



**Constellation  
Nuclear**

**Calvert Cliffs  
Nuclear Power Plant**

*A Member of the  
Constellation Energy Group*

September 15, 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  
License Amendment Request: Add Note Crediting CEA Drop Time Surveillance Requirement for CEA Trip From 50% Withdrawn Surveillance Requirement

**REFERENCES:**

- (a) Letter from Mr. C. H. Cruse (BGE) to NRC Document Control desk, dated December 4, 1996, License Amendment Request; Conversion of the Calvert Cliffs Units 1 and 2 Technical Specifications to the Improved Standard Technical Specifications
- (b) Letter from Mr. C. H. Cruse (BGE) to NRC Document Control Desk, dated August 19, 1997, Revision 4 to the License Amendment Request to Convert the Improved Technical Specifications (TAC Nos. M97363 and M97364)
- (c) Letter from Mr. A. E. Lundvall, Jr. (BGE) to Mr. J. R. Miller (NRC), dated February 26, 1985; Request for Amendment

Pursuant to 10 CFR 50.90, Calvert Cliffs Nuclear Power Plant, Inc. (CCNPP) hereby requests an amendment to Renewed Operating License Nos. DPR-53 and DPR-69 to incorporate the changes described below into the Technical Specifications for Calvert Cliffs Unit Nos. 1 and 2.

**DESCRIPTION**

The proposed amendment revises the Unit 1 and Unit 2 Technical Specification Surveillance Requirement (SR) 3.1.7.2 which verifies that each control element assembly (CEA) not fully inserted is capable of full insertion when tripped from at least the 50% withdrawn position. Specifically, the proposed amendment adds a note to SR 3.1.7.2, which allows the SR to not be performed during initial power escalation following a refueling outage if SR 3.1.4.6 (CEA drop time test) has been met. In addition, "once" was added to the SR frequency as an administrative change to clarify that the SR is only performed once and not on a periodic basis. This proposed license amendment is consistent with Technical Specification Task Force (TSTF)-134, Revision 1, which received Nuclear Regulatory Commission (NRC) approval on April 21, 1998. A similar change was initially submitted in Reference (a) as a TSTF generic change, to be incorporated into the CCNPP Improved Technical Specification submittal. However, the change was withdrawn from the Improved Technical Specification

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submittal as documented in Reference (b), since acceptance of the change was contingent upon NRC approval of TSTF-134.

### **BACKGROUND**

Low Power Physics Testing is performed at CCNPP subsequent to each refueling as discussed in the Updated Final Safety Analysis Report. Included in the low power physics testing are CEA group worth measurements. Control element assembly worth is measured by inserting all of the regulating group CEAs into the core. This has the potential to reduce shutdown margin (SDM) to below the minimum Technical Specification limit. Technical Specification 3.1.7, Special Test Exception-SDM, allows suspension of the requirements of Limiting Condition for Operation (LCO) 3.1.1 "Shutdown Margin," through the performance of SR 3.1.7.1 and 3.1.7.2.

Surveillance Requirement 3.1.7.2 is performed to provide assurance that the CEAs will trip from at least the 50% position prior to reducing SDM to less than the limits of LCO 3.1.1. The current requirement to perform the SR within seven days prior to reducing SDM provides assurance that no maintenance has been performed that could interfere with the CEAs ability to trip. Typically, at CCNPP, SR 3.1.7.2 is met through performance of Control Element Drive Mechanism (CEDM) testing, which usually takes place a day or two before the CEA group worth tests. During CEDM testing SR 3.1.4.6 "CEA Drop Time Testing" is performed. Surveillance Requirement 3.1.4.6 proves trippability of the CEAs from greater than the 50% withdrawn position and therefore satisfies the requirements of SR 3.1.7.2. However, should more than seven days elapse between performance of SR 3.1.4.6 and implementation of Technical Specification 3.1.7, SR 3.1.7.2 would require a separate verification of CEA trippability. This additional scram causes increased component wear, complicates and delays completion of the series of low power physics tests and results in decreased plant availability. Furthermore, the additional scram is not necessary since any activities performed that could affect the CEDM system following performance of SR 3.1.4.6 and before implementation of the special test exception, would require reperformance of SR 3.1.4.6. Therefore, the seven-day requirement is unnecessary and redundant.

