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February 18, 2003

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Response to Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors

REFERENCES:

(a) Letter from S. J. Collins (NRC) to Holders of Licenses for Operating Pressurized Water Reactors, dated February 11, 2003, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors"(EA-03-009)

(b) Letter from Mr. P. E. Katz (CCNPP) to Document Control Desk (NRC), dated October 9, 2002, 30-Day Response to NRC Bulletin 2002-02, "Reactor Pressure Vessel Head Penetration Nozzle Inspection Programs"

Pursuant to the requirements of 10 CFR 2.202(a)(2), the Answer to Reference (a) is being transmitted to the Nuclear Regulatory Commission under separate cover.

In accordance with Section IV.F of Reference (a), Calvert Cliffs Nuclear Power Plant hereby requests relaxation from the inspection requirements of Section IV.C(1)(b)(i) of Reference (a) as described in Attachment (1).

Calvert Cliffs Unit 2 is currently in a refueling outage. Reactor vessel head penetration nozzle inspections, as described in Reference (b), are scheduled to begin shortly. Therefore, to ensure adequate contingency planning, if needed, we request approval of the relaxation on or before March 21, 2003.

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Should you have questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,

Peter E. Katz

STATE OF MARYLAND :
: **TO WIT:**
COUNTY OF CALVERT :

I, Peter E. Katz, being duly sworn, state that I am Vice President - Calvert Cliffs Nuclear Power Plant, Inc. (CCNPP), and that I am duly authorized to execute and file this response on behalf of CCNPP. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other CCNPP employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

Peter E. Katz

Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of Calvert, this 18th day of February, 2003.

WITNESS my Hand and Notarial Seal:

Denise D. Snuhis
Notary Public

My Commission Expires:

2/1/2006
Date

PEK/JKK/bjd

Attachment

cc: J. Petro, Esquire
J. E. Silberg, Esquire
Director, Project Directorate I-1, NRC
D. M. Skay, NRC
G. S. Vissing, NRC
H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR
S. D. Bloom, NRC

ATTACHMENT (1)

REQUEST FOR RELAXATION

OF ORDER REQUIREMENT IV.C(1)(b)(i)

FOR CALVERT CLIFFS UNITS 1 AND 2

ATTACHMENT (1)

REQUEST FOR RELAXATION OF ORDER REQUIREMENT IV.C(1)(b)(i) FOR CALVERT CLIFFS UNITS 1 AND 2

RELAXATION REQUEST:

In accordance with Section IV.F(2) of Reference (1), Calvert Cliffs Nuclear Power Plant, Inc. (CCNPP) hereby submits a request for relaxation.

ORDER REQUIREMENT FROM WHICH RELAXATION IS REQUESTED:

Section IV.C(1)(b)(i) -- Ultrasonic testing of each Reactor Pressure Vessel (RPV) head penetration nozzle (i.e., nozzle base material) from two inches above the J-groove.

SPECIFIC PENETRATION NOZZLES FOR WHICH RELAXATION IS REQUESTED:

In accordance with the commitment we made in Reference (2), our plan calls for ultrasonic test (UT) examinations 100% of the Calvert Cliffs Units 1 and 2 RPV head penetrations. However, physical restrictions may exist for some portion of the UT examinations. Specifically, the control element drive mechanism (CEDM) penetrations have guide/thermal sleeves with a funneled-end installed inside the CEDM penetration to position the CEDM shaft. There is also a counterbore step above the J-groove weld. This results in an annular gap of approximately 0.175" that reduces to 0.123" for inspection using a thin "gap scanning" (blade) UT probe. Each sleeve is centered by three expansion points made in the sleeve above the J-groove weld to contact the CEDM penetration nozzle. Ultrasonic test examination near these expansion points using the gap-scanning probe may be affected and could limit examination in the area of interest. Actual coverage can only be determined after scanning and imaging the nozzle.

JUSTIFICATION FOR RELAXATION REQUEST:

Compliance with the requirements specified in this order would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Field experience at St. Lucie Nuclear Power Plant, which has a RPV head similar to the RPV heads on Calvert Cliffs Units 1 and 2, confirms the inability to examine a full two inches above the J-groove weld for all scans of the CEDM nozzles using a blade probe.

It is possible to permanently remove the guide/thermal sleeves and attach a new guide funnel to the CEDM nozzle, allowing the insertion of a rotating ultrasonic probe, instead of a blade probe, to improve the scan of the nozzle. However, the additional work associated with this modification would result in an estimated accumulation of dose between 130 and 160 man-rem, extend the outage two to three weeks, and cost roughly $10,000,000, without providing enough relevant inspection information to constitute a commensurate increase in quality and safety.

The in-core instrument nozzles and the RPV head vent nozzle will be ultrasonically tested two inches above the J-groove weld. The number of other affected nozzles cannot be determined prior to the completion of the inspection, as experienced at other plants. Where limitations exist that preclude the full examination coverage, the limitations will be noted and reported as requested by Section IV.E of Reference (1). Each nozzle exam consists of about 120 scans, and we anticipate that we can accomplish the UT inspection for the full distance of two inches above the weld on most scans. Access limitations are expected due to the sleeve expansion points and gap clearance limitations. The least coverage expected above the J-groove weld will be approximately 0.75 inches. In practice, the observed limitations at other nuclear power plants that have similar geometries and used similar inspection equipment achieved a minimum inspection distance above the J-groove weld of 0.66 inches. The proposed inspection of all of the CEDM nozzles will provide an acceptable level of quality and safety.

In Reference (2), CCNPP committed to inspect approximately two inches above the J-groove weld for the target inspection coverage. This value was selected based on inspection vendor recommendations to obtain data to support a "leak path" determination by inspecting in the area of the RPV head interference fit in the RPV head. Typically, inspection 0.5 inches above the top of the J-groove weld is sufficient to interrogate the nozzle base material for evidence of cracking. Primary water stress cracking corrosion is driven by the residual stresses from weld shrinkage. The stresses that drive primary water stress cracking corrosion decay rapidly above the weld. In the region where most limitations to obtaining a full 2-inch scan above the J-groove weld are expected, (the region for which CCNPP is seeking relaxation of the requirements provided in the Order), the nozzle material is constrained by the shrink fit. The shrink fit limits ovalization and dilation stresses caused by weld shrinkage. Hence no cracking is expected in the shrink fit region.

CONCLUSION:

As described above, compliance with the Order requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, in accordance with the provisions of Section IV.F(2) of the Order, we request relaxation of the requirement described in Section IV.C(1)(b)(i).

REFERENCES:

(1) Letter from S. J. Collins (NRC) to Holders of Licenses for Operating Pressurized Water Reactors, dated February 11, 2003, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors"(EA-03-009)

(2) Letter from Mr. P. E. Katz (CCNPP) to Document Control Desk (NRC), dated October 9, 2002, 30-Day Response to NRC Bulletin 2002-02, "Reactor Pressure Vessel Head Penetration Nozzle Inspection Programs"