Entergy

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F. G. Burford
Acting Director
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CNRO-2005-00013

March 8, 2005

U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Request for Alternatives W3-R&R-003
Response to NRC Request for Additional Information

Waterford Steam Electric Station, Unit 3
Docket No. 50-382
License No. NPF-38

REFERENCES:
1. Entergy letter CNRO-2005-00001 to the NRC dated January 31, 2005
2. Arizona Public Service letter to the NRC dated June 15, 2004
3. NRC letter to Arizona Public Service dated November 5, 2004

Dear Sir or Madam:

Entergy Operations, Inc. (Entergy) recently submitted to the NRC via Reference #1 Request for Alternative W3-R&R-003 for use at Waterford Steam Electric Station, Unit 3. W3-R&R-003 proposed alternatives to the temper bead welding requirements of ASME Section XI IWA-4500 and IWA-4530, which are needed to support the pro-active replacement of pressurizer heater sleeves and instrument nozzles with ones made from a material less susceptible to primary water stress corrosion cracking (PWSCC).

Representatives of the NRC staff and Entergy discussed this proposal in a telephone conversation on March 2, 2005. In that call, Entergy agreed to provide to the staff a matrix that identifies the differences between W3-R&R-003 and a similar request submitted by Arizona Public Service (APS) for use at the Palo Verde Nuclear Generating Station (PVNGS Relief Request 28). [APS submitted PVNGS Relief Request 28 via Reference 2; the NRC staff approved the APS request via Reference #3.] This matrix is provided in the enclosure to this letter. In summary, Entergy identified 3 difference categories involving 21 specific items.

Entergy requests approval of W3-R&R-003 in order to support the pressurizer nozzle replacement activities scheduled to be performed during Waterford 3's upcoming refueling outage RF-13.

AD47

Should you have any questions regarding this submittal, please contact Guy Davant at (601) 368-5756.

This letter contains no new commitments.

Sincerely,

Guy H. Davant
for F. G. Burford

FGB/ghd
Enclosure: Comparison of Entergy's Request for Alternative W3-R&R-003 to APS' PVNGS Relief Request 28

cc: Mr. W. A. Eaton (ECH)
Mr. J. E. Venable (W3)

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U. S. Nuclear Regulatory Commission
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ENCLOSURE

CNRO-2005-00013

COMPARISON OF
ENTERGY'S REQUEST FOR ALTERNATIVE W3-R&R-003
TO APS' PVNGS RELIEF REQUEST 28

**COMPARISON OF
ENTERGY'S REQUEST FOR ALTERNATIVE W3-R&R-003
TO APS' PVNGS RELIEF REQUEST 28**

REVIEW SUMMARY

This review identified 21 specific items that resulted in differences between Entergy's Request for Alternative W3-R&R-003 and Arizona Public Service's (APS) PVNGS Relief Request 28. These items are categorized as follows:

- Editorial Clarification

  Entergy provided additional information to ensure understanding. Eight (8) items fall into this category.

- Difference in Code Requirements

  The ASME Section XI Code of Record for Waterford 3 is the 1992 Edition while the Code of Record for Palo Verde is the 1992 Edition, 1992 Addenda. The different Codes of Record result in different requirements for postweld soak temperatures. Specifically, ASME Section XI, 1992 Edition requires 450°F - 550°F while the 1992 Addenda requires 300°F. Eight (8) items fall into this category.

- Difference of Application

  This category denotes the differences in the applications for which the ambient temperature temper bead welding process will be used at the two plants. These differences are sub-categorized as follows:

  - Mid-Wall Repair (Palo Verde) vs. Mid-Wall and Pad Repairs (Waterford 3)

    Entergy will use the ambient temperature temper bead process for mid-wall and pad repairs at locations on the pressurizer top head, bottom head, and side shell. APS proposed to use the process for mid-wall repairs on the pressurizer head, only. The technical requirements for the noted applications and locations are the same.

