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Calvert Cliffs Nuclear Power Plant
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410 495-4455

BGE

September 10, 1996

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: Extension of the Engineered Safety Features Actuation System Automatic Actuation Logic Surveillance from Monthly to Quarterly

REFERENCES:

(a) CEN-327, "RPS/ESFAS Extended Test Interval Evaluation," dated May 1986

(b) CEN-327, Supplement 1, "RPS/ESFAS Extended Test Interval Evaluation," dated January 1989

(c) CEN-403, Revision 1-A, "ESFAS Subgroup Relay Test Interval Extension," dated March 1996

Pursuant to 10 CFR 50.90, the Baltimore Gas and Electric Company hereby requests an Amendment to Operating License Nos. DPR-53 and DPR-69 by incorporation of the changes described below into the Technical Specifications for Calvert Cliffs Units 1 and 2. The proposed amendment would extend the Engineered Safety Features Actuation System (ESFAS) automatic actuation logic channel functional test surveillance interval from monthly to quarterly. The amendment request is based on analysis documented in Combustion Engineering Owners Group (CEOG) Topical Reports CEN-327 (Reference a), CEN-327, Supplement 1 (Reference b), and CEN-403, Revision 1-A, (Reference c). We have confirmed that the information presented in CEN-327 and CEN-403 is applicable to Calvert Cliffs, and agree with the methodology used to develop the topical reports. In a related matter, we request the surveillance test interval for the containment sump isolation valves be extended from monthly to quarterly.

Topical Report CEN-327, as supplemented, evaluated the change in core melt frequency resulting from extending the Reactor Protective System (RPS) and ESFAS surveillance intervals from monthly to quarterly. The report compared the increase in core melt frequency resulting from system unavailability to the decrease in core melt frequency resulting from reduced test-induced plant transients. The Topical

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Report concluded that the surveillance interval extension results in a slight net decrease in core melt frequency.

Engineered Safety Features Actuation System subgroup relays (referred to as actuation relays at Calvert Cliffs) were specifically excluded from the CEN-327 evaluation. The Calvert Cliffs ESFAS design does not include features for testing of the actuation relays separately from the automatic actuation logic circuits. Therefore, in order to extend the surveillance interval for the ESFAS automatic actuation logic circuits, the actuation relays must also be evaluated.

A separate CEOG task was initiated to evaluate extending the test interval for ESFAS actuation relays. Topical Report CEN-403, Revision 1-A, evaluated ESFAS actuation relay failure data at Combustion Engineering plants, including Calvert Cliffs. The data supported extending the surveillance interval for these relays to refueling, on a staggered test basis. Thus, the combined analysis in CEN-327 and CEN-403 provides Nuclear Regulatory Commission-approved justification for extending the ESFAS automatic actuation logic channel functional tests from monthly to quarterly.

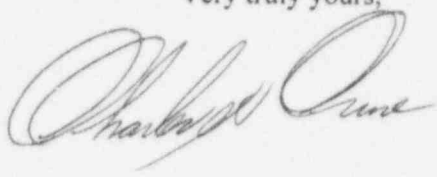
Because the ESFAS actuation relays cannot be tested separately from the automatic actuation logic circuitry, the associated engineered safety features equipment is actuated each time the ESFAS automatic actuation logic channel functional test is performed. We have reviewed the Units 1 and 2 Technical Specifications, and found that all associated ESFAS equipment tests are performed at intervals of at least quarterly or greater, with the exception of the containment sump isolation valve test, which is performed monthly (refer to Technical Specifications 4.5.2.b.1 and 4.6.2.1.a.1). Failure to extend the surveillance interval for the containment sump isolation valves would require the ESFAS containment sump recirculation automatic actuation logic channel functional test to continue to be performed monthly. Therefore, we are request the surveillance interval for these valves be extended from monthly to quarterly to match the change in the ESFAS automatic actuation logic surveillances. Attachment (1) provides a detailed discussion of the proposed changes.

