply within the same grade of steel? e.g. does a steel of thickness  $>16\text{mm} \leq 40\text{mm}$  BS EN 10025 S355JR (yield of  $345\text{N/mm}^2$ ) qualify steels  $\leq 16\text{mm}$  that have yield strengths of  $355\text{N/mm}^2$ .

### Interpretation

PD CR ISO 15608 states that steels should be grouped according to yield strength and alloy content.

SAFed Member Companies believe that it is not the intention to differentiate yield strengths within a steel specification by thickness for that particular steel.

### Interpretation number 11

<b>Status</b>	Issue 05
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<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614-1 +A2 : 2012 Table 3 Note a and BS EN ISO 15614-1 : 2017 Table 5 Note a
<b>Subject</b>	Range of Qualification for Carbon Steels

### Situation

What is the range of qualification for Carbon Steels?

### Interpretation

#### **BS EN ISO 15614-1: 2004 + A2 2012**

All materials covered by BS EN ISO 15614-1 are grouped in accordance with Table 1 of PD CR ISO 15608

In general carbon steels produced to European standards conform to one of the sub-groups of Group 1 dependent on the specified yield strength. The range of qualifications in Table 3 covers carbon steels with equal or lower specified yield strength steels of the same group.

E.g. BS EN 10025 S355JR steel is a Group 1.2. The range of approval for this material would be Group 1 steels with  $Re \leq 355 \text{ N/mm}^2$ .

Note - Carbon Steels produced to American standards may conform to one of the sub-groups of Group 11 due to the specified maximum carbon content.

In Table 3 the range of qualification for Group 11 covers steels in the same sub-group and any lower sub-group within the same group. e.g. ASTM A106 Grade B is Group 11.1

The range of approval for this material would be all Group 11.1 steels.

In addition, SAFed Member companies will continue to accept that Group 11.1 steels will cover Group 1.1 steels with equal or lower specified yield strength than the original material.

SAFed Member companies confirm that subject to a technical review by the Member Company a weld procedure qualification based on a Group 1 steel may be acceptable for a similar Group 11 material providing that the carbon content of the Group 11 material is restricted to 0.24% maximum.

### **BS EN ISO 15614-1: 2017**

Steels are grouped according to ISO/TR 15608. Where materials are assigned groups by ISO/TR 20172, ISO/TR 20173 or ISO/TR 20174, those assignments shall be used.

Test piece materials in groups 1 and 11 qualify the equal or lower specified minimum yield strength steels.

For example: EN 10025-2 S355 J2H is a group 1.2 material. The range of approval for this material would be; Steels – Group 1 with Yield Strengths  $\leq 355\text{N/mm}^2$ .

When welding a Group 1 Steel to another Group 1 Steel, Table 5 does not allow any coverage to weld a Group 11 Steel.

Qualifying a Group 11 Steel, for example API 5L Grade B, the range of approval is; Steels Group 11 and Group 1 with Yield Strengths  $\leq 241\text{ N/mm}^2$ .

### Interpretation number 12

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<b>Prepared by</b>	Welding and Materials Committee (WMC)
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<b>Reference</b>	BS EN ISO 15614-1 sub clause 8.4.2

### Situation

What is the range of approval for welding positions to BS EN ISO 15614-1

### Interpretation

#### BS EN ISO 15614-1: 2004 + A2 2012

For positional approval in plate and pipe, qualification is given according to the heat input, and the requirements for a hardness survey and Charpy impact testing.

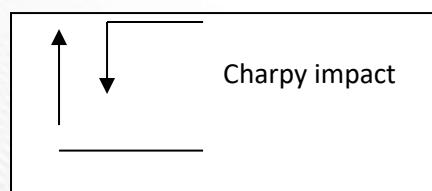
Where neither are required, any position approves all positions, except vertical down.

**NOTE:** In a practical sense, the positional approval may be limited by changes in other variables e.g. transfer mode.

BS EN ISO 15614-1 sub clause 8.4.2 states: For example, butt welds in plate the highest heat input position is normally PF and the lowest PC. SAFed Member Companies have previously considered the lowest heat input position to be PE/PD. In the absence of recorded values of heat input in each welding position SAFed Members will continue to use the existing positional approval.

