

Charles H. Cruse
Vice President
Nuclear Energy

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



A Member of the
Constellation Energy Group

August 27, 1999

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
License Amendment Request: Revision to Spent Fuel Pool Water Level
Technical Specification

Pursuant to 10 CFR 50.90, Baltimore Gas and Electric Company (BGE) hereby requests an amendment to Operating License Nos. DPR-53 and DPR-69 to incorporate the changes described below into the Technical Specifications for Calvert Cliffs Units 1 and 2.

The proposed amendment revises Technical Specification 3.7.13, "Spent Fuel Pool (SFP) Water Level" to allow placement of one or more fuel assemblies on SFP rack spacers to support fuel reconstitution activities while irradiated fuel assembly movement continues in the SFP. Although the plant Technical Specifications do not prohibit fuel reconstitution, the effect of the current wording of Technical Specification 3.7.13, in conjunction with the specific design of our SFP and storage racks, limits us to reconstituting only one fuel assembly at a time and only when no irradiated fuel assembly movement occurs in the SFP. Specifically, the proposed change adds a new statement to the limiting condition for operation that would require the water level over fuel assemblies placed on rack spacers to be 19.8 feet while irradiated fuel assemblies are being moved in the SFP. The proposed administrative controls will ensure that the current design basis fuel handling accident described in the Updated Final Safety Analysis Report bounds a fuel handling accident associated with reconstitution activities.

REQUESTED CHANGES

Revise Technical Specification 3.7.13, "Spent Fuel Pool (SFP) Water Level" as shown in the marked-up Technical Specification page in Attachment (3).

SCHEDULE

During the 2000 refueling outage, several fuel assemblies are scheduled to undergo reconstitution. To support the outage schedule, we will need to perform these activities on more than one assembly at a time while we continue to move irradiated fuel assemblies in other areas in the SFP. Without this change, these activities could add at least three days to the 2000 refueling outage. Therefore, we request that this change be approved by February 1, 2000. This change would also support future fuel reconstitution activities.

010009
9909010018 990827
PDR ADOCK 05000317
P PDR

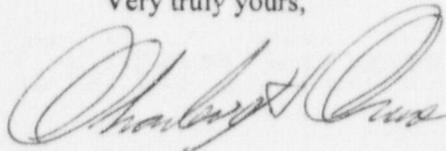
V/I
A001

ASSESSMENT AND REVIEW

We have evaluated the significant hazards considerations associated with this proposed amendment, as required by 10 CFR 50.92, and have determined that there are none (see Attachment 2 for a complete discussion). We have also determined that operation with the proposed amendment will not result in any significant change in the types or significant increases in the amounts of any effluents that may be released offsite, and no significant increases in individual or cumulative occupational radiation exposure. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change. The Plant Operations and Safety Review Committee and the Offsite Safety Review Committee have reviewed this proposed change and concur that operation with the proposed change will not result in an undue risk to the health and safety of the public.

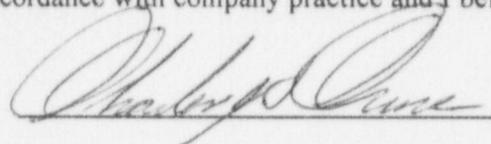
Should you have questions regarding this matter, we will be pleased to discuss them with you.

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 Division, Baltimore Gas and Electric Company (BGE), and that I am duly authorized to execute and file this License Amendment Request on behalf of BGE. 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 BGE 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 27 day of August, 1999.

WITNESS my Hand and Notarial Seal:


Notary Public

My Commission Expires:

February 1, 2002
Date

CHC/DJM/dlm

- Attachments: (1) Summary Description and Safety Analysis
(2) Determination of Significant Hazards
(3) Technical Specification Marked-up Page

Document Control Desk

August 27, 1999

Page 3

cc: R. S. Fleishman, Esquire
J. E. Silberg, Esquire
S. S. Bajwa, NRC
A. W. Dromerick, NRC

H. J. Miller, NRC
Resident Inspector, NRC
R. I. McLean, DNR
J. H. Walter, PSC

ATTACHMENT (1)

SUMMARY DESCRIPTION AND SAFETY ANALYSIS

ATTACHMENT (1)

SUMMARY DESCRIPTION AND SAFETY ANALYSIS

Fuel reconstitution activities require placing an assembly on a rack spacer in the reconstitution area of the spent fuel pool (SFP) and removing the upper end fitting. Placing a fuel assembly on a rack spacer causes it to protrude above the top of the spent fuel rack in the SFP. Currently, our Technical Specifications require that the SFP water level be at least 21.5 feet over the top of fuel assemblies seated in the storage racks when irradiated fuel assemblies are being moved in the SFP. This wording, in conjunction with the specific design features of our SFP, has the effect of limiting fuel reconstitution activities to one fuel assembly at a time and prohibiting irradiated fuel assembly movement in the SFP during reconstitution activities. This proposal adds new controls that would resolve this limitation while providing adequate assurance of safety during fuel reconstitution.

