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May 12, 2005

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 2; Docket No. 50-318
60 Days After Plant Restart Report - First Revised NRC Order EA-03-009, Interim Inspection Requirement for Reactor Pressure Vessel Heads at Pressurized Water Reactors

REFERENCES:

(a) Letter from Mr. R. W. Borchardt (NRC) to Holders of Licenses for Operating Pressurized Water Reactors, dated February 20, 2004, Issuance of First Revised NRC Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors

(b) Letter from Mr. C. F. Holden, Jr. (NRC) to Mr. G. Vanderheyden (CCNPP), dated March 11, 2005, Calvert Cliffs Nuclear Power Plant, Unit No. 2 – Relaxation of the Requirements of First Revised Order Modifying License (EA-03-009), Regarding Reactor Pressure Vessel Head Inspections (TAC No. MC5705)

The purpose of this letter is to forward Calvert Cliffs Nuclear Power Plant, Inc.'s "60 Days After Plant Restart" report requested in Section IV(E) of First Revised Nuclear Regulatory Commission Order EA-03-009 (Reference a). Calvert Cliffs Nuclear Power Plant completed the inspection of Unit 2 reactor vessel head penetrations required by Reference (a), as modified by Reference (b), and returned the plant to operation on March 16, 2005.

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Attachment (1) to this letter provides the requested report. Should you have questions regarding this matter, please contact Mr. L. S. Larragoite at (410) 495-4922.

Very truly yours,

GV/MJY/bjd

Attachment: (1) 60 Days After Plant Restart Report – First Revised NRC Order EA-03-009, Interim Inspection Requirement for Reactor Pressure Vessel Heads at Pressurized Water Reactors

cc: R. V. Guzman, NRC
S. J. Collins, NRC
Resident Inspector, NRC
R. I. McLean, DNR

ATTACHMENT (1)

60 DAYS AFTER PLANT RESTART REPORT

FIRST REVISED NRC ORDER EA-03-009, INTERIM INSPECTION REQUIREMENT FOR REACTOR PRESSURE VESSEL HEADS AT PRESSURIZED WATER REACTORS

Calvert Cliffs Nuclear Power Plant, Inc.
May 12, 2005

ATTACHMENT (1)

60 DAYS AFTER PLANT RESTART REPORT – FIRST REVISED NRC ORDER EA-03-009, INTERIM INSPECTION REQUIREMENT FOR REACTOR PRESSURE VESSEL HEADS AT PRESSURIZED WATER REACTORS

Calvert Cliffs Nuclear Power Plant completed the inspection of Unit 2 reactor vessel head penetrations required by Nuclear Regulatory Commission (NRC) Order EA-03-009 (Reference 1), as modified by Reference (2), and returned the plant to operation on March 16, 2005.

Calvert Cliffs Unit 2 is in the highest susceptibility category as a result of having accumulated greater than 12 Effective Degradation Years, which was calculated in accordance with the methodology provided in the Order. For those plants in the High category, reactor pressure vessel (RPV) head and head penetration nozzle inspections must be performed using the following techniques every refueling outage;

(a) Bare metal visual examination of 100% of the RPV head surface (including 360° around each RPV head penetration nozzle). For RPV heads with the surface obscured by support structure interferences which are located at RPV head elevations downslope from the outermost RPV head penetration, a bare metal visual inspection of no less than 95% of the RPV head surface may be performed provided that the examination shall include those areas of the RPV head upslope and downslope from the support structure interference to identify any evidence of boron or corrosive product. Should any evidence of boron or corrosive product be identified, the licensee shall examine the RPV head surface under the support structure to ensure that the RPV head is not degraded.

(b) For each penetration, perform a nonvisual NDE [nondestructive examination] in accordance with either (i), (ii), or (iii):

(i) Ultrasonic testing of the RPV head penetration nozzle volume (i.e., nozzle base material) from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis (or bottom of the nozzle if less than 2 inches); OR from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 1.0-inch below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) and including all RPV head penetration nozzle surfaces below the J-groove weld that have an operating stress level (including all residual and normal operation stresses) of 20 ksi tension and greater. In addition, an assessment shall be made to determine if leakage has occurred into the annulus between the RPV head penetration nozzle and the RPV head low-alloy steel.

(ii) Eddy current testing or dye penetrant testing of the entire wetted surface of the J-groove weld and the wetted surface of the RPV head penetration nozzle base material from at least 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis (or the bottom of the nozzle if less than 2 inches); OR from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 1.0-inch below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) and including all RPV head penetration nozzle surfaces below the J-groove weld that have an operating stress level (including all residual and normal operation stresses) of 20 ksi tension and greater.

(iii) A combination of (i) and (ii) to cover equivalent volumes, surfaces, and leak paths of the RPV head penetration nozzle base material and J-groove weld as described in (i) and (ii). Substitution of a portion of a volumetric exam on a nozzle with a surface examination may be performed with the following requirements:

1. On nozzle material below the J-groove weld, both the outside diameter and inside diameter surfaces of the nozzle must be examined.
2. On nozzle material above the J-groove weld, surface examination of the inside diameter surface of the nozzle is permitted provided a surface examination of the J-groove weld is also performed.

