

## Welder Qualification Form (Instructions)

(1) Initial / Requalification

(circle one)

Welding Procedure Number Followed <b>MANGO Welding Procedure NO. 2 - LH Rev. 11/5/15 (2)</b> Reference Procedure Qualification Record No. : MANGO#2LH-11/9-10/2015									
Date: (3)			Welder's I.D. Mark: (7)						
Welder: (4)			Employee # : (8)						
Contractor/Company: (5)			Test Location: (9)						
Certifying Company: (6)									
<b>Test Pipe/Fitting Material and Test Conditions for Welder Qualification</b>									
Ambient Test Temp.: (10)			Weather conditions: (11)			Type of Machine: (16)			
Test Pipe Material Grade: (12)						Sleeve Material Grade: (17)			
Test Pipe Dia. / W. T.: (13)						Sleeve Material WT.: (18)			
Direction of Welding: (14)						Direct Current Reverse Polarity /EP: (19)			
Position of Test Weld Sample: (15) 45° Angle Seam @ 1:30 & 7:30									
Initial Qualification Test Conducted with Water Flowing Through Test Pipe <input type="checkbox"/> (20)									
<b>Welding Parameters and Electrical Characteristics</b>									
Pass No.	Process	Filler Material		Electrical Characteristics		Minimum Heat Input (kJ/in)	Time Between Passes	Travel Speed (IPM)	Cleaning Method
		Size	Classification	Amperage	Voltage				
(21) Seam Weld Side 1 or 2									
1	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
2									
3									
4									
5									
(31) Top Fillet Weld Side 1 or 2									
1									
2									
3									
4									
5									
(32) Bottom Fillet Weld Side 1 or 2									
1									
2									
3									
4									
5									

Preheat: (33) \_\_\_\_\_

Postheat: (34) \_\_\_\_\_

(35) [ ] Check here if voltage is measure across the terminals of welding machine

## Welder Qualification Data Report

(36) Initial / Requalification

(circle one)

Welder: (37)

(38) Visual Inspection Results per API 1104, Twentieth Edition						
Pass			Fail			
Inspector:			Date:		Notes:	
(39) Destructive Test Results per API 1104, Twentieth Edition, Appendix B						
Seam Weld						
Tensile Tests						
Specimen	Width	Thickness	Area	Max Load (Lbs.)	U.T.S.	Fracture Location
(40) T-1						
(41) T-2						
						ie Base Material
Face Bend Tests		Root Bend Test		Nick-Break Tests		
Specimen	Results	Specimen	Results	Specimen	Results	
(42) FB-1		(44) RB-1		(46) NB-1		
(43) FB-2		(45) RB-2		(47) NB-2		
Fillet Weld Nick-Break Tests						
Specimen	Results	Specimen	Results			
(48) NB-1		NB-5				
NB-2		NB-6				
NB-3		NB-7				
NB-4		NB-8				
<p>Tested by: (49) _____</p> <p>Acceptable Date: (50) _____ Unacceptable Date: (51) _____</p> <p>6 Month Requalification Due Date: (52) _____</p> <p>Additional Information: (53) _____</p>						

## Guide for completing MANGO Welder Qualification Date Report

Each number below corresponds to a section on the welder qualification data report for the MANGO procedure number 2

- 1) Circle whichever test is being performed.
  - a. Initial if first time qualifying or requalifying after certification has lapsed.
  - b. 6 Month ReQual. If time elapsed since previous welding test has not exceeded 7 ½ months.
- 2) Check to ensure the proper form is being used
  - a. MANGO 1 for welding with E6010 electrodes.
  - b. MANGO 2 for in-service welding with E7018 electrodes.
- 3) Date test welds are completed by welder.
- 4) Full name of welder performing test welds.
- 5) Name of company or contractor authorizing/requesting test if applicable.
- 6) Name of testing facility/lab administering test.
- 7) Welder identification used on test parts.
- 8) Employee number of welder taking weld test, if applicable.
- 9) Facility where weld test was performed.
- 10) Temperature at site of welding test.
  - a. Ambient temperature below 40°F or the presents of moisture in test material will require preheat.
- 11) Weather conditions if testing is performed outdoors.
- 12) Material grade.
  - a. Material must conform to the requirements of API 1140.
  - b. Mill test report number for material should be listed if available.
  - c. Mill test report may be referenced if material type comes into question.
- 13) Outside diameter and wall thickness of test material.
- 14) Direction of weld travels, must be up hill for MANGO 2.
  - a. Direction of travel must be monitored throughout the testing process.
- 15) Verify test weld sample is in the correct orientation throughout the test.
- 16) Brand and model of welding machine used for test.
- 17) Sleeve material grade.
  - a. Material must conform to the requirements of API 1140.
  - b. Mill test report number for material should be listed if available.
  - c. Mill test report may be referenced if material type comes into question.
- 18) The wall thickness of the sleeve material must be listed.
- 19) The welding polarity used during the test must be verified before and during the test.
- 20) Check if test was conducted with water flowing through the pipe.
  - a. Flowing water must be used during initial qualification.
  - b. A minimum of ¾ GPM flow should be used.
- 21) Information on each line will correspond with the pass being ran for the seam/groove weld.
  - a. Readings are required for at least one bead on each pass