  - Code Case N-638 Interpass Temperature

    Paragraph 2.1(e) of Code Case N-638 limits the maximum interpass temperature to 150°F for procedure qualification. Paragraph 3.0(d), which applies to procedure requirements, specifies that the maximum interpass temperature for field welding applications (i.e., as specified in the welding procedure) shall be 350°F regardless of the interpass temperature utilized during procedure qualification. APS applied the procedure qualification limit of 150°F to the field welding whereas Entergy is consistent with the Code Case by utilizing the 350°F maximum interpass temperature. Five (5) items fall into this category. [**NOTE:** Code Case N-638 is being revised by ASME to further clarify these requirements. The draft Section 3.0(d) reads in part, "The maximum interpass temperature for field applications shall be 350°F (180°C) for all weld layers regardless of the interpass temperature used during qualification."]

Provided in the attached matrix are the specific items from W3-R&R-003 and PVNGS Relief Request 28 (denoted in ***bold italicized text***) as well as the reasons for the differences.

Minor editorial differences, such as word phrasing and descriptive information, are not identified in this review.

COMPARISON OF ENTERGY'S REQUEST FOR ALTERNATIVE W3-R&R-003 TO APS' PVNGS RELIEF REQUEST 28
(Differences are denoted in ***bold italicized*** text.)

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
II. CODE REQUIREMENTS (Page 2 of 24)	**III. Applicable Code Requirements for Welding Alloy 690 Half Sleeve to Pressurizer Mid-wall** (Page 4)	
IWA-4530 applies to dissimilar materials such as welds that join P-No. 43 nickel alloy to P-No. 3 low alloy steels. According to IWA-4530, "Repairs to welds that join P-No. 8 or P-No. 43 material to P-Nos. 1, 3, 12A, 12B, and 12C material may be made without the specified postweld heat treatment provided the requirements of IWA-4530 through IWA-4533 are met. ***Repairs made to this paragraph are limited to those along the fusion line of a nonferritic weld to ferritic base material where 1/8-inch or less of nonferritic weld deposit exists above the original fusion line after defect removal.***"	IWA-4530 applies to dissimilar materials such as welds that join P-No. 43 nickel alloy to P-No. 3 low alloy steels. According to IWA-4530, "Repairs to welds that join P-No. 8 or P-No. 43 material to P-Nos. 1, 3, 12A, 12B, and 12C material may be made without the specified postweld heat treatment provided the requirements of IWA-4530 through IWA-4533 are met."	**Editorial Clarification**
Temper bead repairs are performed in accordance with IWA-4500 and IWA-4530 whenever the repair cavity is within 1/8-inch of the ferritic base materials. When the gas tungsten arc welding (GTAW) process is used in accordance with IWA-4500 and IWA-4530, temper bead welding is performed as follows:	When the gas tungsten arc welding (GTAW) process is used in accordance with IWA-4500 and IWA-4530, temper bead welding is performed as follows:	**Editorial Clarification**

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
• Upon completion of welding, a postweld soak or hydrogen bake-out at ***450°F - 550°F*** for a minimum of four (4) hours is required	• Upon completion of welding, a postweld soak or hydrogen bake-out at ***300°F*** for a minimum of four (4) hours is required	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F.
III.A <u>Background</u> (Page 3 of 24) ***This request for alternative is specific to each of the following pressurizer repair welding activities that involve welding using a proposed ambient temperature temper bead technique:*** • ***Heater Sleeve Mid-Wall Repair*** • ***Heater Sleeve Repair Using an Outside Diameter Weld Pad*** • ***OD Weld Pad Repair of Lower Head Instrument Nozzles*** • ***OD Weld Pad Repair of Side Shell Instrument Nozzle*** • ***OD Weld Pad Repair of Previously Repaired Upper Head Instrument Nozzles***	**Background Information** (Page 1) ***The PVNGS Unit 2 pressurizer heater sleeves were repaired using a half-sleeve, pad repair ... This pad repair was installed using the process described in PVNGS Relief Request 23 approved on July 30, 2003.*** ***The half-sleeve, mid-wall weld repair being proposed for the heater sleeves in Units 1 and 3 ...***	**Difference of Application** As stated in PVNGS Relief Request 28, the pad repair previously installed on the Unit 2 pressurizer was performed using Relief Request 23. Relief Request 28 covers use of ambient temperature temper bead repair for mid-wall repair, only. W3-R&R-003 proposes to use the ambient temperature temper bead weld repair process for both the mid-wall repair and the pad repair. The technical requirements for both configurations are the same.