We have evaluated the significant hazards considerations associated with this change, as required by 10 CFR 50.92, and determined that there are none (see Attachment 2 for a complete discussion). We have also determined that operation with the proposed amendment would not result in any significant change in the types or significant increases in the amounts of any effluents that may be released offsite, and in 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. We have evaluated the plant risk associated with these changes and determined that it is acceptable. The Plant Operations and Safety Review Committee and Offsite Safety Review Committee have reviewed the proposed change and concurred that the change involves no significant hazards considerations, and operation with the proposed change will not result in an undue risk to the health and safety of the public.

In order to minimize the opportunity for test-induced plant transients, this change is requested to be approved by March 1, 1997 or earlier if possible. Approval of this amendment will result in a reduction in man-hours for ESFAS testing, allowing these resources to be devoted to more safety significant items. Issuance of this amendment is not currently identified as impacting future unit outages.

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 hereby certify that on the 10 day of September, 1996, before me, the subscriber, a Notary Public of the State of Maryland in and for Calvert County, personally appeared Charles H. Cruse, being duly sworn, and states that he is Vice President of the Baltimore Gas and Electric Company, a corporation of the State of Maryland; that he provides the foregoing response for the purposes therein set forth; that the statements made are true and correct to the best of his knowledge, information, and belief; and that he was authorized to provide the response on behalf of said Corporation.

WITNESS my Hand and Notarial Seal:

Michelle D. Hall
Notary Public

My Commission Expires:

February 2, 1998
Date

CHC/JPW/dlm

Attachments:
(1) Description of Proposed Change
(2) Determination of Significant Hazards
(3) Unit 1 Marked-Up Technical Specifications
(4) Unit 2 Marked-Up Technical Specifications

cc: D. A. Brune, 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
J. H. Walter, PSC

ATTACHMENT (1)

DESCRIPTION OF PROPOSED CHANGE

ATTACHMENT (1)

DESCRIPTION OF PROPOSED CHANGE

CHANGE REQUEST

Baltimore Gas and Electric Company requests the Engineered Safety Features Actuation System (ESFAS) automatic actuation logic channel functional tests surveillance interval be extended from monthly to quarterly. The surveillance requirements are detailed in Technical Specification Table 4.3-2. The following functional units are affected:

- Safety Injection,
- Containment Spray,
- Containment Isolation,
- Main Steam Line Isolation,
- Containment Sump Recirculation, and
- Auxiliary Feedwater.

We further request the containment sump isolation valve automatic opening verification be extended to preclude having to continue monthly testing of the Containment Sump Recirculation automatic actuation logic. We request the surveillance test be conducted at quarterly intervals to achieve consistency with the ESFAS automatic actuation test.

DESCRIPTION OF ENGINEERED SAFETY FEATURES ACTUATION SYSTEM

The ESFAS initiates automatic operation of plant equipment, which aids in mitigating and terminating design basis accidents in order to protect the health and safety of the public. The ESFAS consists of four sensor subsystems (channels) and two actuation subsystems, which include two logic subsystems, for sequential loading of the emergency diesel generators. The proposed license amendment is not applicable to the emergency diesel generator sequencer circuits. Therefore, a description of these controls is omitted from the below discussion.

Automatic initiation of engineered safety features equipment is controlled by ESFAS actuation relays. The Units 1 and 2 ESFASs were designed by Vitro Corporation. Unlike Combustion Engineering (CE)-designed ESFAS, the Vitro design does not include provisions for testing of the actuation relays separately from the actuation logic circuitry.

Sensor Subsystems - Each of the four sensor subsystems (one subsystem per channel) monitor redundant and independent process variables and actuate independently when the monitored variables reach specific trip setpoints. The sensor subsystem channels receive input from the following process variables:

1. Containment Pressure,
2. Pressurizer Pressure,
3. Containment Radiation,
4. Steam Generator Pressure,
5. Steam Generator Level,
6. Bus Undervoltage,
7. West Penetration Room Pressure,
8. Letdown Heat Exchanger Room Pressure, and
9. Refueling Water Tank (RWT) Level.

All process variables provide analog input signals to ESFAS with the exception of the RWT level and bus undervoltage inputs. The process variable signal level is compared to the trip setpoint of an associated bistable. At the predetermined trip setpoint, the bistable output is sent to the actuation subsystems where the output of additional sensor bistables is compared to develop a two-out-of-four logic for actuation of the associated ESFAS equipment.

