

III. Qualification of Welders

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A. Classes of Welders

All Company and contractor personnel welding on new steel pipelines of all sizes and live steel pipelines up to 2.375" OD shall be qualified in accordance with API-1104, Section 6. This is to include test headers or assemblies fabricated and pressure tested with the intent to be installed in the gas infrastructure. This does not include casings, casing vents or any structural items, such as pipe stands or barricades, not intended to carry gas pressure in normal operating conditions. Any Company and contractor personnel welding on "live" steel pipelines over 2.375" OD shall also be qualified in accordance with API-1104, Appendix B. Use the following table to determine welder classifications and required tests.

Table III-1 - Determining Welder Classifications and Required Tests

Welder Classification	Classification Description	Required Tests
Grade A	Qualified to fillet and butt weld on pipe of any diameter, wall thickness, and grade using DOWNHILL Shielded Metal Arc Welding (SMAW) processes. Qualified to fillet and butt weld on pipe of any diameter, wall thickness, and grade using UPHILL SMAW processes. Qualified to fillet and butt weld on pipe in compressor stations using downhill or uphill SMAW processes.	1, 4
Grade B	Qualified to fillet and butt weld on pipe up to 12.75" outside diameter, any wall thickness, and any grade using DOWNHILL SMAW processes. Qualified to fillet and butt weld on pipe of any diameter, wall thickness, and grade using UPHILL SMAW processes. NOT qualified to weld on any compressor station piping.	2, 4
Grade SP	Qualified on all welding processes, pipe diameters, pipe grades, pipe wall thicknesses, weld joint designs and welding positions that are necessary for the welder to make as part of a specified project or limited welding duties.	3

B. Welder Tests

1. Test 1

Welders successfully completing this test shall be qualified to groove weld any grade, diameter, and wall thickness of pipe using the downhill SMAW process. Welders will also be qualified to fillet weld any grade, diameter, and wall thickness pipe during new construction and up to 2.375" OD on

"live" lines using the downhill SMAW process. All groove welds shall be destructively or radiographically tested. All fillet welds shall be destructively tested.

- a. Using API 5L Grade X52, 12.75" OD, 0.250" WT steel pipe, the welder shall make a butt joint groove weld with the pipe axis in the horizontal fixed position using WPS [SM-10](#).
- b. The welder shall lay out, cut, fit and weld a branch connection that extends vertically downward from run pipe in the horizontal position. The branch and run pipe shall be API 5L Grade X52, 12.75" OD, 0.250" WT steel pipe. A full size hole shall be cut in the run pipe prior to welding of the branch. The welder shall use WPS [SM-60](#).
- c. Using API 5L Grade B, 1.315" OD, 0.179" WT steel pipe, the welder shall make a butt joint groove weld with the pipe axis in the horizontal fixed position using WPS [SM-1](#). Company may require the welder to make two of these welds to provide enough samples for destructive testing.

2. Test 2

Welders successfully completing this test shall be qualified to groove weld any grade, outside diameters up to 12.75", and any wall thickness of pipe using the downhill SMAW process. Welders will also be qualified to fillet weld any grade, outside diameters up to 12.75", and wall thickness pipe during new construction and up to 2.375" OD on "live" lines using the downhill SMAW process. Welders will not be qualified to weld on compressor station piping. All groove welds shall be destructively or radiographically tested. All fillet welds shall be destructively tested.

