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Adrian P. Heymer
SENIOR DIRECTOR, NEW PLANT DEPLOYMENT
NUCLEAR GENERATION DIVISION

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SUBJECT: Draft Regulatory Guide DG-1167, "*Welder Qualification for Areas of Limited Accessibility*" Request for Comment

PROJECT NUMBER: 689

The Nuclear Energy Institute (NEI) is pleased to submit, on behalf of the nuclear industry, the following response to the *Federal Register* notice, dated September 22, 2006, *Volume 71, Number 184*, which invited written comments on the Proposed Revision 1 of Regulatory Guide 1.71 (DG-1167), "*Welder Qualification for Areas of Limited Accessibility*."

The industry believes that this additional guidance could have a significant impact on the cost of performing repair and replacement activities while not providing appreciable improvement in public safety. Revision 1 of Regulatory Guide 1.71 applies to welder qualification and has no bearing on the examination requirements and acceptance criteria for welds regardless of accessibility because all welds are examined in accordance with the appropriate ASME Code rules to ensure quality that are endorsed by NRC in 10CFR50.55a.

Revision 1 of Regulatory Guide 1.71 would have limited bearing on current plants but would be an issue for future plants due to current FSAR commitments pursuant to Draft Regulatory Guide 1145 "*Combined License Applications for Nuclear Power Plants*" Section C.I.5. Few current licensees have committed to RG 1.71 although it has been in place since 1973.

¹ NEI is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, nuclear material licensees, and other organizations and individuals involved in the nuclear energy industry.

SUNSI Review Complete
Template = ADM-013

E-REDS = ADM-03
Call = J.B. Hixon (JBH3)
S. O'Connor (SCO) J. Ridgely (JNE)
J.T. Yerokun (JTY)

Chief, Rules and Directives Branch

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In light of modifications to Section III of the ASME code, (specifically section 4622.9) the industry believes that this issue is suitably addressed in the ASME code and a separate Regulatory Guide on this topic is unnecessary. Consistent with Public Law 104-113, "*National Technology Transfer and Advancement Act of 1995*", Section 12-d, NEI recommends NRC utilize consensus technical standards in lieu of regulatory guidance.

Enclosure 1 provides additional comments and recommendations from the NEI members. The industry recognizes the positive changes to DG-1167 that provide clarity in reference to the correct sections of the ASME code, however industry recommends that NRC eliminate this regulatory guidance and use consensus technical standards in this area.

We appreciate the opportunity to comment on the draft documents. If you have any questions regarding this effort please contact Carol Berrigan at (202) 739-8050; clb@nei.org.

Sincerely,



Adrian P. Heymer

Enclosure

c: Mr. J.B. Hixon
Mr. Stephen C. O'Connor
NRC Document Control Desk

Comments on Draft Regulatory Guide DG-1167 (Dated October 2006)

The proposed Regulatory Guide is very vague and the industry believes that this additional guidance could have a significant impact on the cost of performing repair and replacement activities while not providing appreciable improvement in public safety. Revision 1 of Regulatory Guide 1.71 applies to welder qualification and has no bearing on the examination requirements and acceptance criteria for welds regardless of accessibility. Thus, all welds are examined in accordance with the appropriate ASME Code rules to ensure quality that are endorsed by NRC in 10CFR50.55a.

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In light of modifications to Section III of the ASME code, (specifically section 4622.9) the industry believes that this issue is suitably addressed in the ASME code and a separate Regulatory Guide on this topic is unnecessary. Consistent with Public Law 104-113, "*National Technology Transfer and Advancement Act of 1995*", Section 12-d, NEI recommends NRC utilize consensus technical standards in lieu of regulatory guidance.

The industry also provides the following comments:

Comment	Recommendation
<i>General Comments</i>	
This Regulatory Guide applies only to low alloy steel, high alloy steel, nickel based alloy base metals, in wrought or cast forms, and dissimilar metal welds. However, the wording of the first	Revise first sentence to read, "Weld fabrication and repair of low-alloy steel, high alloy steel, and nickel-base alloy materials (either cast or wrought), and

