September 7, 1998

Mr. Charles H. Cruse, Vice President
Nuclear Energy Division
Baltimore Gas & Electric Company
1650 Calvert Cliffs Parkway
Lusby, MD 20657-47027

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 & 2, INTEGRATED PLANT ASSESSMENT SECTIONS 3.3A, 3.3B, 3.3C, 3.3D, 3.3E, AND 6.2 (TAC NOS. MA1448, MA1449, MA1455, MA1089, MA1090, MA1098, MA1091, MA1092, MA1099, MA1094, MA1095, MA1100, MA1450, MA1452, MA1456, MA1443, MA1444, AND M99217)

Dear Mr. Cruse:

By letter dated April 8, 1998, Baltimore Gas and Electric Company (BGE) submitted its license renewal application. The NRC staff has reviewed reports 3.3A, "Primary Containment Structures," 3.3B, "Turbine Building Structure," 3.3C, "Intake Structure," 3.3D, "Miscellaneous Tank and Valve Enclosures" 3.3E, and 6.2, "Electrical Commodities," against the requirements of 10 CFR 54.21(a)(1) and 10 CFR 54.21(a)(3). By letter dated April 4, 1996, the Nuclear Regulatory Commission (NRC) staff approved Baltimore Gas and Electric Company's methodology for meeting the requirements of 10 CFR 54.21(a)(2). Based on a review of the information submitted, the staff has identified in the enclosure, areas where additional information is needed to complete its review.

Please provide a schedule by letter or telephonically for the submittal of your responses within 30 days of the receipt of this letter. Additionally, the staff would be willing to meet with BGE prior to the submittal of the responses to provide clarifications of the staff's requests for additional information.

Sincerely,

Original Signed By

David L. Solorio, Project Manager
License Renewal Project Directorate
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

Docket Nos 50-317 and 50-318
Enclosure: Request for Additional Information
cc w/encl: See next page
DISTRIBUTION:
See next page
DOCUMENT NAME:G:\WORKING\SOLORIO\STRU_RAI.LTR

OFFICE	LA:PDI-1	PDLR/DRPM	PDLR/DRPM:ASC	PDLR/DRPM:D
NAME	SLittle	DSolorio	BPrato	CGrimes
DATE	9/4/98	9/7/98	9/ /98	9/7/98

OFFICIAL RECORD COPY

DF01 1/1

170146

9809170284 980907
PDR ADOCK 05000317
P PDR

NRC FILE CENTER COPY

Mr. Charles H. Cruse
Baltimore Gas & Electric Company

Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 and 2

cc:

President
Calvert County Board of
Commissioners
175 Main Street
Prince Frederick, MD 20678

James P. Bennett, Esquire
Counsel
Baltimore Gas and Electric Company
P.O. Box 1475
Baltimore, MD 21203

Jay E. Silberg, Esquire
Shaw, Pittman, Potts, and Trowbridge
2300 N Street, NW
Washington, DC 20037

Mr. Thomas N. Prichett, Director
NRM
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
Lusby, MD 20657-4702

Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 287
St. Leonard, MD 20685

Mr. Richard I. McLean
Nuclear Programs
Power Plant Research Program
Maryland Dept. of Natural Resources
Tawes State Office Building, B3
Annapolis, MD 21401

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. Joseph H. Walter, Chief Engineer
Public Service Commission of
Maryland
Engineering Division
6 St. Paul Centre
Baltimore, MD 21202-6806

Kristen A. Burger, Esquire
Maryland People's Counsel
6 St. Paul Centre
Suite 2102
Baltimore, MD 21202-1631

Patricia T. Birnie, Esquire
Co-Director
Maryland Safe Energy Coalition
P.O. Box 33111
Baltimore, MD 21218

Mr. Loren F. Donatell
NRC Technical Training Center
5700 Brainerd Road
Chattanooga, TN 37411-4017