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
III.B. <u>Proposed Alternative</u> (Pages 4 – 6 of 24) 4. **IWA-4500(e)(2)** specifies that thermocouples and recording instruments shall be used to monitor process temperatures. Entergy will not employ thermocouples or recording instrumentation since there will be no elevated preheat. Because of the large heat sink ***provided by the pressurizer***, the interpass temperature is not expected to approach 350°F. ***This was verified by mockup testing.***	IV. **Proposed Alternative** (Pages 5 – 7) 4. **IWA-4500(e)(2)** specifies that thermocouples and recording instruments shall be used to monitor process temperatures. APS will not employ thermocouples or recording instrumentation since there will be no elevated preheat. Because of the large heat sink interpass temperature is not expected to approach 350°F.	**Editorial Clarification**
9. **IWA-4532.2(d)** specifies that, after at least 3/16-inch of weld metal has been deposited, the weld area shall be maintained at a temperature of ***450°F - 550°F*** for a minimum of four (4) hours (for P-No. 3 materials). As an alternative, Entergy's proposed ambient temperature temper bead technique does not include a postweld soak	8. **IWA-4532.2(d)** specifies that, after at least 3/16-inch of weld metal has been deposited, the weld area shall be maintained at ***a temperature of 300°F*** for a minimum of four (4) hours (for P-No. 3 materials). As an alternative, APS' proposed ambient temperature temper bead technique does not include a postweld soak	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F.

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
10. **IWA-4532.2(e)** specifies that after depositing at least 3/16-inch of weld metal and performing a postweld soak ***450°F - 550°F***, the balance of welding may be performed at an interpass temperature of 350°F. As an alternative, Entergy proposes that an interpass temperature of 350°F may be ***used throughout the welding process*** without a postweld soak	9. **IWA-4532.2(e)** specifies that after depositing at least 3/16-inch of weld metal and performing a postweld soak ***at a minimum temperature of 300°F***, the balance of welding may be performed at an interpass temperature of 350°F. As an alternative, APS proposes that an interpass temperature of 350°F may be used ***after depositing at least 1/8-inch of weld metal*** without a postweld soak.	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F. **Difference of Application** Paragraph 2.1(e) of Code Case N-638 limits the maximum interpass temperature to 150°F for procedure qualification. Paragraph 3.0(d), which applies to procedure requirements, specifies that the maximum interpass temperature for field welding applications (i.e., as specified in the welding procedure) shall be 350°F regardless of the interpass temperature utilized during procedure qualification. Entergy is consistent with the requirements of Paragraph 3.0(d).