- b. Additional readings may be taken and listed as desired.
- 22) The process being used must be listed.
  - a. MANGO 2 uses the SMAW process only.
- 23) Size of filler rod being used.
  - a. Reference MANGO No. 2 Welding Procedure Specifications for specific parameters based on size of filler rod being used.
- 24) Type of electrode being used.
  - a. E7018 must be used for MANGO 2
  - b. Electrodes must be stored in accordance to AWS standard D1.1 for low hydrogen electrodes prior to use.
    - i. Electrodes not stored properly cannot be used for MANGO 2 welds or test.
- 25) The amperage must be checked, with a calibrated meter, during welding and recorded
  - a. The amperage recorded must be listed
  - b. Amperage reading(s) must be listed for at least one bead on each pass.
  - c. Reading outside the ranges listed in MANGO 2 will result in a failed test.
- 26) The voltage must be checked with a calibrated meter, during welding and recorded
  - a. The voltage recorded must be listed
  - b. Voltage reading(s) must be listed for at least one bead on each pass.
  - c. Reading outside the ranges listed in MANGO 2 will result in a failed test.
- 27) The heat input for each bead recorded must be calculated.
  - a. Heat input reading below 14 KJ/in will result in a failed test.
- 28) The time from the end of one pass to the beginning of the next pass being must be listed.
  - a. If time exceeds 5 minutes preheating may be required.
- 29) Travel speed for each bead recorded must be calculated.
  - a. Travel speeds outside the ranges listed in MANGO 2 will result in a failed test.
- 30) Method used to clean between passes shall be listed.
- 31) Recorded all information for at least on bead on each pass for the upper fillet weld as listed in 22 thru 30 above.
- 32) Recorded all information for at least on bead on each pass for the lower fillet weld as listed in 22 thru 30 above.
- 33) Preheat temperature if used.
  - a. Preheat temperature shall be 250°F for 3" on both sides of the weld when required.
- 34) Post heat temperature if used.
- 35) If voltage is measured across terminal at the machine check box. Voltage should be measured as close to electrode and work as possible to ensure accurate readings due to voltage drop.

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The weld must pass a visual inspection, by a qualified inspector, in accordance with API 1104 before it can be destructively tested.

- 36) This must be marked the same as 1 above.
- 37) List welder name or I.D. mark as listed in 6 above.
- 38) All welds must pass a visual inspection prior to destructive test.
  - a. Qualified inspector mark pass or fail for visual inspection, list name of inspector and date welds passed visual inspection.

- 39) This area is for recording results of destructive tests.
- a. Reference MANGO Welding Procedure No.2, drawing sheet 2 of 2 and section 6 of API 1104 for location of test samples.
- 40) One tensile test coupon is required
- a. The tensile test coupon may be omitted, in which case an additional Nic-break test would be required.
  - b. All information for the tensile test coupon shall be filled in.
  - c. If the test fails, the reason for failure shall be noted accordingly.
- 41) If additional tensile test are performed the specimen shall be marked and recorded.
- 42) Test material  $\frac{1}{2}$ " or less shall subject to one face bend.
- a. Reference MANGO Welding Procedure No.2, drawing sheet 2 of 2 and section 6 of API 1104 for location of test samples.
  - b. Test material greater than  $\frac{1}{2}$ " shall be subject to two side bends.
- 43) If second face bend is performed results may be recorded here.
- 44) Test material  $\frac{1}{2}$ " or less shall subject to one root bend.
- a. Reference MANGO Welding Procedure No.2, drawing sheet 2 of 2 and section 6 of API 1104 for location of test samples.
- 45) If a second root bend is performed the results may be recorded here.
- 46) The test weld shall be subject to one Nick Break test.
- a. Reference MANGO Welding Procedure No.2, drawing sheet 2 of 2 and section 6 of API 1104 for location of test samples.
- 47) A second Nick Break may be performed in place of a tensile test.
- a. Reference MANGO Welding Procedure No.2, drawing sheet 2 of 2 and section 6 of API 1104 for location of test samples.

Fillet Weld destructive test results.

- 48) A minimum of four nick break shall be tested from the fillet welds.
- a. Two nick breaks will come from the lower fillet welds.
  - b. Two nick breaks will come from the upper fillet welds.
  - c. Reference MANGO Welding Procedure No.2, drawing sheet 2 of 2 and section 6 of API 1104 for location of test samples.
- 49) Name of qualified inspector who conducted destructive test.
- 50) Date weld test were successfully completed.
- 51) If weld failed list date of failure.
- 52) Date will be 6 months from date test weld was complete.
- 53) Inspector notes.
- a. If the test is a fail the reason for failure should be noted here.