<p>sentence is confusing and leads the reader to believe that perhaps plain carbon steels are also included in "...or other materials..." To clarify the scope of this Reg Guide, the first sentence of the first paragraph need to be revised.</p>	<p>dissimilar metal welds, should comply with the fabrication standards specified in Sections III and IX of the ASME Code, supplemented by the following:"</p>
<p>The draft is very vague and provides no guidance on what ranges of variables a particular test might qualify for (e.g., if this qualifies a welder for 2G pipe butt welds with restricted access, does this also qualify for fillets? Does a particular restricted access test qualify indefinitely or does it lapse after 6 months? etc.). Also, the words, "awkward position" open up a whole new realm of possible restricted access qualifications. As written, it would be almost impossible to anticipate every possible circumstance and we could end up testing a welder before just about every field weld.</p>	<p>Clarify the scope and specific qualification periods.</p>
<p><i>Section B--Discussion</i></p>	
<p>The test includes "Procedure AND Performance" Limited access qualification. "Procedure" should be deleted as this is a Performance ONLY document and procedure qualification for limited access areas would be counterproductive and of no benefit.</p>	<p>Delete "procedure" qualification as noted.</p>
<p>Page 3, Para B: Utilization of a mock up coupon with one specimen removed from the least favorable position followed by RT per QW-191 & 302.2 must assume that the test was a groove weld in order to get a viable RT exam. The last sentence in this paragraph recommends "This test should also be sectioned for macro examination (QW-184) and hardness</p>	<p>If a macro examination and hardness evaluation are desired, two coupons would be required. It may not be representative of the production butt joint to do a fillet weld test. The same is true for the reverse condition.</p>

<p>evaluation...". QW-184 refers the user to QW-462.4.(b) or (c). The figures in both of those paragraphs show fillets in plate or socket welds or pipe to plate fillets.</p>	
<p>Page 3, Para 2: The testing required for the alternative mockup (including its actual access limits) should not stipulate a radiograph with a macro examination and hardness evaluation. The testing for this mockup should be in accordance with the requirements of Sec IX for welder performance testing. That is, for groove welds, the required testing should be visual examination with either radiographic exam or transverse bend tests. For fillet welds, the required testing should be a visual examination, a macro, and a break test. There are no hardness evaluations required for welder performance qualifications.</p>	<p>The second sentence should read "...and this specimen should be evaluated in accordance with one of the following criteria of Section IX; For groove welds, a visual examination in accordance with QW-194 and either a radiographic examination in accordance with QW-302.2, or guided bend specimens in accordance with QW-302.1. For fillet welds, a visual examination in accordance with QW-194 , a fracture test in accordance with QW-182 and a macro examination in accordance with QW-184." Delete the entire last sentence of this paragraph.</p>
<p>Page 4, 1st para: This paragraph states: (such as static and centrifugal castings and bimetallic joints)... I do not believe it is the intent to include bimetallic joints. These are not typical joints used in ASME piping and vessel fabrication. I believe the intent was to call out dissimilar metal joints.</p>	<p>Revise "bimetallic joints" to read "dissimilar metal joints".</p>
<p>The "12 inch" criterion is problematic. A piece of conduit/ rod hanger within 12 inches of the weld area may not affect welder performance. "Qualification" should not be used here but mock-up testing to the satisfaction of the Welding Engineer.</p>	<p>The criteria should be amended to "Only interferences within 12 inches of the joint AND which would hinder welder access, bead progression or require indirect means of puddle observation shall require Limited Access Mock-up training to reflect the accessibility limitations</p>
<p>Limited access is an issue for welder performance qualifications (that is welders using manual or semiautomatic processes). This is not a welding procedure issue. The references to essential variables in the Reg Guide should be clarified to</p>	<p>Last sentence of 3rd paragraph should read "However, requalification would not be required for various restricted accessibility conditions unless the welder performance essential variables of Section IX</p>