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
11. **IWA-4533** specifies the following examinations shall be performed after the completed repair weld has been at ambient temperature for at least 48 hours: (a) the repair weld and preheated band shall be examined by the liquid penetrant method; (b) the repaired region shall be volumetrically examined by the radiographic method, and if practical, by the ultrasonic method. As an alternative to the IWA-4533, ***Entergy proposes to perform the following examinations of the new mid-wall repair weld and OD weld pad:*** ***a. A liquid penetrant examination of the completed repair weld shall be performed in accordance with NB-5000 of ASME Section III, 1989 Edition. Acceptance criteria shall comply with NB-5350.*** ***b. The completed repair weld shall be ultrasonically examined in accordance with NB-5000 of ASME Section III, 1989 Edition. Acceptance criteria shall comply with NB-5330.***	10. **IWA-4533** specifies the following examinations shall be performed after the completed repair weld has been at ambient temperature for at least 48 hours: (a) the repair weld and preheated band shall be examined by the liquid penetrant method; (b) the repaired region shall be examined by the radiographic method, and if practical, (c) by the ultrasonic method. ***APS will perform the liquid penetrant examination of the completed repair weld.*** As an alternative to *the radiographic examination of* IWA-4533, APS proposes ***ultrasonic examination of the repair weld.***	**Editorial Clarification** Both reflect the same requirements; however, Entergy provides more explicit information. This information is repeated in Section IV.B.8 and in Attachment 1, Section 4.0 of W3-R&R-003.

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
IV. <u>BASIS FOR PROPOSED ALTERNATIVE</u> (Pages 6 – 9 of 24)	V. **Basis of Alternative for Providing Acceptable Level of Quality and Safety** (Pages 7 – 10)	
The pressurizer ***upper and lower heads and side shell*** were manufactured from P-No. 3, Group 3 low alloy steel.	The pressurizer ***head*** was manufactured from P-No. 3, Group 3 low alloy steel.	**Difference of Application** Entergy will use the ambient temperature temper bead process for mid-wall and pad repairs at locations on the pressurizer top head, bottom head, and side shell. APS proposed to use the process for mid-wall repairs on the pressurizer head, only. The technical requirements for both configurations are the same.
IWA-4500 and IWA-4530 of ASME Section XI establish requirements for performing temper bead welding of "dissimilar materials". According to IWA-4530, either the automatic or machine GTAW process or SMAW process may be used. When using the machine GTAW process, a minimum preheat temperature of 300°F must be established and maintained throughout the welding process while the interpass temperature is limited to 450°F. Upon completion of welding, a postweld soak is performed at ***450°F - 550°F*** for a minimum of 4 hours.	IWA-4500 and IWA-4530 of ASME Section XI establish requirements for performing temper bead welding of "dissimilar materials". According to IWA-4530, either the automatic or machine GTAW process or SMAW process may be used. When using the machine GTAW process, a minimum preheat temperature of 300°F must be established and maintained throughout the welding process while the interpass temperature is limited to 450°F. Upon completion of welding, a postweld soak is performed at ***300°F (minimum)*** for a minimum of 4 hours.	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F.

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
1. Mechanical Properties (2nd para.) The IWA-4530 temper bead process also includes a postweld soak requirement. Performed at ***450°F - 550°F*** for 4 hours (P-No. 3 base materials), this postweld soak assists diffusion of any remaining hydrogen from the repair weld. As such, the postweld soak is a hydrogen bake-out and not a postweld heat treatment as defined by the ASME Code. At ***450°F - 550°F***, the postweld soak does not stress relieve, temper, or alter the mechanical properties of the weldment in any manner.	1. Mechanical Properties (2nd para.) The IWA-4530 temper bead process also includes a postweld soak requirement. Performed at ***300°F*** for 4 hours (P-No. 3 base materials), this postweld soak assists diffusion of any remaining hydrogen from the repair weld. As such, the postweld soak is a hydrogen bake-out and not a postweld heat treatment as defined by the ASME Code. At ***300°F***, the postweld soak does not stress relieve, temper, or alter the mechanical properties of the weldment in any manner.	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F.
2. Hydrogen Cracking (2nd paragraph) IWA-4500 establishes elevated preheat and postweld soak requirements. The elevated preheat temperature of 300°F increases the diffusion rate of hydrogen from the weld. The postweld soak at ***450°F - 550°F*** was also established to bake-out or facilitate diffusion of any remaining hydrogen from the weldment. However, while hydrogen cracking is a concern for SMAW, which uses flux covered electrodes, the potential for hydrogen cracking is significantly reduced when using the machine GTAW welding.	2. Hydrogen Cracking (2nd paragraph) IWA-4500 establishes elevated preheat and postweld soak requirements. The elevated preheat temperature of 300°F increases the diffusion rate of hydrogen from the weld. The postweld soak at ***300°F*** was also established to bake-out or facilitate diffusion of any remaining hydrogen from the weldment. However, while hydrogen cracking is a concern for SMAW, which uses flux covered electrodes, the potential for hydrogen cracking is significantly reduced when using the machine GTAW welding.	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F.

