8.10 STATION BLACKOUT

8.10.1 Description

On July 21, 1988, the Code of Federal Regulations, 10 CFR 50, was amended to include a new section 50.63, entitled, "Loss of All Alternating Current Power," (Station Blackout). The Station Blackout (SBO) rule requires each plant to cope with the loss of off-site power concurrent with the failure of Emergency Diesel Generators (EDGs) in excess of those required for normal redundancy. For the SBO duration, the plant must be capable of maintaining core cooling and appropriate containment integrity. SBO coping duration for BFN is four hours.

SBO is postulated as the failure of the two EDGs that normally feed a respective unit's 480-V AC shutdown boards concurrent with the loss of all offsite power. Coping strategy is to shutdown the blacked-out unit with equipment powered from the 250-V DC battery system. Alternate AC power from diesel generators in the non-blacked-out units, will be made available to power additional required HVAC and common loads. As set forth in NUMARC 87-00, Appendix B, the Alternate AC will be available within one hour through existing cross-ties.

The 250-V unit batteries 1, 2, and 3 are adequate to supply the required Unit 1, Unit 2, and Unit 3 loads for the coping duration of four hours. SBO on Unit 2 is the loss of EDGs B and D and loss of EDGs A and C for SBO on Unit 1. SBO on Unit 3 is the loss of EDGs 3A and 3C. Considering the failure of one EDG in each of non-blacked out units (A or C for Unit 1, B or D for Unit 2, and 3A or 3C for Unit 3), and additional failure of EDG 3B or 3D, a minimum of three diesel generators remain available for SBO. These provide sufficient power to supply required HVAC and common loads.

8.10.2 Containment Cooling

For the units, the containment response to a SBO was evaluated. The details of this evaluation are provided in Subsection 14.12.5.1.

The units would automatically trip when the SBO event occurs. Initial reactor vessel pressure control will be accomplished by automatic Main Steam Relief Valve (MSRV) operation. Reactor vessel water level control is maintained automatically by the operation of the RCIC/HPCI systems. The RCIC and HPCI systems take suction from the condensate storage tank. The operator would manually perform a controlled depressurization by cycling the MSRV’s with reactor vessel water level being controlled by RCIC. The steam discharge from the reactor vessel would be through the MSRVs tailpipes directly to the suppression pool. During the 4-hour coping period, the suppression pool water temperature would continue to increase.

As discussed in Subsection 6.5.5.6, the Net Positive Suction Head (NPSH) analysis does not take credit for any containment pressure greater than that assumed to exist at the start of the postulated SBO event.