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BGE

October 20, 1995

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 1; Docket No. 50-317
License Amendment Request; One-Time Extensions of 18-Month Surveillances to March 31, 1996

REFERENCES:

(a) Letter from Mr. R. E. Denton (BGE) to NRC Document Control Desk, dated June 6, 1995, License Amendment Request: Extension of Instrument Surveillance Intervals

(b) Letter from Mr. D. G. McDonald, Jr. (NRC) to Mr. R. E. Denton, dated October 19, 1995, Issuance of Amendments for Calvert Cliffs Nuclear Power Plant, Unit 1 (TAC No. M92479) and Unit 2 (TAC No. M92480)

Pursuant to 10 CFR 50.90, the Baltimore Gas and Electric Company hereby requests an Amendment to Operating License No. DPR-53 by the incorporation of the changes described below to the Technical Specifications for Calvert Cliffs Unit No. 1.

Calvert Cliffs Unit 1 had been scheduled to begin a refueling outage on February 16, 1996. This outage start date was based on a number of considerations, including our need to perform several 18-month interval frequency surveillances on plant instruments. We have recently changed the outage start date to March 15, 1996. Delaying the start date of the outage allows us to maximize use of the available fuel in the core and gain approximately one additional month of power production during a period of potentially high electrical demand, as well as additional outage planning time. We have considered performing the instrument surveillances at power, but believe that this would present an unwarranted personnel safety risk. A small number of surveillances cannot be done at power because they would cause a plant trip.

Many of the analyses for this request were also used in Reference (a) and have been approved by Amendment No. 208, which permanently extends the interval for 18-month surveillances to 24 months

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(Reference b) after a number of transmitters are replaced. This request extends the surveillance interval for the same instruments for a significantly shorter period of time. As described in Attachment (1), we have evaluated the effect of delaying the instrument surveillances until after the scheduled refueling outage beginning March 15, 1996. We believe the existing monitoring and corrective action programs are sufficient to identify and address any problems that might occur during the extended interval. Therefore, we determined that the delay will not have an adverse effect on safety based on analyses, expected instrument performance, and existing surveillance practices.

We have considered the possibility of significant hazards associated with this change as required by 10 CFR 50.92, and determined that there are none (see Attachment 5 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 increase 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. 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.

We request that this change be approved and issued by January 31, 1996, so that we may make appropriate plans for the refueling outage.

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 20th day of October, 1995, before me, the subscriber, a Notary Public of the State of Maryland in and for Calvert County, personally appeared Robert E. Denton, 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:

Robin C. Johnson
Notary Public

My Commission Expires:

January 13, 1999
Date

RED/JV/dlm

Attachments:
(1) Overview
(2) Unit 1 Instruments Whose Surveillances are Due Before March 31, 1996
(3) General Safety Analysis
(4) Discussion of Instrument Functions and Safety Analyses
(5) Determination of Significant Hazards
(6) Marked-up Technical Specification Pages

cc: D. A. Brune, Esquire
J. E. Silberg, Esquire
L. B. Marsh, NRC
D. G. McDonald, Jr., NRC
T. T. Martin, NRC
Resident Inspector, NRC
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ATTACHMENT (1)

OVERVIEW

ATTACHMENT (1)

OVERVIEW

BACKGROUND

Calvert Cliffs Unit 1 had been scheduled to begin a refueling outage on February 16, 1996. This outage start date was based on a number of considerations, including our need to perform 18-month interval surveillances on plant instruments. We have recently changed the outage start date to March 15, 1996. There are several benefits to be gained from starting the outage later as explained below. This delay will require that either the instrument surveillance intervals be extended, or the surveillances be performed at power or during a mid-cycle outage. The last two options are impractical as described below. Therefore, we are requesting an extension of the scheduled surveillances to March 31, 1996. The requested extension date of March 31, 1996 provides some flexibility in the exact outage start date and allows time for testing which is performed during the transition to lower plant operating modes.

Calvert Cliffs Unit 1 has been operating on a 24-month refueling interval since July 1988. Historically, the 18-month surveillances were performed during mid-cycle outages. On June 6, 1995 (Reference a), Baltimore Gas and Electric Company (BGE) requested a license amendment to extend many of the instrument surveillance intervals to a refueling interval (nominally 24 months, not to exceed 30 months). This request was approved by Amendment No. 208 (Reference b). Amendment No. 208 cannot be implemented until new transmitters are installed for some of the instruments during the upcoming Unit 1 refueling outage. The instrument surveillance intervals addressed by this request were also addressed in that request. At the time Reference (a) was submitted, we did not request a one-time extension because the scheduled outage start date supported the existing surveillance intervals. Several months after the initial amendment request was made, and after consultation with the Pennsylvania-New Jersey-Maryland power pool, we determined that a later outage start date would benefit Calvert Cliffs and the power pool. This recent schedule change requires that we now request this one-time extension.

ORGANIZATION OF AMENDMENT

This attachment is an overview of the amendment request. Attachment (2) lists the instruments whose surveillances are due before or on March 15, 1996. This list is arranged by the instrument surveillance due date. The instrument surveillance due dates include the 25% extension allowance. The Attachment also shows the maximum number of days that the individual surveillances would have to be extended to get their due date to March 31, 1996. Attachment (3) describes the generic instrument safety analyses which are used to determine the acceptability of the surveillance extensions on an instrument group basis. The arguments developed in Attachment (3) are used to justify the individual instrument extensions by applying the appropriate generic discussion to the individual instruments. This discussion of the individual instrument acceptability is given in Attachment (4). Attachments (3) and (4) provide our basis for concluding that the surveillance intervals can be safely extended to March 31, 1996.