Where Charpy impact testing or hardness criteria need to be fulfilled, the following positional approval applies:

Highest Heat Input	-	Vertical-Up
		Flat
		Horizontal
		Overhead



Lowest Heat Input	-	Vertical-Down
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For each condition (Hardness Value, Charpy Impact), the range of approval is in the direction of the arrow.

e.g. Hardness only, overhead would approve all positions, except vertical-down.

Hardness and Charpy impact, overhead\* and vertical-up\*\*. Thus, for plate, two test pieces would be required.

Notes:

\*Hardness testing is performed on the test plate welded in the overhead position.

\*\* Charpy Impact testing is performed on the test plate welded in the vertical-up position.

### **BS EN ISO 15614-1: 2017**

Sub clause 8.4.2: When neither impact nor hardness requirements are specified, welding of the test piece in any position (pipe or plate) qualifies for welding in all positions (pipe or plate).

The specification for the need of impact or hardness testing could come from, but should not be limited to; Table 2 of BS EN ISO 15614-1 : 2017, An application specification/standard, a design and/or build code, a material specification etc.

For qualification of all welding positions, where impacts and/or hardness are specified the following shall apply:

- Impact tests shall be taken from the weld metal in the highest heat input position.

For Butts - the highest heat input position is normally PF or PA

- Hardness testing shall be taken from the weld metal in the lowest heat input position.

For Butts – the lowest heat input position is normally PE or PC

For plate, it may often be necessary to weld more than one test piece to produce test pieces containing weldments with both high and low heat input requirements. For fixed pipe, test locations shall be in accordance with the above requirements.

If a material only has one of either impact or hardness requirements, it is only necessary to perform the required test in the applicable welded position (lowest for hardness, highest for impact) to gain qualification for all positions.

NOTE: The above positions as sited in the standard are examples only for higher and lower heat input positions. Calculated heat input in accordance with BS EN 1011 Pt 1 or arc energy i.a.w ISO /TR18491. Actual test locations to be determined based on heat input /arc energy recorded during procedure test.

### Interpretation number 15

<b>Status</b>	Issue 05
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<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614-1:2004+A2 : 2012 Table 1 and BS EN ISO 15614-1:2017 Table 2
<b>Subject</b>	Impact test temperatures for unknown applications

### Situation

For steels with specified impact properties, what is the appropriate impact test temperature when the application is unknown?

### Interpretation

BS EN ISO 15614-1:2004+A2 : 2012 Table 1 and BS EN ISO 15614-1:2017 Table 2, Note d states that impact tests are required for materials  $\geq 12$ mm thick and having specified impact properties. Application standards may require impact testing below 12mm thick. The test temperature shall be chosen by the manufacturer regarding the application or application standard but need not be lower than the parent metal specification.

Where the application is not known, the impact tests should first be attempted at the conditions required by the material specification. If this is not achieved, then a certificate may be issued providing a statement is added in the remarks column reporting that the procedure is only suitable for applications where the impact properties shown on the E3 certificate are acceptable to the Application Standard.

It should be noted that BS EN ISO 15614-1, relevant para, requires that where multiple welding processes are qualified in a single test piece, impact test specimens shall be taken from the weld metal and HAZ that include each process where practicable. This may also apply if there are changes within a single process joint e.g., a change in the type of electrode covering.

This should be a consideration for materials  $\geq 12$ mm thick if 10mm x 10mm Charpy Specimens are used.

### Interpretation number 16

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<b>Prepared by</b>	Welding and Materials Committee (WMC)
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<b>Reference</b>	BS EN ISO 15614-1:2004+A2 : 2012 Table 3/4 and BS EN ISO 15614-1:2017 Table 5/6
<b>Subject</b>	Range of approvals for dissimilar metal joints

### Situation

The range of approval for dissimilar metal joints is given in BS EN ISO 15614-1 relevant clause and table. Does this mean that all materials in each of the groups are approved?

### Interpretation

No, Notes A, B and C from both relevant tables need to be adhered to. The philosophy given in BS EN ISO 15614-1 sub clause 8.3.1 must be followed for each of the dissimilar materials involved, also the welding consumable used for the test must be suitable for welding the other steels for which approval is given.

