Calvert Cliffs Nuclear Power Plant

1650 Calvert Cliffs Parkway
Lusby, Maryland 20657

CENG
a joint venture of
Constellation Energy EDF

CALVERT CLIFFS
NUCLEAR POWER PLANT

March 13, 2012

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 1; Docket No. 50-317
Supplemental Information for Relief Request for Unit 1 Dissimilar Metal Butt Welds Baseline Examinations (RR-ISI-04-06A)

REFERENCE: (a) Letter from J. J. Stanley (CCNPP) to Document Control Desk (NRC), dated February 9, 2012, Relief Request for Dissimilar Metal Butt Welds Baseline Examinations (RR-ISI-04-06A)

In Reference (a), Calvert Cliffs Nuclear Power Plant, LLC requested the Nuclear Regulatory Commission (NRC) approval for use of an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Code Case N-770-1 as conditioned in 10 CFR 50.55a, dated June 21, 2011. As discussed in a telephone conference call with the NRC on March 6, 2012, additional information is needed for the NRC staff to complete its review of the relief request. Attachment (1) contains the requested information.

Should you have questions regarding this matter, please contact Mr. Douglas E. Lauver at (410) 495-5219.

Very truly yours,

James J. Stanley
Manager – Engineering Services

JJS/PSF/bjd

Attachment: (1) Supplemental Information for Revised Relief Request for Calvert Cliffs Unit 1 Dissimilar Metal Butt Weld Examinations (RR-ISI-04-06A)

cc: D. V. Pickett, NRC
W. M. Dean, NRC
Resident Inspector, NRC
S. Gray, DNR

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NRR

ATTACHMENT (1)

SUPPLEMENTAL INFORMATION FOR REVISED RELIEF REQUEST FOR CALVERT CLIFFS UNIT 1 DISSIMILAR METAL BUTT WELD EXAMINATIONS (RR-ISI-04-06A)

Calvert Cliffs Nuclear Power Plant, LLC
March 13, 2012

ATTACHMENT (1)

SUPPLEMENTAL INFORMATION FOR REVISED RELIEF REQUEST FOR CALVERT CLIFFS UNIT 1 DISSIMILAR METAL BUTT WELD EXAMINATIONS (RR-ISI-04-06A)

During a phone call on March 6, 2012, the Nuclear Regulatory Commission (NRC) staff discussed their review of the information provided in Reference (1) and requested the following information be provided to complete their review of the relief request.

NRC Request 1:

The licensee identified 16 welds which required relief from the requirements of 10 CFR 50.55a(g)(6)(ii)(F)(2) or (3). NRC staff's review of Table A of the February 9, 2012 letter has identified the following welds for which relief is required, 12-PSL-1, 12-PSL-13, 12-SC-1004-1 and 4-PS-1003-6 require relief from 10 CFR 50.55a(g)(6)(ii)(F)(2), and 30-RC-11A-7, 30-RC-11B-7, 30-RC-12A-7, 30-RC-12B-7, 12-SI-1009, 12-SI-1012-13 require relief from 10 CFR 50.55a(g)(6)(ii)(F)(3).

The ten welds identified above are those welds for which relief is required due to the implementation of 10 CFR 50.55a(g)(6)(ii)(F). The six additional welds that the licensee has identified require relief for inservice inspection coverage requirements under paragraph -2500(b) of ASME Code Case N-770-1. As stated during the January 10th, 2012 public meeting on a generic industry relief request from the requirements of 10 CFR 50.55a(g)(6)(ii)(F), the NRC staff requested licensees submit separate relief requests for implementation and inservice inspection requirements of 10 CFR 50.55a(g)(6)(ii)(F). In order to address the necessary relief for the current outage, the NRC staff requests the licensee confirm that the above welds are the correct welds for which relief from 10 CFR 50.55a(g)(6)(ii)(F)(2) and (3) is requested by the licensee in the February 9, 2012 letter.

Calvert Cliffs Response 1:

We confirm that the ten welds identified above are the welds for which relief is required at this time due to implementation of 10 CFR 50.55a(g)(6)(ii)(F). Note that the weld identified above as 12-SI-1009 is identified as weld 12-SI-1009-16 in Reference 1.

