



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 97 TO

FACILITY OPERATING LICENSE NO. NPF-38

ENERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

1.0 INTRODUCTION

By application dated December 14, 1993, Entergy Operations, Inc. (the licensee), submitted a request for changes to the Waterford Steam Electric Station, Unit 3, Technical Specifications (TSs). The requested changes would revise TS 3.2.3 "Azimuthal Power Tilt" to require that the actual tilt be less than or equal to the tilt allowance used in the core protection calculators (CPCs) and be no greater than 3%. The changes would also revise the action statement for control element assembly (CEA) misalignment to allow 24 hours to restore the tilt to less than 3%.

2.0 EVALUATION

The limitations on the azimuthal power tilt are provided to ensure that design safety margins are maintained by limiting the core power distribution to the initial values assumed in the accident analyses. The maximum tilt is a key safety parameter in the analysis of single CEA movement events such as the CEA ejection or CEA drop.

The current specification allows the maximum tilt to equal 10% above 20% of rated thermal power as long as it does not exceed the allowance used in the CPCs. However, this has been determined to be nonconservative with respect to the initial tilt value used in the analysis of single CEA movement events in which a maximum 3% tilt value was assumed. The proposed change would place a 3% limit on the maximum azimuthal tilt during normal steady state operation. This is acceptable as it would make the TSs consistent with the safety analyses. Since this discrepancy between the safety analyses and the TSs has existed since Cycle 2, the licensee has evaluated previous operation and has concluded that the plant has not operated with a steady state power azimuthal tilt greater than 3% above 20% of rated thermal power. Currently, administrative controls are in place to assure compliance with this requirement.

The proposed TSs would also allow up to 24 hours to restore the tilt to less than 3% following a CEA misalignment event. A CEA misalignment event, such as a CEA drop, causes an asymmetric core power generation and an increase in

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xenon concentration in the vicinity of the dropped CEA and could cause the tilt to exceed 3%. Since a lower power reduces the rate at which xenon near the dropped CEA can be burned out, a reduction in power would tend to increase the tilt, making the transient worse. Therefore, extending the existing 2 hour action time to reduce core power to 24 hours allows for correction of the misaligned CEA, per TS 3.1.3.1, and allows time for the xenon redistribution effects to dampen out. The reduction in xenon concentration, which is aided by operation at full power, will in turn reduce the tilt below the 3% limit. Therefore, this proposed change is acceptable. However, the 24 hour period is applicable only to a CEA misalignment where the cause of the tilt has been identified. All other conditions (not due to a CEA misalignment) where the azimuthal tilt exceeds 3% require action within the specified 2 hours.

The corresponding changes to the Bases are consistent with these acceptable TS changes and are, therefore, acceptable.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Louisiana State official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement 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 amendment involves 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 amendment involves no significant hazards consideration and there has been no public comment on such finding (59 FR 2866). Accordingly, the amendment meets 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 amendment.

### 5.0 CONCLUSION

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

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Date: August 3, 1994