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
IV.B <u>Evaluation of Proposed Alternatives to IWA-4500 and IWA-4530</u> (Pages 10 – 13 of 24)	V.B **Evaluation of Proposed Alternatives to ASME Section XI, IWA-4500 and IWA-4530** (Pages 12 – 15)	
1. According to **IWA-4500(a)**, repairs may be performed to dissimilar base materials and welds without the specified postweld heat treatment of ASME Section III provided the requirements of IWA-4500 and IWA-4530 are met. The temper bead rules of IWA-4500 and IWA-4530 apply to dissimilar materials such as P-No. 43 to P-No. 3 base materials welded with F-No. 43 filler metals. When using the GTAW-machine process, the IWA-4500 and IWA-4530 temper bead process is based fundamentally on an elevated preheat temperature of 300°F, a maximum interpass temperature of 450°F, and a postweld soak of ***450°F - 550°F***. The proposed alternative of Attachment 1 also establishes requirements to perform temper bead welding on dissimilar material welds that join P-No. 43 to P-No. 3 base materials using F-No. 43 filler metals. However, the temper bead process of Attachment 1 is an ambient temperature technique that only utilizes the GTAW-machine or GTAW-automatic process. The suitability of the proposed ambient temperature temper bead technique is evaluated in this section. The results of this evaluation demonstrate that the proposed ambient temperature temper bead technique provides an acceptable level of quality and safety.	1. According to **IWA-4500(a)**, repairs may be performed to dissimilar base materials and welds without the specified postweld heat treatment of ASME Section III provided the requirements of IWA-4500 and IWA-4530 are met. The temper bead rules of IWA-4500 and IWA-4530 apply to dissimilar materials such as P-No. 43 to P-No. 3 base materials welded with F-No. 43 filler metals. When using the GTAW-machine process, the IWA-4500 and IWA-4530 temper bead process is based fundamentally on an elevated preheat temperature of 300°F, a maximum interpass temperature of 450°F, and a postweld soak of ***300°F***. The proposed alternative of Attachment 1 also establishes requirements to perform temper bead welding on dissimilar material welds that join P-No. 43 to P-No. 3 base materials using F-No. 43 filler metals. However, the temper bead process of Attachment 1 is an ambient temperature technique that only utilizes the GTAW-machine or GTAW-automatic process. The suitability of the proposed ambient temperature temper bead technique is evaluated in this section. The results of this evaluation demonstrate that the proposed ambient temperature temper bead technique provides an acceptable level of quality and safety.	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F.

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2. According to **IWA-4500(e)(2)**, the weld area plus a band around the repair area of at least 1-1/2 times the component thickness or 5 inches, whichever is less, shall be preheated and maintained at a minimum temperature of 300°F for the GTAW process during welding while the maximum interpass temperature is limited to 450°F. The ambient temperature temper bead technique of Attachment 1 also establishes a preheat band of at least 1½ times the component thickness or 5 inches, whichever is less. However, the ambient temperature temper bead technique requires a minimum preheat temperature of 50°F and a maximum interpass temperature of 350°F. The suitability of an ambient temperature temper bead technique with reduced preheat and interpass temperatures is addressed in Section IV.A.	2. According to **IWA-4500(e)(2)**, the weld area plus a band around the repair area of at least 1-1/2 times the component thickness or 5 inches, whichever is less, shall be preheated and maintained at a minimum temperature of 300°F for the GTAW process during welding while the maximum interpass temperature is limited to 450°F. The ambient temperature temper bead technique of Attachment 1 also establishes a preheat band of at least 1½ times the component thickness or 5 inches, whichever is less. However, the ambient temperature temper bead technique requires a minimum preheat temperature of 50°F, ***a maximum interpass temperature of 150°F for the first three layers,*** and a maximum interpass temperature of 350°F. The suitability of an ambient temperature temper bead technique with reduced preheat and interpass temperatures is addressed in Section IV.A.	**Difference of Application** Paragraph 2.1(e) of Code Case N-638 limits the maximum interpass temperature to 150°F for procedure qualification. Paragraph 3.0(d), which applies to procedure requirements, specifies that the maximum interpass temperature for field welding applications (i.e., as specified in the welding procedure) shall be 350°F regardless of the interpass temperature utilized during procedure qualification. Entergy is consistent with the requirements of Paragraph 3.0(d).