The six additional welds that are identified as requiring relief for inservice inspection coverage requirements will be included in a separate relief request for Code Case N-770-1 -2500(b) coverage limitation, under the provision of 10 CFR 50.55a(a)(3)(i) or (ii), prior to the next scheduled examination. These six welds (30-RC-11A-10, 30-RC-11B-10, 30-RC-12A-10, 30-RC-12B-10, 12-SI-1010-14 and 12-SI-1011-13) have not been examined in the current interval at this point in time. The expected limitation of the examinations (currently projected for spring 2016) in this In-service Inspection (ISI) interval will be identified in a separate relief request.

NRC Request 2:

The NRC staff requests additional information about weld 12-PSL-1. For this weld, Table A, from the February 9, 2012 submittal, reports limited circumferential scan coverage of 50 percent of the susceptible material during the 2010 inspection. In order to recategorize this weld as inspection item D of ASME Code Case N-770-1, NRC staff requests details on the previous examination performed on this weld during the 2006 refueling outage at Calvert Cliffs, Unit 1. The requested information includes;

a. *What inspection was performed?*
b. *Did this inspection meet the qualification requirements of Appendix VIII of Section XI of the ASME Code?*
c. *What percent coverage was obtained to meet the requirements of paragraph I-5 of Appendix I of ASME Code Case N-770-1?*
d. *What percent coverage was obtained of the susceptible material of Figure 1 of ASME Code Case N-770-1?*

Of note, the licensee has the option of not categorizing this weld as an inspection item D weld. The weld would then default to a category A-1 weld. Relief would then be required from 10 CFR 50.55a(g)(6)(ii)(F)(3) to use the limited inspection coverage from the 2010 refueling outage exam as the baseline exam. Given the licensee's performance of a bare metal visual examination during the current refueling outage on this weld, the staff would require no additional information to support this review.

Calvert Cliffs Response 2:

The information requested to support a Category D recategorization is provided below:

a. In the 3rd 10-year ISI interval, during the spring 2006 refueling outage, the 12-PSL-1weld was scanned using fixed angle transducers. The scan was performed using qualified procedures in accordance with the American Society of Mechanical Engineers (ASME) Code Edition applicable to the Calvert Cliffs 3rd 10-year ISI interval. The procedure qualification included a site specific demonstration as prescribed in ASME Code Section XI, 1998 Edition, no Addenda, Appendix III, Supplement 4, to increase the examination volume coverage in areas that were limited by geometry and attenuation variables. This resulted in a selection of probes most suitable for examination of the cast stainless steel (CSS) safe end side and geometry of the weld. These probes demonstrated the capability of detecting circumferential and axial defects in the CSS pipe site-specific mock-up:

- 45 degree RL 2 MHz, 2(10X18) scanned axial, nozzle side
- 60 degree RL 2 MHz, 2(.375"X.75")scanned axial, nozzle side
- 45 degree 1.5 MHz, 0.50" shear wave scanned axial, nozzle and circumferentially clockwise and counter clockwise
- 45 degree RL 1 MHz, 2(20X34) scanned axial, safe end side
- 60 degree RL 1 MHz, 2(20X34) scanned axial, safe end side
- 45 degree RL 2 MHz, 2(10X18) scanned circumferentially clockwise and counter clockwise
- 45 degree RL 1 MHz, 2(10X18) scanned circumferentially clockwise and counter clockwise
- 45 degree RL 1 MHz, 2(15X25) scanned circumferentially clockwise and counter clockwise

b. The inspection met the qualification requirements of ASME Code Section XI, Appendix VIII. WesDyne Report number WDI-PJF-1303234-TR-004 served as the demonstration report/technical basis document as required by Performance Demonstration Initiative (PDI), Dissimilar Metal Weld Mock-Up Criteria, Revision A to expand the applicability of the PDI-qualified procedure, PDI-UT-10, Revision B. This weld (12-PSL-1) configuration includes a measured 6° external taper and an approximately 8° internal taper (measured by UT thickness procedure) on the SA 105 Class 2 material nozzle side of the weld. The external tapered configuration is outside of the qualification parameters and therefore required a site specific demonstration in accordance with the qualified procedure PDI-UT-10, Revision B. The CSS safe end is also outside the PDI-UT-10, Rev B qualification parameters. The site specific demonstration expanded on currently qualified essential variables (such as beam angles, probe element sizes, sound focal depths, probe contouring, scan patterns, etc.) and allowed the inspection personnel to gain specific knowledge of potential sources of UT responses associated with this weld. Those sources may be from metallurgical, geometric and defect conditions.