During the 2000 refueling outage at least four fuel assemblies are scheduled to undergo fuel reconstitution activities. The 2000 outage schedule does not support performing these activities one fuel assembly at a time. The proposed change will allow for these activities to be performed on multiple fuel assemblies while fuel assembly movement continues in the SFP. Without this change, these activities could add at least three days to the duration of the 2000 refueling outage.

The Technical Specification requirement of at least 21.5 feet of water above the top of fuel assemblies seated in the SFP storage racks is sufficient to provide the required total iodine decontamination factor (DF), per Regulatory Guide 1.25 ("Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors"), because the current analysis for a Fuel Handling Incident (FHI) assumes damage occurs as a fuel assembly strikes the bottom of the SFP. An energy impact analysis shows that a fuel assembly striking another assembly with the upper end fittings installed end-to-end would not damage any fuel pins. When assemblies are placed on rack spacers and their upper end fittings are removed and there is no template on the assembly, a heavy object dropped onto the assembly could damage the fuel pins. A template is a device that is placed on the guide tubes of the fuel assembly to be reconstituted that aids in the location and extraction of the desired fuel rods. When placed on a fuel assembly, the template provides the same protective features as the upper end fittings. An FHI during reconstitution activities would result in a lower DF based on reduced water coverage. A revised DF for an FHI during reconstitution on rack spacers with 19.8 feet of water between the top of the fuel assembly and the surface of the water was computed. The rack spacers are 20.5 inches tall and are used to facilitate removal of the upper end fitting. This will result in the top of the fuel assembly placed on a rack spacer to have a minimum of 19.8 feet of water above it when the SFP water level is at 21.5 feet above the fuel assemblies seated in the storage racks. A new minimum fuel decay time prior to commencement of reconstitution activities was calculated to ensure the current Updated Final Safety Analysis Report (UFSAR) Section 14.18, "Fuel Handling Incident," continued to be bounding for Control Room operator and offsite doses. Based on the revised DF and water levels, the minimum decay time for commencement of reconstitution activities was found to be ten days after shutdown. This requirement will be included in the plant procedure that controls our reconstitution activities.

While on the rack spacers, the top of the active fuel region of the affected assemblies will be approximately 12 inches above the poison sheets in the spent fuel racks. To assure a subcritical configuration in the SFP (below 0.95 k-effective), administrative procedures will be in place to limit the raised assemblies to a single row of alternate locations (i.e., raised-normal-raised . . .). Also, when the affected fuel assembly is placed on a rack spacer, administrative controls will be put in place to prohibit an assembly in the adjacent storage rack cells from being raised, lowered, or moved. This configuration will provide a minimum assembly separation of 11.4 inches and ensures that there will be no increase in k-effective during reconstitution. This analysis assumes no credit for burnup or soluble boron.

Analysis supporting the current description of the FHI in Section 14.18 of the UFSAR determined that if an assembly in the spent fuel handling machine (SFHM) is dropped on top of an assembly seated in a

ATTACHMENT (1)