INSTRUMENTATION AFFECTED

The systems and equipment affected by this license amendment request are the Reactor Protective System, Engineered Safety Features Actuation System, Power-Operated Relief Valve actuation instruments, Low Temperature Overpressure Protection-related instruments, Remote Shutdown Panel instruments, Post-Accident Monitoring instruments, Radiation Monitoring instruments, and Containment Sump Level

instruments. Surveillance tests provide a level of assurance that the instruments operate properly. Properly operating instruments, in conjunction with plant procedures, help maintain plant parameters within the design bases. Extending the surveillance interval provides additional possibility for instrument components to malfunction by means such as drift or instrument failure, which could allow plant parameters to exceed design bases assumptions. As described in Attachments (3) and (4), we have concluded that extending the interval has only a small effect on plant safety based on a number of considerations. The primary considerations are:

1. Many of the instruments discussed in Reference (a) will have new transmitters installed during the upcoming refueling outage. Baltimore Gas and Electric Company is familiar with the operating characteristics and history of the existing transmitters described in Attachment (3), Item II-3. The existing surveillance program, including channel checks, has successfully detected instrument drift when it occurred. Where appropriate, corrective actions have been taken, including calibrating transmitters while the unit was operating at power. We expect our existing surveillance program will continue to identify problems such as instrument drift or malfunctions during the surveillance interval extension requested. In addition, we expect the existing corrective action program will properly address these problems.

2. Analyses for the sensors not addressed by Item (1) above are addressed in Reference (a), and approved in Reference (b).

3. Instrument loop surveillances for many functions are split in two parts, testing of the sensors (such as transmitters) and testing of the rest of the instrument loop. Both sensors and balance of the loop components are fully calibrated at each refueling interval. Channel functional tests are performed on the balance of the loop components for many instruments more frequently than on a refueling interval basis. The analysis for channel functional tests performed on the balance of the loop components is contained in Reference (a), and approved in Reference (b).

4. Once-a-shift or monthly channel checks are performed on most instruments and provide evidence of proper operation from the sensor to the instrument indication. This analysis is discussed in Reference (a), and approved in Reference (b).

5. If an instrument does malfunction, the surveillance program will identify the problem. When the malfunction is identified, we will follow one of various options allowed by Technical Specifications.

ALTERNATIVES TO THE EXTENSION REQUEST

In order to help minimize personnel radiation exposure, promote personnel safety and maintain plant reliability, the surveillances addressed in this submittal are normally performed in Mode 5 during refueling outages. Please note that while at power, we have occasionally performed some of these calibrations on individual transmitters inside containment. However, based on the hazards and plant reliability issues

discussed below, we do not routinely perform these calibrations at power. Specifically, by performing these surveillances while shut down, the hazards we avoid include:

- Working in areas with high radiation levels in the vicinity of and along the route to the detectors, which would require three sequential groups of at least two people each to work on each instrument;
- Working in high temperature areas (approximately 90°F) while wearing full anti-contamination clothing; and
- Working on high pressure lines used by pressure, level, and flow transmitters where only a single valve would separate the worker and the pressurized system during the surveillance.

By performing these surveillances while shut down, plant reliability is improved because:

- Channel functional tests for some of the instrument components cannot be performed at power without causing a plant trip; and
- Fluctuations in sensing line pressure while testing the pressure, level, and flow transmitters may cause plant trips.

In addition to concluding it is inappropriate to perform these surveillances at power, we have also concluded that, if we shut down to conduct a mid-cycle surveillance outage, the benefit to BGE of extending operation is significantly reduced. Note that the BGE benefit is based on operating for an additional month while still completing the refueling outage in time to meet agreements with other utilities regarding summer 1996 Units 1 and 2 availability dates. We plan to start the outage on March 15, 1996. The requested extension date of March 31, 1996 provides some flexibility in the exact outage start date, and allows time for testing which is performed during the transition to lower plant operating modes.

SCHEDULE

This amendment request addresses many of the same instrument surveillances as References (a) and (b), but must be implemented before the June request. This is because Reference (b) cannot be implemented until new transmitters are installed during the Unit 1 1996 refueling outage. We need to implement the changes in this request before February 21, 1996, and then after March 31,1996 (and after transmitter changeout), we would implement Amendment No. 208. This change will add footnotes to the affected Technical Specification pages. The June request did not consider these footnotes and does not request their removal. Therefore, we are requesting that we be permitted to remove the footnotes added by this request upon implementation of Amendment No. 208. Since this is a one-time change, the footnotes will no longer apply and will be no longer needed.

We request that this amendment be approved by January 31,1996, so that we may make appropriate plans for the refueling outage. We apologize for the shortened schedule, but believe it is acceptable because much of this request is based on analyses already approved in Amendment No. 208.