Actuation Subsystems - Two redundant and independent actuation subsystems monitor the sensor subsystem trip outputs and, by means of coincidence logics, determine if a protective action is required. Each actuation subsystem initiates independent and redundant equipment. Either subsystem controls sufficient equipment to protect the public in the event of a design basis accident. The particular sensor and actuation channels are arranged to produce actuation signals consistent with the type of protective action required. The following actuation signals are outputs of the actuation subsystem:

1. Safety Injection Actuation Signal,
2. Containment Spray Actuation Signal,
3. Containment Isolation Signal,
4. Containment Radiation Signal,
5. Recirculation Actuation Signal,
6. Steam Generator Isolation Signal,
7. Auxiliary Feedwater Actuation Signal,
8. Chemical and Volume Control Isolation Signal,
9. Diverse Scram System Signal, and
10. Diverse Turbine Trip Signal.

The actuation channels which produce the Safety Injection Actuation Signal, Containment Spray Actuation Signal, and Containment Isolation Signal are subdivided into multiple actuation subchannels. Therefore, the amount of equipment initiated by a single subchannel is reduced, permitting flexibility in periodic testing of the actuation subsystem.

ESFAS Actuation Relays - The ESFAS actuation relays are the final relays in the circuits which control automatic initiation of the engineered safety features equipment (pumps, valves, etc.). Genicom (formerly General Electric) series 3SAA1383A2 relays are used in ESFAS actuation relay applications at Calvert Cliffs. The relays are miniature, canned, plug-in, 25 VDC relays. Each unit at Calvert Cliffs utilizes approximately 200 ESFAS actuation relays. The Vitro ESFAS design utilized at Calvert Cliffs does not permit testing the actuation relays separately from the actuation logic circuits.

LICENSING BASIS EVALUATION

The licensing basis evaluation is presented in three sections. An evaluation of extending the surveillance interval for the ESFAS automatic actuation logic channel functional tests based on CEN-327 is presented first. The second evaluation focuses on extending the surveillance interval for the ESFAS actuation relays based on CEN-403, Revision 1-A. Finally, evaluation of the containment sump isolation valve surveillance interval is presented.

ATTACHMENT (1)

DESCRIPTION OF PROPOSED CHANGE

ESFAS Automatic Actuation Logic Evaluation - In Generic Letter 83-28 (Reference 1), the NRC requested that plants review the Reactor Protective System (RPS) test intervals to determine if they were consistent with achieving high RPS availability. Combustion Engineering performed a sensitivity analysis to evaluate the availability of the RPS given the 30-day test interval required by the Technical Specifications. Later, as a follow-up to the original sensitivity analysis, the impact of extending the surveillance test intervals for selected components in the RPS and ESFAS was evaluated by CE. This analysis is documented in CEN-327 "RPS/ESFAS Extended Test Interval Evaluation."

In CEN-327, four RPS fault tree models developed previously for the CEOG were expanded to cover all RPS electronic trip parameters. Fault tree models were also constructed for each of the ESFAS signals for the different plant classes used for the RPS analysis. Each ESFAS fault tree model specifically addressed common mode failures, operator error, reduced redundancy, and random component failures. The study found that, for Calvert Cliffs, adoption of a quarterly test interval would yield a decrease in core melt frequency due to the reduced exposure to test-induced transients and a small increase in core melt frequency due to the increase in system unavailability. The unavailability of the tested instrumentation represents the potential for failure of the appropriate engineered safety features to actuate when required. For the Calvert Cliffs ESFAS, extending the test interval to quarterly results in a slight decrease in core melt frequency. Extending the surveillance test interval does not change the trip-per-test frequency, but does reduce the trip-per-year frequency.