The proposed amendment allows credit to be taken for the CEA drop time test (SR 3.1.4.6) if it has been performed during initial power escalation following a refueling outage. The CEA drop time test proves trippability and is required to be performed after each reactor vessel head removal or any other activity that could effect CEDM operation. This ensures that the test is performed after any maintenance that could affect CEA drop times. Therefore, performance of the CEA drop test is adequate to prove that the CEAs will trip from the 50% withdrawn position.

In addition, "once" was added to the SR frequency as an administrative change to clarify that the SR is only performed once and not on a periodic basis. This change is consistent with TSTF-134, Revision 1, which has been approved by your staff.

### **REQUESTED CHANGES**

Change Surveillance Requirement 3.1.7.2 of the CCNPP Unit Nos. 1 and 2 Technical Specifications as shown in Attachment (1).

### **SAFETY ANALYSIS**

The primary function of the CEAs is to control the core axial power distribution and provide instantaneous reactivity to shut down the reactor during controlled procedures and during abnormal and

emergency conditions. Surveillance Requirement 3.1.7.2 provides reasonable assurance that all withdrawn CEAs will insert upon a reactor trip signal (i.e., no CEA stuck-out). The only accidents impacted by a stuck CEA are those that may result in positive reactivity addition after a reactor trip (i.e., an overcooling event). The proposed change still ensures that the necessary testing is performed as required to provide assurance that the CEAs will insert upon receipt of a reactor trip signal. However, the frequency that this SR is performed may be affected by the proposed change. Presently, SR 3.1.7.2 must be performed within seven days prior to reducing SDM to less than the limits of LCO 3.1.1 as required to perform the CEA worth tests. The proposed change allows credit for SR 3.1.4.6, which must be performed on a frequency prior to reactor criticality, after each removal of the reactor head. Surveillance Requirement 3.1.4.6 is usually performed within a day or two of CEA worth tests however, post-refueling startup delays could challenge the seven day limit.

A risk assessment was performed to support a prior license amendment request (Reference c), submitted to change SR 3.1.7.2 frequency from 24 hours to 7 days. Results of a study performed in support of the risk assessment indicated no change in the geometry of those components utilized in CEA insertion over the seven day evaluation period. The study also evaluated electronic/electrical failures that could cause a CEA to be stuck, concluding that the feature that controls the movement of the CEAs is not time-related. Since there have been no modifications performed on the components analyzed or changes in the manner in which they are operated, it is reasonable to assume that the conclusions remain valid. The CEA drop time test proves that any work done during the refueling outage does not prevent the rods from tripping. Revising SR 3.1.7.2, such that it could allow more than seven days from successfully performing the CEA drop time test does not change this. However, as with any component, there will eventually be some time-related degradation that may impact the ability of the CEA to drop. Thus, when the seven days are exceeded, there is some negligible increase in the probability that a rod would fail to drop. This causes an insignificant increase in core damage frequency because it requires multiple rod failures to cause core damage in the event of an overcooling event (the most bounding accident for a stuck CEA during rod worth testing). This additional risk is believed to be small since the degradation is the result of core changes, which occur slowly, and not the result of maintenance. Thus, the risk increase due to this Technical Specification change is considered to be negligible. The probability of an overcooling event is not changed and no new accident would be created by the proposed change. Furthermore, this change is consistent with TSTF-134, Revision 1, which has been approved by your staff. Adopting testing practices consistent with those specified in TSTF-134, Revision 1 are acceptable based on similar design, like-component testing for the system application and the availability of other Technical Specification requirements which provide regular checks to ensure limits are met.

Therefore, we conclude that the proposed change allows continued safe operation, as the safety analysis remains valid.

#### **DETERMINATION OF SIGNIFICANT HAZARDS**

The primary function of the control element assemblies (CEAs) is to control the core axial power distribution and provide instantaneous reactivity to shut down the reactor during controlled procedures and during abnormal and emergency conditions.

The proposed amendment revises the Unit 1 and Unit 2 Technical Specification Surveillance Requirement (SR) 3.1.7.2 which verifies that each CEA not fully inserted is capable of full insertion when tripped from at least the 50% withdrawn position. Specifically, the proposed amendment adds a note to SR 3.1.7.2, which allows the SR to not be performed during initial power escalation following a

refueling outage if SR 3.1.4.6 (CEA drop time test) has been met. In addition, "once" was added to the SR frequency as an administrative change to clarify that the SR is only performed once and not on a periodic basis. This proposed license amendment is consistent with Technical Specification Task Force (TSTF)-134, Revision 1, which received Nuclear Regulatory Commission (NRC) approval on April 21, 1998.