CONCLUSION

This amendment would benefit BGE by allowing us to gain approximately one additional month of power production during a period of high electrical demand, to maximize use of the available fuel in the core, and to gain additional outage planning time. Surveillance tests provide a level of assurance that the instruments operate properly. Properly operating instruments, in conjunction with plant procedures, help maintain plant parameters within the design bases. Extending the surveillance interval provides additional possibility for instrument components to malfunction by means such as drift or instrument failure, which could allow plant parameters to exceed design bases assumptions. As described above and in Attachments (3) and (4), we have determined that the effect of the surveillance interval extension on safety is small, and operation of the instruments in the extended interval would not invalidate any assumption in the plant licensing basis. Therefore, we request this amendment be approved.

REFERENCES:

(a) Letter from Mr. R. E. Denton (BGE) to NRC Document Control Desk, dated June 6, 1995, License Amendment Request: Extension of Instrument Surveillance Intervals

(b) Letter from Mr. D. G. McDonald, Jr. (NRC) to Mr. R. E. Denton, dated October 19, 1995, Issuance of Amendments for Calvert Cliffs Nuclear Power Plant, Unit 1 (TAC No. M92479) and Unit 2 (TAC No. M92480)

ATTACHMENT (2)

UNIT 1 INSTRUMENTS WHOSE SURVEILLANCES ARE DUE BEFORE MARCH 31, 1996

ATTACHMENT (2)

UNIT 1 INSTRUMENTS WHOSE 18-MONTH SURVEILLANCES ARE DUE BEFORE MARCH 31, 1996

(The due dates reflect a 22.5-month interval, which adds the 25% allowance per Technical Specification 4.0.2 to the 18-month interval.)

Instruments Whose Surveillances are Due Before or on March 15, 1996	Surveillance Due Date with 25% Extension Allowance	Number of Extension Days	Technical Specifications Affected
Steam Generator Pressure	February 21, 1996	39	Table 4.3-1, Items 6, 9.b 4.3.1.1.2 Table 4.3-2, Item 4.b 4.3.2.1.2 Table 4.3-6, Item 7 Table 4.3-10, Item 6
RPS, ESFAS and PORV Pressurizer Pressure	February 21, 1996	39	Table 4.3-1, Item 4, 9a 4.3.1.1.2 Table 4.3-2, Item 1.c 4.4.3.1.b
Steam Generator Level	February 22, 1996	38	Table 4.3-1, Item 7 Table 4.3-2, Item 9.b Table 4.3-6, Item 6 Table 4.3-10, Item 7
4 kV Emergency Bus Undervoltage	February 26, 1996	34	Table 4.3-2, Items 7.a, 7.b
ESFAS Manual Pushbuttons	February 27, 1996	33	Table 4.3-2, Items 1.a, 2.a, 3.a, 5.a
SIAS and SGIS Logic Circuitry for Blocking Removal	February 29, 1996	31	4.3.2.1.2
ESFAS Time Response	February 24, 1996	36	4.3.2.1.3
SIAS and CIS Logic Circuits	February 25, 1996	35	Table 4.3-2, Notes 3 and 4
RCS Flow	February 26, 1996	34	Table 4.3-1, Item 3
Pressurizer Level	February 26, 1996	34	Table 4.3-6, Item 5 Table 4.3-10, Item 5
Pressurizer Pressure Used for Remote Shutdown and PAM Indication and Subcooled Margin Monitor	February 26, 1996	34	Table 4.3-10, Items 4, 9 Table 4.3-6, Item 4
Containment Sump Level	February 29, 1996	31	4.4.6.1.b
Containment Water Level	February 29, 1996	31	Table 4.3-10, Item 13
Containment Radiation Monitors	February 29, 1996	31	Table 4.3-3, Item 1b
Pressurizer Pressure Used for LTOP Overpressure Protection	February 29, 1996	31	4.4.9.3.1.b
Feedwater Flow	March 4, 1996	27	Table 4.3-10, Item 12
Acoustic Monitors	March 4, 1996	27	Table 4.3-10, Item 10

ATTACHMENT (2)

UNIT 1 INSTRUMENTS WHOSE 18-MONTH SURVEILLANCES ARE DUE BEFORE MARCH 31, 1996

Instruments Whose Surveillances are Due Before or on March 15, 1996	Surveillance Due Date with 25% Extension Allowance	Number of Extension Days	Technical Specifications Affected
MSIV Handswitches and Feedwater Header Isolation Handswitches	March 6, 1996	25	Table 4.3-2, Item 4.a
SGIS and CSAS Logic Circuits	March 12, 1996	19	Table 4.3-2, notes 5 and 6
SIAS Logic Circuits	March 14, 1996	17	Table 4.3-2, note 2
Resistance Temperature Detectors	March 15, 1996	16	Table 4.3-1, Item 2.b, 9a Table 4.3-6, Item 3 Table 4.3-10, Items 3, 9

ATTACHMENT (3)

GENERAL SAFETY ANALYSIS

Baltimore Gas and Electric Company
October 20, 1995

ATTACHMENT (3)

GENERAL SAFETY ANALYSIS

I. The instruments for which these surveillance interval extensions are being requested provide signals for automatic or manual operation of plant equipment or for operator indication. This attachment describes the generic instrument safety analyses and references used in Attachment (4). These generic safety analyses are parts of the bases for concluding that instrument surveillance intervals addressed by this submittal can be extended a short time to March 31, 1996. The due dates for these Surveillances are listed in Attachment (2) in chronological order.