SUMMARY DESCRIPTION AND SAFETY ANALYSIS

storage rack, no fuel damage will result. This result also applies to fuel assemblies seated on rack spacers provided that the upper end fittings of the assemblies are not removed or a template is installed on the assembly. Administrative controls will be put in place to ensure that a fuel assembly carried in the SFHM will not strike fuel assemblies placed on rack spacers. These controls will limit movement of loads in the area where reconstitution activities are in progress. For the purpose of this discussion, a load is defined as a minimum weight of 1,600 lbs. These controls will be placed on the affected assemblies on rack spacers plus one storage rack cell on each side of the affected assemblies. These adjacent cells may or may not be empty. With the fuel assembly fully raised in the SFHM, the fuel assembly carried in the SFHM will not strike the fuel assemblies placed on rack spacers. The SFHM can be moved even if the fuel assembly has been lowered from the fully raised position. However, the SFHM interlocks only permit the machine to be moved in slow speed with the fuel assembly in that position. Slow speed for the SFHM is approximately one foot per minute. Spotters are used when fuel assemblies are moved within the SFP to ensure the safety of the fuel assemblies. The SFHM operators are required to de-energize the SFHM controls before they leave the machine. When the assembly is placed on a rack spacer and has the upper end fitting removed, we will only allow the use of the single-failure-proof crane to move loads into the reconstitution area. Since the SFHM is not considered a single-failure-proof crane, the SFHM will be prohibited from moving another assembly over the affected assembly or the adjacent storage rack cells when the upper end fitting has been removed. After the upper end fitting has been re-installed, the SFHM will be used to move the affected assembly to another location within the SFP. The distance between the bottom of the SFHM mast and the storage rack would prevent a dropped assembly from falling over onto the raised assemblies. Administrative controls are in place that prohibit the SFHM from being moved if the grapple is empty and not raised within the mast. These administrative controls will ensure that the SFHM will not strike the fuel assemblies placed on rack spacers, or that a load will not be dropped on them during reconstitution activities.

Based on the above, we feel that reconstitution activities can safely be performed on multiple fuel assemblies while fuel movement continues in the SFP.

Summary of Administrative Controls

Below is a summary of the administrative controls that will be applied to reconstitution activities:

- The minimum time for reconstitution activities to commence will be 10 days after shutdown.
- Placement of fuel assemblies in the spent fuel storage racks for reconstitution will be to limit the raised assemblies on spacers to a single row of alternate locations (i.e., raised-normal-raised . . .).
- When the affected fuel assembly is placed on a rack spacer, an assembly in the adjacent storage rack cells will not be raised, lowered, or moved.
- A fuel assembly carried in the SFHM will be controlled such that it will not strike the fuel assemblies placed on rack spacers.
- Spotters are used when fuel assemblies are moved within the SFP to ensure the safety of the fuel assemblies.
- The SFHM controls are de-energized when the operators leave the machine.
- The administrative controls will be placed on the affected assembly on rack spacers plus the adjacent storage rack cells.
- When the assembly is placed on a rack spacer and has the upper end fitting removed, we will only use the single-failure-proof crane to move loads over the affected fuel assembly and the adjacent storage rack cells.
- The SFHM is prohibited from being moved if the grapple is empty and not raised within the mast.

ATTACHMENT (2)

DETERMINATION OF SIGNIFICANT HAZARDS

**Baltimore Gas & Electric Company
Docket Nos. 50-317 & 50-318
August 27, 1999**

ATTACHMENT (2)

DETERMINATION OF SIGNIFICANT HAZARDS

The proposed amendment revises the Technical Specification for the minimum required water level in the Spent Fuel Pool (SFP). The proposed change will specify the required water level over fuel assemblies when they are placed on a rack spacer for fuel reconstitution or inspection activities while fuel movement continues in the SFP.

The proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to not involve a significant hazards consideration, in that operation of the facility in accordance with the proposed amendments:

1. *Would not involve a significant increase in the probability or consequences of an accident previously evaluated.*

The proposed change will require a minimum water level of 19.8 feet over fuel assemblies that are placed on rack spacers for fuel reconstitution activities while fuel movement continues in the SFP. This proposed change does not cause any spent fuel handling equipment to be operated in a new or different manner. No structural changes or modifications are being made to the spent fuel handling machine (SFHM) or to the spent fuel storage racks. Administrative controls will be put in place to ensure that the SFHM or an assembly being carried by the SFHM will not strike assemblies placed on rack spacers. This proposed change does not make any changes to equipment, procedures, or processes that increase the likelihood of dropping the fuel assembly from the SFHM. Administrative controls will be put in place to limit the movement of heavy loads such that only a single-failure-proof crane will be used in the area of the affected fuel assembly and the adjacent storage rack cells when the assemblies are seated on rack spacers with their upper end fittings removed. Therefore, this proposed change does not involve a significant increase in the probability of an accident previously evaluated.

A Fuel Handling Incident (FHI) during reconstitution activities is bounded by those previously analyzed and described in the Updated Final Safety Analysis Report (UFSAR) for the limiting FHI. The number of fuel pins that could be ruptured in a raised fuel assembly does not exceed that previously analyzed. Also, by requiring that reconstitution activities do not occur until 10 days after shutdown ensures that a FHI during these activities will be bounded by the most limiting FHI described in the UFSAR. Therefore, the proposed change does not significantly increase the consequences of an accident previously evaluated.