CCNPP Inspection Results

The bare metal visual examination was accomplished with no indications of leakage. Every penetration was examined 360° around. The head was clean, with no evidence of degradation of any kind.

The vent line and in-core instrument (ICI) penetrations were examined using a rotating ultrasonic testing (UT) probe. These examinations included all of the nozzle material from the bottom of the nozzle to greater than 2 inches above the J-groove weld. There were no indications of cracking or degradation.

For the ICI penetrations, an assessment to determine if leakage has occurred into the interference fit zone was performed using an ultrasonic technique. No evidence of leakage was found.

For the vent line, a UT leakage path assessment could not be performed because the vent line was installed with a clearance fit. For the vent line the assessment to determine whether leakage has occurred into the interference fit zone was accomplished by performing an eddy current examination (ET) of the J-groove weld surface. No evidence of leakage was found.

All of the control element drive mechanism (CEDM) penetrations were inspected using UT techniques. The assessment to determine if leakage has occurred into the interference fit zone was performed using an ultrasonic technique. No evidence of leakage was found.

Above the weld, all nozzles were examined to a minimum of 1.2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis). Fifteen of the CEDM nozzles were UT inspected at least 2 inches above the highest point of the root of the J-groove weld in accordance with the requirements of the First Revised NRC Order (Reference 1). Fifty CEDM penetration nozzles did not meet this requirement. Relaxation was requested and granted for these nozzles.

Below the weld, six CEDM nozzles (3, 14, 18, 26, 38, and 46) were successfully scanned for the full length below the toe of the weld. The remaining 59 CEDM nozzles where examined to a minimum of 0.35 inches below the toe of the weld. Relaxation was requested and granted for these nozzles.

Results of the RPV head penetration examinations are provided in Table 1.

ATTACHMENT (1)

60 DAYS AFTER PLANT RESTART REPORT -- FIRST REVISED NRC ORDER EA-03-009, INTERIM INSPECTION REQUIREMENT FOR REACTOR PRESSURE VESSEL HEADS AT PRESSURIZED WATER REACTORS

REFERENCES:

(1) Letter from Mr. R. W. Borchardt (NRC) to Holders of Licenses for Operating Pressurized Water Reactors, dated February 20, 2004, Issuance of First Revised NRC Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors

(2) Letter from Mr. C. F. Holden, Jr. (NRC) to Mr. G. Vanderheyden (CCNPP), dated March 11, 2005, Calvert Cliffs Nuclear Power Plant, Unit No. 2 – Relaxation of the Requirements of First Revised Order Modifying License (EA-03-009), Regarding Reactor Pressure Vessel Head Inspections (TAC No. MC5705)

ATTACHMENT (1)

60 DAYS AFTER PLANT RESTART REPORT -- FIRST REVISED NRC ORDER EA-03-009, INTERIM INSPECTION REQUIREMENT FOR REACTOR PRESSURE VESSEL HEADS AT PRESSURIZED WATER REACTORS

Table 1

Calvert Cliffs Unit 2 (Spring 2005)

Extent of UT Coverage in RPV Head Nozzle Material

Pen #	Nozzle Angle	Coverage Above Weld Root on Uphill (in)	Coverage Below Weld Toe on the Downhill Side (in) (Note 1)	Circumferential Coverage Achieved (Degrees)	Scan Type (Blade Probe / Rotating) Axial Blade: A Circ Blade: C	Examined to End of Nozzle	Leak Path Assessment Possible? (Yes / No)
CEDM 1	0.0	1.70*	1.00*	360	C	No	Yes
CEDM 2	11.1	>2	0.51*	360	C	No	Yes
CEDM 3	11.1	1.91*	N/A	360	A/C	Yes	Yes
CEDM 4	11.1	1.50*	0.65*	360	C	No	Yes
CEDM 5	11.1	>2	0.85*	360	C	No	Yes
CEDM 6	12.0	>2	0.70*	360	C	No	Yes
CEDM 7	12.0	1.71*	0.75*	360	C	No	Yes
CEDM 8	12.0	1.20*	0.85*	360	C	No	Yes
CEDM 9	12.0	>2	0.80*	360	C	No	Yes
CEDM 10	22.6	1.92*	0.45*	360	C	No	Yes
CEDM 11	22.6	1.90*	0.60*	360	C	No	Yes
CEDM 12	22.6	>2	0.40*	360	C	No	Yes
CEDM 13	22.6	>2	0.80*	360	C	No	Yes
CEDM 14	24.1	>2	N/A	360	A	Yes	Yes
CEDM 15	24.1	1.90*	0.50*	360	C	No	Yes
CEDM 16	24.1	>2	0.40*	360	C	No	Yes
CEDM 17	24.1	>2	0.45*	360	C	No	Yes
CEDM 18	25.5	1.61*	N/A	360	A	Yes	Yes
CEDM 19	25.5	1.50*	0.70*	360	C	No	Yes
CEDM 20	25.5	1.61*	0.50*	360	C	No	Yes
CEDM 21	25.5	1.80*	0.60*	360	C	No	Yes
CEDM 22	25.5	1.55*	0.40*	360	C	No	Yes
CEDM 23	25.5	1.61*	0.40*	360	C	No	Yes
CEDM 24	25.5	>2	0.40*	360	C	No	Yes
CEDM 25	25.5	>2	0.74*	360	C	No	Yes
CEDM 26	29.3	1.81*	N/A	360	A	Yes	Yes
CEDM 27	29.3	1.75*	0.60*	360	C	No	Yes
CEDM 28	29.3	>2	0.40*	360	C	No	Yes
CEDM 29	29.3	1.80*	0.75*	360	C	No	Yes
CEDM 30	29.3	>2	0.45*	360	C	No	Yes
CEDM 31	29.3	>2	0.35*	360	C	No	Yes
CEDM 32	29.3	1.84*	0.50*	360	C	No	Yes
CEDM 33	29.3	>2	0.75*	360	C	No	Yes
CEDM 34	34.9	1.66*	0.80*	360	C	No	Yes
CEDM 35	34.9	1.48*	0.40*	360	C	No	Yes
CEDM 36	34.9	1.61*	0.85*	360	A/C	No	Yes
CEDM 37	34.9	1.79*	0.85*	360	C	No	Yes
CEDM 38	38.5	1.63*	N/A	360	A	Yes	Yes
CEDM 39	38.5	1.30*	0.45*	360	C	No	Yes
CEDM 40	38.5	1.30*	0.40*	360	C	No	Yes

