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October 17, 1986

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC 20555

ATTENTION: Mr. Ashok C. Thadani, Director
PWR Project Directorate #8
Division of PWR Licensing-B

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Request for Amendment

REFERENCES: (a) Letter from D. H. Jaffe (NRC), to A. E. Lundvall, Jr. (BG&E), dated February 1, 1982

(b) Letter from A. E. Lundvall, Jr. (BG&E), to Robert A. Clark (NRC), dated September 22, 1982

(c) Letter from D. H. Jaffe (NRC), to A. E. Lundvall, Jr. (BG&E), dated October 13, 1982

Gentlemen:

The Baltimore Gas and Electric Company hereby requests an Amendment to its Operating License Nos. DPR-53 and DPR-69 for Calvert Cliffs Unit Nos. 1 & 2, respectively, with the submittal of the proposed changes to the Technical Specifications.

CHANGE NO. 1 (BG&E FCR 86-161)

Change pages 3/4 1-9, 1-11, 5-5, 6-11, 7-14, 7-15, and 7-16 of the Unit 1 and 2 Technical Specifications as shown on the marked-up copies attached to this transmittal.

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BACKGROUND

BG&E plans to begin 24-month refueling cycles commencing with the spring 1987, Unit 2 refueling. Therefore, plant engineers have been researching the associated 18-month Surveillance Requirements - evaluating whether the equipment and past operating history justifies extending the surveillance interval to 24 months. The Surveillance Requirements have been administratively grouped into several categories (e.g., Instrumentation, Containment, Fire Protection, etc.). This change addresses one such category of related surveillances - **Integrated Engineered Safety Features (ESF) Test.** The integrated engineered safety features test is performed during the COLD SHUTDOWN or REFUELING MODE coinciding with our current 18-month fuel cycle. The primary purpose of this test is to ensure the integrated response of the engineered safety features equipment prior to unit startup. The following Surveillance Requirements are included in this test and will be specifically addressed in this submittal:

Category: Integrated Engineered Safety Features Test

Group I

4.1.2.4.a	Charging Pump Safety Injection Actuation Signal (SIAS) Verification
4.5.2.f	ECCS SIAS Verification
4.6.2.1.b	Containment Spray Valve SIAS/CS Pump CSAS Verification
4.7.3.1.b	CCW SIAS Verification
4.7.5.1.b	SW SIAS Verification

Group 2

4.1.2.2.c	BA/RWT Train SIAS Verification
4.7.4.1.b	SRW SIAS Verification

The above Surveillance Requirements are further categorized into Groups I and II. Group I Surveillance Requirements are tested, in addition to the refueling frequency integrated test, on a monthly basis by an ESF Logic Test. Group II Surveillance Requirements, although similarly tested, are not completely satisfied by the monthly ESF testing. These surveillances test several components that can only be tested during the COLD SHUTDOWN or REFUELING MODE, due to their impact on systems necessary for operation.

DISCUSSION

In support of our future 24-month fuel cycle schedule, this submittal proposes to change the interval for performing the above-mentioned Surveillance Requirements from "once per 18 months" to "at least once per refueling interval." Changing the Surveillance Requirement wording as stated will permit these tests to be completed during the COLD SHUTDOWN or REFUELING MODE coincident with our new 24-month fuel cycle. This submittal addresses each Technical Specification individually, beginning with those in Group I.

4.1.2.4.a

This Surveillance Requirement states that at least two charging pumps be demonstrated OPERABLE at least once per 18 months during shutdown by verifying that each charging pump starts automatically upon receipt of a Safety Injection Actuation Test Signal. This requirement is satisfied by monthly ESF Logic Testing. This monthly test is performed by initiating a SIAS test signal locally (in the cable spreading room) which starts the charging pumps. Control room operators verify appropriate system response for both SIAS logic channel actuations.

Additionally, one administrative change is proposed for this Surveillance Requirement. A typographical error has been corrected on the Unit 1, Technical Specification page 3/4 1-11 (attached).

4.5.2.f

This Surveillance Requirement verifies that upon receipt of a Safety Injection Actuation Test Signal:

1. Each automatic valve in the Emergency Core Cooling System flow path actuates to its correct position, and

2. Each high-pressure and low-pressure safety injection pump starts automatically.

This requirement is satisfied by monthly ESF Logic testing. A SIAS test signal is initiated locally (in the cable spreading room). Control room operators verify that the valves actuate to their correct positions and that the pumps start. The test is performed for each logic channel.

4.6.2.1.b

This Surveillance Requirement states that each containment spray system be demonstrated OPERABLE at least once per 18 months during shutdown by verifying that each automatic valve in the flow path actuates to its correct position on a Safety Injection Actuation Test Signal (SIAS). Additionally, each spray pump is verified to start automatically on a Containment Spray Actuation Signal (CSAS). Both of these requirements are satisfied by the current monthly testing. An operator initiates the appropriate test signal (SIAS/CSAS) locally. Control room operators verify that the valves actuate to their correct positions and that the pumps start. These tests are performed on each logic channel for both test signals.