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.*

A risk assessment was performed to support a prior license amendment request submitted to change Surveillance Requirement (SR) 3.1.7.2 frequency from 24 hours to 7 days. Results of a study performed in support of the risk assessment indicated no change in the geometry of those components utilized in control element assembly (CEA) insertion over the 7-day period. The study also evaluated electronic/electrical failures that could cause a CEA to be stuck, concluding that the feature that controls the movement of the CEAs is not time-related. Since there have been no modifications performed on the components analyzed or changes in the manner in which they are operated, it is reasonable to assume that the conclusions remain valid.

The CEA drop time test SR 3.1.4.6 proves that any work done during the refueling outage does not prevent the rods from tripping. Revising SR 3.1.7.2, such that it could allow more than seven days from successfully performing the CEA drop time test does not change this. However, as with any component, there will eventually be some time-related degradation that may impact the ability of the CEAs to drop. Thus, when the seven days are exceeded, there is some negligible increase in the probability that a rod would fail to drop. This causes an insignificant increase in core damage frequency because it requires multiple rod failures to cause core damage in the event of an overcooling event (the most bounding accident for a stuck CEA during rod worth testing). This additional risk is believed to be small since the degradation is the result of core changes, which occur slowly, and not the result of maintenance. Thus, the risk increase due to this Technical Specification change is considered to be negligible. The probability of an overcooling event is not changed by the proposed change.

Therefore 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 to the surveillance requirement for CEA trippability does not result in any change to the facility or the manner in which it is operated.

Therefore, this proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

Operation of the facility in accordance with this proposed amendment does not involve a significant reduction in a margin of safety. Control element assembly trippability is still demonstrated via performance of SR 3.1.4.6. The risk increase due to this change is considered to be negligible. Thus, appropriate equipment continues to be tested in a manner and at a frequency necessary to provide reasonable assurance that the equipment can perform its assumed safety function.

Furthermore, this change is consistent with Technical Specification Task Force (TSTF)-134, Revision 1, which has been approved by the Nuclear Regulatory Commission. Adopting testing practices consistent with those specified in TSTF-134, Revision 1 are acceptable based on similar design, like-component testing for the system application and the availability of other Technical Specification requirements which provide regular checks to ensure limits are met.

Therefore, this proposed modification does not significantly reduce the margin of safety.

Based on the above evaluations, Calvert Cliffs Nuclear Power Plant concludes that the activities associated with the above described change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92 and accordingly, a finding by the Nuclear Regulatory Commission of no significant hazards consideration is justified.

#### **ENVIRONMENTAL ASSESSMENT**

We have 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 amendment.

#### **SAFETY COMMITTEE REVIEW**

The Plant Operations and Safety Review Committee and the Offsite Safety Review Committee have reviewed this proposed amendment and concur that operation with the proposed amendment will not result in an undue risk to the health and safety of the public.

Calvert Cliffs Nuclear Power Plant, Inc. requests approval of the proposed License Amendment by March 1, 2001 to be implemented within 60 days of the issuance of the license amendment. This amendment is required to prevent unnecessary delays during startup tests subsequent to refueling outages with the next refueling scheduled to commence on March 15, 2001.



**ATTACHMENT (1)**

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**TECHNICAL SPECIFICATION**

**MARKED-UP PAGE**

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**3.1.7-2**

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (Continued)</p> <p>All CEAs inserted and the reactor subcritical by less than the above shutdown reactivity equivalent.</p>		

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.1.7.1 Verify that the position of each CEA not fully inserted is within the acceptance criteria for available negative reactivity addition.</p>	<p>2 hours</p> <p>Once within</p>
<p>SR 3.1.7.2 Verify that each CEA not fully inserted is capable of full insertion when tripped from at least the 50% withdrawn position.</p>	<p>Within 7 days prior to reducing SDM to less than the limits of LCO 3.1.1</p>

- NOTE -

Not required to be performed during initial power escalation following a refueling outage if SR 3.1.4.6 has been met.