Therefore, a site specific demonstration was used to justify obtaining examination coverage credit. That site specific demonstration was performed in accordance with the ASME Section XI, 1998 Edition, no Addenda, Appendix III, Supplement 4 (c) Qualification - and therefore served to

expand the applicability of the Appendix VIII-qualified procedure. Note that this qualification does not exist in ASME Code Section XI, 2004 Edition, no Addenda.

c. The qualified coverage that was obtained in the 2006 pre- and post-MSIP™ examination of the 12-PSL-1 weld is identified in Table B below.

d. The qualified coverage that was obtained in the 2006 pre- and post-MSIP™ examination of the 12-PSL-1 weld is identified in Table B below.

Since weld 12-PSL-1 does have a greater limitation than other Inspection Item D welds examined with the application of a more recent phased array technology and a later Edition of ASME Code Section XI, this mitigated weld is not included in the 25% sample selection as allowed by Code Case N-770-1, Inspection Item D. This ensures that the 12-PSL-1 weld is examined once per Inservice Inspection interval. The examination of this weld will not be credited towards satisfying the 25% selection of the remaining population of Inspection Item D welds. A visual exam of this weld was performed in the current 2012 refueling outage and no indications were noted.

ATTACHMENT (1)

SUPPLEMENTAL INFORMATION FOR REVISED RELIEF REQUEST FOR CALVERT CLIFFS UNIT 1 DISSIMILAR METAL BUTT WELD EXAMINATIONS (RR-ISI-04-06A)

TABLE B - PRE- AND POST-MSIP™ 2006 EXAMINATION COVERAGE

DM Weld Designator / ID	Location	NPS	Inspection Item Category		N-770-1 Based Coverage(1)(2)			N-770-1 Coverage including CSS(1)(3)			Susceptible Material Coverage(4)		
			MRP-139	N-770-1	Axial Scan (%)	Circ Scan (%)	Total (%)	Axial Scan (%)	Circ Scan (%)	Total (%)	Axial Scan (%)	Circ Scan (%)	Total (%)
110450 / 12-PSL-1	PZR Surge @ PZR	12"	C	D	100	100	100	100	100	100	100	100	100

Notes:

(1) The examination volume is based on Figure 1 from ASME Code Case N-770-1.

(2) Coverage has been calculated based on the limitations contained in the Section XI, Appendix VIII-qualified examination procedure, PDI-UT-10, Rev B, which requires alternative qualification requirements for examinations performed from the CSS material side. Alternative qualification meeting ASME Code Section XI, 1998 Edition, no Addenda, Mandatory Appendix III, Supplement 4(c) was performed. [Without alternative qualification, the discounting of examination of CSS would result in achieving approximately 68% axial scan, 68% circ scan and 68% total scan.]

(3) Calculated coverage values include the CSS material that was interrogated by the examination technique.

(4) Examination coverage of the susceptible material located in the lower 1/3 thickness region of the base material has been estimated based on original design drawings.

NRC Request 3:

The NRC staff requests additional information about weld 12-SI-1012. For this weld, Table A, of the February 9, 2012 submittal, reports limited circumferential scan coverage of 34 percent of the susceptible material during the 2010 inspection. Due to the lack of sufficient inspection coverage for axial flaws in this weld, NRC staff requests the licensee identify any additional actions to be taken to provide defense in depth NDE coverage until the next scheduled volumetric examination of this weld. As well, the NRC staff requests confirmation that the licensee will evaluate methods to improve inspection coverage of this weld prior to the next scheduled volumetric inspection.

Calvert Cliffs Response 3:

A visual examination of weld 12-SI-1012-13 will be performed during a refueling outage prior to the next scheduled Inspection Item Category B ultrasonic examination. We confirm that we update our inspection methods to new requirements and evaluate new technologies and approaches that offer nondestructive examination exam coverage improvements as they become available.

REFERENCE

1. Letter from J. J. Stanley (CCNPP) to Document Control Desk (NRC), dated February 9, 2012, Relief Request for Dissimilar Metal Butt Welds Baseline Examinations (RR-ISI-04-06A)