4.7.3.1.b/4.7.5.1.b

These Surveillance Requirements state that at least two component cooling/salt water loops be demonstrated OPERABLE at least once per 18 months during shutdown by verifying that each automatic valve servicing safety related equipment actuates to its correct position on a Safety Injection Actuation Test Signal. Once again, the monthly ESF Logic Test satisfies these requirements. SIAS test signals are initiated locally (in the cable spreading room); and, control room operators verify proper valve actuation. Each SIAS logic channel is tested separately.

Group I Surveillance Requirements that are required to be tested once per 18 months are, in general, redundant to monthly testing performed during plant operation. The need for an Integrated ESF Test once per refueling interval will not be removed, since proper system operation should be verified prior to unit start-up following shutdown for refueling. However, it can be readily seen that extending this Integrated ESF Test to coincide with the refueling outage associated with our new 24-month fuel cycle should not adversely affect safety or system operation.

The following Group II Surveillance Requirements consist of systems which may be only partially tested during plant operation. Therefore, although a majority of system components may be satisfactorily tested during the monthly ESF Logic Test, certain specific components must be tested during COLD SHUTDOWN. For these specific components, a plant history failure search was conducted to assist in evaluating whether these particular Surveillance Requirement intervals could be safely extended to "once per refueling interval," (i.e., once per 24-month refueling cycle).

4.1.2.2.c

This Surveillance Requirement states that at least two of the boron injection flow paths be demonstrated operable at least once per 18 months by verifying that each automatic valve in the flow path actuates to its correct position, and each boric acid pump starts, on a Safety Injection Actuation Test Signal. Monthly testing satisfies this Surveillance Requirement in full, with the exception that the Volume Control Tank discharge isolation valve (CVC-501; actuates shut on SIAS) is not tested during operation. A Plant History review of previous Integrated ESF Tests, (eight on Unit 1, seven on Unit 2), from 1974 to 1985, was conducted. This review revealed that CVC-501 has never failed to shut on a SIAS test signal.

4.7.4.1.b

This Surveillance Requirement states that at least two service water loops be demonstrated OPERABLE at least once per 18 months during shutdown, by verifying that each automatic valve servicing safety related equipment actuates to its correct position on Safety Injection Actuation and Containment Spray Actuation test signals. The monthly engineered safety features logic testing satisfies this requirement in part; however, the turbine building isolation control valves are not tested during operation. These valves, SRW-1600, 1637, 1638, and 1639 are required to shut on the associated test signals. Therefore, they must be tested during COLD SHUTDOWN. A review of plant history indicates that there were only two instances where any one of these valves failed to close. In 1974 (prior to Unit 1 commercial operation), and again in 1979, 1-SRW-1637 failed to close on a SIAS signal. The Maintenance Request (MR) packages are not available in Plant History for either of these failures. However, Quality Control reports provide information on the nature of both of these failures. The 1974 failure (pre-operational) appears to be strictly mechanical in nature, since the initial Quality Control report states the valve did not "completely" close. It appears that this was an isolated failure, detected during pre-operational testing. The 1979 failure appears to be strictly an indication failure. The Quality Control Inspection Report states that during troubleshooting, the valve closed properly when the Instrument & Control Technician lifted a lead at the Unit 1 Engineered Safety Features Actuation Cabinet. Operations noted a burned-out light bulb in the closed indication and replaced the bulb. A SIAS signal was then initiated locally, while the associated terminal voltages were monitored. Two valve strokes were performed with no anomalies noted. The MR was signed off the same day it was initiated (**NOTE:** It is the current practice of Operations to check for light bulb failures prior to initiating MRs.)

The above two cases document one failure of a service water valve to fully close (pre-operational), and one failure of the associated "closed" indication to function. It is important to note that in each of these cases, the redundant valve did shut, thereby isolating service water to the turbine building. The design of the system allows for one valve in each train to fail, and still perform its design function. Additionally, recent surveillance tests (on 18-month intervals) have shown no failures. Therefore, based on the fact that there has not been a failure of a turbine building service water isolation valve to close since 1974, extending the interval of this test from 18 months to 24 months will not significantly reduce the capability of this system.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

Extending the surveillance interval for these tests does not significantly increase the probability or consequences of an accident previously evaluated. These surveillances are largely satisfied by Monthly ESF Logic Testing. For those surveillances with components that must be tested while shutdown, failure history indicates that these components have, in general, been extremely reliable.

(ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

This change does not create the possibility of a new or different type of accident. No changes to plant equipment configurations are involved.

(iii) involve a significant reduction in a margin of safety.

