



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 202 TO FACILITY OPERATING LICENSE NO. DPR-31
AND AMENDMENT NO. 196 TO FACILITY OPERATING LICENSE NO. DPR-41

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT UNIT NOS. 3 AND 4

DOCKET NOS. 50-250 AND 50-251

1.0 INTRODUCTION

By letter dated July 27, 1999, as supplemented by letter dated October 4, 1999, Florida Power and Light Company (FPL or the licensee) proposed to revise the Turkey Point Unit 3 Technical Specifications (TS) to extend the allowed outage time (AOT) for an inoperable emergency diesel generator (EDG) from 72 hours to 7 days. The proposed one-time AOT extension will be used to replace the Unit 3 diesel engine radiators prior to April 2000. The extended AOT will be applied to one EDG at a time in a sequential manner. The revision applies to Turkey Point Unit 3 only. Unit 4 is included administratively because the TS are combined for both Units.

The proposed change will also revise, on a one-time basis, TS 3.4.3, "Pressurizer," TS 3.5.2, "ECCS Subsystems-Tavg Greater than or Equal to 350°F," and TS 3.8.1.1, "A.C. Sources Operating." The October 4, 1999, submittal provided clarification of the earlier submittal, and did not change the scope of the request or the original no significant hazard consideration determination.

2.0 BACKGROUND

Each unit at Turkey Point is provided with two redundant and independent EDG sets as a backup source of ac power. The Unit 3 Class 1E power system consists of two 2500 kW EDGs, each driven by a 20-cylinder diesel engine. Each EDG set includes a redundant and independent air start system, an independent fuel oil transfer system, and an independent cooling water system. Each engine cooling water system includes a temperature control valve, cooling water pumps, radiator fan, and an expansion tank. The pumps circulate cooling water through the engine block and lube oil cooler to remove engine heat. Flow through the radiator is regulated by the temperature control valve, which is designed to maintain the engine outlet temperature constant.

The licensee had performed extensive maintenance on the Unit 3 EDGs during the Fall 1998 refueling outage. However, maintenance on the engine radiators was limited to replacing and re-torquing the flange gasket bolts. During this activity, a mechanic's wrench accidentally struck

a section of radiator tubes causing several through-wall leaks. Subsequently, the licensee plugged the leaking tubes in preparation for unit start-up because the replacement radiators were not available at that time.

The purpose of the proposed one-time extension is to permit replacement of the Unit 3 EDG radiators prior to the next scheduled refueling outage in the year 2000. The proposed extension is based on the anticipated time required to replace the engine radiator assemblies, perform post-maintenance testing, and complete any additional corrective actions that may be needed to restore the EDG to operable status. The licensee states that this maintenance activity cannot be completed within the existing AOT of 72 hours, and an additional 96 hours are needed to complete this task.

3.0 PROPOSED TS CHANGES

The licensee is proposing the following changes:

- a. Add the following footnote, denoted by "***" to Action Statements 3.8.1.1.b and 3.8.1.1.f:

**7 days for a Unit 3 diesel generator if the inoperability is associated with replacement of the engine radiators prior to April 2000.

- b. Add the following footnote, denoted by "***" to TS 3.5.2.a:

**7 days if the inoperability is associated with an inoperable Unit 3 diesel generator removed from service for radiator replacement prior to April 2000.

- c. Add the following footnote, denoted by "***" to TS 3.5.2.f:

**7 days for a Unit 3 diesel generator if the loss of capability is associated with replacement of the engine radiator prior to April 2000.

4.0 EVALUATION

4.1 TS 3.8.1.1

TS 3.8.1.1 requires that three separate and independent EDGs be operable in Modes 1, 2, 3, and 4. For Unit 3, this includes the 3A and 3B EDGs plus one from Unit 4, either 4A or 4B EDG. The operability of a Unit 4 EDG is required for Unit 3 in Modes 1, 2, 3, and 4 to satisfy the single failure criterion for high head safety injection pumps, battery chargers, and other shared equipment required during a loss-of-coolant accident coincident with a loss of offsite power (LOOP).

TS 3.8.1.1 Action Statement 'b' currently requires that if one of the required EDGs becomes inoperable, the inoperable EDG must be returned to operable status within 72 hours or the

plant must transition to Hot Standby within 6 hours, and be placed in Cold Shutdown within the following 30 hours. The licensee has proposed to extend, on one-time basis, the AOT for an inoperable EDG from 72 hours to 7 days if the inoperability of the Unit 3 EDG is associated with replacement of the engine radiators prior to April 2000.

TS 3.8.1.1 Action Statement 'f' currently requires that if two of the required EDGs become inoperable, at least one of the inoperable EDGs must be returned to operable status within 2 hours or the plant must be brought to Hot Standby conditions within the next 6 hours and to Cold Shutdown conditions within the following 30 hours. In addition, TS 3.8.1.1 Action Statement 'f' requires that both inoperable EDGs must return to operable status within 72 hours or the plant must be in at least Hot Standby conditions within the next 6 hours and to Cold Shutdown conditions within the following 30 hours. In lieu of the above, the licensee has proposed to add a footnote to extend to 7 days, on a one-time basis prior to April 2000, the AOT for a Unit 3 EDG if the inoperability of that EDG is associated with the replacement of the engine radiators.

