COMPANY NAME	**QW-483 Procedure Qualification Records (PQR)** QW-483 Registro de la Calificación del Procedimiento (PQR) **By:** (Por) 1

PQR No. 2 **Date** Fecha 3

WPS No. 4

Welding Process(es) Proceso(s) de Soldadura 5 **Type (s)** Tipo (s) 6

JOINTS (QW-402) JUNTAS

7

Groove Design of Test Coupon
Diseño de la ranura del cupón de prueba

BASE METALS (QW-403) METAL BASE

Material Spec. Esp. del Material 8 **To** a 9

Type / Grade Tipo / Grado 10 **To** a 11

P-No. No. P 12 **Group No** Grupo No. 13 **To** a **P-No.** No. P 14 **Group No** Grupo No. 15

Diameter of test coupon Diámetro de cupón de prueba 16

Thickness of test coupon Espesor de cupón de prueba 17 **To** a 18

Maximum Pass Thickness Espesor máximo por paso 19

Other (Otro) 20

FILLER METALS (QW-404) METAL DE APORTE

	1	2
Spec. No. (SFA) No. de Esp. (SFA)	21	
AWS No. (Class) Clasif. AWS No.	22	
F-No. (No. F)	23	
A-No. (No. A)	24	
Size of Filler Metal Tamaño del aporte	25	
Electrode-Flux (Class) Clasif. Electrodo-Fundente	26	
Flux Type (Tipo de fundente)	27	
Filler Metal Product Form Forma del metal de aporte	28	
Supplemental Filler Metal Aporte suplementario	29	
Weld Metal Thickness Esp. de soldadura depositado	30	
Alloy elements Elementos aleantes	31	
Alloy Flux(Aleación de flux)	32	
Recrushed slag (flux reciclado)	33	
Filler (Metal de Aporte)	34	
Other (Otro)	35	

POSITION (QW-405) Posición

Position of groove Posición de la ranura 36

Progression Progresión ☐ **Up** Ascendente 37 ☐ **Down** Descendente 38

Other (Otro) 39

PREHEAT (QW-406) PRECALENTAMIENTO

Preheat Temperature Temperatura de Precalentamiento 40

Interpass Temperature Temperatura entre pasos 41

Preheat Maintenance Mantenimiento del precalentamiento 42

POST WELD HEAT TREATMENT (QW-407)
TRATAMIENTO TERMICO POSTERIOR A LA SOLDADURA

Temperature Temperatura 43

Time Range Rango de Temperatura 44

GAS (QW-408)

	Percent Composition (Porcentaje de Composición)		
	Gas(s) Gas (es)	**Mixture** Mezcla	**Flow Rate** Rango de Flujo
Shielding Protección	45	46	47
Trailing Arrastre	48	49	50
Backing Respaldo	51	52	53

TECHNIQUE (QW-410) TECNICA

Multipass or Single Pass (per side) Paso múltiple o sencillo (por lado) 54

String or Weave Bead Cordón recto u oscilado 55

Single or multiple electrode Electrodo simple o múltiple 56

Use of termal process Uso de procesos térmicos 57

Closed to out chamber Cámara cerrada 58

Oscillation Oscilación 59

Other Otro 60

COMPANY NAME	PQR No. 2

ELECTRICAL CHARACTERISTICS QW-409 CARACTERISTICAS ELECTRICAS

Weld Pass(es) Pasos de Soldadura	**Process** Proceso	**Transfer Mode GMAW (FCAW)** Modo de Transf. GMAW (FCAW)	**Current** Corriente	**Polarity** Polaridad	**Amps** Amperaje	**Volts** Voltaje	**Travel Speed** Velocidad de Avance	**Energy or Power** Energia o Poder	**Heat Input** Entrada de calor	**Tungsten electrode size & type** tungsteno tamaño y tipo	**Other** Otro
61	62	63	64	65	66	67	68	69	70	71	72

TENSILE TEST (QW-150) PRUEBA DE TENSION

Specimen No. Espécimen No.	**Width, in** Ancho, pulg.	**Thickness, in** Espesor, pulg	**Area, in²** Area, pulg.²	**Ultimate Total Load, lb** Carga máx. de ruptura, lb.	**Ultimate Unit Stress, psi** Esfuerzo max. de ruptura	**Type of failure & Location** Tipo de falla & localización
73	74	75	76	77	78	79