In November 1989, the NRC issued a Safety Evaluation Report (SER) for CEN-327 and CEN-327, Supplement 1 (Reference 2). The NRC stated that it was acceptable to extend the surveillance test intervals for the RPS and ESFAS from 30 days to 90 days for all CE plants (excluding Maine Yankee). This approval was contingent on each plant confirming that instrument drift occurring over the proposed surveillance test interval would not cause the setpoint values to exceed those assumed in the safety analysis and specified in the Technical Specifications. The NRC SER stated that licensees must confirm that they have reviewed instrument drift information for each channel involved, and have determined that drift occurring in that channel over the period of extended surveillance test interval would not cause the setpoint value to exceed the allowable value as calculated for that channel by the licensee's methodology; each licensee should have onsite records of the as-found and as-left values showing actual calculations and supporting data for planned future NRC audits; the records should consist of monthly data over a period of the last two to three years with the current plant-specific setpoint methodology used to derive the safety margins.

By letter dated May 27, 1994 (Reference 3), Baltimore Gas and Electric Company requested Technical Specification Table 4.3-1 and 4.3-2 be amended to extend several RPS and ESFAS channel functional tests from monthly to quarterly. The amendment was based on Nuclear Regulatory Commission (NRC) approval of Combustion Engineering Owners Group (CEOG) Topical Report CEN-327 (RPS/ESFAS Extended Test Interval Evaluation), and CEN-327, Supplement 1. Engineered Safety Features Actuation System actuation relays were specifically excluded from the CEN-327 evaluation. The Calvert Cliffs ESFAS design does not include features for testing the actuation relays separately from the automatic actuation logic circuits. Therefore, extension of ESFAS automatic actuation logic channel functional tests from monthly to quarterly was not included in the original amendment request.

The ESFAS actuation logic circuitry is composed of logic gates (AND gates, OR gates, etc.), which are not subject to time-related instrument drift. Therefore, a plant-specific instrument drift analysis for these components was not conducted to support this license amendment request. However, in support of Reference (3), a plant-specific instrument drift analysis was conducted on each sensor loop, which analyzed the effect on instrument drift of extending the RPS and ESFAS channel functional test interval from monthly to quarterly. A 120-day drift interval was calculated to bound the quarterly interval plus the 25% maximum allowable extension period permitted in the Calvert Cliffs Technical Specifications. A review of all of the affected RPS and ESFAS instrumentation channels determined that the instrument drift for the extended surveillance test interval did not exceed the 30-day setpoint assumptions. Therefore, it was unnecessary to change any setpoints to accommodate the proposed extended surveillance test intervals. Also supporting Reference (3), three years of observed, monthly, as-found and as-left data for each channel of the applicable instrumentation functions were reviewed for the plant-specific evaluation. The onsite records of the as-found and as-left values showing the calculations and supporting data are available for future NRC audits.

ESFAS Actuation Relay Evaluation - A separate CEOG task was initiated to evaluate extending the test interval for ESFAS actuation relays. Topical Report CEN-403 (ESFAS Subgroup Relay Test Interval Extension) was approved by the NRC in February 1996. The Topical Report recommends extending the test interval for ESFAS actuation relays to refueling, on a staggered test basis.

Topical Report CEN-403, Revision 1-A, analyzed the affect of ESFAS actuation relay surveillance test interval extensions on the availability of the ESFAS for both CE ESFAS instrumentation designs and non-CE ESFAS designs. Engineered Safety Features Actuation Signal actuation relay failure data was summarized for all CE plants. The report lists the mean time between relay failures for Calvert Cliffs Unit 1 as 72 months, and 192 months for Unit 2. Of all CE plants, Calvert Cliffs Unit 2 had the longest mean time between failures and Unit 1 had the fourth longest. We are proposing the relays which currently require monthly testing to be tested quarterly. Extending the surveillance interval to quarterly requires the mean time between failure to be greater than 3.75 months (3-month surveillance interval, plus 25% tolerance permitted by Technical Specifications). The above plant-specific relay failure data more than satisfies this requirement.