### Interpretation number 19

<b>Status</b>	Issue 05
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<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	Sub clause 8.4.3a. BS EN ISO 15614-1:2004+A2 : 2012 Table 6 and BS EN ISO 15614-1:2017 Table 8
<b>Subject</b>	Fillet Welding Similar and Dissimilar Thickness

### Situation

Clause 8.4.3.a. indicates that approval of a butt weld also includes approval for fillet welds. What is the approved range for parent material and throat thickness when fillet welding similar and dissimilar thicknesses?

### Interpretation

The thickness of the butt weld should be used in conjunction with relevant table to give the material thickness range for fillet welds and is applicable to each of the components of the fillet welded joint.

Similarly, the weld metal thickness of the butt weld (single or multi run) should be used with relevant table to give the fillet weld throat thickness range.

Where a thin material is to be fillet welded to a much thicker material and one of the parent metal thicknesses is outside the range approved by the butt weld, a pre-production (WPQR) welding test shall be carried out to simulate the joint to be welded or to include the required thicknesses in the range approved. The range of thickness approved is then applied to each of the components in the joints. As per BS EN ISO 15614-1:2017 Table 8 note a.



### Interpretation number 20

<b>Status</b>	Issue 05
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<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614-1 sub clause 8.2
<b>Subject</b>	Technical and Quality Control for Welding on Differing Sites

### Situation

A manufacture's approved Welding Procedure Specification is valid for welding in workshops or sites under the same technical and quality control. What constitutes this?

### Interpretation

This clause is intended to allow manufacturers who operate on more than one site, on either a permanent or temporary basis, to use one set of approved WPSs. It is considered that this could apply to welding subcontracted to another fabricator providing that it is carried out under the technical and quality control of the manufacturer who approved the WPS originally (the manufacturer). In order to demonstrate that the welding is under the same technical and quality control at the sub-contractors', the following points should be demonstrated:

- All welding is the responsibility of the manufacturer and documentation is available detailing the manufacturer's authority.
- All welders are approved in accordance with the appropriate part of BS EN 287-1, BS EN ISO 9606 series or ISO 14732.

Quality procedures shall describe the following:

- Responsibility for technical and quality control functions at the sub-contractor's site.
- Details of technical control of the welders by the manufacturers.
- Details of requirements for weld examination and acceptance by the manufacturer.

### Interpretation number 25

<b>Status</b>	Issue 06
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<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 14732
<b>Subject</b>	Approval Testing of Welding Operators of Mechanised/Automatic Process and Resistance Weld Setters

### Situation

ISO 14732 is the specification for the approval testing of welding operators of fully mechanised, automatic processes and/or resistance weld setters.

- A. How will SAFed Member Companies interpret the requirements of ISO 14732 to define a welding operator to be able to determine whether approval is required?
- B. How will SAFed Member Companies interpret the requirements of ISO 14732 with reference to an approved Welding Procedure Specification/Welding Procedure Qualification Record (WPS/WPQR) to determine the range of approval applicable?

### Interpretation

There follows the SAFed interpretation of the Situations / actions that will need to be addressed at the appropriate time for Member Companies to be technically correct with respect to the application of the above specification.

For approval in accordance with ISO 14732 the operator will need to follow a pWPS/ WPS. The range of approval for the operator is generally unlimited for the type of welding unit used; this however is on the understanding that he / she works to an approved WPS or approved WPS's produced by the manufacturer that the operator is working for.

The ISO 14732 specification does however have some ranges of approval and not all variables are given an open-ended range of approval. Therefore, where the specification does give specific ranges of approval for variables then these shall be shown on the certificate issued by the examiner / examining body.

Note: It is not considered necessary to undertake a further functional knowledge test when a welding operators' qualification is to be renewed via a prolongation by a given notified body.