Extending the surveillance interval for these tests does not involve a significant reduction in a margin of safety. Monthly ESF Logic Testing will continue to provide the necessary degree of reliability. For those valves that must be cycled shut during a shutdown period, extending the surveillance interval to coincide with our new 24-month refueling schedule does not significantly reduce the probability of valve closure. Past failure history for these valves indicates that their closure should not be adversely affected by an extension of this surveillance interval.

CHANGE NO. 2 (BG&E FCR 86-165)

Change pages 3/4 4-7, 4-8, 4-33, 5-2, 5-5, and 6-27 of the Unit 1, and pages 3/4 4-7, 4-8, 4-34, 5-2, 5-5, and 6-27 of the Unit 2 Technical Specifications as shown on the marked-up copies attached to this transmittal.

BACKGROUND

We plan to begin 24-month refueling cycles commencing with the Spring 1987, Unit 2 refueling. The associated 18-month Surveillance Requirements have been administratively grouped into several categories (e.g., Instrumentation, Integrated Engineered Safety Features, Fire Protection, etc.). This change addresses one such category of related Surveillance Requirements - **CONTAINMENT.** This category groups together equipment that is located within the containment. The major purpose for

submitting these changes as a group is that the justification for extending each Surveillance Requirement interval is largely based on past equipment performance. The following Surveillance Requirements are grouped under the Containment heading:

CATEGORY: CONTAINMENT

CHANGE #	SURVEILLANCE	SUBJECT
2a	4.4.5.3	Steam Generator Tube Inservice Inspection
2b	4.4.13.2	Reactor Coolant System Vent Path
2c	4.5.1.e	SIT Valve Interlock and SIAS Verification
	4.5.2.e	Shutdown Cooling Isolation Test/Sump and TSP Inspections
2d	4.6.4.1.5	Containment Purge Valve Seal Replacement
2e	4.6.5.2.b	Hydrogen Recombiner Testing

DISCUSSION

Each Surveillance Requirement will be individually addressed in the body of this submittal. A separate determination of significant hazards has been provided for each sub-category (Change 2a-2e).

Change 2a - Surveillance 4.4.5.3

This Surveillance Requirement states that steam generator tube inservice inspections shall be performed at intervals of not less than 12 nor more than 24 calendar months after the previous inspection, and allows extension to a 40-month interval based on inspection results. The basis for these steam generator tube inspections was taken from Regulatory Guide 1.83, "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes." Both our present 18-month, and our future 24-month refueling schedules fit this recommended inspection interval (12-24 month). Our current 18-month inspection interval allows for the application of General Technical Specification 4.0.2, which grants an extension of 25% of the surveillance base interval. The extension of the steam generator tube inservice inspection interval to coincide with our new 24-month refueling cycle will preclude application of the Technical Specification 4.0.2 extension provision, since the current Surveillance Requirement states that inspections can not be performed at greater than 24 months following the previous inspection. Therefore, the proposed Surveillance Requirement simply states that "inservice inspections shall be performed at least once per refueling interval." This change will allow automatic extension of the inspection period when "refueling interval" is extended to 24 months. (Currently "R" is defined in Section 1.0 of the Technical Specifications as "at least once per 18 months.") Also, the provisions of Technical Specification 4.0.2 will continue to apply.

Two additional changes are proposed for this Surveillance Requirement. First, the sentence detailing requirements for the first inservice inspection following initial criticality has been deleted. It is no longer necessary. Secondly, paragraph 4.4.5.3.b has been reworded. This paragraph requires that the steam generator tube inspection interval be reduced (from 40 months to at least once per 20 months) if inspection results on a third sample fall into Category C-3 (Technical Specification Table 4.4-2). Extending our refueling interval to 24 months necessitates that the wording of this surveillance requirement be changed to require this inspection "once per refueling interval." Additionally, paragraph 4.4.5.3.b has been clarified to refer back to paragraph 4.4.5.3.a.

It is important to note that our steam generator tube inservice inspection program has historically shown excellent results. Based on the results of inspections from 1978-1983, Unit 1 and Unit 2 steam generators could, by current Technical Specifications, have had inservice tube inspections performed once per 40 months. However, we chose to conservatively perform this inspection once per refueling interval. The following Tables provide data summarized from inservice inspection reports:

UNIT 1

YEAR	STEAM GENERATOR	TOTAL # TUBES INSPECTED	# TUBES DEGRADED	# TUBES DEFECTIVE
1977	11	306	0	0
	12	337	0	0
	TOTAL	643		
1978	11	614	0	0
1979	12	674	0	0
1980	11	646	0	0
1982	11	886	0	0
	12	1038	0	0
	TOTAL	1924		
1983	11	1044	10	1
	12	1048	6	2
	TOTAL	2092	16	3
1985	11	8460	59	9
	12	8442	69	7
	TOTAL	16902	128	16