In February 1996, the SER for CEN-403, Revision 1-A, was issued (Reference 4). The NRC staff concluded that the small number of relay failures justified extending the surveillance test interval for ESFAS actuation relays to refueling, on a staggered test basis, such that each relay is tested at least once per refueling cycle. Licensees referencing CEN-403 in License Amendment Requests were asked to confirm the applicability of CEN-403, Revision 1-A, for their plant and confirm that the applicable setpoint calculations account for any increase in instrument drift caused by the extended test interval. In addition, licensees must reevaluate the adequacy of the surveillance test interval in the event two or more ESFAS actuation relays fail in a 12-month period such that a single relay failure can be detected prior to the occurrence of a second relay failure. Additional restrictions were imposed on plants utilizing Potter and Brumfield-type MDR relays in ESFAS actuation relay applications.

We have confirmed that the relay failure data presented in CEN-403 is applicable to Calvert Cliffs. Additionally, we have reviewed Nuclear Plant Reliability Data System (NPRDS) entries and have confirmed that one additional ESFAS actuation relay failure has occurred on Unit 1 since submittal of CEN-403, Revision 1-A. This failure occurred on April 14, 1996. The additional failure results in a

Unit 1 mean time between failure of 66 months, which far exceeds the required mean time between failure of 3.75 months. The plant-specific drift analysis conducted in support of Reference (3) confirmed that the increased surveillance interval did not result in exceeding the 30-day setpoint assumptions for the ESFAS sensor loops. The ESFAS actuation relays are essentially digital devices, which are not subject to time-related instrument drift. Therefore, a plant-specific instrument drift analysis for these components was not conducted to support this license amendment request. To address the evaluation of the surveillance interval, we have looked at the actuation relay failure rate. Based on the relatively low failure rate at Calvert Cliffs, a quarterly surveillance test interval ensures that failure of a single ESFAS actuation relay can be detected prior to the failure of a second relay. Therefore, tracking the ESFAS actuation relay failure rate separately from our corrective action program is unnecessary. Finally, we have confirmed Potter and Brumfield-type MDR relays are not used in ESFAS applications at Calvert Cliffs.

Containment Sump Isolation Valve Evaluation - The containment sump isolation valves (1-MOV-4144, 2-MOV-4144, 1-MOV-4145, and 2-MOV-4145) automatically open on receipt of a Recirculation Actuation Signal (RAS). Single failure criteria is satisfied by two redundant valves on each unit. Testing of the automatic opening feature is currently performed monthly in accordance with Technical Specifications 4.5.2.b.1 and 4.6.2.1.a.1. Although the wording of these two Technical Specifications differs (see attached Technical Specification pages), verification of valve opening on receipt of a RAS satisfies both specifications, since the containment sump isolation valves are the only components in the flow path which actuate on RAS.

Automatic initiation of associated engineered safety features equipment, i.e., valves and pumps, is verified at intervals of at least quarterly or greater, with the exception of the containment sump isolation valves and associated flow path, which is verified monthly. The test requires verification of valve opening based on application of a RAS. Because the Containment Sump Recirculation automatic actuation logic channel functional test is being extended to quarterly, we request the containment sump isolation valve test interval also be extended to quarterly.

Justification for extending the containment sump isolation valves test interval from monthly to quarterly is based on review of surveillance test procedures and NPRDS data (valve failure history). We have conducted an historical review of the Units 1 and 2 surveillance test procedures supporting successful completion of Technical Specifications 4.5.2.b.1 and 4.6.2.1.a.1, and found no failures of the containment sump isolation valves or associated valve operators. A review of NPRDS data revealed no failures of these components, as well.

SAFETY ANALYSIS

The ESFAS provides actuation signals to the engineered safety features equipment needed to mitigate accidents and transients. Topical Report CEN-327 documented that the proposed increase in the ESFAS surveillance interval impacts the core melt frequency in two ways. The first impact is a slight increase in core melt frequency that results from undetected equipment failure, which otherwise would have been discovered during more frequent surveillance testing. The undetected failure of the ESFAS instrumentation components represents the potential for the failure of the appropriate engineered safety features to actuate when required. The opposing impact on core melt risk is the corresponding reduction in core melt frequency that would result due to the reduced exposure of the plant to test-induced

transients. The Topical Report concluded that the surveillance interval extension resulted in a slight decrease in core melt frequency. In addition, we have performed a plant-specific risk analysis and concluded that the proposed changes will result in a decrease in the annual core melt frequency.

