



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 135

TO PROVISIONAL OPERATING LICENSE NO. DPR-16

GPU NUCLEAR CORPORATION AND  
JERSEY CENTRAL POWER & LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

1.0 INTRODUCTION

By letter dated March 31, 1988 (Ref. 1) GPU Nuclear Corporation (the licensee) requested changes to the Oyster Creek Technical Specifications. GPU provided additional information and clarifications in Ref. 2 & 2a. The change request proposes to delete a safety limit of the facility that requires at least two reactor recirculation loops to have both the recirculation pump suction and discharge valves open during all plant conditions except when the reactor head is off and the reactor is flooded to a level above the main steam nozzles. The purpose of the safety limit was to ensure adequate fluid communication between the downcomer and core regions in the reactor vessel so that water level sensed in the downcomer is indicative of water level in the core. This safety limit was imposed after the event on May 2, 1979 when all five recirculation loop valves were simultaneously closed effectively isolating the downcomer region from the core region. Later on September 11, 1987, a violation of the safety limit occurred when the plant was in cold shutdown and when fewer than two sets of recirculation loop valves were not fully open for a short period of time.

The licensee is proposing to delete the safety limit and requests to add a limiting condition for operation (LCO) to require at least one set of recirculation loop valves to be open during conditions other than normal operation.

The licensee is also proposing to allow all five reactor recirculation loops to be isolated if reactor coolant temperature is less than 212°F and the RPV is flooded to a level 185 inches above Top of Active Fuel (TAF). The licensee also provided a basis for Technical Specification 3.3.F.

In a letter dated June 15, 1988 (Ref. 3), the State of New Jersey submitted their comments regarding the proposed changes. They requested NRC to consider two alternatives. The first alternative they suggested is to require implementation of the recirculation loop electrical interlock modification (TMI-2 action item II.K.3.19). The second alternative they suggested is to keep the requirement that one recirculation loop be maintained in communication with the reactor as a safety limit.

## 2.0 EVALUATION

The current safety limit requirement of maintaining two open recirculation loops was originally proposed after the May 1979 event in order to be conservative. Since the requirement pertains to position requirement of equipment, specifically the reactor recirculation loop valves, rather than to any process variable, the requirement may be included as a LCO of the Technical Specifications. This is in conformance with the definitions of safety limits and LCO given in 10 CFR 50.36(c) and present staff practice. The process variable (reactor water level) is still given as a safety limit in 2.1.D of the plant Technical Specifications.

In the proposed LCO, the number of recirculation loops required to be open during conditions other than power operation is changed from two to one. Normal power operation is not allowed with less than four recirculation loops. In Ref. 4, the staff, in its evaluation of TMI-2 action item II.K.3.19, concluded that one open recirculation loop is sufficient to assure communication between the core and downcomer regions. Licensee calculations have verified that during natural circulation, a single fully open recirculation loop transfers coolant from the downcomer to the core region at approximately five times the boiloff rate (Ref. 5).

The conditions which require less than four recirculation loops are most likely during shutdown conditions when reactor water level is maintained at several feet above top of the active fuel. The recirculation loop closure alarm annunciates in the control room when the fourth recirculation loop is isolated.

This alarm will reflash when the fifth loop isolates. This alarm alerts the operator to open at least one loop. During shutdown conditions at Oyster Creek, if no action is taken upon isolating all five recirculation loops, it would take hours before boiloff of water would lower vessel level to the top of active fuel from the normal water level band. Moreover, fuel zone level instrumentation would remain available for operation. If the RPV level is 185 inches above TAF, there is sufficient hydraulic communication between the core and the downcomer region with all recirculation loop valves closed. Thus, the proposed changes to T/S 3.3.F.6 to isolate all five loops when the reactor coolant temperature is less than 212°F (cold shutdown) and when the RPV water level is 185 inches above TAF is acceptable.

The proposed T/S change 3.3.F.3 also requires the plant to be placed in a hot shutdown condition within 12 hours instead of present 24 hours for cold shutdown if less than four recirculation loops are operating during power operation. This proposed change is in conformance with standard Technical Specification guidance and hence it is acceptable.

Also by this amendment, the above technical considerations are reflected in the bases for Section 3.3 and we find this acceptable.

In Ref. 3, the state of New Jersey, requested the staff to consider implementation of the recirculation loop interlock modification. The staff in Ref. 4 already stated that the interlock modification is not necessary to satisfy TMI-2 action item 11.K.3.19. The staff concluded that alarms plus adequate training should be sufficient to maintain one open loop. The staff is not aware of any new facts to change the position taken in Ref. 4. The state of New Jersey also proposed to keep the requirement that one loop be maintained in communication with the reactor as a safety limit. The safety limit is not required as discussed above.

The proposed request to delete safety limit 2.1.E, dealing with the position requirement of reactor recirculation loop valves, and to replace it with a LCO in T/S section 3.3.F.4 and other changes are acceptable.

The proposed T/S changes are acceptable as discussed in Section 2.0 of this report.

### 3.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact have been prepared and published in the Federal Register on December 29, 1989 (54 FR 53789). Accordingly, based upon the environmental assessment, we have determined that the issuance of the amendment will not have a significant effect on the quality of the human environment.

### 4.0 CONCLUSION

The staff 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, and (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 nor to the health and safety of the public.

### 5.0 REFERENCES

1. Letter dated March 31, 1988 from Peter B. Fiedler, Vice President and Director, Oyster Creek to USNRC.
2. Letter dated August 23, 1989 from E.E. Fitzpatrick, Vice President and Director, Oyster Creek to USNRC.

- 2.a Letter dated November 15, 1988 from M.W. Laggart, Manager, BWR Licensing, Oyster Creek to USNRC.
3. Letter dated June 15, 1988 from David M. Scott, Chief, Bureau of Nuclear Engineering, Department of Environmental Protection, Division of Environmental Quality, State of New Jersey to USNRC.
4. Letter dated April 16, 1988 from John A. Zwolinski, Director, BWR Project Directorate #1, Division of BWR Licensing, Office of NRR, NRC to P.B. Fiedler, Vice President and Director, Oyster Creek Nuclear Generating Station.
5. Letter dated May 12, 1979 from Ivan R. Finfrock, Jr., Vice President, Oyster Creek to USNRC, Appendix 1, GE Calculation "Natural Circulation Flow."
6. Letter dated November 15, 1988 from M.W. Laggart, Manager, BWR Licensing, Oyster Creek to USNRC.
7. Letter dated May 30, 1979 from Victor Stello Jr., Director, Division of Operating Reactors, Office of NRR, NRC to I. R. Finfrock, Jr., Vice President-Generation, Jersey Central Power & Light Company.

Dated: December 30, 1989

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