David Lewis
Shaw, Pittman, Potts, and Trowbridge
2300 N Street, NW
Washington, DC 20037

Douglas J. Walters
Nuclear Energy Institute
1776 I Street, N.W.
Suite 400
Washington, DC 20006-3708
DJW@NEI.ORG

Barth W. Doroshuk
Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
1650 Calvert Cliffs Parkway
NEF 1st Floor
Lusby, Maryland 20657

Distribution:
HARD COPY
Docket Files
PUBLIC
PDLR R/F
MEI-Zeftawy

DISTRIBUTION: E-MAIL:
FMiraglia (FJM)
JRoe (JWR)
DMatthews (DBM)
CGrimes (CIG)
TEssig (THE)
GLainas (GCL)
JStrosnider (JRS2)
GHolahan (GMH)
SNewberry (SFN)
GBagchi (GXB1)
RRothman (RLR)
JBrammer (HLB)
CGratton (CXG1)
JMoore (JEM)
MZobler/RWeisman (MLZ/RMW)
SBajwa/ADromerick (SSB1/AXD)
LDoerflein (LTD)
BBores (RJB)
SDroggitis (SCD)
RArchitzel (REA)
CCraig (CMC1)
LSpessard (RLS)
RCorreia (RPC)
RLatta (RML1)
EHackett (EMH1)
AMurphy (AJM1)
TMartin (TOM2)
DMartin (DAM3)
GMeyer (GWM)
WMcDowell (WDM)
SStewart (JSS1)
THiltz (TGH)
SDroggitis (SCD)
DSolorio (DLS2)
PDLR Staff

TMarsh/GHubbard (LBM/GTH)
WLefave (WTL1)
GGeorgiev (GBG)
TSullivan (EJS)
KParczewski(KIP)
RWessman (RHW)
Yeuh-Li Li (YCL)
SLittle (SSL)

REQUEST FOR ADDITIONAL INFORMATION
CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NOS. 1 & 2
PRIMARY CONTAINMENT STRUCTURE, SECTION 3.3A
TURBINE BUILDING STRUCTURE, SECTION 3.3B
INTAKE STRUCTURE, SECTION 3.3C
MISCELLANEOUS TANK AND VALVE ENCLOSURES, SECTION 3.3D
ELECTRICAL COMMODITIES, 6.2
DOCKET NOS. 50-317 AND 50-318

General Questions Related to Sections 3.3B, 3.3C, 3.3D, 3.3E and 6.2

1. To facilitate the staff's review, BGE should provide a summary (in a tabular form) indicating which program (or programs) will cover safety-related tanks (including the field erected vertical tanks) and heat exchangers, and how these programs will be implemented.

2. For concrete components of Category I structures, the significant ARDMs are the following: settlement, freeze-thaw, leaching of calcium hydroxide, aggressive chemical attack, aggregate reaction, flowing water, and corrosion of embedded steel/rebar. The application addresses settlement as the applicable aging effect for concrete components of Category I structures only. Provide a brief summary (including basis and past operating experience, if any) to which these aging effects were either determined to be non-plausible or were not addressed, for the components described in sections 3.3A, 3.3B, 3.3C, and 3.3D.

3. Have the results of prior inspections (1994 and earlier) indicated any particular trend in the incidence of coating degradation or corrosion of steel?

4. One of the generic structural functions considered under the component level scoping process is to "Provide flood protection barrier (internal flooding events)." Is protection from external flood events an intended function? If so, clearly identify the structures associated with implementing the intended function and describe the corresponding aging management programs.

5. A heavy waterproofing membrane is provided at exterior walls and base slab. Rubber water stops are also provided at all construction joints up to grade elevation. Explain whether the waterproofing membrane and rubber water stops are relied upon to protect the concrete foundations. If not, provide the basis for excluding them from the scope of license renewal.