UNIT 2

YEAR	STEAM GENERATOR	TOTAL # TUBES INSPECTED	# TUBES DEGRADED	# TUBES DEFECTIVE
1978	21	365	0	0
	22	343	0	0
	TOTAL	708	0	0
1979	21	688	0	0
1981	22	755	0	0
1982	21	842	5	1
	22	806	2	1
	TOTAL	1648	7	2
1984	21	7150	9	4
	22	6462	15	2
	TOTAL	13612	24	6
1985	21	2066	22	9
	22	2446	19	4
	TOTAL	4512	41	13

As can be seen from the above data, our steam generator water chemistry program has shown excellent results in maintaining tube integrity. Technical Specifications require that 3% of the steam generators' tubing be inspected. Historically, we have inspected much more than this minimum requirement. Specifically, we have completed new baseline tube inspections on both units in 1985. Results from 100% tube inspections reveal that, in general, the steam generators are in excellent condition. Steam generator tube inspections will be performed, nominally, on a 24-month interval (as allowed by current Technical Specifications). This Technical Specification change is proposed to incorporate the 25% extension of the surveillance base interval as allowed by Specification 4.0.2, should this condition be reached. (Note: Technical Specification 4.0.2 allows a 25% maximum extension per interval; however, the combined time interval for any three consecutive intervals must not exceed 3.25 times the specified surveillance interval).

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

Extending the steam generator tube inservice inspection surveillance interval does not significantly increase the probability or consequences of an accident previously evaluated. Our successful steam generator tube maintenance program has, in the past, warranted an inspection interval of up to 40 months. However, we have conservatively performed tube inservice inspections "once per refueling interval." Additionally, past inservice inspection results justify extending the steam generator tube inspection interval to incorporate the 25% extension of the surveillance base interval (as allowed by Technical Specification 4.0.2).

(ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

This change does not create the possibility of a new or different type of accident. The plant will continue to be operated in a manner such that the secondary coolant will be maintained within those chemistry limits found to result in negligible corrosion of the steam generator tubes.

(iii) involve a significant reduction in a margin of safety.

We have consistently chosen to conservatively perform our steam generator tube inservice inspections. We have both: (1) inspected more than the minimum required tubes on numerous occasions, and (2) maintained our inspection frequency at "once per refueling interval", even when it was possible, by Technical Specifications, to extend the inspection interval to 40 months. This change proposes to incorporate the 25% extension of the surveillance base interval (as allowed by Technical Specification 4.0.2) to the Steam Generator Tube Technical Specification. The bases to Technical Specification 4.0.2 state that the tolerances allowed for performing surveillance activities beyond those specified in the nominal interval "are necessary to provide operational flexibility because of scheduling and performance considerations". Nominally, the steam generator tube inspections will continue to be performed within the 24-month criteria as currently stated in the Technical Specifications. However, this change proposes to incorporate the extension of the surveillance base interval, per Technical Specification 4.0.2, to allow for an acceptable measure of flexibility in the operations schedule. Therefore, since our past tube inspection results have been excellent; and, since increased degradation is not expected due to the application of Technical Specification 4.0.2, it is concluded that this proposed change does not involve a significant reduction in a margin of safety.

Change 2b - Surveillance 4.4.13.2

This Surveillance Requirement states that each reactor coolant system vent path shall be demonstrated OPERABLE at least once per 18 months by: 1) verifying that all manual isolation valves are locked open and, 2) verifying flow. This requirement is tested by two separate Surveillance Test Procedures: STP-0-95, "Locked Valve Verification Inside Containment"; and, STP-0-66, "Quarterly Valve Operability Verification - Shutdown", respectively. An extensive surveillance history is not available for this surveillance requirement since the reactor coolant system vent paths were only made operational in 1983. However, discussions with Operations staff personnel reveal that these tests have been consistently performed with satisfactory results. Additionally, no adverse impact on system operation is expected due to extending this surveillance requirement to coincide with our new 24 month refueling schedule. Both tests are intended to be performed following a refueling outage, prior to unit start-up. (The surveillance requirement that verifies flow through each vent valve can only be performed with Reactor Coolant System pressure between 100-270 psia).

The Reactor Coolant System vent valve vendor was contacted and notified of our intent to go to a 24-month refueling cycle. The vendor stated that the vent valve design does not preclude an extension of the operating cycle. Also, the vendor remarked that this valve model's operating history to date has been excellent.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

No problems have been encountered during the 18-month testing, nor is any system degradation expected upon extending the surveillance interval. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

(ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

This change does not create the possibility of a new or different type of accident. This change only extends the surveillance interval (for a test obviously intended to be performed during a refueling outage) to coincide with the refueling outage of our new 24-month fuel cycle.

(iii) involve a significant reduction in a margin of safety.

This surveillance requirement is intended to verify each reactor coolant system vent path as operable on a refueling interval basis. The primary purpose of this surveillance requirement is to verify flow through each vent path following re-installation of the reactor vessel head (post refueling). Vent valve operability is not expected to be adversely impacted by this surveillance interval extension; therefore, this change is deemed not to involve a significant reduction in a margin of safety.

