



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

STATION BLACKOUT MODIFICATION

WISCONSIN ELECTRIC POWER COMPANY

POINT BEACH NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-266 AND 50-301

1.0 INTRODUCTION

The NRC safety evaluations dated October 3, 1990, and March 22, 1991, for Point Beach Nuclear Plant (PBNP) for the station blackout (SBO) rule stated that the licensee needed to reevaluate the SBO coping duration after the installation of additional emergency diesel generators (EDGs). On September 22, 1994, the licensee submitted that reevaluation. The licensee is in compliance with the SBO rule by using the onsite gas turbine generator as an alternate ac (AAC) power source. The licensee concluded that the new EDGs will provide additional flexibility for AAC power and emergency ac (EAC) power configurations.

In response to the staff's concern regarding the EAC classification of group "A" (expressed during the telephone conference on December 8, 1994), the licensee agreed to reevaluate the EAC classification group and to revise its SBO evaluation as needed. On June 14, 1995, the licensee submitted the revised SBO evaluation.

The licensee changed the extremely severe weather (ESW) classification group for PBNP from "ESW4" to "ESW2" and, as a result, the SBO coping duration is reduced from 8 hours to 4 hours.

2.0 EVALUATION

The staff's evaluation of the licensee's addition of two EDGs for the site and changing the ESW classification group for PBNP follows.

2.1 SBO Coping Duration Before the Additional EDG Modification

The licensee stated that it had initially selected the ESW classification of "ESW4" based on Nuclear Management and Resources Council, Inc. (NUMARC) Report 87-00, Table 3-2. Subsequently, after discussions with Kewaunee Nuclear Power Plant (KNPP) personnel, the licensee found out that using plant-specific weather data, KNPP personnel determined the ESW classification group for KNPP as "ESW2." The staff has accepted the ESW classification group of

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"ESW2" for KNPP (NRC letter of April 4, 1990, from M. J. Davis to K. H. Evers of Wisconsin Public Service). The licensee stated that KNPP is approximately 3 miles north of PBNP on the shores of Lake Michigan. The licensee determined that the plant-specific weather data for KNPP are applicable to PBNP and, hence, ESW classification group for PBNP should be "ESW2."

The licensee stated that this change places PBNP in the offsite power design characteristic group "P1" (independence of offsite power group "I2," severe weather classification group "SW2," and extremely severe weather classification group "ESW2") instead of previously determined "P2" group (group "I2," group "SW2" and group "ESW4"). The licensee recalculated a minimum acceptable SBO coping duration of 4 hours based on group "P1," EAC power configuration group "D," and an EDG reliability target of 0.975.

The licensee stated that the coping evaluations remain essentially the same for PBNP. The gas turbine is the AAC power source which will be available within 1 hour.

On the basis of its review, the staff agrees with the licensee that extremely severe weather classification group at PBNP is "ESW2" and, as a result, SBO coping duration is 4 hours. The licensee should maintain the documentation for the "ESW2" classification in its SBO documentation package for possible future inspection or audits.

2.2 SBO Coping Duration After the Additional EDG Modifications

The licensee stated that after the installation of two additional EDGs, the EDG configuration at PBNP will consist of four shared EDGs (two train A and two train B). The two train A EDGs will normally be aligned as standby emergency power, one to the Unit 1 train A 4160-volt bus (1A05) and one to the Unit 2 train A 4160-volt bus (2A05). The two train B EDGs will normally be aligned as standby emergency power, one to the Unit 1 train B 4160-volt bus (1A06) and one to the Unit 2 train B 4160-volt bus (2A06).

The licensee further stated that the two train A EDGs will be the original EDGs G-01 and G-02. The EDG G-01 will automatically provide power to bus 1A05 if power is lost on 1A05, the EDG G-02 will automatically provide power to bus 2A05 if power is lost on 2A05. EDG G-01 will be manually connectable to provide power to 2A05, and EDG G-02 will be manually connectable to provide power to 1A05. Additionally, if EDG G-01 is out of service, EDG G-02 may be placed in a mode that will allow it to automatically provide power to 1A05, 2A05, or both, if either or both buses lose power. EDG G-01 will have the same capability in the A train if EDG G-02 is out of service. The new EDGs G-03 and G-04 will have similar capabilities in the B train.