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6. According to **IWA-4532.2(d)**, the weld area shall be maintained at a temperature of ***450°F - 550°F*** for a minimum of 4 hours (for P-No. 3 materials) after at least 3/16-inch of weld metal has been deposited. In the proposed alternative of Attachment 1, a postweld soak is not required. The suitability of an ambient temperature temper bead technique without a postweld soak is addressed in Section IV.A.	6. According to **IWA-4532.2(d)**, the weld area shall be maintained at a temperature of ***300°F*** for a minimum of 4 hours (for P-No. 3 materials) after at least 3/16-inch of weld metal has been deposited. In the proposed alternative of Attachment 1, a postweld soak is not required. The suitability of an ambient temperature temper bead technique without a postweld soak is addressed in Section IV.A.	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F.

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
7. According to **IWA-4532.2(e)**, after depositing at least 3/16-inch of weld metal and performing a postweld soak at ***450°F - 550°F***[1], the balance of welding may be performed at an interpass temperature of 350°F. As an alternative, Entergy proposes that an interpass temperature of 350°F may be used ***throughout the welding process*** without a postweld soak. The proposed ambient temperature temper bead process of Attachment 1 is carefully designed and controlled such that successive weld beads supply the appropriate quantity of heat to the untempered heat affected zone such that the desired degree of carbide precipitation (tempering) is achieved. The resulting microstructure is very tough and ductile. This point is validated during weld procedure qualification. Based on Charpy V-notch testing of the procedure qualification test coupon, impact properties in weld heat affected zone will be demonstrated to be equal to or better than those of the unaffected base material. The suitability of an ambient temperature temper bead technique without a postweld soak is addressed in Section IV.A.	7. According to **IWA-4532.2(e)**, after depositing at least 3/16-inch of weld metal and performing a postweld soak at ***a minimum temperature of 300°F***, the balance of welding may be performed at an interpass temperature of 350°F. As an alternative, APS proposes that an interpass temperature of 350°F may be used ***after depositing at least 1/8-inch of weld metal*** without a postweld soak. The proposed ambient temperature temper bead process of Attachment 1 is carefully designed and controlled such that successive weld beads supply the appropriate quantity of heat to the untempered heat affected zone such that the desired degree of carbide precipitation (tempering) is achieved. The resulting microstructure is very tough and ductile. This point is validated during weld procedure qualification. Based on Charpy V-notch testing of the procedure qualification test coupon, impact properties in weld heat affected zone will be demonstrated to be equal to or better than those of the unaffected base material. The suitability of an ambient temperature temper bead technique without a postweld soak is addressed in Section IV.A.	**Difference in Code Requirements** The ASME Section XI Code of Record for Entergy is the 1992 Edition. This edition requires 450°F - 550°F. APS is committed to follow the 1992 Addenda, which requires 300°F. **Difference of Application** Paragraph 2.1(e) of Code Case N-638 limits the maximum interpass temperature to 150°F for procedure qualification. Paragraph 3.0(d), which applies to procedure requirements, specifies that the maximum interpass temperature for field welding applications (i.e., as specified in the welding procedure) shall be 350°F regardless of the interpass temperature utilized during procedure qualification. Entergy is consistent with the requirements of Paragraph 3.0(d).