6. Subsurface drains are typically relied upon to lower the elevation of groundwater around the plant. Describe whether or to what extent the drainage system was considered to be within the scope of license renewal and if not, justify why. Summarize the operating experience of the drainage system and groundwater levels. Describe the consequence of elevated groundwater levels on the aging degradation of the various structures. Also,

provide a discussion of how failure of the drain system would impact the aging effects (such as settlements) that is considered not plausible.

7. As stated in the application, the need for a new aging management program for caulking and sealants which do not function as fire barriers was identified. Provide a description, in summary form, of this new program including the schedule for implementation, experience of failures of caulking and/or sealants, if any, that resulted in aging degradation of concrete and/or steel components, and corrective actions.

8. The modified aging management program Calvert Cliffs Nuclear Power Plant (CCNPP) Administrative Procedure MN-1-319, "Structure and System walkdowns," was credited (or will be credited) as an aging management program for seismic Category I structures. It is the staff's understanding that there are many safety-related reinforced concrete walls (e.g., auxiliary building walls, intake structure walls, etc.) in CCNPP. Provide the basis for why these safety-related reinforced concrete walls are not covered in the structure walkdown. (refer to Attachment 4 to MN-1-319, Structure Monitoring walkdown; Concrete Structures Other Than Containment [concrete slabs, beams, columns, base plates, and foundations])

9. Provide the details of specific national codes and standards (e.g., ACI, AISC, etc.) including their editions that will be used to determine repairs and acceptance criteria. If there are changes with respect to specific national codes and standards previously committed to as part of the initial licensing basis, describe plans for incorporating these changes in the CCNPP Updated Final Safety Analysis Report.

10. Section 3.3C.2 states that a structure performance assessment is currently required for Category I structures at CCNPP at least once every 6 years. Regulatory Guide (RG) 1.127 recommends a frequency of 5 years for the inspection and evaluation of the steel components of the intake structure. Describe the basis for the frequency of the structural performance assessments at CCNPP and describe the attributes of the aging management program as it relates to RG 1.127 for steel components.

Section 3.3A.2 - Primary Containment Structures

11. Describe the past performance experience of the permanent pipe drain system for the primary containment structure foundation. Please provide the basis for concluding that most of the predicted settlement is in terms of uniform settlement, for any previously experienced cracking of the concrete basemat, degradation, deformation or excessive straining of the containment dome, wall and basemat.

12. Provide a summary description of the Time-Limited Aging Analysis (TLAA) that will be performed for the three types of containment prestressing tendons and explain the basic assumptions and limitations that will be used in the evaluation.

13. Are the transfer tube/bellows and containment sump recirculation penetrations accessible for periodic inspections? If not, discuss the rationale for concluding that the

functionality and integrity of these items are assured and maintained during the license renewal period.

14. Provide a discussion of how the following degradation mechanisms were determined to be non-plausible for the CCNPP primary containment structure: (a) scaling, cracking and spalling of concrete dome, wall and basemat, and loss of bond and material of embedded steel and reinforcement; (b) cracking, distortion, component stress level increase, and loss of strength and modulus due to elevated temperature of the concrete basemat; and (c) corrosion and loss of prestress of hoop and dome tendons.

15. Since 1997, CCNPP Units 1 and 2 have experienced degradation in their containment prestressing systems. Provide a description of the aging effects associated with this degradation and aging management program(s) that will be relied on to manage these aging effects for the period of extended operation.

16. Provide a discussion of how STP-M-663-1 and STP-M-663-2, in conjunction with the proposed lift-off force TLAA, will ensure that the effects of tendon corrosion and loss of prestress force are adequately managed. Describe how items such as: (a) preventive actions will mitigate or prevent aging degradation; (b) aging effects will be detected before losing structure and component function; (c) measures incorporated in the procedure will effectively reflect past CCNPP operating experience with respect to tendon corrosion and loss of prestress and eliminate the root causes identified during post tendon degradation assessment; and (d) timely detection of aging effects and corrective action implementation are fully realized.

