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

Attention: Document Control Desk

Dear Sir:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Station Blackout (SBO)
Supplemental Response

GPU Nuclear (GPUN) submitted a response to the SBO rule (10 CFR 50.63) on April 17, 1989 for the Oyster Creek Nuclear Generating Station (OCNGS). That response was based upon our belief that SBO implementation at OCNGS was consistent with guidance in NUMARC 87-00, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors." A recent review of our initial SBO rule response and a substantial portion of supporting documentation has identified several areas where further discussion is warranted. The review was conducted considering the clarifications contained in the attachments to the January 4, 1990 NUMARC letter and included a reevaluation of the coping assessment and loss of HVAC effects. We believe the scope of our review addresses the major areas of concern expressed by the NRC Staff. The areas where our initial response requires clarification are as follows:

1) Containment Isolation Valves

The documented evaluation of containment integrity during a SBO was reviewed to determine if credit is taken for normally closed valves as being locked closed. The result of this review is that valves that are normally closed and required to be closed to ensure containment integrity will fail in the as-is (closed) position upon loss of AC power, with the exception of the reactor building to torus vacuum breakers (V-26-16/18). These are air operated valves which fail open on loss of air, but are required to remain closed to ensure containment integrity. In this case, containment integrity will be assured by check valves V-26-15 and V-26-17 which are located outboard of V-26-16 and V-26-18, respectively.

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Normally closed valves which fail as-is are maintained closed under administrative control in accordance with plant procedures. We believe this is consistent with criterion 2 of step 1 in Section 7.2.5 of NUMARC 87-00.

2) Reactor Coolant Inventory Loss

The assumed loss of coolant rate used in the inventory loss calculation is 40 gpm. This is consistent with the Appendix R evaluation and considers Technical Specification allowed leakage plus some additional leakage. Recirculation pump seal leakage was not explicitly considered.

Oyster Creek recirculation pumps are Byron Jackson vertical single stage type DVSS using hydrodynamic seals for pressure containment. Each seal - exposed to a ΔP of 50% of system pressure.

Byron Jackson advises us that the Oyster Creek type SU seals have been shop tested under SBO conditions for a period of eight hours without any increase in seal leakage. Seal examination has shown that all elastomers and other seal components had not degraded to a point that would result in excessive seal leakage.

Recirculation pump seal leakage is unidentified leakage limited to 5 gpm by Technical Specifications. Since leakage was not expected to increase during SBO and since recirculation pumps were not clearly identified in NUMARC 87-00, Section 2.5, the original 25 gpm per pump leakage was believed not applicable.

A preliminary assessment of the inventory loss calculation shows that if a 100 gpm leakrate is assumed, reactor coolant inventory remains above the top of active fuel and can be monitored. The 100 gpm leakrate is conservative and accounts for 18 gpm seal leakage for each of the five recirculation pumps (90 gpm total) plus 10 gpm for normal leakage. The inventory loss calculation will be revised to reflect the 100 gpm loss. The methodology assumes no makeup until CRD pumps are powered by the AAC source one hour after the onset of SBO.

3) Loss of Ventilation

GPUN did not use NUMARC 87-00 methodology (Section 7.2.4 and Appendix E) while evaluating the effects of loss of ventilation. Instead GPUN utilized two existing analyses to conservatively bound temperature increases in the reactor building and control room following a loss of ventilation to these areas.

One analysis evaluated heatup within the reactor building. It assumed temperatures increased uniformly throughout the building and did not consider specific evaluations of compartments. The basis for this assumption rests with the fact that the interior of the reactor building is open between floors and good transfer occurs between elevations. In addition, the analysis considered the effects due to transmission through the massive concrete walls, and heat gains from electrical equipment, piping, and pumps. Furthermore, equipment operating during a LOCA was considered in this analysis.

The other analysis evaluated heatup within the control room. This analysis assumed adjacent areas to be operating at temperatures greater than the initial control room temperature of 75°F and considered the effects of heat gain from those adjacent areas. The adjacent areas were assumed to be at approximately 120°F. Electrical heat loads including lighting, and people, were considered for the analysis. The opening of external doors or electrical cabinet doors was not considered in the evaluation and no credit was taken for any cooling by these methods.

Although NUMARC 87-00 methodology provides specific guidance for determining the average steady state temperature in dominant areas of concern following a SBO, our analysis meets the intent of this guidance. The basis for this conclusion is that: 1) The appropriate geometries as required by NUMARC were considered in the evaluations, 2) heat generation rates were conservative in the fact that more equipment was assumed to operate in the GPUN analysis than required for SBO, 3) no credit was taken for other cooling means such as the opening of passage doors, and 4) testing for the control room verified the analytical approach taken.

In addition, we understand the requirement to maintain a diesel generator target reliability of 0.975 at Oyster Creek. The projected completion of the station blackout response procedure per NUMARC 87-00, Section 4.2.1, originally scheduled for the first quarter of 1990, is now the end of the third quarter 1990.

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