[1] W3-R&R-003 states that the postweld soak temperature is 300°F rather than 450°F - 550°F. This is in error. By this letter, Entergy corrects this error as indicated. This correction has no impact on W3-R&R-003 since Entergy is proposing an alternative to IWA-4532.2(e).

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
9. *IWA-4533 specifies that (a) the repair weld and preheated band shall be examined by the liquid penetrant method; (b) the repaired region shall be volumetrically examined by the radiographic method, and if practical, by the ultrasonic method. As an alternative to the IWA-4533, Entergy proposes to perform the following examinations:* *a. Liquid penetrant examination shall be performed in accordance with NB-5000 of ASME Section III, 1989 Edition. Acceptance criteria shall comply with NB-5350.* *Suitability: When using an ambient temperature temper bead technique, an elevated preheat temperature is not used. As a result, there is no preheated band. Therefore, the proposed alternative to only examine the new mid-wall repair weld and OD weld pad (including weld heat affected zones) is acceptable.* *b. The completed repair weld shall be ultrasonically examined in accordance with NB-5000 of ASME Section III, 1989 Edition. Acceptance criteria shall comply with NB-5330.* *Suitability: Radiographic examination is impractical since the pressurizer vessel inside diameter is inaccessible for positioning the gamma source. As an alternative to radiographic examination, an ultrasonic examination of the new mid-wall repair weld and OD weld pad will be performed. Ultrasonic examination of temper bead repair welds is an acceptable option according to ASME Section XI, IWA-4630 in the 1995 Edition, 1996 Addenda*	8. **IWA-4533** specifies that the repair weld and preheated band shall be ***examined by liquid penetrant. Since there is no elevated preheated band, APS will be performing a penetrant examination of the final weld surface and the adjacent heat affected zone only. IWA-4533 also states that the repair weld shall be volumetrically examined by the radiographic method,*** and if practical, by the ultrasonic method after the completed repair weld has been at ambient temperature for at least 48 hours. ***As an alternative to the radiographic examination of IWA-4533, APS proposes using the ultrasonic examination method.*** ***Radiographic examination is impractical since the pressurizer vessel ID surface is inaccessible for positioning the gamma source. Ultrasonic examination is another acceptable volumetric NDE method to assure weld quality and the 1996 Addenda of ASME Section XI (approved by the NRC) provides such an option. The ultrasonic examination will be performed in accordance with NB-5000 and acceptance criteria will be in accordance with NB-5330.***	**Editorial Clarification** Item #9 for W3-R&R-003 repeats and expands the information contained in Item #8 of RR 28. Item #9 provides the basis for the proposed alternative discussed in Section III.B.11 of W3-R&R-003.

W3-R&R-003	PVNGS Relief Request 28	Reason for the Difference
and later (approved by NRC through the 2001 Edition, 2003 Addenda). Ultrasonic examination of repair welds is also required in Code Case N-638. The proposed ultrasonic examination will be performed in accordance with ASME Section III, NB-5000 which includes acceptance criteria that is appropriate for fabrication type flaws.		
Attachment 1 (Pages 21 and 22 of 24)	**Attachment 1** (Page 4)	
4.0(a) Prior to welding, a surface examination will be performed ***in accordance with NB-5000 of ASME Section III*** on the area to be welded.	4.0(a) Prior to welding, a surface examination will be performed on the area to be welded.	**Editorial Clarification**
5.0 Use of Request No. W3-R&R-003 shall be documented on NIS-2. ***Alternatively, repairs may be documented on Form NIS-2A as described in Code Case N-532 if prior approval is obtained from the NRC.***	5.0 Use of this request shall be documented on NIS-2.	**Editorial Clarification** Code Case N-532 has since been approved by the NRC.