Change 2c - Surveillance 4.5.1.e and 4.5.2.e

The following Surveillance Requirements are performed at least once per 18 months in demonstrating each ECCS subsystem OPERABLE. Each Surveillance Requirement will be justified individually for extending its interval to "at least once per refueling interval."

4.5.1.e

This Surveillance Requirement demonstrates each Safety Injection Tank (SIT) operable at least once per 18 months by verifying that each SIT isolation valve opens automatically under each of the following conditions:

(1) When reactor coolant system pressure exceeds 300 psia, and
(2) Upon receipt of a safety injection test signal.

Surveillance Test Procedure 0-35, "Safety Injection Tank Outlet Isolation Valve Test" performs this test. A plant history review of previous tests (six on Unit 1, four on Unit 2), from 1977 to present, was conducted. This review revealed that there has never been a failure of a SIT outlet isolation valve to open on either the input of a simulated, rising pressure test signal; or a safety injection actuation test signal.

Results show that 90% of the valve actuations testing the SIT/SDC interlock occurred in the range from 280 - 300 psia. Also, all safety injection actuation test signals resulted in valve openings ranging from 53.5 to 64 seconds (65 second maximum specification). Twelve-month and 18-month refueling interval STP's were compared, looking for evidence of system response degradation associated with the additional six month timeframe incurred as a result of our previous refueling cycle extension. No such degradation was evident.

4.5.2.e.1

This Surveillance Requirement verifies the automatic isolation and interlock action of the Shutdown Cooling System from the Reactor Coolant System (RCS) when the RCS pressure is above 300 psia. Surveillance Test Procedure 0-36, "Shutdown Cooling Return Header Valve Test" performs this test. A plant history review of previous tests (seven on Unit 1, six on Unit 2), from 1977 to present, was conducted. This review revealed that there has never been a failure of a shutdown cooling return header valve to close on the

input of a simulated, rising pressure test signal. Over 92% of the valve closures occurred in the range from 280-300 psia. Twelve-month and 18-month refueling interval STPs were compared, looking for evidence of system response degradation associated with the additional six month timeframe incurred as a result of our previous refueling cycle extension. No such degradation was evident.

4.5.2.e.2

This Surveillance Requirement verifies by visual inspection that the containment sump suction inlets are not restricted by debris and that the sump components show no evidence of structural distress or corrosion. A plant history review of the STP inspecting the sump was conducted. One STP for Unit 2 failed this visual inspection in 1976 (pre-commercial operation) due to a large number of cigarette butts covering the screen. This post-construction "debris" was cleaned; and, no other sump inspections have failed to date. (Smoking has not been allowed in containment since construction was completed). It is evident that this surveillance is meant to be performed during the refueling outage. Extending this inspection to "once per refueling interval" is not expected to alter the STP results.

4.5.2.e.3,4

These Surveillance Requirements verify the volume and the effectiveness of the granular trisodium phosphate (TSP) contained within the storage baskets inside containment. A plant history review of the test procedure that calculates the amount of TSP contained in each storage basket reveals that no basket has ever failed the minimum volume criteria. Additionally, discussions with the Plant Chemistry Unit have shown that the TSP has, without fail, passed the pH test. This test requires 4.0 $\pm$ .1 grams of TSP to be submerged in 3.5 $\pm$ .1 liters of borated water from the Refueling Water Tank (RWT). The pH of the mixed solution must be raised to 6 within four hours. Most baskets of TSP continue to pass this test within the first hour. No basket of TSP has ever been replaced for failure of this Surveillance Requirement. Test results for both the volume and pH surveillances indicate that neither of these tests should be adversely affected by extending the interval between surveillances to coincide with our new 24-month fuel cycle.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

Extending the surveillance interval for these tests does not significantly increase the probability or consequences of an accident previously evaluated. The surveillance history for these tests verifies proper past performance. Additionally, the extended surveillance inspection interval is not expected to adversely affect test results.

(ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

This proposed change does not create the possibility of a new or different type of accident. No plant modifications or changes in surveillance requirement acceptance criteria are proposed.

(iii) involve a significant reduction in a margin of safety.

Extending the surveillance interval for these tests does not involve a significant reduction in a margin of safety. A review of the past failure history of these tests indicates that system performance should not be adversely affected by an extension of these surveillance intervals. Additionally, a comparison between STP results performed on 12 and 18-month intervals did not reveal any evidence of system degradation associated with the additional six month timeframe incurred as a result of our previous refueling cycle extension.

Change 2d - Surveillance 4.6.4.1.5

This Surveillance Requirement ensures that the containment purge isolation valve seals are replaced at a frequency guaranteeing no seal remains in service greater than two consecutive fuel reload cycles. No change needs to be made to this Surveillance Requirement as a result of extending our fuel cycle to 24 months; however, we are addressing this issue due to the fact that the interval between purge valve seal replacements will be lengthened.