17. Provide a discussion of how STP-M-663-1/2 surveillance procedures effectively manages the potential additional tendon force loss (8 to 14 %) due to elevated temperature resulting from abnormal sun exposure or proximity to hot penetrations (refer to NUREG-1611, page 18, issue 14).

18. Referring to page 3.3A-15, fourth paragraph, it is stated that ,"...Other intended function (structural or functional support to safety-related (SR) equipment, shelter/protection of SR equipment, and missile barrier) will not be affected because those functions will be provided by the containment wall itself." Clarify this conclusion with consideration that the design strength of the containment wall is dependent on the availability of the prestress level prescribed in the design analysis calculations and any reduction or deviation of the actual prestress level in a wall section from that of the designed prestress level will reduce both the strength and the margin of the wall, which may lead to loss of wall integrity and functionality.

19. Are there any parts of the primary containment structures that are inaccessible for inspection? If so, describe what aging management program will be relied upon to maintain the integrity of the inaccessible areas. If the aging management program for the inaccessible areas is an evaluation of the acceptability of inaccessible areas based on conditions found in surrounding accessible areas, please provide information to show that conditions would exist in accessible areas that would indicate the presence of, or result in degradation to such inaccessible areas. If different aging effects or aging

management techniques are needed for the inaccessible areas, please provide a summary to address the following elements for the inaccessible areas: (1) Preventive actions that will mitigate or prevent aging degradation; (2) Parameters monitored or inspected relative to degradation of specific structure and component intended functions; (3) Detection of aging effects before loss of structure and component intended functions; (4) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (5) Acceptance criteria to ensure structure and component intended functions; and (6) Operating experience that provides objective evidence to demonstrate that the effects of aging will be adequately managed.

20. Referring to the plausibility of microbiologically-induced corrosion of fuel transfer tube, provide an explanation for concluding that the stress level of the CCNPP fuel transfer tube is lower than the threshold to cause the microbiologically-induced corrosion.

21. Provide the justification for the inspection frequencies in CCNPP procedures MN-3-100, MN-1-319, STP-M-665-1/2 and STP-M-661-1/2, and discuss how they compare to related industry standards including that of the "Rules for Inservice Inspection, Section XI, ASME Boiler and Pressure Vessel Code," and justify any deviations.

22. Explain and justify the modification of CCNPP Administrative Procedure MN-1-319 pertaining to the "authority to deviate from scope or schedule" described on page 3.3A-24 of the application.

23. Provide a summary discussion of the method and procedures used in the 1992 containment inspection including a list of deficiencies found. Describe how the experience from the inspection was incorporated into the proposed revision of the walkdown procedure MN-1-319, as applicable. In addition, clarify the basis upon which you concluded that the components in the containment system were in good to excellent condition.

24. Provide a justification for excluding from the aging management review that part of the liner that is embedded horizontally inside the concrete basemat from the aging management review, and discuss how the aging effects of this part of the liner will be managed to ensure its functionality for the extended period of operation. It appears that the embedded horizontal basemat liner, because of its relatively low elevation and horizontal orientation, tend to have a higher likelihood of water accumulation/retention on its surfaces, which in turn, might result in a higher potential for liner corrosion/degradation. Discuss how this specific concern as well as any other applicable aging effects are factored into your liner aging management program.

25. Provide a justification for determining corrosion and degradation of the concrete shell-side liner surfaces and the anchor studs is not plausible. It is recognized that due to the presence of prestressing forces on the shell concrete, there will be a lesser degree of moisture penetration through the concrete to reach the liner surfaces and the anchor studs. However, it is not totally clear to the NRC staff that the concrete shell-side liner surface and anchor stud corrosion can be determined to be non-plausible. If available,

please provide a description of the results actually observed from concrete side liner surface examination to support your non-plausibility conclusion.

26. How did BGE consider Generic Letter 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," in the context of license renewal? Describe your plans for participating in any industry efforts in preparing the response to the generic letter as it relates to license renewal.

