



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 46 TO FACILITY OPERATING LICENSE NO. NPF-1

PORTLAND GENERAL ELECTRIC COMPANY

THE CITY OF EUGENE, OREGON

PACIFIC POWER AND LIGHT COMPANY

TROJAN NUCLEAR PLANT

DOCKET NO. 50-344

Introduction

By letter dated July 2, 1980, as supplemented July 7, 1980, Portland General Electric Company, et al. requested changes to the Technical Specifications (TS) for operation of Trojan Nuclear Plant in Columbia County, Oregon. The licensee proposes to delete the reactor trip function in the reactor protection system derived from the opening of any single reactor coolant pump circuit breaker above 36% reactor power level.

Discussion and Evaluation

The existing Trojan reactor protective system (RPS) design incorporates a reactor trip function which occurs when any (one of four) reactor coolant pump circuit breaker is open while reactor power level is above 36% of full power. The device which senses the open circuit breaker is an auxiliary relay which is powered by an instrument (inverter) power supply. Four separate inverters power each of the four relays. Due to the existing one-out-of-four logic, any single inverter power supply failure (or voltage fluctuation) will cause a spurious reactor trip, since the loss of power to the auxiliary relay is seen by the RPS as a (false) open coolant pump breaker signal. This design has led to several reactor trips in the past, which is undesirable both from the standpoint of reliable operation and the standpoint of safety as well, in that such reactor trips cause unnecessary thermal cycling of the reactor coolant system.

The coolant-pump-breaker-open reactor trip signal was designed as an anticipatory backup reactor trip for a low flow condition in the reactor coolant loops. The action of this trip signal was not relied upon in the

8007180 453

safety analysis for this facility. Rather, the safety analysis relies on three flow instruments in each loop. Reactor trip is initiated when two of three loop flow devices sense reduced loop flow. Each of the three flow sensors per loop is powered from independent and redundant vital instrument buses. Since coincidence of two out of three of these sensors detecting low loop flow is required to initiate a reactor trip, no single failure will render this protective feature inoperable. In addition, this trip system will not lead to spurious reactor trips such as have been experienced on loss of instrument bus power supplies, because each of the three loop flow instruments is powered from a different power supply. Therefore, failure of one power supply will result in a single channel trip, not the two-of-three condition necessary for protective action.

No changes would be made to the loop flow sensors or to the associated protection logic designed to cause a reactor trip on reduced loop flow. There would be no effect on any other reactor trips. The proposed modification would have no effect on the independence or testability of the two of three low loop flow trip signals. There would be no effect on the safety analysis for the facility since the safety analysis is based on the low loop flow detection system, not the pump-breaker-open anticipatory trip system.

Based on the foregoing, we conclude that the proposed change is acceptable and desirable in that spurious reactor trips would be eliminated due to single instrument bus power supply failures. The proposed change is consistent with the design of the new Westinghouse reactors being licensed today.

#### Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does 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 this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: July 10, 1980