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March 22, 1994

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  
Request for Additional Information - Civil Engineering Design Report (TAC  
Nos. M85222 and M85223)

Following discussions with the NRC Staff on February 17, 1994, there were two items identified which required further clarification. One issue involved the use of live loads and dead loads in the seismic evaluation of the safety-related Diesel Generator Building. Attachment (1) provides justification for calculating vertical seismic loads using vertical acceleration and dead loads. We do not anticipate extensive live loads to be present in the building, even during maintenance periods. There is no large equipment which has not already been identified and shown on the preliminary drawings provided to the NRC in the Mechanical Systems Design Report. The second issue dealt with the design of the anchor bolts in the building. Based on discussions with the NRC Staff, we have rechecked the stresses on the anchor bolts using criteria which resolved the NRC concerns and the stresses meet the new acceptance criteria.

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

Very truly yours,

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RED/PSF/dlm

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## ATTACHMENT (I)

The generic load case for the operating basis earthquake (OBE) seismic condition is characterized by the following equation:

$$1) \quad DL + 0.25LL + OBE (DL + 0.25LL)$$

DL = Dead Loads  
LL = Live Loads  
OBE = Operating Basis Earthquake Acceleration  
(specified as a fraction of the acceleration of gravity)

NOTE: The 0.25 factor accounts for unspecified live loads. Where live loads can be identified and expected to be present during normal operation, a factor of 1.0 is used. Within the Diesel Generator Building, no specific live load in excess of 0.25 LL has been identified.

The OBE floor acceleration at Calvert Cliffs is less than 0.3 g; however, 0.3 g was assumed for the OBE acceleration. Since flexibility was included in the building model for the seismic analysis, this floor acceleration includes the effects of vertical floor flexibility. Substituting 0.3 for the OBE acceleration into equation 1) yields the following:

$$DL + 0.25LL + 0.3 (DL + 0.25LL)$$

simplifying:

$$DL + 0.25LL + 0.3DL + 0.075LL$$

combining live load terms:

$$DL + 0.325LL + 0.3DL$$

Substituting OBE (DL) for 0.3DL yields:

$$2) \quad DL + 0.325LL + OBE (DL)$$

Assumption/Basis 8 of the calculation for Structural and Miscellaneous Steel Framing, Composite Slabs and Miscellaneous Platforms identifies an equation used to reduce the number of load combinations which would need to be evaluated:

$$3) \quad DL + LL + OBE (DL)$$

Since  $1.0LL > 0.325LL$ , equation 3) conservatively envelopes equation 2) for the expected Diesel Generator Building live loads. Therefore, using equation 3) to multiply the vertical acceleration by the dead load only (sheet Nos. 12, 20 and 50 in the above mentioned calculation) conservatively calculates the vertical seismic load.