On February 1, 1982, the NRC issued Reference (a), containing a specification requiring the measurement of leakage associated with the purge isolation valves at least once every six months. We presented an alternative to this six month leak testing program in Reference (b), consisting of:

1. A leak testing program to be performed " . . . anytime upon entering **MODE** 5 from power operation modes, unless the last surveillance test has been performed within the past six months . . . " (Technical Specification 4.6.4.1.5), and

2. A seal replacement program.

The NRC accepted our alternate program in Reference (c), stating: "Experience (BG&E and vendor) indicates that the resilient seals associated with the containment purge isolation valves can be expected to maintain a high degree of integrity for five years of operation. The proposed individual seal replacement interval of two refueling cycles corresponds to approximately three years." Extending this seal replacement interval to approximately four years is well within the manufacturer's recommended seal life; and, is not expected to significantly decrease seal reliability.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

Valve leakage is not expected to increase as a result of extending this Surveillance Requirement time interval for seal replacement by approximately one year. Seals currently replaced on a three year basis show no evidence of visible degradation. A seal replacement program of approximately four years is well within the manufacturers recommended seal life. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously identified.

(ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

The leak testing program, performed anytime upon entering **MODE** 5 from power operation modes (not more frequently than once per six months), will continue to provide the primary information in assessing seal reliability. Extending the time interval of "refueling cycle" (R) by six months, thereby effectively postponing purge valve seal replacement by approximately one year (seals are replaced at intervals of 2R), will not create the possibility of a new or different type of accident.

(iii) involve a significant reduction in a margin of safety.

This proposed change does not involve a significant reduction in a margin of safety. Past surveillance history for the containment purge valve seals, coupled with the manufacturer's recommendations concerning seal life, indicate that seal reliability is not expected to significantly decrease by incorporating this change.

Change 2e - Surveillance 4.6.5.2.b

Each hydrogen recombiner system is demonstrated OPERABLE at least once per 18 months by performance of the following Surveillance Requirements. Each Surveillance Requirement will be individually addressed in justifying extending the surveillance interval to "at least once per refueling interval." In general, the tests take several hours to perform inside containment. Therefore, due to concerns in keeping personnel radiation dosage to a minimum (As Low As Reasonably Achievable), it is considered impractical to perform these tests at power.

4.6.5.2.b.1

This test performs a channel calibration of all hydrogen recombiner instrumentation and control circuits. A plant history review of previous tests (seven on Unit 1, six on Unit 2), from 1977 to present, was conducted. All test results were found in specification. In January 1977, on Unit 1, Hand Switch 7505 Position 2 was providing erratic indication; however, this minor problem did not affect test results and was subsequently resolved.

4.6.5.2.b.2 and .4

These tests verify: 1) that there is no evidence of abnormal conditions within the recombiners (by performing a visual examination); and 2) that the integrity of the heater electrical circuits is satisfactory (by performing a continuity and resistance to ground test.) Both of these tests are performed under the same Surveillance Test Procedure. A plant history review of this test revealed only one instance where the test results were not in specification. In February 1977, on Unit 1, the A, B, & C phase to ground resistance was low on #11 Hydrogen Recombiner Heater. The ground was found to be caused by a frayed lead at the cable connector for the third heater bank's power cable. This cable was repaired; and, this failure is considered to be an isolated occurrence.

4.6.5.2.b.3

This test verifies during a recombiner system functional test that the heater sheath temperature increases to $\geq$ 1200°F within five hours, and is maintained for at least four hours. A plant history review of previous tests (eight on Unit 1, seven on Unit 2), from 1976 to present, revealed that the results have never been out-of-specification. Additionally, there is no reason to believe that extending this surveillance interval to "once per refueling interval" will adversely affect these results.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

Extending the surveillance interval for these tests does not significantly increase the probability or consequences of an accident previously evaluated. The ability of the hydrogen recombiners to function in a post accident situation should not be degraded. Past surveillance history results are excellent, with no indication of time related failure mechanisms.

(ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

This change does not create the possibility of a new or different type of accident. Extension of the hydrogen recombiner surveillances is not expected to have any adverse effect on recombiner operability.

(iii) involve a significant reduction in a margin of safety.

Extending the surveillance interval for these tests does not involve a significant reduction in a margin of safety. Past operating history, and the nature of the tests themselves, indicates that this surveillance interval extension will not adversely effect system operation.

CHANGE NO. 3 (BG&E FCR 86-176)

Change pages 3/4 6-13 and 3/4 6-15 of the Unit 1 and 2 Technical Specifications as shown on the marked-up copies attached to this transmittal.

DISCUSSION

We propose to change the interval for performing certain containment iodine filter train Surveillance Requirements from "18 months" to "refueling interval" to support our future 24-month fuel cycles. These changes would eliminate the need to perform these Surveillance Requirements in the containment during reactor operation or during a reactor shutdown prior to a refueling outage.