Section 3.3B.2, Turbine Building Structure

27. Provide the basis for excluding the seismic Category II portions of the turbine building from consideration in addressing Intended Function No. 5. Was consideration given to the potential for adverse impacts on the SR structures, systems and components within the turbine building if aging related degradation results in the turbine building, which is not a seismic Category I structure, being damaged or collapsing under a design basis event? Also, discuss how the venting functions will be maintained if the siding and retainer clips are not classified as SR. (reference Section 3.3B.1, pp 3.3B5-6)

28. Regarding Structure Description/Conceptual Boundaries (p.3.3B-2), BGE states that "The circulating water intake and discharge conduits are incorporated into the spread footings."

    a. Do these conduits perform any of the seven identified intended functions?

    b. Are the conduits classified as SR? If not, describe their design standards.

    c. Are conduits subject to any aging management review? If so, where in the license renewal application (LRA) are these conduits addressed? If not, justify why they were excluded.

    d. Provide a summary description, including the important elements, of BGE's current and future program for managing aging effects on these conduits.

29. Address the following questions related to Table 3.3B-2 and Table 3.3B-3 regarding seismic Category I electrical duct banks:

    a. Provide a summary description of how the seismic Category I conduits were encased in the ductbanks. Are a number of conduits individually encased in concrete <u>or</u> are a number of conduits collectively routed through void spaces under the turbine building?

    b. What is the chain of events that may lead to water seepage into the conduits?

c. What are the consequences of water seepage into the conduits? How would this affect the power cables to the saltwater pumps?

d. Why is intended function No. 2 not affected by water seepage into the conduits? Explain this apparent inconsistency with Table 3.3B-2.

e. What is the basis for concluding that there are no plausible age related degradation mechanisms (ARDMs) for the ductbanks, relating to the possibility for flowing groundwater?

f. Provide a summary description, including the important elements (such as schedule for inspection, methods, criteria, etc.), of BGE's current and future aging management program for the ductbanks.

g. Address the effects of settlement on the ductbanks.

30. In the last paragraph of Section 3.3B.1, replacement of components is discussed. Provide a description of how this process will be applied, and provide examples of structural components and subcomponents which may be subject to replacement.

31. Are there any parts of the turbine building structures that are inaccessible for inspection? If so, describe what aging management program will be relied upon to maintain the integrity of the inaccessible areas. If the aging management program for the inaccessible areas is an evaluation of the acceptability of inaccessible areas based on conditions found in surrounding accessible areas, please provide information to show that conditions would exist in accessible areas that would indicate the presence of, or result in degradation to such inaccessible areas. If different aging effects or aging management techniques are needed for the inaccessible areas, please provide a summary to address the following elements for the inaccessible areas: (1) Preventive actions that will mitigate or prevent aging degradation; (2) Parameters monitored or inspected relative to degradation of specific structure and component intended functions; (3) Detection of aging effects before loss of structure and component intended functions; (4) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (5) Acceptance criteria to ensure structure and component intended functions; and (6) Operating experience that provides objective evidence to demonstrate that the effects of aging will be adequately managed.

Section 3.3C, Intake Structure

32. Explain how the actions taken to manage recurring degradations of the structural components (Groups 1, 2, 3, and 4) identified in Section 3.3C.2 during the baseline inspection and subsequent inspections will be integrated into the aging management programs developed for the license renewal term.

33. Figure 3.3C.1 shows the evaluation boundary for the intake structure excludes the intake channel and baffle structure. Are the intake channel and baffle structure within the scope

of license renewal? If not, provide a justification for not including them? If so, where are they addressed in the LRA?

34. Referring to Table 3.3C-2, identify any masonry walls within the scope of license renewal (SR or non-SR whose failure could directly prevent satisfactory accomplishment of any of the required SR functions) in the intake structure? If any intake structure masonry walls within the scope of license renewal are identified, identify where they discussed in the LRA. Describe any masonry walls that were excluded from the scope of license renewal and the basis for their exclusion.