GUIDED BEND TESTS (QW-160) PRUEBA DE DOBLEZ GUIADO

Specimen No. Espécimen No.	**Type and Figure No.** Tipo y No. de figura	**Result** Resultado
80	81	82

TOUGHNESS TESTS (QW-170) PRUEBAS DE TENACIDAD

Specimen No. Espécimen No.	**Notch Location** Localización de la muesca	**Specimen Size** Tamaño del Espécimen	**Test Temperature** Prueba de Temperatura	**Impact Values** Valores de la prueba de impacto			**Drop Weight Break (Y/N)** Peso de ruptura (Y/N)
				Ft-lb (J)	**% Shear** % Cizallado	**Mils**	
83	84	85	86	87	88	89	90

Comments: 91

FILLET WELD TEST (QW-180) PRUEBA DE SOLDADURA DE FILETE

Result Resultado — **Satisfactory** Satisfactorio 92 ☐ **Yes** Si 93 ☐ **No** No

Penetration into Parental Metal Penetración en el Metal Base 94 ☐ **Yes** Si 95 ☐ **No** No

Macro Results Resultados de prueba Macro 96

OTHER TESTS OTRAS PRUEBAS

Type of Test Tipo de Prueba 97

Deposit Analysis Análisis del Deposito 98

Other (Otro) 99

Welders Name Nombre del Soldador 100 — **Clock No.** No. Tarjeta 101 — **Stamp No.** Estampa No. 102

Test Conducted by Prueba conducida por 103 — **Laboratory Test No.** Prueba de Laboratorio No. 104

We certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of Section IX of the ASME BOILER AND PRESSURE VESSEL CODE.

Nosotros certificamos que lo contenido en este registro es correcto y que las probetas de soldadura fueron preparadas , soldadas y Probadas de acuerdo con los requerimientos de la Sección IX del Código ASME.

Manufacturer Fabricante 105

Date Fecha 106 — **Certified by** Certificado por 107

Instructions for Completion of Procedures Qualification Records
Form QW-483

The paragraph numbers correspond to the numbers on the lines on Form QW-483. These instructions are applicable to SMAW, GTAW, PAW, SAW and/or GMAW (including FCAW). *Sentences in Italics are the references to the applicable paragraphs in Section IX that address the item.*

1. The company representative responsible for certifying the PQR. Name and title.
2. Unique number assigned for each PQR.
3. Date PQR qualified.
4. WPS number.
5. Welding process (i.e. GMAW, SMAW, etc.).
6. Type of process (i.e. Automatic, Semiautomatic, Manual or Machine).
7. Show the groove design of the test coupon used with this PQR

8 - 9. Enter the specification of the base metal which made up the test coupon. S*ee QW-424 and QW-403.11*

10-11. Enter the type and/or grade of the base metal specification which made up the test coupon. S*ee QW-424 and QW-403.11*

12-14. Enter the P-Number of the base metal which made up the test coupon. *See QW-403.11.* Base metals are assigned P-Number in table QW / QB-422. If not P-Number can be assigned enter “None”.

13-15. Enter the Group-Number of the base metal which made up the test coupon. *See QW-403.5*. Base metals are assigned P-Number plus Group Numbers in table QW / QB-422. If not P-Number can be assigned enter “None”.

16. If the test coupon were performed in pipe, enter the diameter (NPS) of the test coupon.

17-18. Enter the nominal thickness of the base metal which made up the test coupon. *See QW-403.8, 10, QW-403.6 and QW-407.4.*