II. **Generic Discussions**

Aspects of some Generic Safety Analyses apply to more than one instrument or component. The safety analyses in Attachment (4) for these instruments or components will refer to the following generic safety analyses. Most of these analyses were submitted in Reference (a) and approved in Reference (b) for a refueling interval (nominally 24-months, not to exceed 30-months). The generic safety analyses are used for the respective instruments to conclude that the affect of this surveillance interval extension on safety is small, and operation of the instruments in the extended period would not invalidate any assumption in the plant licensing basis.

1. Rosemount Transmitters (Technical Specification Table 4.3-1, Items 3, 4, and 9a, Table 4.3-2, Item 1.c, 4.3.2.1.2, 4.4.3.1.b, and 4.4.9.3.1.b)

   The pressure instruments for Reactor Coolant System (RCS) Flow trip, High Pressurizer Pressure trip, Thermal Margin/Low Pressure (TM/LP) trip, Engineered Safety Features Actuation System (ESFAS) pressurizer pressure for Safety Injection Actuation Signal (SIAS) and the ESFAS total bypass function, and the pressurizer pressure for Power-Operated Relief Valves (PORVs) lift and Low Temperature Overpressure Protection (LTOP) use Rosemount 1152 or 1154 transmitters. The analysis for these transmitters was submitted in Reference (a) and approved in Reference (b).

2. Resistance Temperature Detectors (RTDs) (Technical Specification Table 4.3-1, Items 2.b and 9a, Table 4.3-6, Item 3, Table 4.3-10, Items 3 and 9)

   The temperature instruments for Reactor Protective System (RPS) RPS ΔT Power and TM/LP, Remote Shutdown Reactor Coolant Cold Leg Temperature, and Post-Accident Monitoring (PAM), Reactor Coolant Outlet Temperature and RCS Subcooled Margin Monitor use RTDs. The analysis for these instruments was submitted in Reference (a) and approved in Reference (b).

3. Steam Generator Pressure, Steam Generator Level, Remote Shutdown and PAM Pressurizer Pressure, Pressurizer Level, and Containment Water Level (Wide Range) Transmitters (Technical Specifications 4.3.1.1.2, Table 4.3-1, Items 6, 7, and 9.b, 4.3.2.1.2, Table 4.3-2, Items 4.b and 9.b, Table 4.3-6, Items 4, 5, 6, and 7, and Table 4.3-10, Items 4, 5, 6, 7, 9, and 13)

   The operating characteristics and history are well known for the steam generator level and steam generator pressure transmitters used by RPS, ESFAS, Remote Shutdown and PAM,

pressurizer pressure and level transmitters used by Remote Shutdown and PAM, and transmitters used by Containment Water Level (Wide Range) for PAM. The existing channel check process has successfully detected instrument drift when it occurred. If channel checks are performed on the instruments, they are performed either every shift or monthly, depending on the system. Where appropriate, corrective actions have been taken, including calibrating the instruments while the unit was operating at power. We expect these processes to continue to identify and address such problems during the surveillance interval extension requested. These transmitters are scheduled for replacement during the 1996 Unit 1 outage to improve transmitter performance.

4. Channel Functional Tests (Technical Specification 4.3.1.1.2, Table 4.3-1, Items 2.b, 3, 4, 5, 7, 9a and 9b; 4.3.2.1.2, Table 4.3-2, Items 1.c, 4.b, 7.a, 7.b, and 9.b; 4.4.3.1.b, and 4.4.9.3.1.b)

Instrument loop surveillances for the RPS, ESFAS, PORV, and LTOP functions are split into two parts, sensor testing and balance of loop testing. Both sensor and balance of loop components are fully calibrated at each refueling. A channel functional test is performed on the balance of loop components more frequently than on a refueling interval basis or prior to use of certain instruments. The analysis for these components was submitted in Reference (a) and approved in Reference (b).

5. Performance Monitoring

Instrument performance monitoring will continue to be done between channel calibrations by methods that include channel checks, channel functional tests, and routine monitoring. Channel checks, channel functional tests, and routine monitoring of indications provide a reliable indication of instrument operation. These methods have identified improperly operating instruments in the past. The plant corrective action system is used when instrument parameters fall outside specified acceptance criteria. We expect the instrument performance monitoring program described above to identify problems and initiate appropriate action in response to the problems, such as excessive drift, that would potentially cause plant parameters to exceed accident analysis assumptions.

III. Conclusion

Reference (a), the submittal extending certain 18-month surveillance intervals to refueling interval (nominally 24-months, not to exceed 30-months), was approved in Reference (b), and will allow us to operate on a true 24-month fuel cycle. This new submittal requests a shorter extension than Reference (a). However, many of the analyses are the same. The analyses that are different apply to the transmitters scheduled for replacement with Rosemount transmitters during the upcoming Unit 1 outage. Our basis to allow extending the surveillance interval for the existing transmitters is that we believe the existing monitoring and corrective action programs are sufficient to identify and address any problem that might occur during the extended surveillance interval.