35. Table 3.3C-3 identifies the sluice gate as a long lived/passive structure within the scope of license renewal, but does not identify mechanical wear as a plausible ARDM. Provide a justification for excluding mechanical wear as a plausible ARDM.

36. Section 3.3C.2 states that the expansion joints that run along the intake structure floor have experienced age-related degradation in the past. The degradation allowed water seepage up through the joints that required repairs to affected joints. This is an indication that the intake structure concrete floors, walls, and joints may be exposed to groundwater. What are the potential consequences of this exposure to ground water with respect to aging degradation of the concrete floors and walls and was that identified as a plausible ARDM for inclusion in the aging management review. If not, provide a justification for this conclusion.

37. The salinity and sulfate content of the Chesapeake Bay surface water as found in 1968-69 is high enough to chemically attack the steel components and sluice gates. Describe the basis upon which you concluded that the concentrations of these attributes have not increased in the last 30 years, and describe how the proposed aging management program would address significant increases if they were to occur in the future.

38. Are there any parts of the intake structure that are inaccessible for inspection? If so, describe what aging management program will be relied upon to maintain the integrity of the inaccessible areas. If the aging management program for the inaccessible areas is an evaluation of the acceptability of inaccessible areas based on conditions found in surrounding accessible areas, please provide information to show that conditions would exist in accessible areas that would indicate the presence of, or result in degradation to such inaccessible areas. If different aging effects or aging management techniques are needed for the inaccessible areas, please provide a summary to address the following elements for the inaccessible areas: (1) Preventive actions that will mitigate or prevent aging degradation; (2) Parameters monitored or inspected relative to degradation of specific structure and component intended functions; (3) Detection of aging effects before loss of structure and component intended functions; (4) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (5) Acceptance criteria to ensure structure and component intended functions; and (6) Operating experience that provides objective evidence to demonstrate that the effects of aging will be adequately managed.

Section 3.3D, Miscellaneous Tank and Valve Enclosures

39. A 1994 inspection of the No. 12 CST and No. 21 fuel oil storage tank enclosures identified minor surface corrosion on steel beams. This surface corrosion was deemed insufficient to affect the structural integrity of the enclosures. Provide a justification for this conclusion, and discuss how the aging management review assessed the structural integrity of the enclosures.

40. Has the auxiliary feedwater valve enclosure been previously inspected for corrosion of steel components or degradation of protective coatings? If so, provide a summary of the results.

41. Provide a description of the amount of corrosion or degradation of protective coatings that will be allowed on tanks and valve enclosures before corrective action is implemented. If degradation is observed, what will be the acceptance criteria to determine that intended functions will be maintained with a sufficient margin?

42. Are there any parts of the tank and valve enclosures that are inaccessible for inspection? If so, describe what aging management program will be relied upon to maintain the integrity of the inaccessible areas. If the aging management program for the inaccessible areas is an evaluation of the acceptability of inaccessible areas based on conditions found in surrounding accessible areas, please provide information to show that conditions would exist in accessible areas that would indicate the presence of, or result in degradation to such inaccessible areas. If different aging effects or aging management techniques are needed for the inaccessible areas, please provide a summary to address the following elements for the inaccessible areas: (1) Preventive actions that will mitigate or prevent aging degradation; (2) Parameters monitored or inspected relative to degradation of specific structure and component intended functions; (3) Detection of aging effects before loss of structure and component intended functions; (4) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (5) Acceptance criteria to ensure structure and component intended functions; and (6) Operating experience that provides objective evidence to demonstrate that the effects of aging will be adequately managed.