Extending the surveillance interval for the ESFAS channel functional test from monthly to quarterly will increase the likelihood that an ESFAS actuation relay failure would go undetected, but will also result in fewer opportunities for an inadvertent safety system actuation. The surveillance interval should be established such that a single relay failure could be detected prior to the occurrence of a second relay failure. This ensures that at least one train of ESFAS equipment is available to mitigate design basis accidents and events. The NRC has endorsed testing of each actuation relay at least once per refueling cycle. Because the actuation relays cannot be tested separately from the actuation logic, we are proposing that each relay be tested quarterly. The ESFAS actuation relays utilized at Calvert Cliffs have proven to be highly reliable. Currently, Unit 2 has an average failure rate of approximately one relay per nineteen years, while Unit 1 averages approximately one relay failure per five years. The relatively high testing rate combined with the relatively low relay failure rate minimizes the possibility of a relay failure going undetected before a second relay could fail.

With respect to extension of the containment sump isolation valve surveillance interval, historical data has shown the valves to be highly reliable. Single failure criteria is satisfied by two redundant containment sump isolation valves on each unit. A review of surveillance test procedures, as well as NPRDS data, revealed no failures of these components.

REQUESTED CHANGE

Change 1 - Change the ESFAS channel functional test surveillance interval listed in Table 4.3-2 of the Units 1 and 2 Technical Specifications from monthly to quarterly. The following functional units are affected:

1. Safety Injection
2. Containment Spray
3. Containment Isolation
4. Main Steam Line Isolation
5. Containment Sump Recirculation
6. Auxiliary Feedwater

Currently, Technical Specification Table 4.3-2 allows testing of specific subchannels once per refueling interval during shutdown. Testing of these subchannels with the reactor operating would result in unacceptable equipment operation. Therefore, these subchannels will continue to be tested each refueling interval.

ATTACHMENT (1)

DESCRIPTION OF PROPOSED CHANGE

Change 2 - Change the containment sump isolation valve RAS automatic opening verification surveillance interval from 31 days to quarterly. This change revises Units 1 and 2 Technical Specifications 4.5.2.b.1 and 4.6.2.a.1.

Marked-up pages are attached to this transmittal. Minor style and punctuation changes may be made to the final Technical Specification pages, and the pages may be renumbered to accommodate added and/or deleted pages.

CONCLUSION

We request the NRC grant our proposed license amendment to extend the ESFAS automatic actuation logic channel functional test from monthly to quarterly, and the containment sump isolation valve automatic opening verification from monthly to quarterly. The change will result in fewer opportunities for test-induced plant transients and reduce unnecessary cycling of engineered safety features equipment. The combined analysis contained in CEN-327 and CEN-403 provides justification for this change. We have determined that the requested amendment does not create an undue risk to the public health and safety, and that the plant-specific risk is acceptable.

REFERENCES

(1) Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events," dated July 8, 1983

(2) Letter from Mr. A. C. Thadani (NRC) to Mr. E. Sterling (APSC), dated November 6, 1989, NRC Evaluation of CEOG Topical Report CEN-327, "RPS/ESFAS Extended Test Interval Evaluation"

(3) Letter from Mr. R. E. Denton (BGE) to NRC Document Control Desk, dated May 27, 1994, License Amendment Request; Extension of the Reactor Protection System and Engineered Safety Features Actuation System Surveillance from Monthly to Quarterly

(4) Letter from Mr. B. A. Boger (NRC) to Mr. D. F. Pilmer (CEOG), dated February 27, 1996, Review of CE Owners Group Topical Report CEN-403, Revision 1-A, "ESFAS Subgroup Relay Test Interval Extension"

ATTACHMENT (2)

DETERMINATION OF SIGNIFICANT HAZARDS

Baltimore Gas and Electric Company
Calvert Cliffs Nuclear Power Plant
September 10, 1996

ATTACHMENT (2)

DETERMINATION OF SIGNIFICANT HAZARDS

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 amendment:

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

   The Reactor Protective System and the Engineered Safety Features Actuation System (ESFAS) provide the actuation signals to safety equipment necessary to mitigate design basis accidents and transients. The proposed change would increase the surveillance test interval from monthly to quarterly for the ESFAS automatic actuation logic channel functional tests and associated actuation relays. The proposed change will also extend the containment sump isolation valve automatic opening verification surveillance interval from monthly to quarterly. The ESFAS instruments and containment sump isolation valves are not initiators in any previously evaluated accidents. Therefore, the proposed change does not involve an increase in the probability of an accident previously evaluated.