indicate they are 'welder performance' essential variables.	are changed.”
The provision to use the 6G position with a corner structural enclosure, in lieu of the 2G and 5G positions, to provide for an all position qualification should be recognized.	Second sentence should read, “Positions 2G and 5G, or 6G, with a corner structural enclosure....”
The wording of the second sentence in this paragraph has changed. RG 1.71 December 1973 considers the 12 inch structural enclosure as an acceptable simulation. The draft is written to indicate this enclosure is not always acceptable. There is no basis to limit the acceptability of the 12 inch structural enclosure test.	Second sentence should read, “Positions 2G and 5G, or 6G, with a corner structural enclosure that limits access to within 30 centimeters (12 inches) on two sides and overhead, provides an acceptable simulation of welder accessibility.
The point of this Reg Guide is to ensure production welds with limited accessibility conform to the specified criteria. In cases where there is a concern, the additional welder testing (using bends or radiographic exam) along with infield monitoring is used to provide some assurance of the production weld quality. Volumetric examination of the production weld would provide actual proof of the quality of the production weld. Based on the adequacy of Seciton III volumetric examinations and the fact that Section IX provides for welder testing by radiography of production joints, this Reg Guide is really only applicable to those welds, with limited access conditions, that do not receive a Construction Code radiographic examination.	Add the following as the lead in sentence in paragraph C. “This Regulatory Guide does not apply to welds which receive radiographic examination in accordance with the Construction Code.”
Utilization of a mock up coupon with one specimen removed from the least favorable position followed by RT per QW-191 & 302.2 must assume that the test was a groove weld in order to get a viable RT exam. The last sentence in this paragraph recommends “This test should also be sectioned for macro examination (QW-184) and hardness evaluation...”. QW-184 refers the user to QW-462.4.(b) or (c). The figures in both of those paragraphs show fillets in plate or socket welds or pipe to	If a macro examination and hardness evaluation are desired, two coupons would be required. It may not be representative of the production butt joint to do a fillet weld test. The same is true for the reverse condition.

plate fillets.	
<p>The wording of the first sentence in this paragraph has changed. The draft indicates that a mockup with actual access limits is the preferred option to qualify welders for limit access welds. It is inappropriate for the NRC to state such a preference. The current Reg Guide indicates no such preference. Use of mockups with the actual access limitations will greatly increase the cost of welder qualification with no corresponding increase in quality or safety. The 12 inch structural enclosure has worked for the past 33 years, the decision to use an actual mockup or the 12 inch enclosure should be left to the Owner or certificate holder.</p>	<p>First sentence should read “As an alternative, the structure...”</p>
<p>Page 3, para 2: Hardness testing as referenced has nothing to do with welder performance qualifications or by specific direction in a weld data card</p>	<p>Suggest “This test specimen should also be bend tested in accordance with ASME Section IX to demonstrate weld soundness, fusion and ductility.”</p>
<p><i>Section C—Regulatory Position</i></p>	
<p>Performance qualifications for personnel who weld under conditions of limited access, as defined in Regulatory Position C.1, are maintained in accordance with the applicable requirements of ASME Sections III and IX. However, specific qualification for limited access welds will not be required. To assure that the required integrity level for a specific limited access weld is achieved, welding conducted in areas of limited access must pass the required nondestructive examination. No waiver or relaxation of examination methods or acceptance criteria because of the limited access will be permitted.</p>	<p>Respondents did not consider this change/update necessary as the current requirements for nondestructive evaluation is not relaxed or waived due to access limitations. Weld quality must be maintained and this requires that the end user take appropriate action during training/testing.</p>
<p>Title vs. C. Regulatory Position 1st paragraph: The wording in</p>	

<p>Part C appears to exempt plain carbon steels. Was this by design or does “, or other materials” address plain carbon steels?</p>	
<p>Paragraphs (1) and (2) have been revised to include the position of the weld when considering restricted access limitations. Position should not be included here as it is a Section IX welder performance essential variable. Including position implies that the welder can not be tested in an ‘all-position test’.</p> <p>Delete the words added in regards to the welder’s awkward position. This is a Reg guide on limited access to the weld. Awkward position of the welder is subjective and varies by welder. Consideration of this issue is best left to the Owner or certificate holder who understands the physical size and flexibility concerns of his welders.</p>	<p>The first sentence of C (1) should read “Performance qualification should... ..under simulated access, and visibility... ..or when visibility of the weld pool is limited.</p> <p>The first sentence of C (2) should read “Requalification should be necessary when (a) access, and visibility...”</p>
<p>C. 1--In any direction from joint</p>	<p>Revise language to say “in two or more directions from joint”</p>
<p>This section has two vague statements: “weld pool visibility is limited” and “welder must assume a defined and are open to a wide degree of interpretation.</p>	<p>Please clarify.</p>
<p>C.2 “welding performance” is unclear.</p>	<p>Last line of C (2) should read “...or (b) any of the welder performance essential welding variables...”</p>
<p>Delete “or when visibility of the weld pool is limited or the welder must assume an awkward position.” The additional wording is redundant and subjective. It could easily be argued that every weld is in an “awkward” position.</p>	<p>Performance qualification should provide for testing the welder under simulated position, access, and visibility limitations when any of these physical conditions restrict the welder’s access to a production weld to less than 30 centimeters (12 inches) in any direction from the joint.</p>