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JOSEPH A. TIERNAN
VICE PRESIDENT
NUCLEAR ENERGY

August 25, 1986

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 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
Exigent Request for Amendment

REFERENCES: (a) Letter from Mr. J. A. Tiernan (BG&E), to Mr. A. C. Thadani (NRC), dated August 1, 1986, same subject

(b) Letter from Mr. E. J. Butcher (NRC), to Mr. A. E. Lundvall, Jr., (BG&E), dated October 7, 1985, NUREG-0737 Item II.K.3.25

Gentlemen:

In response to the requests from Mr. S. A. McNeil of your office, the following information is provided. We hope this additional information will assist you in your review of Reference (a).

Chronology

In September 1985, our Chemistry Section sampled No. 12 Diesel Generator's (DG) jacket cooling water (JCW). The Operations Section had requested the investigation because of a low jacket coolant pressure trip on the DG. Subsequent testing identified a pressure switch malfunction as the cause for the trip. However, the chemistry analyses did show that Carbon Monoxide (CO) gas was present in the JCW. The Chemistry Section initiated a Maintenance Request (MR) to document the situation. The attached chronology (Attachment 1) describes the sequence of events following the initial investigation.

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The MR remained in the maintenance backlog until the engineer responsible for the system was made aware of the condition in March 1986. From that point to the present, a thorough investigation has been conducted involving plant management, other utilities, vendors, and consultants. We have waited until now to request a temporary Technical Specification change so that alternatives other than an exigent request could be researched and analyzed. As explained in Reference (a), we can go no further in our troubleshooting until we perform the pressure test/leak check described therein.

Mobile AC Power Source

We have located a portable DG that could be used in an outage if necessary. The Curtis Engine and Equipment Company of Baltimore, Maryland will rent a 1000 kw, 480 volt, Cummins Model KTA-50-G1 diesel engine. Electrically this DG could be connected to Vital 480 volt buses 11A, 11B, 14A, or 14B for Unit No. 1 or 21A, 21B, 24A, or 24B for Unit No. 2. Each bus can power one charging pump and one battery charger.

Surveillances

We have attached (Attachment 2) a marked-up copy of the temporary Technical Specifications proposed by Mr. S. A. McNeil of your office. We agree to perform the Surveillance Requirements specified at the proposed frequency. In addition, we will perform the other surveillances that have been requested by Mr. S. A. McNeil and report their results. These requests, as we understand them, are listed below.

1. Perform Surveillance Requirement 4.8.1.1.1.a prior to removing No. 12 DG from service.

2. Perform Surveillance Requirement 4.8.1.1.2.a, Steps 1-6, on Nos. 11 and 21 DGs prior to removing No. 12 DG from service.

3. Sample Nos. 11 and 21 DGs for Carbon Monoxide prior to removing No. 12 DG from service.

Furthermore, we will submit a written copy of the approved test procedure to your office at least seven days prior to performing the hydrostatic leak test on No. 12 DG. We will also call Mr. S. A. McNeil 96 hours prior to beginning the leak test. Additionally, we understand that Section 3.0.4 of the Technical Specifications will not apply with respect to the operability of the No. 12 DG during the 10-day period. We have added this exemption to Attachment 2.

Offsite AC Power Sources

In addition to the accelerated surveillances noted in Attachment 2, we agree to maintain the 69 kv SMECO power circuit operable onsite during this 10-day maintenance period. We will energize the 13 kv bus No. 23 with SMECO power by shutting breaker No. 252-2301, isolate it from all other buses, and open the feeder from No. 23 bus to our warehouse. The warehouse will still be powered by SMECO, but through alternate feeders. The appropriate procedures exist and the operators possess adequate knowledge to perform such an electrical line-up.

We have ensured that no unnecessary planned maintenance will be performed offsite on the two 500 kv lines that would jeopardize the operability of the power sources. We also acknowledge the proposed change in the Limiting Condition for Operation in Attachment 2 that requires the operability of all three sources.