19. Enter the maximum pass thickness in the welded test coupon. *See QW-403.9*
20. Enter additional information, i.e. heat number and/or identifier plate of the test coupon.
21. Enter the specification (e.g. SFA-5.4) of the electrode or filler metal used in the test coupon. See Section II Part C of ASME Code. If the weld was made using GTAW or PAW without the addition of filler metal or the filler metal is not whiting an SFA specification, enter “None”. *See QW-404.14*
22. Enter the classification (e.g. E309-16) of the electrode or filler metal whiting an SFA specification used in the test coupon. For classification of the electrode or filler metal see Section II, Part C. *See QW-404.12.* If the weld was made using GTAW or PAW without the addition of filler metal, enter “None”. *See QW-404.14.* If the filler metal classification is not whiting an SFA specification, enter the manufacturer’s trade name (change in the filler metal manufacturer’s trade name require WPS requalification).
23. Enter the F-Number of the filler metal. See QW-432 of Section IX. The F-Number depends on the welding process and electrode or filler metal used. *See QW-404.4 which leads to QW-432*. If the weld was made using GTAW or PAW without the addition of filler metal or the F-Number cannot be assigned, enter “None”. *See QW-404.14*.
24. Enter the A-Number of the weld metal chemical composition. *See QW-442*. The A-Number depends of the welding processes from the chemical analysis of the weld deposit that was used. *See QW-404.5.* If the A-Number cannot be assigned, enter the chemical analysis of the weld deposit.
25. Enter the size of filler metal (electrode, rod, etc.) used in the test coupon (i.e. 1/8”). *See QW-404.7.*
26. Enter the electrode - flux (class) if used to weld the test coupon (i.e. F7A2-EM12K) See Section II, Part C. Leave in blank or enter “NA” if the process is not SAW. *See QW-404.9 and QW-404.35.*
27. Enter the flux type if used to weld the test coupon (i.e. neutral, active, etc.). Leave in blank or enter “NA” if the process is not SAW. *See QW-404.34.*
28. For GTAW, GMAW or PAW, record whether solid, metal cored, powder or flux cored wire was used. Leave blank or enter “NA” if the welding process is not GTAW, GMAW or PAW. *See QW-404.23*.

29. Enter the supplemental filler metal used in the test coupon. If not used, enter “None”. *See QW-404.24.* If is not SAW or GMAW processes leave in blank or enter “NA”.
30. Enter the weld metal thickness used in the test coupon welded in groove. That is, if more than one process or variation on a process is used (e.g. E6010 root / E7018 balance, downhill root/ uphill fill, etc.), enter a separate deposit thickness for each variation, welding process, each F-Number and for each set of essential variables. *See QW-451*, *QW-404.30 and QW-404.32.*
31. Enter the alloy elements used in the test coupon. If an alloy element was not used, enter “Not allow”. Leave in blank or enter “NA” if the process is not SAW, GMAW or PAW. *See QW-404.27.*
32. Enter the alloy flux used in the test coupon. If an alloy flux was not used, enter “Not allow”. Leave in blank or enter “NA” if the process is not SAW. *See QW-404.10.*
33. Enter the flux from recrushed slag if used to weld the test coupon. If a flux from recrushed slag was not used, enter “None”. Leave in blank or enter “NA” if the process is not SAW. *See QW-404.36.*
34. Enter if the weld was made using GTAW or PAW with the addition of filler metal, enter “Yes”. If the weld was made using GTAW or PAW without the addition of filler metal, enter “None”. Leave in blank or enter “NA” if the process is not GTAW or PAW. *See QW-404.14.*
35. Other: Enter additional information, i.e. filler metal; lot number and/or heat number, trade name, etc.
36. Enter the position of groove covered used to weld the test coupon (i.e. 1G, 2G, 3G, etc.). *See QW-405.2. See QW-120, for definitions of testing positions and QW-203 unless specifically required otherwise by the welding variables (QW-250), a qualification in any position qualifies the procedure for all positions.QW-120 lead to QW-461.3 though QW-461.4 sketches.*

37-38. Mark the box if the progression “Uphill or Downhill” use to weld the test coupon. If was welded in the 3G, 5G, 6G, 3F or 5F positions. Enter nothing if welding was done in any other position. *See QW-405.2. If this is not a notch-toughness test requirement per other Section, may be mark both box if is permitted by the process.*

