



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

SAFETY EVALUATION AND ENVIRONMENTAL IMPACT APPRAISAL

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 62 TO FACILITY OPERATING LICENSE NO. DPR-31

AND AMENDMENT NO. 53 TO FACILITY OPERATING LICENSE NO. DPR-41

FLORIDA POWER AND LIGHT COMPANY

TURKEY POINT PLANT UNIT NOS. 3 AND 4

DOCKET NOS. 50-250 AND 50-251

Introduction

By letter dated January 31, 1979, as supplemented on September 26, 1980, Florida Power and Light Company (FPL) submitted an application which would delete the fuel residence time requirement from the Technical Specifications, Appendix A to License Nos. DPR-31 and DPR-41, of the Turkey Point Plant Unit Nos. 3 and 4. The definitions section of the Technical Specifications now limits Unit 3 to 27,000 effective full power hours (EFPH) and Unit 4 to 30,000 EFPH. Our review is based on the batch average discharge of 35,000 MWD/MTU for Unit No. 3 and 33,200 MWD/MTU for Unit No. 4.

Safety Evaluation

We have reviewed the request of FPL to remove a Technical Specification requirement on fuel residence times from a reactor safety viewpoint. FPL makes the argument that this deletion is acceptable from a safety consideration because the calculated times to collapse of the fuel rod cladding are in excess of any planned irradiation time. However, this could change as the fuel design changes (such things as internal pressure and wall thickness have an important effect on cladding collapse times). Another reason that this deletion is acceptable is that such limitations in the Technical Specifications can be overly restrictive and would lead to a more frequent need for changes to the Technical Specifications. Such limits are not really necessary because the plant Nuclear Safety Committee is already charged with the responsibility of performing evaluations of such changes for each reload. If cladding is predicted to collapse during operation, FPL is required to assume a peak cladding temperature criterion of 1800°F rather than the normal value of 2200°F. FPL is, therefore, already obligated to assure that the correct peak clad temperature limit is being used. In addition, if a cycle length

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should be extended over the value intended at the beginning of the cycle, FPL has stated that a safety review would be done to assure that the new extended cycle length would not be longer than the calculated cladding collapse time. A Technical Specification requirement is, therefore, not necessary.

We have also reviewed the FPL request to remove the fuel residence time limitation from the Technical Specifications from the viewpoint of the accident analysis.

Historically, the residence time limit was imposed to prevent fuel rod cladding collapse. For the situation of collapsed clad, a different temperature criterion is applied for peak cladding temperature in evaluating fuel performance. For the present situation, when clad collapse is predicted not to occur for the projected fuel lifetime, the previously approved techniques for calculating performance are still applicable. Radiological considerations, for accidents in which fuel failure is postulated to occur, stem from the amount of fuel which is calculated to release fission products. Since approved temperatures for non-collapsed clad have been used, removal of the resident time restriction would not cause an increase in the radiological consequences of accidents.

There is a de facto limitation imposed on the burnup of the fuel in the Turkey Point by the resident time limit. Since such factors as composition of the gas in the gap, pellet-clad interactions, internal pressure in the rod, and clad stress can influence the number of rods calculated to fail in accident situations, radiological consequences for high burnup in the core can be larger than previously calculated. We considered whether the de facto burnup limit should be removed, or replaced with another, more appropriate, limit on MWD/MTU.

Based on our review, it was concluded that the de facto limit should be removed since it was imposed for a reason which is no longer valid. It was further concluded that no other limit should be imposed in its place for several reasons: (a) generally good performance of present LWR fuel to burnups in the range of 30,000 MWD/MTU, (b) successful operation with a limited number of lead test assemblies to somewhat higher burnups and (c) current understanding of the effects of higher burnup on some fuel damage mechanisms.

### Environmental Impact Appraisal

The values of environmental effects in Table S-4 will not be significantly affected by these changes for several reasons. Increasing burnup will produce changes within the spent fuel; different inventory of radionuclides, extra neutron, gamma ray, and heat fluxes. However, the external radiation and accident resistance of the cask in which spent fuel is transported will not change. The use of the cask may change because the regulations limit the radiation field outside the cask. Generally, the field is limited to 200 mrem/hr at any accessible point on the surface of the closed vehicle (or cask; if the vehicle is not closed) and to 10 mrem/hr at six feet from the vehicle. The routine exposure to the public from the cask may be considered invariant to the increases in burnup because the shipper must certify to the carrier that the cask meets these regulatory limits.

The conclusions in the final environmental impact statement concerning the radiological consequences of accidents remain unchanged due to removal of the Technical Specification on fuel residence time. The limit was imposed historically to preclude clad collapse in early-design fuel rods. Since the time to clad collapse of the present fuel rods is beyond the effective lifetime of the fuel, removal of the limit will not cause a change in the number of fuel rods predicted to fail in any accident situation and hence, no change in the radiological consequences of such accidents. No other change in Technical Specifications is being made. Therefore, the radiological consequences of accidents where fuel damage is not predicted to occur will also not change.

### Environmental Consideration

On the basis of the foregoing analysis, it is concluded that there will be no significant environmental impact attributable to the proposed action. Having made this conclusion, the Commission has further concluded that no environmental impact statement for the proposed action need be prepared and that a negative declaration to this effect is appropriate.

### Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Date: December 19, 1980