ATTACHMENT (4)

DISCUSSION OF INSTRUMENT FUNCTIONS AND SAFETY ANALYSES

Baltimore Gas and Electric Company
October 20, 1995

ATTACHMENT (4)

DISCUSSION OF INSTRUMENT FUNCTIONS AND SAFETY ANALYSES

The following section discusses the individual instrument functions and their Safety Analyses.

The instrument functions affected by this submittal are:

A. RPS Instrument Total Bypass Functions (Technical Specification 4.3.1.1.2)

Manually or automatically inserted bypasses allow plant operation under conditions that do not require the respective RPS functions, but would result in an unnecessary RPS trip if they were not bypassed. The total bypass functions remove these bypasses when the plant conditions no longer support allowing the bypasses. The RPS total bypass function, whose surveillance interval will expire, uses the low steam generator pressure trip bypass bistable. The Steam Generator Low Pressure Trip may be bypassed below 785 psia, and the bypass is automatically removed at or above 785 psia. The removal is accomplished by means of the Steam Generator Low Pressure Trip Bypass bistable. The steam generator pressure signal is generated by four steam generator pressure transmitters per steam generator. Safety Analysis for the steam generator pressure instruments is discussed in Generic Discussions II-3, 4, and 5.

B. RPS Instruments (Technical Specification Table 4.3-1)

Reactor Protective System instruments addressed by this submittal generate a trip signal using a two-of-four logic matrix. The trip signals and associated instruments affected by this submittal are:

1. Power Level - High, ΔT Power (Table Item 2.b)

   The thermal reactor power signal is generated by the ΔT power calculator contained within the Thermal Margin/Low Pressure (TM/LP) calculator circuitry, using signals from four hot leg and four cold leg temperature instruments in each of the two RCS loops. Four linear power range nuclear instrumentation channels monitor reactor flux (nuclear power). The larger of either nuclear power or thermal power signal is supplied to the high power bistable trip unit, which compares the signal to the variable high power trip limit. The trip limit is determined by the variable high power trip calculator. This trip provides protection against reactivity excursions which are too rapid to be protected against by a High Pressurizer Pressure or TM/LP trip. Safety Analysis for the temperature instruments is discussed in Generic Discussions II-2, 4, and 5.

2. Reactor Coolant Flow - Low (Table Item 3)

   Reactor coolant flow rate is determined using the differential pressure of the RCS across the steam generators. The pressure signal is generated by four RCS pressure transmitters which monitor the pressure drop across each of the steam generators. The trip protects the plant from departure from nucleate boiling in the event of a sudden, significant decrease in reactor coolant flow. Safety Analysis for the RCS pressure instruments is discussed in Generic Discussions II-1, 4, and 5.

3. Pressurizer Pressure - High (Table Item 4)

The pressurizer pressure signal is generated by four pressurizer pressure transmitters. The Pressurizer Pressure - High trip, backed up by the pressurizer code safety valves and main steam line safety valves, provides protection against RCS overpressurization. Safety Analysis for the pressurizer pressure instruments is discussed in Generic Discussions II-1, 4, and 5.

4. Steam Generator Pressure - Low (Table Item 6)

The steam generator pressure signal is generated by four pressure transmitters per steam generator. The Steam Generator Pressure - Low trip provides protection against an excessive rate of heat extraction from the steam generators and subsequent cooldown of the reactor coolant. Safety Analysis for the steam generator pressure instruments is discussed in Generic Discussions II-3, 4, and 5.

5. Steam Generator Water Level - Low (Table Item 7)

The steam generator level signal is generated by four level transmitters per steam generator. The Steam Generator Water Level - Low trip provides core protection by preventing operation with the steam generator water level below the minimum volume required for adequate heat removal capacity and assures that the pressure of the RCS will not exceed its safety limit due to overheating. The specified setpoint, in combination with the Auxiliary Feedwater Actuation System, ensures that sufficient water inventory exists in both steam generators to remove decay heat following a loss of Main Feedwater flow event. Safety Analysis for the steam generator level instruments is discussed in Generic Discussions II-3, 4, and 5.

6. TM/LP (Table Item 9.a)

The TM/LP trip calculator receives input signals from the power range nuclear instrumentation channels, hot leg and cold leg temperature instrumentation, Axial Flux Offset Calculator, and the ΔT Power Calculator. Reactor Coolant System pressure is input to the bistable trip unit where it is compared to the calculated TM/LP trip setpoint value or a fixed lower limit. The TM/LP trip is provided to protect against transients that could cause departure from nucleate boiling ratio to be less than a specific value. Safety Analysis for the temperature and RCS pressure instruments is discussed in Generic Discussions II-1, 2, 4, and 5.

7. Steam Generator Pressure Difference - High (Asymmetric Steam Generator Transient Protection Trip Function) (Table Item 9.b)

The steam generator pressure signal is generated by four steam generator pressure transmitters per steam generator. The Asymmetric Steam Generator Transient Protection calculator calculates the differential pressure between generators and compares it to the setpoint. A trip signal is processed by modifying the TM/LP setpoint. The High Steam

Generator Pressure Difference trip provides protection against asymmetric steam generator events. The trip is designed for Anticipated Operational Occurrences associated with secondary system malfunctions which result in asymmetric primary loop coolant temperatures. Safety Analysis for the steam generator pressure instruments is discussed in Generic Discussions II-3, 4, and 5.