   The ESFAS automatic actuation logic circuitry and actuation relays are essentially digital devices, which are not subject to time-related instrument drift. Therefore, a plant-specific instrument drift analysis for these components is not required. However, in support of Calvert Cliffs License Amendment Request, dated May 27, 1994, a plant-specific setpoint drift analysis for each sensor loop demonstrated that the observed changes in instrument uncertainties for the extended surveillance test interval did not exceed the 30-day setpoint assumptions. This provides confidence that the 90-day test interval will not impact the ability to detect and monitor system degradation. A review of previous containment sump isolation valve surveillance test procedures revealed no valve or valve operator failures. Additionally, single failure criteria continues to be satisfied by two redundant and independent valves on each unit. Therefore, the proposed changes will not change the ability of the ESFAS instrumentation or associated engineered safety features equipment to respond to and mitigate the consequences of any previously evaluated accident.

   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 extended surveillance test interval for the ESFAS instruments, actuation relays, and containment sump isolation valve automatic opening verification does not involve any changes in equipment or the function of these instruments. The proposed change does not represent a change in the configuration or operation of the plant. The ESFAS setpoints will not be affected since the ESFAS automatic actuation logic circuitry and actuation relays are not subject to time-related instrument drift. Therefore, the proposed change does not create the possibility of a new or different type of accident from any accident previously evaluated.

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

The proposed change will not affect the functions of the ESFAS instruments or associated equipment. Topical Reports CEN-327, "RPS/ESFAS Extended Test Interval Evaluation," and CEN-327, Supplement 1, quantified the corresponding changes in core melt frequency for the representative fault tree models that were developed for Calvert Cliffs. Additionally, the ESFAS actuation relay failure data presented in CEN-403, Revision 1-A, "ESFAS Subgroup Relay Test Interval Extension," justifies extending the test interval for these relays. The proposed change has two principal effects with opposing impacts on core melt frequency. The first impact is a slight increase in core melt frequency that results from the increased possibility of an undetected instrumentation failure due to the extended surveillance interval. This assumed unavailability results from less frequent testing. The undetected ESFAS failure represents the potential for the failure of the appropriate engineered safety features to actuate when required. The opposing impact on core melt risk is the corresponding reduction in core melt frequency that would result due to the reduced exposure of the plant to test-induced transients. Topical Report CEN-327 determined that the two changes are nearly equal, and the net result is no distinguishable effect on plant safety. The NRC issued a Safety Evaluation Report which found that the above evaluations were acceptable for justifying the extensions in the surveillance test intervals for the ESFAS automatic actuation logic channel functional tests from 30 days to 90 days. In addition to the evaluation of risk given in Topical Report CEN-327, we have evaluated the plant specific risk associated with these proposed changes and concluded that changing the surveillance intervals from monthly to quarterly results in a net decrease in the annual core melt frequency.

The ESFAS setpoints will not be changed since ESFAS automatic actuation logic circuitry and actuation relays are not subject to time-related instrument drift. The conclusions of the accident analyses in the Calvert Cliffs Updated Final Safety Analysis Report remain valid and the safety limits continue to be met.

Extending the containment sump isolation valve automatic opening surveillance interval from monthly to quarterly will not significantly reduce the margin of safety. Both Units 1 and 2 are provided with two containment sump isolation valves, which satisfy single failure criteria. Historical review of surveillance test procedures and Nuclear Plant Reliability Data System data revealed no failures of these valves or associated valve operators. We have also evaluated the plant specific risk associated with this proposed change to the surveillance interval and conclude that the risk is acceptable.

Based on the generic and plant specific risk evaluations and the demonstrated low failure rate of the components, we conclude that these proposed changes do not involve a significant reduction in the margin of safety.