39. Other: Additional information [i.e. enter the position of fillet use to weld the test coupon (i.e. 1F, 2F, All, etc. or “None”, if test coupon not was welded in fillet weld.)].
40. Enter the minimum temperature in the weld joint preparation immediately prior to the welding. *See QW-406.1.*
41. Enter the maximum interpass temperature used to weld the test coupon. *See QW-406.3*.
42. Enter the preheat maintenance temperature if is used for welding the test coupon. If not preheat maintenance performed, enter “None”.
43. Enter the temperature of PWHT, if PWHT is performed with this PQR. If not PWHT performed, enter “None”. *See QW-407.1,4 and QW-407.2.*
44. Enter the minimum holding time at the PWHT reaching temperature, if PWHT is performed with this PQR. If not PWHT performed, enter “None”. See QW-407.2.
45. Enter the single shielding gas type used to weld the test coupon (i.e. CO2, Ar, etc.). Enter “None” if no shielding gas was single used. Leave blank (or enter “NA”) if the process is not GMAW, FCAW, GTAW or PAW. *See QW-408.2.*
46. Enter the mixture shielding gas (i.e. 75% Ar – 25 % CO2). Enter “None” if not mixture shielding gas was used. Leave blank (or enter “NA”) if the process is not GMAW, FCAW, GTAW or PAW. *See QW-408.2*.
47. Enter the shielding gas flow rate (i.e. 25 CFH). Enter “None” if no shielding gas was used (single or mixture). Leave blank or enter “NA”, if the process is not GMAW, FCAW, GTAW or PAW.
48. Enter the single trailing gas type used to weld the test coupon (i.e. CO2, Ar, etc.). Enter “None” if not single trailing gas was used. Leave blank or enter “NA”, if the process is not GMAW, FCAW, GTAW or PAW. *See QW-408.10.*
49. Enter the mixture trailing gas (i.e. 75% Ar – 25 % CO2). Enter “None” if no mixture trailing gas was used. Leave blank or enter “NA”, if the process is not GMAW, FCAW, GTAW or PAW. *See 408.10.*
50. Enter the trailing gas flow rate (i.e. 25 CFH). Enter “None” if no trailing gas was used. Leave blank or enter “NA”, if the process is not GMAW, FCAW, GTAW or PAW. *See QW-408.10*.
51. Enter the single backing gas type used to weld the test coupon (i.e. Ar, etc.). Enter “None” if no single backing gas was used. Leave blank or enter “NA”, if the process is not GMAW, FCAW, GTAW or PAW. *See QW-408.9.*

52. Enter the mixture backing gas (i.e. 75% Ar – 25 % CO2). Enter “None” if no mixture backing gas was used. Leave blank or enter “NA”, if the process is not GMAW, FCAW, GTAW or PAW. *See QW-408.9.*
53. Enter the backing gas flow rate (i.e. 25 CFH). Enter “None” if no backing gas was used. Leave blank or enter “NA”, if the process is not GMAW, FCAW, GTAW or PAW.
54. Enter if “Single Pass” or “Multiple Pass” per side were used to weld the test coupon. *See QW-410.9.*
55. Enter if “**String Bead**” or “**Weave Bead**” for the bead technique were used to weld the test coupon. *See QW-405.2*. *For manual or semiautomatic welding, a change from the stringer bead technique to the weave bead technique, or vice versa.*
56. Enter if single electrode or multiple electrodes were used to weld the test coupon. *See QW-410.10. A change from single electrode to multiple electrodes, or vice versa, for machine or automatic welding only.*
57. Enter “Use”, if use of thermal processes on materials P-No. 11A and P-No. 11B. *See QW-410.64*. Enter “None” if not P-No. 11A and P-No. 11B material used.
58. Enter the technique of closed chamber or out-of chamber torch welding if is used with PNo.-.51 through PNo.-53 and with GTAW or PAW welding process. *See QW-410.11*. If the process used is not PAW or GTAW leave blank or enter “NA”. If the welding process used is GTAW or PAW and not PNo. 51 to PNo. 53 materials used enter “None”.
59. Enter “Oscillation” parameters, if the welding is performed in machine or automatic process with GTAW, SAW, FCAW, GMAW and/or PAW. If the welding process is SMAW the space of oscillation leave blank (or enter “NA”). If is performed GTAW, SAW, FCAW, GMAW and/or PAW welding process and not machine or automatic process used enter “None” in the space of oscillation.
60. Other: Additional information required.
61. Enter the number or identification per every weld pass to describe the welding performed in the test coupon (i.e. **1**, **2** or **any** or **root**, **fil**l, etc.).
62. Enter the welding process used for the corresponding weld pass (i.e. GTAW for weld pass 1 or root, FCAW for weld pass 2 or fill, etc.)
63. Enter transfer mode for GMAW or FCAW (i.e. Short circuiting arc, pulsating arc, spray arc, globular arc, etc.). If the welding process is not a GMAW or FCAW leave blank (or enter “NA”). *See QW-409.2.*
64. Enter the type of current used for the corresponding weld pass (i.e. **DC** for weld pass 1 and **DC** for weld pass 2). *See QW-409.4 and Section II, Part C (describe recommended current and polarity used with electrode or rod).*
65. Enter the type of polarity used for the corresponding weld pass (i.e. **EN** for weld pass 1 and **EP** for weld pass 2). *See QW-409.4 and Section II, Part C (describe recommended current and polarity used with electrode or rod).*
66. Enter the amperage used for the corresponding weld pass (i.e. **140** for weld pass 1 and **200 amps** for weld pass 2). *See QW-409.1 and Section II, Part C (for recommended amperage range use with electrode or rod) or Manufacturer’s electrode recommendations.*
67. Enter the voltage used for the corresponding weld pass (i.e. **19** for weld pass 1 and **23 volts** for weld pass 2). See QW-409.1 and *Section II, Part C (recommended voltage range use with electrode or rod) or Manufacturer’s recommendations.* When waveform controlled welding is used leave in blank this space.
68. Enter the travel speed used for the corresponding weld pass (i.e. **2 to 4 in/min** for weld pass 1 and **8 to 10 in/min** for weld pass 2). *See QW-409.1.*
69. Enter Energy or Power when used waveform controlled welding. *See QW-409.1.*
70. Enter the maximum heat input used to weld the test coupon. *See QW-409.1.*
71. Enter the tungsten electrode size and type used [i.e. 3/32”Ø, EWth-2 (2% thoriated)]. Leave blank or enter “NA”, if the process is not GTAW or PAW.
72. Other: Additional information i.e. weld bead length range or arc time range (*See QW-409.1),* or “None”
73. Enter the identification number assigned per each tensile test specimen. (i.e.1T and 2T).
74. Enter the width of the specimen real in inch (i.e. reduced section-plate: see figure QW-462.1(a) is the letter W, for reduced section-turned specimen: see figure QW-462.1(d) is the diameter).
75. Enter the real thickness in inch per corresponding specimen after machined.