In evaluating the proposed EDG AOT extension, the staff informed the licensee that certain compensatory measures are needed during the extended EDG AOT to ensure safe operation of the plant. This should include (1) verification that required systems, subsystems, trains, components, and devices that depend on the remaining EDG as a source of onsite power are verified to be operable before removing an EDG for an extended maintenance, (2) voluntary entry into a limiting condition for operation action statement should not be scheduled when adverse weather is expected, and (3) access to the switchyard should be restricted during the extended AOT. By letter dated October 4, 1999, the licensee provided the following response to address the staff's concern. The licensee will ensure, in accordance with 0-ADM-210, On-Line Maintenance/Work Coordination, that the systems, components, and devices that depend on the redundant EDG as a source of onsite power are operable prior to removing the EDG from service. The licensee will also be taking various compensatory actions to minimize the potential for a LOOP event during the proposed 7-day EDG outage. The licensee will (1) schedule the radiator replacement activity outside the South Florida hurricane season, or when no adverse weather is expected, (2) postpone the performance of any load threatening surveillance tests until after the affected EDG is returned to service and (3) administratively control personnel access to the Turkey Point switchyard. The staff finds that the above measures taken by the licensee will minimize the probability of LOOP during the EDG outage. On this basis, the staff finds the proposed one-time EDG AOT extension to be acceptable.

4.2 TS 3.4.3

TS 3.4.3 currently requires that at least two groups of pressurizer heaters be operable in Modes 1, 2, and 3. Each group of heaters must be capable of being supplied by an operable EDG. If one or more of the heater groups are not operable, they must be restored to operable status within 72 hours, or the plant must be brought to at least Hot Standby conditions within the next 6 hours, and to Hot Shutdown conditions within the following 6 hours. The licensee has proposed to extend, on a one-time basis, the AOT for inoperable pressurizer heaters from 72 hours to 7 days if the inoperability of the pressurizer heaters is associated with an inoperable Unit 3 EDG removed from service for replacement of the engine radiators prior to April 2000.

The staff concludes that during EDG radiator repair, one group of pressurizer heaters would not get emergency power, however, the reactor coolant pressure control could be maintained by using normal station-powered heaters. In addition, Unit 4 EDGs would be available in the case of an emergency because the design of the plant electrical distribution system is such that any EDG can be cross-tied to either train of the opposite unit from the control room. On this basis, the proposed change is acceptable.

4.3 TS 3.5.2.f

TS 3.5.2.f currently requires, in part, that four High Head Safety Injection (HHSI) pumps be operable in Modes 1, 2, and 3. Each pump must be capable of being powered from its associated operable EDG. If a required pump is operable, but not capable of being powered from its associated EDG, the EDG capability must be restored within 72 hours or the plant be brought to Hot Standby conditions within the next 6 hours and to Hot Shutdown within the following 6 hours. The licensee has proposed to extend to 7 days, on a one-time basis, the AOT for restoring the capability of the HHSI pump from being powered from the associated EDG, if the loss of capability is associated with replacement of the Unit 3 EDG engine radiators prior to April 2000.

During EDG radiator repair one high head safety injection pump would not get emergency power, however, Unit 4 EDGs would be available in the case of an emergency. The licensee states that the design of the plant electrical distribution system is such that any EDG can be cross-tied to either train of the opposite unit from the control room. Also, the continuous rating of each EDG is sufficient to carry the LOOP shutdown loads of both units, or the accident loads of one unit plus the LOOP shutdown loads of the other unit. Thus, the HHSI pump of the inoperable EDG can be powered from the Unit 4 EDG, if needed, to mitigate a large break loss-of-coolant accident in the event of a LOOP in Unit 3. On this basis, the proposed change is acceptable.

5.0 RISK EVALUATION

The licensee assessed the risk associated with the one-time extension of the Unit 3 EDG AOT from 72 hours to 7 days for radiator repair. The licensee used Regulatory Guide 1.177¹ as guidance for the analysis to justify the proposed change. The conditional core damage probability of a single 7-day EDG AOT was estimated to be approximately 7×10^{-7} . The conditional large early release probability for a single EDG AOT was estimated to be approximately 4×10^{-8} .

The licensee's risk assessment performed in support of the proposed change is relatively thorough and of sufficient quality for justification of the proposed change. The staff did not identify any major deficiencies or shortcomings associated with the licensee's risk assessment. The calculated risk estimates are within an expected range based on past staff experience in the review of EDG AOT extension requests. The staff also evaluated the licensee's specific efforts to minimize the risk prior to and during the proposed one-time extended outage. The staff notes that the licensee does not intend to schedule the work during the South Florida

¹RG 1.177, "An approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications"

hurricane season, which runs from June 1 to the end of November 1999. The licensee will also take various compensatory actions to minimize the potential for a LOOP event during the outage. In addition, appropriate measures will be taken to control the configuration of those remaining mitigating systems, components and devices needed in the event of a LOOP event.

The staff finds that the scope and quality of the licensee's risk assessment are reasonable for the proposed change. The risk impact of the proposed one-time AOT extension would be small, and become insignificant when taking into account various compensatory actions that the licensee will take prior to and during the planned outage. In conclusion, risk results and insights support the proposed one-time change to the EDG AOT.

Based on its review and the above discussion, the staff concludes that the proposed one-time AOT extension from 72 hours to 7 days to repair the Unit 3 EDG radiators is acceptable.

6.0 STATE CONSULTATION

Based upon a letter dated March 8, 1991, from Mary E. Clark of the State of Florida, Department of Health and Rehabilitative Services, to Deborah A. Miller, Licensing Assistant, U.S. Nuclear Regulatory Commission, the State of Florida does not desire notification of issuance of license amendments.

7.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in the requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (64 FR 46441). Accordingly, these amendments meet 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 amendments.

8.0 CONCLUSION

Based on the staff evaluation discussed above, the staff concludes that the proposed Technical Specifications changes are acceptable.

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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Date: November 19, 1999

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