### Interpretation number 26

<b>Status</b>	Issue 04
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<b>Prepared by</b>	Welding and Materials Committee (WMC)
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<b>Reference</b>	BS EN 287-1 : 2011 BS EN ISO 9606-1 : 2017
<b>Subject</b>	Fillet Weld Approval sub clause 5.4b & 5.4c

### Situation

BS EN 287-1 : 2011

Sub clause 5.4b

butt welds do not qualify fillet welds or vice versa;

Sub clause 5.4c

when a welder is qualified by butt weld test, a supplementary fillet weld test piece can be welded which shall be in a plate thickness of at least 10 mm and completed using a single layer in the PB position. For this supplementary test the welder shall become qualified for all fillet welds as given for the butt weld qualifications;

BS EN ISO 9606-1 : 2017

Sub clause 5.4b

- b) Butt welds do not qualify fillet welds or vice versa. It is, however, permissible to qualify a fillet weld in combination with a butt weld, e.g. single bevel joint preparation with permanent material backing (a minimum test piece thickness of 10 mm shall be used). See Annex C.

For this combination test, all testing requirements specified in this part of ISO 9606 shall be fulfilled and associated ranges of qualification shall be given based on the test conditions.

### Interpretation

1. When this option is exercised, the fillet weld should be undertaken at the same time as the butt weld qualification test.
2. It is not permissible to supplement a fillet weld to an existing butt weld qualification, any “independently” tested fillet welds shall be treated as a standalone fillet weld approval test with the range of approval as for fillet welds.
3. If a multi process butt weld is applicable the candidate should produce a fillet weld in each process for full coverage of butt weld process or be restricted to the process tested.

4. The range of approval shall be based on table 5 butt weld as per BS EN ISO 9606-1. i.e.: a fillet weld supplementing a 10mm thick butt weld would give a thickness range of  $3 - 2t$  ( $3 - 20\text{mm}$ ) and not as table 7  $\geq 3\text{mm}$ . The diameter range also would apply. For position a PB fillet weld would also give the same range as the butt (a PG butt would give PG, PA, PB)
5. E4 certificate – when the supplementary fillet weld is performed it shall be recorded & details noted on auxiliaries' line if applicable. On the auxiliary's approval range, the process and thickness approval limitations as discussed in bullet point 4.
6. If the butt weld test fails to meet the acceptance criteria, then a welder approval can be issued for the compliant fillet portion only and will be treated as individual fillet weld test for approval purposes.
7. If the fillet weld test fails to meet the acceptance criteria, then a butt weld approval certificate may be issued.

**NOTE:** SAFed recommends a separate Fillet weld qualification is carried out i.a.w relevant standard

### Interpretation number 27

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<b>Reference</b>	BS EN 287-1 : 2011 BS EN ISO 9606 Parts 1 to 5
<b>Subject</b>	<b>(WQTC) Welder Qualification Test Certificate date of Issue</b>

### Situation

Clause 9.1

#### 9.1 Initial qualification

The welder's qualification begins from the date of welding of the test piece(s). This is providing that the required testing has been carried out and the test results obtained were acceptable.

### Interpretation

This is the date to be applied, not the date of completion of the tests.

### Interpretation number 28

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<b>Reference</b>	ASME IX
<b>Subject</b>	Use in Relation to Harmonised Standards

### Situation

ASME IX

An ASME IX welder qualification has been accepted as a technically equivalent qualification for a PED / harmonised standard. ASME IX permits continual use of the qualification based on 6 monthly employer endorsements without the requirements of the prolongation clause within the harmonised ISO 9606. Is this acceptable?

### Interpretation

Where a welder approval qualification is produced or utilised in accordance with ASME IX for harmonised applications (ie: PED) then the rules regarding prolongation as per the harmonised standard should be applied to these certificates / qualifications.

### Interpretation number 29

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<b>Reference</b>	BSEN 9606 -1 : 2017 Sub clause 9.3c
<b>Subject</b>	Revalidation of Welder Qualification

### Situation

Can sub clause 9.3c be used to revalidate welder qualifications?

### Interpretation

During the development of BS EN ISO 9606-1 : 2017 a new option (option c) was introduced to sub clause 9.3 to revalidate a welder's qualification. As per the national foreward, SAFed member companies agree that options a) and b) are the preferred methods for the period verification of a welder's ability/skill to reproduce and meet the acceptance levels of the original test conditions.

Manufacturers should be aware of sub clause 9.3 and which option(s) may or may not be relevant or allowed in application standards or specific contract requirements. EU directive 2014/68/EU (PED) Annex I, 3.1.2 does not permit 9.3c to be used for products that fall into categories II, III and IV.

