Charles H. Cruse
Vice President
Nuclear Energy

1650 Calvert Cliffs Parkway
Lusby, Maryland 20657
410 495-4455

Constellation
Nuclear

Calvert Cliffs
Nuclear Power Plant

A Member of the
Constellation Energy Group

November 21, 2000

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 Request for Additional Information; License Amendment Request: Modification of Containment Closure During Core Alterations/Fuel Handling and Loss of Shutdown Cooling

REFERENCES:

(a) Letter from Mr. C. H. Cruse (BGE) to NRC Document Control Desk, dated January 27, 2000, "License Amendment Request: Modification of Containment Closure During Core Alterations/Fuel Handling and Loss of Shutdown Cooling"

(b) Telephone Conference between Ms. D. J. Moeller, et al. (CCNPP) and Mr. A. W. Dromerick, et al. (NRC), dated July 6, 2000, same subject

In our letter dated January 27, 2000 (Reference a), we requested a License Amendment that would modify containment closure requirements during core alterations/fuel handling and loss of shutdown cooling events. Attachment (1) to this letter contains the information we agreed to provide you during Reference (b). This information does not affect the No Significant Hazards Consideration Determination or the Environmental Impact Review of Reference (a).

A001

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

Very truly yours,

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

I, Charles H. Cruse, being duly sworn, state that I am Vice President - Nuclear Energy, Calvert Cliffs Nuclear Power Plant, Inc. (CCNPP), and that I am duly authorized to execute and file this License Amendment Request 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.

Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of CALVERT, this 21st day of November, 2000.

WITNESS my Hand and Notarial Seal:

Notary Public

My Commission Expires: 2/1/02
Date

CHC/DJM/dlm

Attachment: (1) Response to Request for Additional Information; License Amendment Request: Modification of Containment Closure During Core Alterations/Fuel Handling and Loss of Shutdown Cooling

cc: R. S. Fleishman, Esquire
J. E. Silberg, Esquire
Director, Project Directorate I-1, NRC
A. W. Dromerick, NRC
H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR

ATTACHMENT (1)

Response to Request for Additional Information;

License Amendment Request: Modification of Containment Closure During Core Alterations/Fuel Handling and Loss of Shutdown Cooling

NRC Request

It is stated in the submittal that a program will be in place that will require inspection of the seals and testing of the closure and dogging functions of the containment outage door at the start of each outage to assure reliability of the containment outage door. A concern exists relative to the hinges and latches that are subject to degradation over a period of time. Describe the specific inspections or tests that assure they are maintaining adequate design margins against accident loadings, including seismic. Also provide the specific American Society of Mechanical Engineers (ASME) Code requirements to which the outage door assembly and the equipment hatch were designed.

CCNPP Response

The containment outage door vendor recommends performing a visual inspection of the hinges and latches prior to each refueling outage the door is to be used. The hinges, latches, and bearings have been designed for a 40-year service life. The stress calculations for these components show that the stresses are low and maintain adequate design margins against accident loadings, including seismic. The loading conditions will not provide sufficient driving force for either high- or low-cycle fatigue. The structure is fabricated of carbon steel, which is not susceptible to stress corrosion cracking. The indoor environment is relatively benign to carbon steel. Although no failure mechanisms seem plausible, visual examinations will be performed at the start of each outage that the containment outage door will be used. These examinations will be sufficient to discover general corrosion well before it could lead to loss of significant section thickness. These inspections would also discover high ductility cracking, such as low-cycle fatigue, even though such cracking is never expected to occur. Since the door is only operated a few times a year, high-cycle fatigue is not considered to be credible.

The mechanisms of high-cycle fatigue and stress corrosion cracking can produce degradation that is not readily apparent by visual examination; but since these mechanisms are not operative on the door structure, the application of non-destructive examination techniques to discover the effects of these mechanisms will not be necessary.

The containment outage door and mounting hardware are designed in accordance with the requirements of 1995 ASME Boiler and Pressure Vessel (B&PV) Code Section VIII, Division 1 using the stress categories given in Division 2 for the various loading combinations. The ASME B&PV Code Section VIII, Division 2 stress categories are utilized since Section VIII, Division 1 does not address all of the appropriate loading combinations applicable for this type of structure. The loads considered in the structural design of the containment outage door are the following:

- D - Dead Load
- P - Outage design pressure (+12 psig, -3 psig)
- P_e - Restrained thermal expansion (assume zero expansion for Containment)
- T_A - Outage accident temperature, 195°F
- $T_{A(ss)}$ - Outage Accident Steady State Temperature, 175°F
- T_O - Outage normal temperature, 20°F outside, 120°F inside
- T_T - Temperature at structural integrity and acceptance testing
- E - OBE Earthquake
- E* - DBE Earthquake

It has been determined that the calculated stress categories of P_m, P_1 and P_b and Q (as defined in ASME B&PV Code Section VIII, Division 2) will not exceed the following limits:

- Design $P_m < S_{all}$, $P_1 < 1.5\ S_{all}$, $P_1 + P_b < 1.5\ S_{all}$ at T_A
- Level A/B $P_m < S_{all}$, $P_1 < 1.5\ S_{all}$, $P_1 + P_b < 1.5\ S_{all}$, $P_1 + P_b + Q < 3.0\ S_{all}$ with T_A/T_O
- Level C $P_m < 1.2\ S_{all}$, (or S_y), $P_1 < 1.8\ S_{all}$ (or $1.5\ S_y$), $P_1 + P_b < 1.8\ S_{all}$ (or $1.5\ S_y$) at T_A
- Level D $P_m < 2.0\ S_{all}$, (or $0.6\ S_u$), $P_1 < 3.0\ S_{all}$, (or $0.9\ S_u$), $P_1 + P_b < 3.0\ S_{all}$, (or $0.9\ S_u$) at T_A
- Test $P_m < 0.9\ S_y$ at T_A

S_{all} is the allowable stress defined in UG-23 of the ASME B&PV Code Section VIII, Division 1. Allowable shear stress is $0.6\ S_{all}$ per AD-132.2 of Section VIII, Division 2. Allowable weld stress is based on base material S_{all} times applicable joint efficiency factors from Section VIII, Division 1, Table UW-12, assuming no radiography.

The equipment hatch was designed to ASME Section III, 1968. The containment outage door is attached to the outer edge of the carbon steel sleeve of the containment equipment hatch penetration with new hardware. The new hardware installed does not interfere with the functionality/operability of the equipment hatch.