



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 42 TO FACILITY OPERATING LICENSE NO. DPR-59

POWER AUTHORITY OF THE STATE OF NEW YORK

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

By letter dated August 10, 1978, the Power Authority of the State of New York (licensee) proposed changes to the Technical Specifications appended to Facility Operating License No. DPR-59 for the James A. FitzPatrick Nuclear Power Plant. The proposed changes make certain modifications to the reactor protection system. These modifications involve installing a new design improvement for safety system instrumentation for General Electric Company boiling water reactors in the reactor protection system. This new design of safety system instrumentation is referred to by the supplier (General Electric Company) as the Analog Transmitter Trip Unit System (ATTUS). This system is being supplied as original equipment in the GE/BWR 6 and has been made available to BWR 4 owners as a backfit. GE developed ATTUS to off-set operating disadvantages of the direct pressure and differential pressure actuated switches of the original safety system instrumentation.

The new analog transmitter/trip unit system is comprised of an analog transmitter and trip unit/calibration system (Model 510DU). GE presented ATTUS to the NRC staff for licensing under topical report NEDO-21617 of April 1977 and NEDO-21617-1 of January 1978. The staff reviewed and found acceptable ATTUS in its letter to GE dated June 27, 1978..

The staff in its approval of ATTUS required from those licensees who are backfitting their nuclear units, certain plant specific information in order to interface the review with the staff's review of the topical report on the subject. The particular information required of the licensees' is the environmental qualification and the divisional separation of the hardware installed for the plant backfit.

EVALUATION

GE identified in its topical report (NEDO-21617) hardware application for reactor vessel pressure that provides inputs to the reactor protection system as the backfit to the FitzPatrick plant. The equipment components to be used at the FitzPatrick plant include four analog transmitters (Rosemount Model 1151) and the trip unit/calibration system (Rosemount Model 510DU). This new equipment is located in the reactor building. The trip unit/calibration system is qualified for maximum environmental abnormal exposure test conditions of 171°F, 99% humidity, 7 in. w.g. atmos. and 1.9×10^5 R radiation exposure. The transmitters are qualified to

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test conditions of 303°F, steam humidity, 60 psig pressure and $5 \times 10^6 R$ radiation exposure. The transmitters and trip unit/calibration systems are to be located in the reactor building where temperature is maintained at approximately 75°F by the ventilation system. The radiation level in the area is between 1 to 3 millirem per hour. Typical maximum credible accident conditions for the reactor building of Mark I containment are 130°F, 80-100% humidity and 2 psig. No credit is taken for post accident monitoring for this instrumentation. We find the environmental qualifications for this equipment to be acceptable.

The seismic tests for electrical components were conducted according to IEEE-344-1975 to acceleration levels in excess of the magnitudes expected at the hardware mounting locations. The three axes were tested independently at low g levels for dwell times of 30 to 35 seconds to determine if the hardware had any resonances. Since no resonant frequencies were found, all testing was performed at 33 Hz. Seismic testing of components was reviewed and found acceptable under the topical report NEDO-21617.

The licensee has documented that the new transmitters will replace in the same location the original reactor vessel pressure sensors. The trip unit/calibration systems will be mounted in four separate existing cabinets in the reactor building. The original separation criteria is satisfied. The licensee has documented that divisional separation for all wiring for the four reactor vessel pressure subchannels is in accordance with IEEE Standard 279 (1971). The arrangement of cables and raceways is designed to preserve the independence of redundant reactor protection system. The criteria for all areas of the plant require that a minimum horizontal distance of 3 feet or a minimum vertical distance of 7 feet will be maintained between cable trays, conduits, and armor cables which carry redundant circuits. Redundant cables are run in separate cable trays or conduits which are physically separated and follow different routes to and from power sources to loads and from sensors to protective devices. We find this acceptable.

The proposed equipment modifications required the following minor changes be made to Technical Specifications (T.S.) tables 4.1-1 and 4.1-2.

1. The group identification for high reactor pressure was changed from on-off sensors to analog devices in both tables.
2. Minimum calibration frequency for high reactor pressure was changed from 3 months to once/operating cycle in table 4.1-2.
3. Instrument check once per day was added in parenthesis to functional test frequency for high reactor pressure in table 4.1-1. We find these changes acceptable.

Based on our review of the licensee's submittals, we find the proposed modifications to the reactor protection system satisfy the requirements for environmental/seismic qualification and divisional separation; and are, therefore, acceptable. We also find that changes to T.S. tables 4.1-1 and 4.1-2 are acceptable.

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.

Dated: November 22, 1978