C. **ESFAS Instrument Total Bypass Functions (Technical Specification 4.3.2.1.2)**

Manually inserted bypasses allow plant evolutions under conditions that do not require the respective ESFAS functions, but would result in an ESFAS actuation if they were not bypassed. The total bypass functions remove the bypasses when the plant conditions no longer warrant the bypass.

1. SIAS Block, Pressurizer Pressure - Low

The Pressurizer Pressure Bypass allows the operator to bypass the SIAS and prevent safeguards systems from actuating during normal depressurization of the RCS. The total bypass logic removes the bypass automatically above a preset pressure. The pressurizer pressure signal is generated by four pressurizer pressure transmitters. Safety Analysis for the instruments is discussed in Generic Discussions II-1, 4, and 5.

2. Steam Generator Isolation Signal (SGIS) Block, Steam Generator Pressure - Low

The Steam Generator Pressure Bypass function allows the operator to bypass the SGIS and prevent safeguards systems from actuating during normal depressurization of the steam generators. The total bypass function automatically removes the bypass above a preset pressure. The steam generator pressure signal is generated by four steam generator pressure transmitters per steam generator. Safety Analysis for the instruments is discussed in Generic Discussions II-3, 4, and 5.

D. **Engineered Safety Features Response Time (Technical Specification 4.3.2.1.3)**

The Engineered Safety Features response time is measured to verify that equipment actuates within the time interval assumed in the accident analyses. Analysis for these surveillances is provided in Reference (a) and approved in Reference (b).

E. **ESFAS Instruments (Technical Specification Table 4.3-2).**

Engineered Safety Features Actuation System instruments addressed by this submittal generate an actuation signal using a two-of-four logic matrix. The ESFAS output signals pass through the

Automatic Actuation Circuitry. The ESFAS signals and associated instruments affected by this submittal are:

1. SIAS (Table Item 1.c)

The SIAS actuates equipment necessary for cooling and reactivity control following a loss-of-coolant accident (LOCA) and other design basis events. One signal that initiates the SIAS is a Pressurizer Pressure - Low signal. These signals are generated by four pressurizer pressure transmitters. Safety Analysis for the instruments is discussed in Generic Discussions II-1, 4, and 5. Paragraph G of this attachment describes specific balance of loop equipment not tested at power.

2. Main Steam Line Isolation (Table Item 4.b)

The SGIS shuts the Main Steam and Main Feedwater Isolation Valves and stops the Main Feedwater System pumps in the event of an excessive loss of steam from the Main Steam System. The SGIS is initiated by a Steam Generator Pressure - Low signal. The signal is generated by four steam generator pressure transmitters per steam generator. Safety Analysis for the instruments is discussed in Generic Discussions II-3, 4, and 5. Paragraph G of this attachment describes specific balance of loop equipment not tested at power.

3. Loss of Power - 4.16 kV Bus Undervoltage Signal (Table Item 7.a and .b)

The 4.16 kV bus undervoltage signal initiates the Emergency Diesel Generator start and load sequencing signals automatically to provide reliable emergency power from the Emergency Diesel Generators for load necessary to shut down the plant safely and maintain it in a safe shutdown condition. Analysis for these instruments was submitted in Reference (a) and approved in Reference (b).

4. Auxiliary Feedwater (Table Item 9.b)

The Auxiliary Feedwater Actuation System - Start signal causes one steam and one electric Auxiliary Feedwater System pump to start which will provide feedwater to the steam generators to maintain steam generator level. Auxiliary Feedwater Actuation System - Start is initiated by a Steam Generator Level - Low signal. This signal is generated by four steam generator level transmitters per steam generator. Safety Analysis for the instruments is discussed in Generic Discussions II-3, 4, and 5.

F. ESFAS Manual Trip Buttons and Handswitches (Technical Specification Table 4.3-2, Items 1.a, 2.a, 3.a, 4.a and 5.a)

The SIAS, Containment Spray Actuation Signal (CSAS), Containment Isolation Signal (CIS), and Recirculation Actuation Signal trip systems have manual trip buttons, and the SGIS has Main Steam Isolation Valve and Feedwater Header Isolation handswitches. The CSAS actuates

equipment necessary in the event of a LOCA and other design basis events. The CIS actuates equipment to isolate the containment from the outside environment. The Recirculation Actuation Signal secures the injection of water into the RCS from the Refueling Water Tank initiated by a SIAS, and actuates equipment to begin recirculation of the water in the containment for long-term core cooling. These buttons and handswitches are a backup means for operators to initiate an ESFAS actuation, if necessary. Analysis for these components was submitted in Reference (a) and approved in Reference (b).

G. **ESFAS Automatic Actuation Logic Circuitry (Technical Specification Table 4.3-2, Notation 2, 3, 4, 5, and 6)**

The Automatic Actuation Logic circuitry is tested quarterly, but specific SIAS, CIS, CSAS, and SGIS functions are tested during shutdown because they are exempted from testing during power operation. Analysis for this circuitry was submitted in Reference (a) and approved in Reference (b).

H. **Radiation Monitoring Instrumentation (Technical Specification Table 4.3-3, Table Item 1.b)**

The Containment Area High Range Radiation Monitoring System provides an alarm in the event of high radiation conditions inside the containment. The system consists of two redundant gamma detectors located inside the containment with readout and alarm modules in the Control Room. The system provides an indication of high radiation levels in containment. Analysis for these instruments was submitted in Reference (a) and approved in Reference (b).

