



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 30 TO FACILITY OPERATING LICENSE NO. DPR-3

YANKEE ATOMIC ELECTRIC COMPANY

YANKEE NUCLEAR POWER STATION (YANKEE-ROWE)

DOCKET NO. 50-29

Introduction

By application dated March 5, 1976, Yankee Atomic Electric Company (the licensee) proposed the installation of certain features to improve the performance of the reactor protection system scram bypass circuitry. This proposal involves replacement of descriptive pages in Section 214 "Nuclear Instrumentation and Reactor Protection System" of the Facility Hazards Summary Report which is incorporated in the Technical Specifications appended to License No. DPR-3 for the Yankee-Rowe reactor.

Discussion

The existing scram bypass circuitry provides for an optional manual bypass for the low steam generator level scram, low flow scram and turbine-generator scram signals when the reactor power is below 15 MWe. At power levels of 15 MWe and above, the scram bypass is automatically removed. The high startup rate scram signal is automatically connected at power levels of 15 MWe and below, and automatically bypassed above 15 MWe. At the 130 MWe power level the circuitry provides for automatic cut-in of a manual rods-out reset circuit.

The reactor scram bypass permissive circuitry is initiated at a power level of 15 MWe upon receipt of actuation signals from pressure switches presently installed to monitor the Turbine No. 1 nozzle pressure. The existing scram bypass circuitry was approved by Amendment No. 7 to License No. DPR-3 as described in our Safety Evaluation (supporting the issuance of the amendment) dated July 10, 1974.

Operating experience with the existing scram bypass circuitry has shown that: a. the correlation between generated MWe and Turbine No. 1 nozzle pressure is not consistent enough to provide accurate automatic operation of the reactor scram bypass permissive circuitry, and b. the permissive circuitry indicating lights, as presently wired, do not truly represent the conditions of the circuit, in that the high startup rate scram may be available without the operator's knowledge.

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To correct these observed deficiencies in the performance of the reactor scram bypass circuitry, the licensee proposes to:

1. Disconnect the No. 1 nozzle pressure switches PS-420, PS-421 and PS-423;
2. Install three thermal converters to monitor gross generation from the same signal source as that used for recording gross MWe;
3. Install three millivolt bistable units to sense the new thermal converter outputs and to actuate the permissive circuit at the specified 15 MWe and 130 MWe setpoints, and
4. Connect the startup rate trip (available) indicating light as shown in the schematic included in March 5, 1976 submittal.

Evaluation

We have reviewed the proposed changes to the existing reactor scram bypass permissive circuitry described in the licensee's March 5, 1976 submittal. The proposal involves the replacement of the Turbine No. 1 nozzle pressure switches PS-420, PS-421 and PS-423 with three thermal converters each driving a millivolt bistable and to change the wiring arrangements for the permissive circuitry indicating lights. Replacement of the three pressure switches with the thermal converter bistable instruments which sense generated power output will provide accurate automatic operation of the reactor scram bypass permissive circuitry. Rewiring of the permissive circuitry indicating status lights will reflect the true conditions of the circuitry thus alerting the operator that the high startup rate scram is available.

From our review of the information submitted by the licensee we have determined that: (1) use of the proposed millivolt bistables actuated by thermal converters, in lieu of the existing pressure switches will significantly improve the correlation to MWe and thus, provides more accurate automatic operation of the system; and (2) rewiring of the of the permissive circuitry indicating lights will reflect the true conditions of the circuitry thus alerting the operator that the High Startup Rate Scram is available and thereby reduce the probability of operator error. We have concluded that the proposed changes improve the performance capability of the reactor scram bypass circuitry, do not involve any reduction in the level of safety of this facility and are therefore acceptable.

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 statement, negative declaration, or 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: September 3, 1976