On the basis of these modifications, the licensee determined that the EAC power configuration group at PBNP will be "C" as a 1 out of 2 EDGs dedicated, or 1 out of 3 EDGs, shared EDG configuration (if one EDG is considered to be the AAC power source). This is possible because only one EDG is necessary to operate safe shutdown equipment for both units following a loss of offsite

power (LOOP). The licensee recalculated the SBO coping duration of 4 hours on the basis of the offsite power design characteristic of "P1," EAC configuration group of "C," and EDG reliability target of 0.95 or 0.975.

Since any one EDG at PBNP has sufficient capacity to operate safe shutdown equipment for both units following a LOOP, the EDG on the non-blacked out unit can be used as an AAC power source. The EDGs can be connected to the EAC buses of either unit during an SBO event within ten minutes. The licensee concluded that no coping assessment is necessary for using an EDG as an AAC power source.

The licensee submitted a discussion of how the system meets the requirements of the AAC power source per NUMARC 87-00, Appendix B, except for the initial testing of the AAC power source to supply the SBO loads (B.12) and time test of the AAC power source during refueling outages (B.10). The licensee stated that these tests are not feasible because of possible problems for the operating unit. The licensee stated that the PBNP Technical Specifications (TS) Section 15.4.6 requires monthly load testing of each EDG, and emergency load testing each refueling outage. The EDGs will continue to be tested in this manner. The licensee stated that the required TS testing is sufficient to prove operability of the EDGs.

The EDG will be used as an AAC power source by manually closing the breakers to supply power to the blacked-out unit. The licensee stated that it would be difficult to test this, since one unit is normally operating and it is not desirable to interrupt power to the operating unit. The unit cross-ties are on buses (A03 and A04) that supply non-safeguards power during unit shutdowns. This would also make such testing difficult. The licensee stated that the A03 and A04 bus unit cross-ties have been used previously and are sized equivalently to the normal bus supply. Therefore, it is not necessary to perform a special test of the cross-tie capability. However, the licensee proposed to model these tests on the PBNP simulator.

On the basis of its review, the staff agrees with the licensee that the SBO coping duration at PBNP will be 4 hours once the EDG modifications are completed, and that the EDG at the non-blacked out unit can be used as an AAC power source. The AAC power source at PBNP is a fully capable source since the non-blacked out EDG is capable of powering one complete safety train of normal safe shutdown systems and equipment.

The staff also agrees that no coping analysis is required since the AAC power source will be available within ten minutes. The staff agrees that the EDGs used as an AAC power source exceed the requirements of NUMARC 87-00, Appendix B. Further, the staff agrees that the necessary tests to verify that the AAC power source can be connected to the safety buses of the blacked-out unit within ten minutes (NUMARC 87-00, B.12), and the time test of the AAC power source during a refueling outage (NUMARC 87-00, B.10) can be modelled on the simulator. This is acceptable since the EDGs have capability to automatically provide power to both units and the EDGs are started and connected to the safety buses within ten seconds.

2.3 Technical Specifications

The licensee stated that TSs for SBO equipment will be proposed for PBNP when the NRC guidance regarding the TS requirement for the SBO equipment becomes available.

The staff has determined that the nonsafety-related equipment required for coping with an SBO will not need to be included in the TSs.

2.4 Procedures and Training

The licensee stated that two additional EDGs are being installed in phases, with completion of the final phase expected during the Unit 1, spring refueling outage in 1996. The licensee also stated that PBNP procedures are appropriately changed and operator training is provided as each phase of the modification is completed. On the basis of its review, the staff finds this acceptable.

3.0 SUMMARY AND CONCLUSION

The licensee initially calculated an SBO coping duration of 8 hours. The licensee reevaluated the SBO coping duration after changing the ESW classification group from "ESW4" to "ESW2" by using plant-specific weather data. The licensee also changed the EAC classification group from "D" to "C" by adding two new EDGs.

On the basis of its review, the staff agrees with the licensee that (1) the SBO coping duration at PBNP will be 4 hours (EAC classification group "C," EDG target reliability 0.95 or 0.975, and ESW classification group "ESW2") once the EDG modifications are completed (the new EDGs will provide additional flexibility for AAC power and EAC power configurations); and (2) without consideration of the new EDGs, the SBO coping duration will be 4 hours based on the change of ESW classification group from "ESW4" to "ESW2," EDG classification group "D," and EDG target reliability of 0.975.

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