Section 3.3E, Auxiliary Building and Safety-related Diesel Generator Building Structures

43. Section 3.3E appears to address the license renewal aspects of the safety-related emergency diesel generator (EDG) structures, but not the station blackout diesel generator (DG) structure. Figure 3.3E-1, identifying site structures within the scope of license renewal (WSLR), also does not include the blackout DG structure (attached to the EDG 1A building) as being WSLR. Since the blackout DG systems are WSLR according to Section 5.8 of the technical report, identify where in your application the license renewal aspects of the blackout DG structures are discussed. If you have concluded that the blackout DG structures are not WSLR, provide your rationale for that conclusion.

44. Figure 3.3E-1 shows a number of WSLR structures such as the condensate storage tank enclosure, auxiliary feedwater valve enclosure, and the fuel oil storage tank enclosure, that are somewhat physically removed from the systems they support. There are no interconnecting structural tunnels/raceways for piping and cabling shown on this figure. Please identify and describe any interconnecting structures associated with these components and address the corresponding license renewal aspects of these structures, as necessary. Also, address any other interconnecting structures between major buildings/components that are not shown on this figure and describe where the license renewal aspects are addressed.

45. One of the structural functions identified for structures that are WSLR is to provide flood protection barriers for an internal flooding event. Generally, portions of the equipment and floor drainage system (EFDS) may also be relied upon for adequate protection against internal (and sometimes external) flooding. Identify if any of the EFDS associated with the auxiliary building and EDG structures that are relied upon for protection against internal or external flooding. Also, identify where the license renewal aspects of the WSLR portions of the EFDS are addressed. Otherwise, provide justification for your determination that no portions of the EFDS are WSLR.

46. With regard to the discussion on page 3.3E-3, please discusse: (a) the basis for not including the 1-story missile protection structure located on the east side of the Safety-Related Diesel Generator Building (SR-DGB) within the review scope of the SR-DGB, and (b) describe actions taken to support your conclusion that there has been no evidence of age-related degradation for the SR-DGB.

47. Regarding the entry on Table 3 3E-3, first column, "Concrete (Including Reinforcing Steel)," and "Structural Steel," please provide a justification for determining the following mechanisms as not being plausible ARDMs: corrosion of embedded steel/rebar, cracking of concrete/masonry walls, settlement and corrosion of structural steel.

48. With regard to the discussion on page 3.3E-12, please discuss if any maintenance or watertable elevation monitoring programs are in place to ensure proper functioning of the system and what their role would be in the aging management program.

49. The last paragraph of page 3.3E-12 states that "Most of the predicted settlement is expected in terms of uniform settlement." Please describe the results of monitoring the settlement that led to the assessment that the differential settlement is expected to be small and have a negligible effect. If no monitoring has been performed, provide a justification for this statement.

50. With regard to the discussion on page 3.3E-13, please provide a summary description (including scope and findings) of any past or existing inspection program(s) which led you to state that "no cracking or other evidence of settlement that would affect structural integrity has been observed to date."

51. Page 3.3E-18 indicates that one of the objectives of Calvert Cliffs Administrative Procedure MN-1-319, "Structural and System Walkdowns" program is to assess the

condition of the structures, systems, and components such that any abnormal or degraded condition will be identified, documented, and corrective actions taken before the condition proceeds to failure of the structures, systems and components (SSCs) to perform their functions. Please discuss the frequency with which walkdowns of the SSCs will be carried out and the basis for those frequencies.

52. With regard to the discussion on page 3.3E-20, what has been the average leak rate of water from the spent fuel pool (SFP) liners based on past years of observation? If the SFP liner cannot be confirmed as the source of water collected during the monthly testing, indicate what other potential sources of water the leakage observed to-date can be attributed to in the results of the monthly test? Discuss if there are written procedures available which are used to guide the liner walkdown task and ensure its reasonable performance of functions. Also, based on your past experience, have you ever identified any significant corrosion, thinning, or cracking of liner plates? If yes, discuss the corrective actions taken.

53. With regard to the discussion on Page 3.3E-21, is it your conclusion that the conditions necessary for stress corrosion cracking of the SFP liner do not exist supported by actual field observation of liner conditions?