I. **Remote Shutdown Panel Indication (Technical Specification Table 4.3-6)**

Plant parameter indications are provided to operators on a Remote Shutdown Panel to be used while placing and maintaining the plant in a safe shutdown condition in the event the Control Room is uninhabitable. The indications are used to verify proper system response to plant conditions and operator actions. The Remote Shutdown Panel instruments addressed by this submittal are:

1. Reactor Coolant Cold Leg Temperature (Wide Range) (Table Item 3)

   Two temperature sensors per RCS loop provide the input to the Remote Shutdown Panel indication. Safety Analysis for the instruments is discussed in Generic Discussions II-2 and 5.

2. Pressurizer Pressure (Wide Range) (Table Item 4)

   Two pressurizer pressure transmitters provide input to the Remote Shutdown Panel indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

3. Pressurizer Level (Table Item 5)

Two pressurizer level transmitters provide input to the Remote Shutdown Panel indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

4. Steam Generator Level (Wide Range) (Table Item 6)

Two level transmitters per steam generator provide input to the Remote Shutdown Panel indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

5. Steam Generator Pressure (Table Item 7)

Two pressure transmitters per steam generator provide input to the Remote Shutdown Panel indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

J. PAM System (Technical Specification Table 4.3-10)

The PAM instruments provide the Control Room operators with primary information necessary to take manual actions, as necessary, in response to design basis events, and to verify proper system response to plant conditions and operator actions. The PAM instruments addressed by this submittal are:

1. Reactor Coolant Outlet Temperature (Wide Range) (Table Item 3)

One reactor coolant outlet temperature sensor per primary coolant loop provides input to the Control Room indication. Safety Analysis for the instruments is discussed in Generic Discussions II-2 and 5.

2. Pressurizer Pressure (Wide Range) Table Item 4)

Two pressurizer pressure transmitters provide input to the Control Room indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

3. Pressurizer Level (Wide Range) (Table Item 5)

Two pressurizer level transmitters provide the input to the Control Room indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

4. Steam Generator Pressure (Table Item 6)

Four steam generator pressure transmitters per steam generator provide the input to the Control Room indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

5. Steam Generator Level (Wide Range) (Table Item 7)

Four steam generator level transmitters per steam generator are provided. Two provide the input to the Control Room indication and two provide input to the Remote Shutdown Panel indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

6. RCS Subcooled Margin Monitor (Table Item 9)

The Subcooled Margin Monitor calculates the RCS margin to saturation based on the pressure/temperature inputs. Two Subcooled Margin Monitors provide input to the Control Room indication. Safety Analysis for the instruments is discussed in Generic Discussions II-2, 3 and 5.

7. PORV/Safety Valve Acoustic Monitors (Table Item 10)

The acoustic monitors for the Pressurizer PORV and Safety Valves provide one of the indications that the PORVs or Pressurizer Safety Valves have lifted and reactor coolant is being released from the RCS. Flow is detected by measuring the vibration of the piping through which the coolant is released. Two detectors sense coolant flow from the PORVs, and two sense coolant flow from the Safety Valves, and all four channels provide input to the Control Room indication. Analysis for these instruments was submitted in Reference (a) and approved in Reference (b).

8. Feedwater Flow (Table Item 12)

One flow rate transmitter in each Main Feedwater line provides input to the Control Room indication. The Main Feedwater Flow recorder provides flow indication and a permanent record of Main Feedwater Flow. Analysis for these instruments was submitted in Reference (a) and approved in Reference (b).

9. Containment Water Level (Wide Range) (Table Item 13)

Containment water level provides one of the indications that a LOCA has occurred. Two level transmitters provide input to the Control Room indication. Safety Analysis for the instruments is discussed in Generic Discussions II-3 and 5.

K. PORVs (Technical Specification 4.4.3.1.b)

Power-Operated Relief Valves are set to lift before the pressurizer code safety valves and subsequently reseat to minimize the release of reactor coolant from the RCS. The RPS Pressurizer Pressure - High trip signal initiates the signal to open the PORVs. The Pressurizer Pressure - High RPS trip, backed up by the pressurizer code safety valves and main steam line safety valves, provides RCS protection against overpressurization. Safety Analysis for the pressurizer pressure instruments is discussed in Generic Discussions II-1, 4, and 5.

L. **Containment Sump Level Alarm System (Technical Specification 4.4.6.1.b.)**

The Calvert Cliffs containment has a drainage sump located in the containment basement. The Containment Sump Level Alarm System provides an alarm in the Control Room to provide one of the available indications of excessive RCS leakage during normal plant operation. The sump collects drain water from components in the containment, the reactor cavity cooling plenum, and the reactor cavity. Two redundant level switches provide the signal for the high level alarm. Analysis for these instruments was submitted in Reference (a) and approved in Reference (b).

M. **Low Temperature Overpressure Protection System (Technical Specification 4.4.9.3.1.b.)**

The LTOP provides protection against RCS overpressurization at low temperature by a combination of administrative controls and hardware. The hardware includes two PORVs with variable pressurizer pressure setpoints when operating in the LTOP region. Each PORV protection circuit is provided input by one pressurizer pressure transmitter and one RCS loop cold leg temperature detector dedicated to the specific circuits. Safety Analysis for the instruments is discussed in Generic Discussions II-1, 4, and 5.