OPERABILITY of the containment iodine filter trains assures that sufficient iodine removal capability will be available in the containment in the event of a Loss of Coolant Accident (LOCA). There are three filter trains in each containment and each filter train consists of a moisture separator, HEPA filter, charcoal adsorber, and fan in series. The moisture separator and HEPA filter remove moisture and particulates so that the charcoal adsorber will function effectively in a post-LOCA environment. Each filter train has a capacity of 20,000 cfm.

The filter train fans are normally only operated for short periods prior to personnel entry into the containment after a period of reactor operation. Each fan is operated about 600 to 800 hours during each fuel cycle. Each fan will automatically start on a Containment Isolation Signal (CIS) during a LOCA.

During the maximum hypothetical accident, evaluated in section 14.24 of the Updated Final Safety Analysis Report, one of the three filter train fans is assumed to start automatically; a second fan is started manually after 20 minutes. The operating filter trains are assumed to be 90% effective removing elemental iodine and 0% effective removing organic iodine. In addition, no credit is taken for HEPA filters removing particulate activity.

The 18-month Surveillance Requirements ensure filter train performance is not significantly degraded. Since the filter trains are "standby systems" and used sparingly during the reactor operating cycle, the more likely causes of significant performance degradation are the conditions existing during refueling outages: higher levels of dust and debris in the containment atmosphere, and maintenance or modifications in the vicinity of the filter trains. Therefore, it is prudent to maintain the surveillance interval for these Surveillance Requirements consistent with the refueling interval.

The following is a discussion of each test affected by this proposal:

4.6.3.1.b.1 **In-place test of the charcoal adsorbers**

This test uses a refrigerant tracer gas to assure there is no degradation of the charcoal filter elements or housing. There are 60 charcoal filter elements in each containment iodine filter train; each element has a 333 cfm capacity. A review of previous tests (eight on Unit 1, seven on Unit 2) from 1977 to present shows the integrity of the charcoal filter elements and housing to be extremely reliable. A test in May 1977, the first test performed on the Unit 2 filter trains, showed one element in one Unit 2 filter train to be leaking at the gasketed surface between the element and the housing. The torsion bar was adjusted and the leak stopped. The overall efficiency of the charcoal adsorber was not degraded below what is assumed in previous accident evaluations.

In addition to being required at least once per refueling interval, this test is required after any structural maintenance, painting, fire, chemical release, or replacement of charcoal. Based on the fact that this test has revealed only one leak on one charcoal filter element in the past 10 years, that this leak did not significantly reduce the overall efficiency of the charcoal adsorber, and that no leaks have occurred in the past nine years, extending the interval of this test from 18 months to 24 months will not significantly reduce the capability of the filter trains.

4.6.3.1.b.2 **In-place test of the HEPA filters**

This test uses a DOP aerosol to assure there is no degradation of the HEPA filter elements or housing. There are 20 HEPA filter elements in each containment iodine filter train; each element is rated at 1000 cfm. A review of previous tests (seven on Unit 1, six on Unit 2) from 1976 to present shows the integrity of the HEPA filter elements and housing to be very reliable. A Unit 2 test in November 1979 showed one HEPA filter element to be defective (damaged) and one HEPA filter element (on a different filter train) to be leaking at the gasketed surface. The defective filter was replaced and the torsion bar on the leaking gasket adjusted to stop the leaks. A Unit 1 test in December 1980 showed one HEPA filter element to be leaking at the gasketed surface. This leak was also stopped by adjusting the torsion bar.

Each of the three leaks detected by this test were on a single HEPA filter element on different filter trains. In each case the remaining 19 HEPA filter elements on each filter train were all more than 99% efficient. Therefore, the overall ability of the HEPA filter on each filter train to prevent clogging of the charcoal adsorber was not significantly reduced.

In addition to being required at least once per refueling interval, this test is required after any structural maintenance, painting, fire, chemical release, or replacement of a HEPA filter element. Based on the fact that this test has revealed only three leaks on individual HEPA filter elements on different filter trains in the past 10 years, that these leaks did not significantly reduce the overall ability of the HEPA filter to prevent clogging of the charcoal adsorber, and that no leaks have occurred in the past six years, extending the interval of this test from 18 months to 24 months will not significantly reduce the capability of the filter trains.

4.6.3.1.b.3 **Laboratory test of charcoal samples**

This is a laboratory test which simulates post-LOCA containment conditions and measures the adsorption effeciency of the charcoal using radioiodine gas. A review of previous tests (eight on Unit 1, seven on Unit 2) from 1976 to present shows all laboratory analysis results have been greater than 98% efficiency, decreasing about 2% in 10 years. The Technical Specifications require a 95% efficiency (5% above the accident evaluation assumption of 90%).

In addition to being required at least once per refueling interval, this test is required after any structural maintenance, painting, fire, chemical release, or after every 720 hours of charcoal adsorber operation. Based on the fact that this test has revealed no failures and has shown a very slowly decreasing trend in adsorption efficiency over the past ten years, extending the interval of this test from 18 months to 24 months will not significantly reduce the capability of the filter trains.

