

**Staff Responses to Public Comments on Draft Regulatory Guide DG-1224,  
“Control of the Processing and Use of Stainless Steel” dated June 2009  
(Proposed Revision 1 of Regulatory Guide 1.44 dated May 1973)**

1. James H. Riley, NEI (NEI) (ML092220038)	2. J.A. Gresham, Westinghouse (W) (ML092370506)	3. V. Hull, Dominion (DOM) (ML092400354)
4. Alex Gutierrez, PG&E (PG&E) (via S. Findlan, EPRI) (ML092860609)		

<b>Public Comments</b>		<b>NRC Response</b>
NEI-1	<p>The notices requested comments on all of these draft regulatory guides by August 31, 2009. NEI and EPRI are collecting and consolidating industry comments on these draft guides, but it has become apparent that it will not be possible to complete a comprehensive review of all of these documents in the time available. The information contained in these draft guides is important to the industry's work on primary system materials and it is important to carefully evaluate the changes proposed. NEI is therefore requesting a 30-day extension of the public comment period on these draft guides until October 1, 2009, to allow adequate time to complete and document our review.</p>	<p>Extension to October 1, 2009 granted per NRC 7590-01-P dated August 11, 2009 (ML092230530).</p>

Public Comments		NRC Response
W-1	The second paragraph under Discussion mentions detrimental materials and stress-corrosion cracking. It is recommended this paragraph be clarified since no guidance on the limits is provided.	The second paragraph of Section B, Discussion, of the RG is changed as follows:  “Process controls should be exercised in accordance with good manufacturing /welding practices and knowledge gained from operating experience during all stages of component manufacturing...”
W-2	Paragraph 3 continues the discussion about detrimental materials and elevated temperature but provides no guidance on the limits or "reasonable care" that should be taken. It is recommended these statements be clarified. The statement regarding the pickling of sensitized stainless begs the question why a sensitized stainless steel would be used. Please explain or justify.	The first two sentences of the third paragraph of Section B, Discussion, of the RG are changed as follows:  “All cleaning solutions, processing compounds, degreasing agents, and other foreign materials should be completely removed at any stage of processing before any elevated temperature treatment and before hydrotests in accordance with guidelines of approved manufacturing/elevated temperature treatment procedures. Reasonable care should be taken to keep (1) fabrication and construction areas clean, (2) components protected and dry during storage and shipment, and (3) all crevices and small openings protected against contamination as identified in approved manufacturing quality assurance procedures...”

Public Comments		NRC Response
W-3	Paragraph 7 provides guidance for intergranular corrosion testing for non-L and L grades. Westinghouse disagrees that intergranular corrosion testing for non-L and L grades should be performed because there is not enough carbon for sensitization to occur.	The staff disagrees with the commenter. There is evidence throughout the industry that sensitization has occurred even on L grade material.
W-4	Paragraph 9 and 10 discusses qualification but should be clarified as to what the "adequate documentation" should be.	The second bullet associated with Paragraph 10 of Section B, Discussion of the RG provides clarification for what constitutes "adequate documentation" and "service experience."
DOM-1	Page 2, second sentence in part B under Discussion. There should be some distinction between intergranular stress-corrosion cracking (SCC) and transgranular SCC. Sensitization plays no role in transgranular SCC.	The first two sentences in the first paragraph of Section B, Discussion, of the RG are changed as follows:  "Control of the application and processing of stainless steel to avoid severe sensitization is needed to diminish the numerous occurrences of intergranular stress corrosion cracking in sensitized stainless steel components of nuclear reactors. Test data demonstrate that sensitized stainless steel is significantly more susceptible to intergranular stress corrosion cracking than is nonsensitized..."
DOM-2	Page 3, 3rd Full Paragraph: Chloride, Fluoride, and Oxygen levels are consistent with UFSAR.	Reference to the plant UFSAR is plant-specific and is therefore not appropriate for generic regulatory guidance.

Public Comments		NRC Response
PG&E-1	<p>The last paragraph in Section C6, can be more specific regarding the need to control welding practices to avoid excessive sensitization of the HAZ. Does this only apply when welding on materials with &gt; .03 carbon? Also, what exactly are the welding practices (heat input and interpass temperature) that need to be controlled? The last paragraph of the discussion section specifically mentions heat input and interpass temperature. The discussion section and regulatory position section should be consistent.</p>	<p>The RG does not only apply when welding on materials with &gt; 0.03 carbon. Regulatory Position 6 applies to all unstabilized, austenitic stainless steels of the AISI Type 3XX series used for components that are part of (1) the reactor coolant pressure boundary, (2) systems required for reactor shutdown, (3) systems required for emergency core cooling, and (4) reactor vessel internals that are relied on to permit adequate core cooling for any mode of normal operation or under credible postulated accident conditions.</p> <p>Position 6 of Section C, Regulatory Position, of the RG is revised as follows:</p> <p>“6. Welding practices and, if necessary, material composition should be controlled to avoid excessive sensitization of base metal heat-affected zones of weldments. Controls to prevent sensitization of the material during welding include maintaining low heat input and limiting the interpass temperature.</p> <p>7. An intergranular corrosion test, such as specified in Regulatory Position 3 above, should be performed for each welding procedure to be used for welding material having a carbon content of greater than 0.03 percent.”</p>

<b>Public Comments</b>		<b>NRC Response</b>
PG&E-2	<p>In the second to last paragraph of the discussion section, it mentions performing the qualification tests on material with the minimum and maximum thicknesses anticipated. Wouldn't the worst case be the material with the minimum thickness (due to slow cooling rate)? The maximum thickness would provide the fastest cooling rate and best chance of preventing sensitization. Based on this, testing should only be required using the minimum thickness material anticipated.</p>	<p>Base material thickness affects the cooling rate, thereby affecting the time in the sensitization temperature range. However, the slowest cooling rate is not necessarily obtained with the thinnest base material anticipated. For example, the final pass on a multipass, 10 cm (4 inch) thick weldment may have a slower cooling rate than the final pass on a 0.5 cm (0.2 inch) thick weldment. Therefore, testing of both thicknesses is necessary.</p>