Based on this analysis, we expect these instruments to operate properly, or that individual problems will be identified and addressed appropriately, during the surveillance interval extension requested.

ATTACHMENT (5)

DETERMINATION OF SIGNIFICANT HAZARDS

ATTACHMENT (5)

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 proposed one-time change would extend 18-month instrument surveillance intervals by a maximum of 39 days to March 31, 1996, for specific Reactor Protective System (RPS), Engineered Safety Features Actuation System (ESFAS), Power-Operated Relief Valve, Low Temperature Overpressure Protection (LTOP), Remote Shutdown, Post-Accident Monitoring (PAM), Radiation Monitoring, and Containment Sump Level instruments.

   The purpose of the RPS is to effect a rapid reactor shutdown if any one or a combination of conditions deviates from a pre-selected operating range. The system functions to protect the core and the Reactor Coolant System (RCS) pressure boundary. The purpose of the ESFAS is to actuate equipment which protects the public and plant personnel from the accidental release of radioactive fission products if an accident occurs, including a loss-of-coolant accident, main steam line break, or loss of feedwater event. The safety features function to localize, control, mitigate, and terminate such incidents in order to minimize radiation exposure to the general public. The PAM instruments provide the Control Room operators with primary information necessary to take manual actions, as necessary, in response to design basis events, and to verify proper system response to plant conditions and operator actions. The purpose of the Remote Shutdown System is to provide plant parameter indications to operators on a Remote Shutdown Panel to be used while placing and maintaining the plant in a safe shutdown condition in the event the Control Room is uninhabitable. The indications are used to verify proper system response to plant conditions and operator actions. The LTOP System protects against RCS overpressurization at low temperatures by a combination of administrative controls and hardware. Power-Operated Relief Valves are set to lift before pressurizer safety valves, and subsequently reseat to minimize the release of reactor coolant from the RCS. The Containment Sump High Level Alarm System provides an alarm in the Control Room to provide one of the available indications of excessive RCS leakage during normal plant operation. The Containment Area High Range Radiation Monitoring System provides an indication of high radiation levels in containment.

   Failure of any of these systems is not an initiator for any previously evaluated accident. Therefore, the proposed change would not involve an increase in the probability of an accident previously evaluated.

   Surveillance and maintenance history has demonstrated good capability for identifying adverse operation by individual instruments. Baltimore Gas and Electric Company has the capability to respond to an inoperable instrument by following the Technical Specification Actions for an inoperable instrument or by performing a channel calibration with the Unit at full power. However, calibration of all the instruments at power is not desirable because of personnel safety, personnel radiation protection goals, and plant reliability concerns.

   These factors provide assurance that the requested surveillance extension will not adversely affect our ability to detect degradation of the instruments. Also, either analysis is available to show the instruments will operate properly during the requested surveillance extension, or the surveillance

program has shown that problems will be identified and addressed appropriately. Therefore, these channels will be able to perform the functions assumed in the safety analysis, and there is no significant increase in the consequences of an accident previously evaluated.

Therefore, the proposed Technical Specification changes do not significantly increase 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.*

This requested increase in surveillance interval for RPS, ESFAS, Power-Operated Relief Valve, LTOP, Remote Shutdown, PAM, Radiation Monitoring, and Containment Sump Level instrument surveillances does not involve a significant change in the design or operation of the plant. No plant hardware is being modified as part of the proposed change. The proposed change also does not involve any new or unusual actions by plant operators. Therefore, this change would not create the possibility of a new or different type of accident from any accident previously evaluated.

3. *Does operation of the facility in accordance with the proposed amendment involve a significant reduction in a margin of safety.*

The RPS, ESFAS, Power-Operated Relief Valve, LTOP, Remote Shutdown, PAM, Radiation Monitoring, and Containment Sump Level instruments are designed to provide actuation signals and/or indications to ensure appropriate action is taken in response to design basis accidents. Channel checks, channel functional tests and routine comparison of the redundant and independent parameter indications provides a reliable indication of instrument operation. Also, either analysis is available to show the instruments will operate properly during the requested surveillance extension, or instrument surveillance program has shown that problems will be identified and addressed appropriately. During the requested extension, these systems will be available to perform the functions assumed in the Safety Analysis. Surveillance and maintenance history have demonstrated good capability for identifying adverse operation by individual instruments. Baltimore Gas and Electric Company has the capability to respond to such adverse operation, including performing channel calibrations at power. However, such work on all the instruments is not desirable because of personnel safety, personnel radiation protection goals, and plant reliability concerns. Extending the surveillance interval provides additional possibility for instrument components to malfunction by means such as drift or instrument failure, which could allow plant parameters to exceed design bases assumptions. We have determined that the effect of the surveillance interval extension on safety is small, and operation of the instruments in the extended interval would not invalidate any assumption in the plant licensing basis.

In addition, the footnotes added by this amendment will be removed during the implementation of Amendment 208. Because this is a one-time request, it is appropriate to remove these footnotes when the extensions become permanent.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

ATTACHMENT (6)

MARKED-UP TECHNICAL SPECIFICATION PAGES

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