4.6.3.1.b.4 **Verify a filter train flow rate of 20,000 cfm ± 10%**

This test verifies that the system flow rate will provide the minimum required charcoal residence time for the charcoal to be effective and the minimum containment recirculation rate assumed in previous accident evaluations. A review of all previous test results from 1976 to present (seven on Unit 1, six on Unit 2) shows that the system flow rate has been reliable. A Unit 2 test in June 1984 showed that the flow through one filter train was 16% low, out of the ± 10% tolerance band for acceptable flow. This problem was corrected by lubrication of the fan motor bearings. Since the June 1984 test, a periodic maintenance item was initiated to lubricate the fan motor bearings for each filter train each refueling outage.

In addition to being required at least once per refueling interval, this test is required after any structural maintenance, painting, fire, or chemical release. Based on the fact that the system flow rate was found out of the 10% tolerance band only once in the past 10 years, that the flow in this case was only 6% below the allowable, and that periodic lubrication will reduce the likelihood of such a problem, extending the interval of this test from 18 months to 24 months will not significantly reduce the capability of the filter trains.

4.6.3.1.d.1 **Verify a filter train differential pressure $\leq$ 6 in. w.g.**

This test verifies the filter elements will not be damaged by operation of the filter train fan. The results of previous differential pressure tests (seven on Unit 1, six on Unit 2) from 1976 to present have been significantly less than $\leq$ 6 in w.g., approximately 2 in. w.g., with no significant increasing trend discernable.

Based on the fact that the filter train differential pressure has been significantly below 6 in w.g., extending the interval of this test from 18 months to 24 months will not significantly reduce the capability of the filter trains.

4.6.3.1.d.2 **Verify the filter train fan starts on a Containment Isolation Signal**

This test verifies the filter train fans will start automatically in the event of a LOCA. This test is performed by manually initiating a Containment Isolation Signal (CIS) during the Integrated Engineered Safety Features (ESF) Test which is done during COLD SHUTDOWN. The filter train fans have not failed to start during previous tests (eight on Unit 1, seven on Unit 2) from 1974 to present.

In addition, a monthly ESF Logic Test verifies the filter train fans start when a CIS is initiated at the logic module in the cable spreading room. Based on the fact that the filter train fans have not failed to start during previous Integrated ESF Tests, and that the ESF Logic Test will continue to verify on a monthly basis that the fans start when a CIS is initiated from the cable spreading room, extending the interval of the Integrated ESF Logic Test will not significantly reduce the capability of the filter trains.

DETERMINATION OF SIGNIFICANT HAZARDS

This proposed change has been evaluated against the standards in 10 CFR 50.92 and has been determined to involve no significant hazards considerations, in that operation of the facility in accordance with the proposed amendment would not:

(i) involve a significant increase in the probability or consequences of an accident previously evaluated; or

Extending the surveillance interval for these tests from 18 to 24 months would not significantly degrade the performance of the filter trains. Failure history indicates the filter trains have been extremely reliable and the failures that have occurred have not significantly reduced the capability to remove elemental iodine from the containment atmosphere. Since the filter trains are a standby system, the operating time between tests would not be increased significantly. Therefore, the probability of consequences of an accident previously evaluated would not be significantly increased.

(ii) create the possibility of a new or different type of accident from any accident previously evaluated; or

This proposal affects the surveillance interval only and does not affect system design or operation.

(iii) involve a significant reduction in a margin of safety.

Extending the surveillance interval for these tests from 18 to 24 months would not significantly degrade the performance of the filter trains. Failure history indicates the filter trains have been extremely reliable and the failures that have occurred have not significantly reduced the capability to remove elemental iodine from the containment atmosphere. Since the filter trains are a standby system, the operating time between tests would not be increased significantly. Therefore, the margin of safety would not be significantly reduced.

SAFETY COMMITTEE REVIEW

These proposed changes to the Technical Specifications and our determination of significant hazards have been reviewed by our Plant Operations and Off-Site Safety Review Committees, and they have concluded that implementation of these changes will not result in an undue risk to the health and safety of the public.

FEE DETERMINATION

Pursuant to 10 CFR 170.21, we are including BG&E Check No. 1082432 in the amount of $150.00 to the NRC to cover the application fee for this request.

Very truly yours,

J A Tiernan

STATE OF MARYLAND :
: TO WIT:
CITY OF BALTIMORE :

Joseph A. Tiernan, being duly sworn 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:

Garnet W. Fowlkes
Notary Public

My Commission Expires: 7.1.90

Oct. 17, 1986
Date

JAT/BEH/MTF/gla

Attachments

cc: D. A. Brune, Esquire
J. E. Silberg, Esquire
S. A. McNeil, NRC
T. Foley, NRC
T. Magette, DNR