54. Provide a summary description (including operating experience) of the SFP liner performance program including the scope and inspection frequency.

55. Page 3.3E-26 states that "Experiments have shown that the Carborundum sheets can experience spalling and surface abrasion, which result in a loss of boron carbide, ..." Please discuss the extent of actual spalling you have experienced to date. Also discuss the potential for the debris from Carborundum spalling to accumulate in a asymmetrical fashion to the extent that partial clogging of some gaps between the spent fuel rack cells can result in the loss of partial fuel cooling function. What programs and activities are in place to manage the potential accumulation of the debris for the period of extended operation?

56. With regard to the discussion on Page 3.3E-26, please provide a discussion of the modified content of the coupon surveillance program which reflects the reevaluation of the sampling intervals to monitor Carborundum and Boraflex condition through the period of extended operation.

57. Are there any parts of auxiliary building and EDG structures that are inaccessible for inspection? If so, describe what aging management program will be relied upon to maintain the integrity of the inaccessible areas. If the aging management program for the inaccessible areas is an evaluation of the acceptability of inaccessible areas based on conditions found in surrounding accessible areas, please provide information to show that conditions would exist in accessible areas that would indicate the presence of, or result in degradation to such inaccessible areas. If different aging effects or aging management techniques are needed for the inaccessible areas, please provide a summary to address the following elements for the inaccessible areas: (1) Preventive actions that will mitigate or prevent aging degradation; (2) Parameters monitored or

inspected relative to degradation of specific structure and component intended functions; (3) Detection of aging effects before loss of structure and component intended functions; (4) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (5) Acceptance criteria to ensure structure and component intended functions; and (6) Operating experience that provides objective evidence to demonstrate that the effects of aging will be adequately managed.

Section 6.2, Electrical Commodities

58. Discuss whether corrosion allowances were provided in the design of electrical commodities (EC) and how corrosion is addressed as part of the aging management program.

59. Page 6.2-1 of the application states that operating experience relevant to aging was obtained based on CCNPP specific information and past experience. Please provide a summary discussion of any industry wide operating experience that you concluded was applicable to aging mechanisms for electrical commodities.

60. Page 6.2-2 of the report states that "EC are usually not subject to extreme conditions or excessive loads; however, some CCNPP EC are subject to corrosive environments." Provide a summary description on how the environmental stressors (vibration, heat, radiation, and humidity) and operational stressors (internal heating from electrical or mechanical loading, physical stresses from mechanical or electrical surges, vibration, and abrasive wearing of parts) that have resulted in age related failures in electrical commodities were explicitly addressed in the aging management program(s).

61. Clarify your basis for concluding that the preventive maintenance (PM) program can be relied on to detect electrical stressors, as described on page 6.2-9 of the report.

62. Does the PM program include monitoring and trending? If so, please describe the monitoring and trending activities.

63. Are there any parts of the electrical commodities that are inaccessible for inspection? If so, describe what aging management program will be relied upon to maintain the integrity of the inaccessible areas. If the aging management program for the inaccessible areas is an evaluation of the acceptability of inaccessible areas based on conditions found in surrounding accessible areas, please provide information to show that conditions would exist in accessible areas that would indicate the presence of, or result in degradation to such inaccessible areas. If different aging effects or aging management techniques are needed for the inaccessible areas, please provide a summary to address the following elements for the inaccessible areas: (1) Preventive actions that will mitigate or prevent aging degradation; (2) Parameters monitored or inspected relative to degradation of specific structure and component intended functions; (3) Detection of aging effects before loss of structure and component intended functions; (4) Monitoring, trending, inspection, testing frequency, and sample size to ensure timely detection of aging effects and corrective actions; (5) Acceptance criteria to ensure structure and component intended functions; and (6) Operating experience that

provides objective evidence to demonstrate that the effects of aging will be adequately managed.