Deterministic Analysis

A deterministic analysis was performed assuming a total loss of offsite power (LOSP) while No. 12 DG is out-of-service, and a failure of one of the two remaining DGs to start. In addition, we assumed the worst case reactor coolant pump seal leak, as described in Reference (b), of 40 gpm in the unit opposite the unit with the remaining operable DG. This analysis calculated the time to core uncovery. The calculation shows that the core will remain covered for much greater than four hours. Heat transfer to the steam generators would be adequate to remove the core decay head load, assuming both units tripped at 100% power.

Hurricane Considerations

During the ten-day out-of-service period for No. 12 DG, we will institute the hurricane policy described in Attachment 3 which provides our actions based on the given condition. In the event that the conditions listed in Item D. in Attachment 3 are no longer present, we plan to take actions (consistent with our normal procedures) to bring both units back on-line. This policy will apply only during this one-time change.

Miscellaneous Information

The items discussed below are in direct response to questions asked by Mr. S. A. McNeil.

1. The Atmospheric Dump Valves will still receive power from the batteries (DC) until they deplete if a station blackout occurs.

2. The steam supply valves to the turbine driven Auxiliary Feedwater (AFW) Pumps are air-operated globe valves which are held shut by air supplied through a normally de-energized solenoid valve. If the Steam Generator level reaches the Auxiliary Feedwater Actuation System (AFAS) setpoint, the AFAS start signal will allow 125 VDC to energize the solenoid valve and result in the opening of the steam supply valves. Both AFAS and the solenoid valve are supplied power from the batteries. Additionally, each solenoid valve has an associated three-way manual valve provided in line with it to allow remote manual operations of the steam supply valve.

3. Procedures do exist that provide guidance to the operators for aligning charging pumps to charge to the reactor coolant system, for aligning a DG to the opposite unit's electrical system, and for using the SMECO 69 kv-tie to energize the 13 kv buses.

4. Neither DGs No. 11 nor No. 21 can simultaneously provide power to both unit's AC buses without defeating interlocks designed to protect the diesel generators.

Summary of Mitigating Features

As discussed previously, BG&E has a unique 69 kv tie line. This power source is capable of handling all of the safe shutdown loads at the site (it has the load-carrying capacity of two DGs) and it is a fully qualified GDC-17 power source. Aligning this source, such that it is readily available, compensates somewhat for the unavailability of No. 12 DG.

In the unlikely event of a LOSP followed by a failure of No. 11 or No. 21 DG while No. 12 DG is out-of-service (as described earlier), two full-capacity steam-driven AFW pumps would be available initially to feed the "blacked-out" unit. The recently installed cross-connect between the Unit 1 and Unit 2 motor-driven AFW pumps gives us the ability to feed one unit from the other unit.

The Calvert Cliffs DC electrical power system (including the batteries, the battery chargers, and the inverters) is common to Units 1 and 2. In the event that only a single DG remained operable following a LOSP, it could provide battery charging that serves both units. Sufficient battery capacity would be availab for four hours.

Conclusion

The additional information provided in this letter supports our previous determination in Reference (a) that the proposed changes to the Technical Specifications involve no significant hazards considerations. The additional compensatory actions described in this letter involve an even more insignificant risk than previously considered, and provide adequate assurance that the health and safety of the public will be protected.

Should you have further questions regarding this subject, we would be pleased to discuss them with you.