### Interpretation number 30

<b>Status</b>	Issue 02
<b>Issue date</b>	21 March 2019
<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614-1, sub clause 6.3
<b>Subject</b>	Witnessing Welding Procedure Qualification Test Coupons

#### Situation

“Welding and Testing of the test pieces shall be witnessed by an Examiner or Examining Body”.

Does ALL welding have to be witnessed? (For testing refer to Interpretation No. 32)

#### Interpretation

The word SHALL in the clause dictates that it is a requirement that all welding must be witnessed. The witnessing should not be limited to just the 'welding'. SAFed Member Companies interpret a minimum attendance involvement as:

- During the production of a WPQR test piece, all variables relevant to completing the Record of Weld Test must be witnessed and recorded. This should include:
  - Weld Preparation and Joint Type/Set Up
  - Identification of Materials
  - Identification of Consumables
  - Gas Flow Rates
  - Welding Plant and Electrode Details (if applicable to process)
  - Method of Tacking and Application of required Pre-Heating
  - Pre Heat Temperature
  - Position of Test Piece
  - Welder/Operator Identification
  - Amperage, Voltage and Travel Speed Recording
  - Method of Back Gouging (if applicable)
  - Recording of Interpass Temperature
  - Recording of Run Sequence through to completionThe examiner/examining body should satisfy themselves that welding has been conducted in accordance with the relevant standard

**NOTE:** In SAFed Member Companies opinion, verified shall mean “Witnessed”.



### Interpretation number 31

<b>Status</b>	Issue 02
<b>Issue date</b>	21 March 2019
<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN 287-1: 2011 sub clause 6.1 and BS EN ISO 9606-1 : 2017 sub clause 6.1
<b>Subject</b>	Witnessing Welder Qualification Tests

### Situation

“The welding of test pieces shall be witnessed by an Examiner or Examining Body”.

Does ALL welding have to be witnessed? (For testing refer to Interpretation No. 32)

### Interpretation

The word SHALL in the clause dictates that it is a requirement that all welding must be witnessed. The witnessing should not be limited to just the 'welding'. SAFed Member Companies interpret a minimum attendance involvement as:

- During the production of a welder qualification test piece all variables relevant to the following of the pWPS or WPS shall be witnessed. This should include:
  - Weld Preparation and Joint Type/Set Up
  - Identification of Materials
  - Identification of Consumables
  - Gas Flow Rates
  - Welding Plant and Electrode Details (if applicable to process)
  - Pre heat temperature
  - Position of Test Piece
  - Welder Identification
  - Amperage, Voltage and Heat Input Monitoring (if applicable)
  - Method of Back Gouging (if applicable)
  - Monitoring of Interpass Temperature

In all cases the examiner/examining body should satisfy themselves that welding has been conducted in accordance with the standard i.e. stop/start requirements, positional requirements.

### Interpretation number 32

<b>Status</b>	Issue 02
<b>Issue date</b>	16 March 2023
<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO 15614-1 sub clause 6.3, BS EN 287-1 : 2011 sub clause 6.1 and BS EN ISO 9606-1 : 2017 sub clause 6.1
<b>Subject</b>	Witnessing the Mechanical testing of Weld Procedure Qualification Test Coupons and Welder Qualification Test Coupons

#### Situation

BS EN 287-1 : 2011 sub clause 6.1 and BS EN ISO 9606-1 : 2017 sub clause 6.1 states: "The welding of test pieces shall be witnessed by the examiner or examining body. The testing shall be verified by the examiner or examining body".

BS EN ISO 15614-1 : 2004 + A2 : 2012 sub clause 6.3 states: "Welding and testing of the test pieces shall be witnessed by an examiner or an examining body.

BS EN ISO 15614-1 : 2017 sub clause 6.3 states: "The welding and the testing of the test piece shall be verified by the examiner or examining body"

Does ALL testing have to be witnessed?

