



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

ENCLOSURE

SUPPLEMENTAL SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT, UNITS 3 AND 4

DOCKET NOS. 50-250 AND 50-251

STATION BLACKOUT EVALUATION

1.0 INTRODUCTION

The NRC issued a Safety Evaluation (SE) of Florida Power and Light Company's (the licensee) analysis and proposed method of coping with a Station Blackout (SBO) by letter dated June 15, 1990. The licensee responded to the staff's SE by letters dated July 20, 1990, and September 21, 1990. The staff's evaluation found that the licensee's response did not resolve the staff's principal concern as to whether the emergency diesel generators (EDGs) that are proposed as alternate ac (AAC) power sources for a blacked-out unit have sufficient excess capacity to qualify as AAC power sources. The staff concluded that the licensee should verify the adequacy of the EDGs by preparing a tabulation showing the equipment loads normally available (assuming one train is unavailable) for loss-of-offsite power (LOOP) shutdown of the non-blackout (NBO) unit, plus the loads required for safe shutdown of the blacked-out unit. The licensee provided a tabulation of the EDG loadings by letter dated May 14, 1991.

2.0 EVALUATION

Turkey Point is a two-unit plant that will have two emergency diesel generators (EDGs) per unit. For an SBO on one unit, the licensee proposes to use one of the two EDGs of the other NBO unit to power the required loads of both units. Thus, the NBO unit's EDG would serve as the AAC power source for the SBO unit and also as the shutdown power source for the NBO unit.

The licensee's May 14, 1991, letter included a tabulation of the loads for LOOP (both units), an SBO on one of the units, and the single failure of one of the EDGs on the other (NBO) unit. The loads were tabulated with only one EDG remaining for each of the four combinations, i.e., only EDG 3A, 3B, 4A, or 4B remaining. The worst-case scenario (the least excess capacity) was the scenario with only EDG 3B remaining. For this case, the loads required for the NBO unit (Unit 3) total 1,338 kW, and the loads for the SBO unit (Unit 4) total 1,073 kW, resulting in a total EDG requirement of 2,411 kW. The 2,000-hour rating of EDG 3B is 2,850 kW, resulting in excess capacity of 439 kW.

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The 2,411 kW summation is the capacity required to shut down both units and maintain both units in hot standby for an 8-hour coping duration. The loads include the loads required for heating, ventilation, and air conditioning (HVAC) and battery charging, but do not include the residual heat removal (RHR) system. However, the excess capacity is sufficient to power the RHR system should it be needed, which satisfies the staff position with respect to qualifying an EDG as an AAC source based on excess capacity. While it is not required to bring the NBO unit to a cold shutdown condition, sufficient capacity is available to operate the RHR system should any contingency arise for which it is needed.

Thus, we find that the EDGs qualify for use as AAC sources on the basis of excess capacity, and the SBO rule is satisfied for Turkey Point, Units 3 and 4. In addition, the risk of an SBO is considered very low for Turkey Point, Units 3 and 4, due to the availability of the five onsite black start diesel generators (DGs). The licensee has prudently provided a design which includes connectability of these black start DGs to the emergency buses. Although no requirement is placed on the black start DGs as to their use or availability, from a practical point of view, at least some of these black start DGs could be expected to be available most of the time and could provide for safe shutdown if all other sources are lost.

3.0 CONCLUSION

The staff has reviewed the licensee's tabulations of the worst-case loading scenario at Turkey Point for a LOOP (both units), an SBO on one of the units, and the single failure of one of the EDGs on the other (NBO) unit. For this scenario, the EDG has sufficient capacity to satisfy the staff position with respect to qualifying an EDG as an AAC source based on excess capacity. This completes the staff's review of the licensee's responses to the SBO rule for Turkey Point. However, the licensee should retain all documentation supporting its responses to the SBO rule for further inspection and assessment as may be undertaken by the NRC to further verify conformance with the SBO rule.

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