Table 1

Calvert Cliffs Unit 2 (Spring 2005)

Extent of UT Coverage in RPV Head Nozzle Material

Pen #	Nozzle Angle	Coverage Above Weld Root on Uphill (in)	Coverage Below Weld Toe on the Downhill Side (in) (Note 1)	Circumferential Coverage Achieved (Degrees)	Scan Type (Blade Probe / Rotating) Axial Blade: A Circ Blade: C	Examined to End of Nozzle	Leak Path Assessment Possible? (Yes / No)
CEDM 41	38.5	1.55*	0.50*	360	C	No	Yes
CEDM 42	38.5	1.75*	0.45*	360	C	No	Yes
CEDM 43	38.5	1.77*	0.70*	360	C	No	Yes
CEDM 44	38.5	1.27*	0.65*	360	C	No	Yes
CEDM 45	38.5	1.40*	0.80*	360	C	No	Yes
CEDM 46	41.8	1.56*	N/A	360	A	Yes	Yes
CEDM 47	41.8	1.21*	0.40*	360	C	No	Yes
CEDM 48	41.8	1.50*	0.45*	360	C	No	Yes
CEDM 49	41.8	1.44*	0.64*	360	C	No	Yes
CEDM 50	41.8	1.58*	0.60*	360	C	No	Yes
CEDM 51	41.8	1.30*	0.51*	360	C	No	Yes
CEDM 52	41.8	1.60*	0.63*	360	C	No	Yes
CEDM 53	41.8	1.47*	0.60*	360	C	No	Yes
CEDM 54	42.5	1.60*	0.55*	360	C	No	Yes
CEDM 55	42.5	1.67*	0.45*	360	A/C	No	Yes
CEDM 56	42.5	1.75*	0.90*	360	C	No	Yes
CEDM 57	42.5	1.60*	0.40*	360	C	No	Yes
CEDM 58	42.5	1.55*	0.55*	360	C	No	Yes
CEDM 59	42.5	1.47*	0.65*	360	C	No	Yes
CEDM 60	42.5	1.25*	1.51*	360	A	No	Yes
CEDM 61	42.5	1.60*	0.50*	360	C	No	Yes
CEDM 62	42.5	1.66*	0.50*	360	C	No	Yes
CEDM 63	42.5	1.36*	0.50*	360	C	No	Yes
CEDM 64	42.5	1.35*	0.50*	360	C	No	Yes
CEDM 65	42.5	1.37*	0.50*	360	C	No	Yes
ICI 66	54.8	>2	N/A	360	Rotating	Yes	Yes
ICI 67	54.8	>2	N/A	360	Rotating	Yes	Yes
ICI 68	54.8	>2	N/A	360	Rotating	Yes	Yes
ICI 69	54.8	>2	N/A	360	Rotating	Yes	Yes
ICI 70	54.8	>2	N/A	360	Rotating	Yes	Yes
ICI 71	54.8	>2	N/A	360	Rotating	Yes	Yes
ICI 72	54.8	>2	N/A	360	Rotating	Yes	Yes
ICI 73	54.8	>2	N/A	360	Rotating	Yes	Yes
Vent-Line	0-11	>2	N/A	360	Rotating/ECT	Yes	N/A**

Note 1: N/A indicates coverage to the end of the nozzle

* Relaxation from the Order requirement was granted.

** Leak path assessment performed by ET of weld.