UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 172 TO FACILITY OPERATING LICENSE NO. DPR-53

BALTIMORE GAS AND ELECTRIC COMPANY

CALVERT CLIFFS NUCLEAR POWER PLANT, UNIT NO. 1

DOCKET NO. 50-317

1.0 INTRODUCTION

By letter dated May 1, 1992, the Baltimore Gas and Electric Company (the licensee) submitted a request for changes to the Calvert Cliffs Nuclear Power Plant, Unit No. 1, Technical Specifications (TS). The requested changes would revise the specified test signals required for surveillance testing the containment spray valves and pumps, the containment air coolers, and the containment iodine filter trains. The current TS specify that the Safety Injection Actuation Signal (SIAS) test signal be used for the containment spray valves and the Containment Spray Actuation Signal (CSAS) test signal for the pumps; the CSAS test signal be used for the containment air coolers; and the Containment Isolation Signal (CIS) test signal be used for the iodine filter trains. The purposed change deletes the SIAS, CSAS, and CIS test signals and replaces them with the appropriate Engineered Safety Feature Actuation System (ESFAS) test signal. The proposed change will affect TS 4.6.2.1.b.1, 4.6.2.1.b.2, 4.6.2.2.b, and 4.6.3.1.d.2.

During accident conditions accompanied by a loss of offsite power, the Emergency Diesel Generators (EDGs) sequencers will automatically load the EDGs in a controlled manner. The sequencers initially blocks the SIAS and CSAS to the equipment to be sequenced on to the EDGs and then unblocks these signals in controlled steps. This unblocking is a permissive function, which by itself will not start the equipment. The equipment must have an additional signal to start. Because the loss-of-coolant accident (LOCA) sequencer is initiated upon receipt of a SIAS, equipment which is also started on a SIAS signal will start as soon as the sequencer unblocks it. However, some equipment does not start upon receipt of a SIAS and must have an additional signal present to start. Both the containment spray system and the containment air coolers must receive a CSAS permissive in additional to the SIAS in order to start. The iodine removal system requires a permissive CISA signal in addition to the SIAS to start. These additional signals add an element of uncertainty to the actual start time of this equipment. Therefore, this uncertainty for the actual starting of the containment spray system, containment air coolers, and iodine removal system could lead to a situation where equipment which is assumed to start at a given sequencer step is not actually permitted to start by the CSAS or CIS signals. These loads would, under specific conditions, be started during a latter sequencer step. This situation could result in low voltage conditions on the EDGs associated

electrical buses and have a potential impact on the other safety related equipment connected to the buses.

An amendment was issued to address this concern for Unit 2, Amendment No. 148 to Facility Operating License No. DPR-69, on March 27, 1992, on an emergency basis pursuant to 10 CFR 50.91. Unit 1 is currently in a refueling outage and is requesting the same TS changes that were approved for Unit 2.

To eliminate the uncertainty associated with the equipment start time for Unit 1, a modification is being performed which will change the start signals of the containment spray pumps, the containment air coolers and the iodine removal units as detailed in the following evaluation.

2.0 EVALUATION

The function of the containment spray system is to limit the rise in containment atmosphere pressure and temperature after an accident which reduces the possibility of leakage of airborne radioactivity to the outside environment. As currently designed, the containment spray pumps are started by a CSAS. To prevent an inadvertent actuation of containment spray in the case of an inadvertent CSAS, the containment spray valves are opened only by a SIAS. The proposed modification will reverse this arrangement of signals and equipment; the containment spray pumps will be sequenced on the EDGs and start on a SIAS and the containment spray valves will receive a permissive signal to open on a CSAS.

The containment pressure setpoint for a CSAS is 4.25 psig, while the pressure setpoint for a SIAS is 2.8 psig. By changing the signals on the containment spray pumps, the containment spray pumps would be started earlier in an accident scenario than previously evaluated. The containment pressure/temperature response to a LOCA, as calculated for Updated Final Safety Analysis Report (UFSAR), Section 14.20, assumes the containment spray function starts 60 seconds after the containment pressure reaches 4.25 psig, which is the CSAS setpoint. Since the spray system valves require a CSAS signal to permit opening, the spray system function remains unchanged by the proposed modification.

The staff has determined the proposed change is acceptable. This determination is based on the fact that the reversing of the signals does not change the assumptions related to the initiation of the containment spray function as detailed in the UFSAR. Therefore, the proposed changes to TS 4.6.2.1.b.1 and 4.6.2.1.b.2 are acceptable.

The function of the containment air coolers is also to limit the containment atmosphere pressure and temperature after an accident which reduces the possibility of leakage of airborne radioactivity to the outside environment. As currently designed, the air cooler fans receive their low speed start signal from CSAS. Additionally, the service water outlet valves for the air coolers open upon receipt of a CSAS. A modification is being performed which will replace the CSAS signals with a SIAS signal. The air coolers would start

sooner in a pressurization transient than previously assumed because the SIAS actuates at a containment pressure of 2.8 psig and the CSAS at 4.25 psig. There is no detrimental effect to starting the air coolers earlier in a transient and it would have no negative impact on long-term containment response.

The staff has determined that the proposed change is acceptable. The air cooling system is independent of the containment spray system and, as noted, has the same function. The air cooling system is operating (three of the four cooling units) during normal operation on high speed. A CSAS signal would reduce the speed of the three operating fans and start the fourth if offsite power was available. If not, the loads would be sequenced, two cooling units per EDG, and started on low speed. As the licensee indicated, and the staff agrees, starting the cooling units earlier in the accident sequence has no negative affects. The long-term cooling capability is unaffected in that the cooling units are designed to function for 1 year post-LOCA as noted in the UFSAR. Therefore, the proposed change to TS 4.6.2.2.b is acceptable.

The iodine removal units are designed to collect the iodine which could be released into the containment atmosphere following a postulated LOCA. The fans would start on a CIS in the current design. As in the system described above, the start signal is being changed to a SIAS. Although both CIS and SIAS are actuated at a containment pressure of 2.8 psig, SIAS can also be actuated by a low pressurizer pressure condition. By switching the signal from CIS to SIAS, the iodine removal units might be actuated during an event which did not result in containment pressurization. There is no detrimental effect operating the iodine removal units during a transient in which they might not be needed. The effectiveness of the charcoal is tested after every 720 hours of operation per TS 4.6.3.1.c., to ensure that they still retain the capacity for iodine removal assumed in the accident analyses.

The staff has determined that the proposed change is acceptable. As noted, the effectiveness of the charcoal filters is required to be verified on a specified time basis. Thus, operation during a transient not resulting in containment pressure will not have a negative effect. Therefore, the proposed change to TS 4.6.3.1.d.2 is acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Maryland State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative

occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (57 FR 22260). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor:
Daniel G. McDonald
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