- a. Using API 5L Grade X52, 6.625" OD, 0.188" WT steel pipe, the welder shall make a butt joint groove weld with the pipe axis at an angle of 45 degrees using WPS [SM-10](#).
- b. Using API 5L Grade B, 2.375" OD, 0.154" WT steel pipe, the welder shall make a butt joint groove weld with the pipe axis at an angle of 45 degrees using WPS [SM-3](#).
- c. Using API 5L Grade B, 1.315" OD, 0.179" WT steel pipe, the welder shall make a butt joint groove weld with the pipe axis at an angle of 45 degrees using WPS [SM-1](#). Company may require the welder to make two of these welds to provide enough samples for destructive testing.
- d. The welder shall lay out, cut, fit and weld a branch connection that extends vertically upward from run pipe in the horizontal position. The branch shall be API 5L Grade B, 2.375" OD, 0.218" WT steel pipe, and the run shall be API 5L Grade B, 4.500" OD, 0.188" WT steel pipe. A full size hole shall be cut in the run pipe prior to welding of the branch. The welder shall use WPS [SM-54](#).
- e. The welder shall lay out, cut, fit and weld a branch connection that extends horizontally from the side of run pipe in the horizontal position. The branch shall be API 5L Grade B, 2.375" OD, 0.154" WT steel pipe, and the run shall be API 5L Grade B, 4.500" OD, 0.188" WT steel pipe. A full size hole shall be cut in the run pipe prior to welding of the branch. The welder shall use WPS [SM-53](#).
- f. The welder shall lay out, cut, fit and weld a branch connection that extends vertically upward from run pipe in the horizontal position. The branch shall be API 5L Grade B, 1.315" OD, 0.179" WT steel pipe, and the run shall be API 5L Grade B, 2.375" OD, 0.154" WT steel pipe. A full size hole shall be cut in the run pipe prior to welding of the branch. The welder shall use WPS [SM-51](#).
- g. The welder shall lay out, cut, fit and weld a branch connection that extends horizontally from the side of run pipe in the horizontal position. The branch shall be API 5L Grade B, 1.315" OD, 0.179" WT steel pipe, and the run shall be API 5L Grade B, 2.375" OD, 0.154" WT steel pipe. A full size hole shall be cut in the run pipe prior to welding of the branch. The welder shall use WPS [SM-51](#).

3. Test 3

Welders that are used on a limited basis such as a large cross-country transmission or for only one welding process may at the discretion of the

and/or destructively tested.

- a. The welder shall successfully complete any appropriate weld test(s) as determined by Engineering. The weld test(s) shall be designed to qualify the welder on all pipe diameters, pipe grades, pipe wall thicknesses, weld joint designs and welding positions that are necessary for the welder to make as part of the specified project. The welder shall use a qualified Company welding procedure for all test(s).

Grade SP welders shall not weld on Company's pipelines after the completion of the specified project unless additional qualifications are obtained. Successful completion of any weld test required for a Grade SP Welder may be used in combination with any other weld test(s) to qualify the welder as a Grade A or B. The welder must pass all weld tests in accordance with the re-qualification requirements of [Chapter IV](#).

4. Test 4

Welders welding on "live" transmission, distribution, and compressor station piping using the uphill SMAW process shall successfully complete the test described below. All welds shall be destructively tested.

- a. The welder shall layout, cut, fit and weld a full-sized branch-on-pipe connection along with a horizontal butt joint groove weld. The fillet weld using the 4F welding position shall be made with the run-pipe axis in the horizontal position and the branch-pipe axis extending vertically in the downward from the run. The groove weld using the 2G welding position shall be made with the run-pipe and sleeve in the horizontal position. The sleeve, run, and branch-pipe shall be API 5L Grade X52, 12.750" OD, 0.250" WT steel pipe. The welder shall use WPS [SM-108](#). The finished welds shall exhibit a neat, uniform workman-like appearance.

C. Failure to Qualify

If a welder fails to pass the qualification test because of conditions beyond his/her control, the welder may be given a second opportunity to qualify. No further retests shall be given until the welder has submitted proof of subsequent welder training acceptable to the Company. If a welder fails three consecutive qualification tests within 12 calendar months, he/she shall wait a period of 12 calendar months before being allowed to retest.

Welders failing to qualify shall not weld on Company pipelines.

D. Records

All welder qualifications shall be documented on form WTF-01. Lists of qualified welders and the procedures in which they are qualified shall be maintained at Company Engineering offices.

A welder may be required to re-qualify if there is any question about his/her ability.

Welders will be issued identification cards allowing them to weld on gas pipeline facilities in North Carolina and South Carolina.

(UNCONTROLLED IF PRINTED)