

**SUPPLEMENT 14 - QUALIFICATION REQUIREMENTS FOR COORDINATED
SUPPLEMENT 2 AND 3 QUALIFICATION PERFORMED FROM THE INSIDE
SURFACE**

Proposed Requirements	Technical Basis
1.0 SCOPE	
<p>This Supplement provides requirements for expansion of inside surface examinations of Supplement 10 procedure, equipment, and personnel qualifications to include Supplements 2 and 3. The same ultrasonic essential variables values, or, when appropriate, the same criteria for selecting values, shall be used. This Supplement is applicable to examinations conducted from the inside surface.</p>	<p>There is currently no available Code action allowing for a coordinated implementation of the fundamental qualifications required for the typical examinations performed from the ID of PWR nozzles. Without this Code Case/Change, qualifications would require an excessive amount of flawed and unflawed grading units. This proposed supplement uses the more technically stringent Supplement 10 qualification as a base and then incorporates a limited number of Supplement 2 and Supplement 3 samples. This proposal is consistent with the philosophy of Supplement 12, the proposed changes to Supplement 10, and the approved changes to Supplement 2 and 11.</p>
2.0 SPECIMEN REQUIREMENTS	
<p>2.1 General Qualification test specimens shall meet the requirements listed herein, unless a set of specimens is designed to accommodate specific limitations stated in the scope of the examination procedure (e.g., pipe size, access limitations). The same specimens may be used to demonstrate both detection and sizing qualification. The specimen sets shall conform to the following requirements.</p>	
<p>(a) Specimens shall have sufficient volume to minimize spurious reflections that may interfere with the interpretation process.</p>	
<p>(b) The specimen set shall include the minimum and maximum pipe diameters and thicknesses for which the examination procedure is applicable. Pipe diameters within 1/2 in. of the nominal diameter shall be considered equivalent. Pipe diameters larger than 24 in. (610 mm) shall be considered to be flat. When a range of</p>	

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thicknesses is to be examined, a thickness tolerance of <u>± 25%</u> is acceptable.	
<p>(c) The specimen set shall include examples of the following fabrication conditions:</p> <p>(1) geometric and material conditions that normally require discrimination from flaws (e.g., counterbore or weld root conditions, cladding, weld buttering, remnants of previous welds, adjacent welds in close proximity, and weld repair areas);</p> <p>(2) typical limited scanning surface conditions (e.g., internal tapers, exposed weld roots, and cladding conditions).</p>	
<p>2.2 At least 70% of the Supplement 2 flaws shall be cracks, the remainder shall be alternative flaws. Specimens with IGSCC shall be used when available. Alternative flaws, if used, shall provide crack-like reflective characteristics and shall be limited to the case where implantation of cracks precludes obtaining a realistic response. Alternative flaw mechanisms shall have a tip width of less than or equal to 0.002 in.</p>	
<p>2.3 Supplement 3 flaws shall be mechanical or thermal fatigue cracks.</p>	
<p>2.4 The specimen set shall contain a representative distribution of flaws. Flawed and unflawed grading units shall be randomly mixed.</p>	<p>Since the number of flaws will be limited words such as “uniform distribution” could lead to testmanship and are considered inappropriate.</p>
<p>3.0 CONDUCT OF PERFORMANCE DEMONSTRATION</p>	
<p>The flaw location and specimen identification shall be obscured to maintain a “blind test”. All examinations shall be completed prior to grading the results and presenting the results to the candidate. Divulgence of particular specimen results or candidate viewing of unmasked specimens after the performance demonstration is</p>	

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prohibited.	
4.0 DETECTION QUALIFICATION	
The coordinated implementation shall include the following requirements for personnel detection qualification.	
4.1 The specimen set for Supplement 2 qualification shall include at least five flawed grading units and ten unflawed units in austenitic piping. A maximum of one flaw shall be oriented axially.	
4.2 The specimen set for Supplement 3 qualification shall include at least three flawed grading units and six unflawed units in ferritic piping. A maximum of one flaw shall be oriented axially.	
4.3 Specimens shall be divided into grading units. Each grading unit shall include at least 3 in. of weld length. If a grading unit is designed to be unflawed, at least 1 in. of unflawed material shall exist on either side of the grading unit. The segment of weld length used in one grading unit shall not be used in another grading unit. Grading units need not be uniformly spaced around the pipe specimen.	
4.4 All grading units shall be correctly identified as being either flawed or unflawed.	
5.0 LENGTH SIZING QUALIFICATION	
The coordinated implementation shall include the following requirements for personnel length sizing qualification.	
5.1 The specimen set for Supplement 2 qualification shall include at least four flaws in austenitic material.	
5.2 The specimen set for Supplement 3 qualification shall include at least three flaws in ferritic material.	
5.3 Each reported circumferential flaw in	

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<p>the detection test shall be length sized. When only length sizing is being tested, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the length of the flaw in each region.</p>	
<p>5.4 Supplement 2 examination procedures, equipment, and personnel are qualified for length sizing when the flaw lengths estimated by ultrasonics, as compared with the true lengths, does not exceed 0.75 in.</p>	
<p>5.5 Supplement 3 examination procedures, equipment, and personnel are qualified for length sizing when the flaw lengths estimated by ultrasonics, as compared with the true lengths, does not exceed 0.75 in.</p>	
<p>6.0 DEPTH SIZING QUALIFICATION</p>	
<p>The coordinated implementation shall include the following requirements for personnel depth sizing qualification.</p>	
<p>6.1 The specimen set for Supplement 2 qualification shall include at least four circumferentially oriented flaws in austenitic material.</p>	
<p>6.2 The specimen set for Supplement 3 qualification shall include at least three flaws in ferritic material.</p>	
<p>6.3 For a separate depth sizing test, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the depth of the flaw in each region.</p>	
<p>6.4 Supplement 2 examination procedures, equipment, and personnel are qualified for depth sizing when the flaw depths estimated by ultrasonics, as compared with the true depths, does not exceed 0.125 in.</p>	
<p>6.5 Supplement 3 examination procedures, equipment, and personnel are qualified for depth sizing when the flaw depths</p>	

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estimated by ultrasonics, as compared with the true depths, does not exceed 0.125 in.	
7.0 PROCEDURE QUALIFICATION	
Initial procedure qualification shall include the equivalent of three personnel sets. Successful personnel demonstrations may be combined to satisfy the requirements for procedure qualification. Extension of procedure qualifications to qualify new values of essential variables requires at least one personnel qualification set.	