Based on the above, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Would not create the possibility of a new or different type of accident from any accident previously evaluated.*

The proposed change will not make any physical changes to the plant. Specifically, no modifications will be made to the SFHM, the spent fuel storage racks, or the spent fuel assemblies. No changes are made to the operation of the SFHM. The only change made by this activity is that multiple fuel assemblies may be placed on rack spacers in the SFP for reconstitution activities. Administrative controls will be put in place to ensure that this proposed change does not create the potential of a FHI during reconstitution activities that is not bounded by our current accident analysis. This proposed change does not have any impact on the cooling or safe geometry functions of the SFP storage racks. This proposed change does not create any new interactions between any plant components. Therefore, the possibility of a new or different type of accident is not created by this proposed change.

ATTACHMENT (2)

DETERMINATION OF SIGNIFICANT HAZARDS

The proposed amendment revises the Technical Specification for the minimum required water level in the Spent Fuel Pool (SFP). The proposed change will specify the required water level over fuel assemblies when they are placed on a rack spacer for fuel reconstitution or inspection activities while fuel movement continues in the SFP.

The proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to not involve a significant hazards consideration, in that operation of the facility in accordance with the proposed amendments:

1. *Would not involve a significant increase in the probability or consequences of an accident previously evaluated.*

The proposed change will require a minimum water level of 19.8 feet over fuel assemblies that are placed on rack spacers for fuel reconstitution activities while fuel movement continues in the SFP. This proposed change does not cause any spent fuel handling equipment to be operated in a new or different manner. No structural changes or modifications are being made to the spent fuel handling machine (SFHM) or to the spent fuel storage racks. Administrative controls will be put in place to ensure that the SFHM or an assembly being carried by the SFHM will not strike assemblies placed on rack spacers. This proposed change does not make any changes to equipment, procedures, or processes that increase the likelihood of dropping the fuel assembly from the SFHM. Administrative controls will be put in place to limit the movement of loads such that only a single-failure-proof crane will be used in the area of the affected fuel assembly and the adjacent storage rack cells when the assemblies are seated on rack spacers with their upper end fittings removed. Therefore, this proposed change does not involve a significant increase in the probability of an accident previously evaluated.

A Fuel Handling Incident (FHI) during reconstitution activities is bounded by those previously analyzed and described in the Updated Final Safety Analysis Report (UFSAR) for the limiting FHI. The number of fuel pins that could be ruptured in a raised fuel assembly does not exceed that previously analyzed. Also, by requiring that reconstitution activities do not occur until 10 days after shutdown ensures that a FHI during these activities will be bounded by the most limiting FHI described in the UFSAR. Therefore, the proposed change does not significantly increase the consequences of an accident previously evaluated.

Based on the above, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Would not create the possibility of a new or different type of accident from any accident previously evaluated.*

The proposed change will not make any physical changes to the plant. Specifically, no modifications will be made to the SFHM, the spent fuel storage racks, or the spent fuel assemblies. No changes are made to the operation of the SFHM. The only change made by this activity is that multiple fuel assemblies may be placed on rack spacers in the SFP for reconstitution activities. Administrative controls will be put in place to ensure that this proposed change does not create the potential of a FHI during reconstitution activities that is not bounded by our current accident analysis. This proposed change does not have any impact on the cooling or safe geometry functions of the SFP storage racks. This proposed change does not create any new interactions between any plant components. Therefore, the possibility of a new or different type of accident is not created by this proposed change.

ATTACHMENT (2)

DETERMINATION OF SIGNIFICANT HAZARDS

3. *Would not involve a significant reduction in a margin of safety.*

The Technical Specification requires a minimum water level to be maintained above the fuel assemblies stored in the SFP storage racks to ensure that sufficient water depth is available to remove the assumed iodine gas activity released from the rupture of an irradiated fuel assembly. The proposed change will allow multiple fuel assemblies to be placed on rack spacers for fuel reconstitution activities while fuel movement continues in the spent fuel pool. These activities will reduce the amount of water maintained above the fuel assemblies that are placed on rack spacers. However, the proposed change does not involve a significant reduction in a margin of safety based on the administrative controls that require an increase in the decay time before these activities can be started. Additional administrative controls will be put in place that include, in part, restricting load movements over the affected fuel assembly and the adjacent storage rack cells, as well as controlling the SFHM. The administrative controls will ensure that the FHI associated with reconstitution activities is bounded by the current design basis FHI described in the UFSAR. Therefore, the proposed change does not involve a significant reduction in a margin of safety.