#### Interpretation

The word SHALL in the clause dictates that it is a requirement that all testing must be verified. SAFed Member Companies interpret a minimum involvement as:

The requirement for Inspection Body personnel to witness mechanical tests shall be based on several aspects:

1. If testing is carried out by a Test House which is not accredited by a National Accreditation Body for the appropriate scope within BS EN ISO/IEC 17025, then all mechanical tests shall be witnessed at the time of testing, when the results cannot be verified on examination of the test specimens e.g. tensile/impact.
2. If the manufacturer elects to have the member company coordinate the testing under the above approved BS EN ISO/IEC 17020 Quality Management system then the member company can exercise its discretion to witness testing based on the following:
3. If a manufacturer chooses to place a testing order on a Laboratory directly, irrelevant if that chosen laboratory holds BS EN ISO/IEC 17025 accredited or not, the Inspection body shall witness the testing.

If a member Company's own approved BS EN ISO/IEC 17025 accredited laboratory performs the tests. Tests may be witnessed by the Engineer Surveyor.

If a member Company sub-contracts tests to an approved BS EN ISO/IEC 17025 accredited laboratory, witnessing of tests is at the discretion of the member company, based on control of its subcontractor through supplier audit and site assessments (to the BS EN ISO/IEC 17020 standard) etc.

In all cases the examiner/examining body should satisfy themselves that testing has been conducted in accordance with the relevant standard prior to issuing any reports.

### Interpretation number 33

<b>Status</b>	Issue 01
<b>Issue date</b>	21 March 2019
<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	BS EN ISO/IEC 17020 : 2012
<b>Subject</b>	Subcontract of Non-Destructive Examination

### Situation

Para 6.3.3 “Whenever subcontractors carry out work that forms part of an inspection, the responsibility for any determination of conformity of the inspected item with the requirements shall remain with the inspection body.”

For welding procedure and welding qualifications how is responsibility for the determination of conformity managed?

### Interpretation

To take responsibility for any determination of conformity of the inspected item the Inspection Body shall as a minimum verify all non-destructive examination results.

Where the method of non-destructive examination cannot be verified by review by the Inspection Body, only recorded subcontractors on the Inspection Bodies register or the Inspection Body shall perform the examination.

SAFed members organisations agree that methods of non-destructive examination that cannot be verified by review are magnetic particle, dye penetrant and ultrasonic examination.

Where impartiality and independence risks are identifiable, the Inspection Body shall minimise/eliminate this by verifying all non-destructive examination. This may be performed by witnessing the non-destructive examination, the use of a registered subcontractor or performing the non-destructive examination.

SAFed Member Companies agree that impartiality and independence risks include customers performing their own non-destructive examination, customers subcontracting their own non-destructive examination and non-registered subcontractors.

### Interpretation number 34

<b>Status</b>	Issue 01
<b>Issue date</b>	16 March 2023
<b>Prepared by</b>	Welding and Materials Committee (WMC)
<b>Approved by</b>	Technical Steering Committee (TSC)
<b>Reference</b>	EN Directive 2014/68/EU (PED) and Pressure Equipment (Safety) Regulations 2016 (PESR)
<b>Subject</b>	Qualification using harmonised standards to EU Directive 2014/68/EU [2014 OJ L189] (PED) and Pressure Equipment (Safety) Regulations 2016 (PESR)

### Situation

When submitting or qualifying Welding Procedures and Welder Qualification, that are intended to be used for products covered by PED/PESR, which version of ISO 15614-1 and ISO 9606-1 shall be used?

### Interpretation

SAFed member organisations agree that the standards listed in the current version of the Official Journal of the European Union C326, Notice 2018/C (326/01) shall be used.

### Welding Procedures

Existing Welding Procedure Qualification Records (WPQR's) made to preceded or superseded versions of the standard listed in the Official Journal of the European Union, shall be subject to review. If the document satisfies the technical intent of the standard, a realignment sheet shall be issued bringing the WPQR in line with the current harmonised standard.

Procedure Qualification Records (PQR's) made to ASME IX shall be subject to review. PQR's shall meet the technical intent of the current harmonised standard, including Non-Destructive and Destructive Testing.

### Welder Qualification

Existing Welder Qualifications, made to preceded versions of the standards listed in the Official Journal of the European Union, cease to give presumption of conformity with the essential or other requirements of the relevant Union legislation and shall not be used/prolongated.

Welder Qualification made to ASME IX shall be subject to review. Certificates shall meet the technical intent of the current harmonized standard, including Non-Destructive and Destructive Testing.