76. Enter the area of the specimen in square inch (width x thickness), per corresponding specimen.
77. Enter the Ultimate Total Load in pounds, per corresponding specimen.
78. Enter Ultimate Unit Stress, in pounds per square inch, per corresponding specimen. *See QW-153 acceptance criteria.*
79. Type of failure and location per corresponding specimen (i.e. ductile and base metal). *See QW-153 acceptance criteria.*
80. Enter the identification number assigned per each guided bend test specimen. (i.e. 1D to 4D).
81. Enter type and figure number used per corresponding specimen (i.e. Side Bend and QW-462.2).
82. Enter result of the test (i.e. Satisfactory). *See QW-163 acceptance criteria.*
83. Enter the identification number assigned per each toughness test specimen (i.e. 1IW, 2IW, 3IW, 1IHZ, 2HZ, 3HZ).
84. Enter notch location per corresponding specimen. *See QW-170 The impact test specimen and notch location and orientation shall be as given in the Section requiring such test*. (i.e. charpy v-notch: weld and/or HAZ).
85. Enter specimen size per corresponding specimen. (i.e. charpy v-notch: 10mm X 10mm).
86. Enter the temperature used to performed notch toughness test per corresponding specimen. (i.e. at - 20ºF).
87. Enter impact values in Ft.Lbs (J) of the absorbed energy per corresponding specimen tested. *See QW-170. The acceptance criteria of the results values shall be in accordance with that Section requiring notch toughness.*
88. Enter impact values in % shear. Fracture appearance.
89. Enter impact values in mils, when lateral expansion test is required per other Sections.
90. Enter drop weight tests result, when drop weight test is required by other Sections. *See QW-170 the acceptance criteria of the results values shall be in accordance with that Section requiring notch toughness.*
91. Comments: enter additional information: (i.e. average value of three specimens formed the weld set and the average value of three specimens formed the HAZ set).

92-93. Mark the box yes or no, if the result was satisfactory for the fillet weld test.

94-95. Mark the box yes or no, if the fillet welds test result with Penetration into Parental Metal.

96. Enter result of the macro examination for the fillet weld test.
97. Other tests: Enter the type of test (i.e. penetrant test, hardness test, visual test, etc.)
98. Enter the deposit analysis result when required per the process or to determine A-No.
99. Other: Enter additional information.
100. Enter the Name of the Welder who has been performed the test coupon.
101. Enter the welder's clock number.
102. Enter the Number(s), Letter(s) or Symbol(s) which the Welder has been assigned to identify his or her work.
103. Enter the name and title of the individual who evaluated the tests and his employing company.
104. Enter the identification number assigned by the testing lab if a lab was used
105. Enter the name of the company that is qualifying the PQR.
106. Signature and title of the individual certifying the PQR for the qualifying company.
107. Date of certification. This date will usually be sometime after the date of the mechanical or chemical analysis or other tests. If qualification records are ever reformatted, the test date should remain unchanged and the certification date should be the actual date of certification.