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 H. Fowler
Notary Public

My Commission Expires: July 1, 1990

August 26, 1986
Date

JAT/SRC/dlm

Attachments

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

ATTACHMENT 1

TIMETABLE FOR ADDRESSING CO IN #12 EMERGENCY DIESEL GENERATOR (EDG) JACKET COOLING WATER

DATE	EVENT
851001	The Chemistry Section processes sample of #12 EDG Jacket Cooling Water (JCW) and test results are positive for Carbon Monoxide (CO).
851002	The Chemistry Section generates Maintenance Request (MR) identifying possible exhaust leak into JCW.
860304	System Engineer (SE) is requested to investigate PROBLEM WITH NO. 12 EDG. SE begins study of past diesel operating parameters and trending program data.
860424	SE requests that the Chemistry Section take more samples from Nos. 11, 12, & 21 diesels to determine if there are any conditions where CO forms naturally in the coolant, as a result of hydrazine, different temperatures, and contact with various metals.
860428	The Chemistry Section replies that coolant additives will not generate CO.
860501	SE contacts Fairbanks-Morse (FBM) to discuss situation. FBM recommends we find source of leak quickly, and explains that adapter seal leaks can lead to cracks if they remain for an extended time.
860502	SE begins working with the Maintenance and Operations Departments to develop a specific plan of action.
860505	SE discusses situation with engineers at North Anna (VEPCO) and FERMI II (Detroit Edison). They have had cracked liners in the past.
860523	The Chemistry Section reports that Nos. 11 & 21 DGs have only trace amounts of CO.
860527	SE, planners, and maintenance supervisors present schedule and estimate of repairs to management. Worst case repair (replace liner & blower) will take 134 hours.
860602	SE discusses situation again with FBM. Verified run-in testing schedule if liner should be replaced.
860602	SE requests Licensing support in relaxing Action Statement for No. 12 DG in order to allow sufficient time to effect worst case repairs.

ATTACHMENT 1

TIMETABLE FOR ADDRESSING CO IN #12 EDG JACKET COOLING WATER

DATE	EVENT
860609	SE had meeting with Trident Engineering Associates. Problem was described during meeting. Trident recommends we investigate more fully and points out possible consequences if not corrected.
860611	The "potential" need for a one-time change to No. 12 DG's Action Statement was communicated to Dave Jaffe at the NRC. He stated that a PRA analysis must show that no significant hazards exist before the request would even be considered.
860612	Analytical Support Unit started developing a PRA justification for a 10-day outage on #12 DG.
860616	A meeting was held to discuss our strategy concerning No. 12 DG and licensing activities to support Tech Spec change. The Licensing Unit began researching the issue and preparing a license amendment letter.
860703	Analytical Support completed PRA analysis of a 10-day outage for No. 12 DG.
860711	Licensing completed draft letter to the NRC requesting Tech Spec change.
860718	POSRC reviewed and approved draft license amendment letter. Licensing Unit briefly discussed situation with S. A. McNeil of the NRC.
860725	OSSRC reviewed draft license amendment letter and found no significant hazards or decrease in public health or safety resulting from the proposed change.
860729	Plant staff decided that no DG Tech Spec change was required if Unit 2 was going to be in **MODE** 5 or 6 during resolution of RCP problems; however, RCP problems were resolved and the plant was returned to **MODE** 4 on 860801.
860730	Further discussions with Project Manager and Licensing were held. The NRC requested more information and an early review of our Tech Spec change request.
860801	Submitted Exigent License Amendment Request to the NRC.

ATTACHMENT 2

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. ~~Two~~ Three physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system consisting of ~~either:~~

1. Two 500 Kv offsite power circuits, ~~or as necessary~~ and

2. The 69 Kv SMECO offsite power circuit described in the January 14, 1977 Safety Evaluation and one 500 Kv offsite power circuit, and

b. Two separate and independent diesel generators (one of which may be a swing diesel generator capable of serving either Unit 1 or Unit 2) each with:

1. Separate day fuel tanks containing a minimum volume of 375 gallons of fuel,

2. A common fuel storage system consisting of two independent storage tanks each containing a minimum volume of 18,250 gallons of fuel, and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With ~~two~~ one offsite circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1 within one hour and at least once per 8 hours thereafter; and 4.8.1.1.2.a.4 within 24 hours unless the diesel generators are already operating. Restore ~~at least two~~ three offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

and once every 72 hours thereafter

b. With ~~one~~ No. 12 diesel generator inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1 within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.4 within 24 hours. Restore two diesel generators to OPERABLE status within ~~72~~ 14 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

or by 4:00pm EDT on September —, 1986, whichever comes first,

and once every 72 hours thereafter

ELECTRICAL POWER SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

c. With two offsite circuits and one diesel generator (No. 12) of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter and Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours, unless the diesel generators are already operating. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least ~~two~~ three offsite circuits and ~~two~~ (No. 12) diesel generator to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With three of the above required offsite A.C. circuits and one diesel generator (No. 12) inoperable, ~~demonstrate the OPERABILITY of two diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.4 within 8 hours unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or~~ be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two of the above required diesel generators (No. 12 and Nos. 11 and 21) inoperable, demonstrate the OPERABILITY of ~~two~~ three offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore ~~at least one of the inoperable~~ (No. 11 or No. 21) diesel generator to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two diesel gnerators to OPERABLE status within ~~72~~ 240 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

f. or by 4:00 pm EDT, Sept. —, 1986, or whichever comes first.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each required independent circuit between the offsite transmission network and the onsite Class 1E distribution system shall be demonstrated OPERABLE, as follows:

~~a. Demonstrated OPERABLE, as follows:~~

a. For each 500 Kv offsite circuit, at least once per ~~7 days~~ 8 hours by verifying correct breaker alignments and indicated power availability,

The requirements of Technical Specification 3.0.4 do not apply during this 10-day period.

SURVEILLANCE REQUIREMENTS (Continued)

b. For the 69 Kv SMECO offsite power circuit, ~~within one hour of substitution for a 500 Kv offsite power circuit, and~~ at least once per 8 hours ~~thereafter during use~~ by verifying correct breaker alignments and indicated power availability. ~~and~~

~~b. Demonstrated OPERABLE at least once per 18 months during shutdown by manually transferring unit power supply from the normal circuit to the alternate circuit.~~

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. At least once per ~~31 days~~ 72 hrs on a STAGGERED TEST BASIS by:*

1. Verifying the fuel level in the day fuel tank.

2. Verifying the fuel level in the fuel storage tank.

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

4. Verifying the diesel starts and accelerates to at least 900 rpm with generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz, respectively.

5. Verifying the generator is synchronized, loaded to ≥ 1250 Kw, and operates for ≥ 60 minutes.

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

~~7. Verifying that the automatic load sequence timer is OPERABLE with the interval between each load block within ± 10% of its design interval.~~

~~b. At least once per 92 days by verifying that a sample of diesel fuel from the fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-81 when checked for viscosity, water and sediment.~~

~~c. At least once per 184 days by verifying the diesel starts from ambient condition and accelerates to at least 900 rpm in ≤ 10 seconds.~~

*All engine starts for the purpose of this Surveillance Requirement may be preceded by an engine prelube period and/or other warmup procedures recommended by the manufacturer so that mechanical wear and stress on the diesel engine is minimized.

ATTACHMENT 3

HURRICANE POLICY

	CONDITION	ACTIONS
A.	Hurricane Watch	1. Obtain weather updates every four hours from the system operator. 2. Test Diesel Generators in accordance with Surveillance Test Procedure 0-8.
B.	Hurricane Warning	1. Secure outside equipment. 2. Shut intake watertight doors and hatches. 3. Recall emergency teams. Emergency team leaders must ensure they have adequate personnel for 24 hour coverage.
C.	Onsite winds expected to reach greater than 70 mph **or** sustained onsite wind speed measured at greater than 60 mph.	1. Reduce power on both units to 300 MWe.
D.	Onsite winds expected to reach greater than 90 mph **or** sustained onsite wind speed measured at greater than 80 mph	1. Place both units in hot standby using existing procedures.