



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 65 TO FACILITY OPERATING LICENSE NO. DPR-50

METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER AND LIGHT COMPANY
PENNSYLVANIA ELECTRIC COMPANY

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-289

Introduction

By letters dated March 31, 1980 (TLL 141, TSCR No. 90), January 14, 1981 (TLL 672) and March 11, 1981 (LIL 051) Metropolitan Edison Company (Met Ed) requested an amendment to Appendix A of the Operating License No. DPR-50 for the Three Mile Island Nuclear Power Station Unit No. 1 (TMI-1). The amendment would extend the surveillance period for the reactor internal vent valves until the completion of the 5th fuel cycle. Upon completion of the 5th fuel cycle, the surveillance program would revert to the frequency specified in Amendment 42. Met Ed is required by the existing Technical Specification (TS) to perform a surveillance of these valves during each refueling shutdown, and the TS defines (Sec. 1.2.8) the limits of a refueling interval as no more than 24 months. TMI-1 has been in an extended shutdown since the cycle 5 refueling with the 24 month period expiring at the end of February 1981.

Discussion and Evaluation

The reactor design includes eight reactor internal valves that would be used to relieve the pressure generated by steaming in the core following a LOCA so that the core will remain sufficiently covered. Generating steam pressure will open the valves by the differential force equivalent to <400 lbs applied vertically upward between the inside and the outside of the core barrel. However, if on the otherhand the valves are stuck in the open position during normal operation, a portion of the coolant will bypass the core placing the core in a less conservative condition. Therefore, the operability of the reactor internal vent valves must be assured as a prerequisite to reactor startup. In order to assure adequate valve operability during power operation Met Ed is required by the existing TS to survey these valves during each refueling shutdown. In addition the survey interval is not to be extended beyond 24 months by the definition of a refueling period that can be adjusted by plus or minus 25 percent to accommodate normal test schedules. TMI-1 is now in a cold shutdown period that will extend well beyond the 24 month limit because of the Commission Order dated August 9, 1979.

Met Ed's request to extend the surveillance interval is based upon; (1) the present shutdown mode of operation is benign, (2) one vent valve that was given a detailed examination during the Cycle 5 refueling showed no deleterious effects, (3) there is some risk in removing the pressure vessel head, both with personnel safety concerns as with any major lift and with personnel radiation exposure. The present mode of cold shutdown, which will continue until Cycle 5 startup, places the valves in a favorable environment with respect to the corrosion.

Since initial criticality was achieved in June 1974, the eight internal vent valves have each been tested four times for a total of 32 functional tests without a single failure. Due to concerns about vent valve wear at other B&W units, one vent valve was given a detailed examination beyond what is required by the TS during the Cycle 5 refueling. No wear was evident. The cause of wear at the other B&W facilities was subsequently correlated to characteristic resonant flow pulsations caused by the operation of the reactor coolant pumps. The reactor coolant pump systems where the anomalies were observed are different than those at TMI-1 and the reactor coolant pumps are rarely operated during this extended shutdown period. Industry records indicate that in the 7 other operating B&W reactors (total of 40 reactor years of operation), not a single Internal Vent Valve has ever failed to demonstrate satisfactory operability and no Internal Vent Valve has stuck open.

We have reviewed the materials of construction of the Internal Vent Valves and find that the materials all have satisfactory corrosion resistance to the reactor coolant environment both in the present cold shutdown mode and in the operational mode. Furthermore, the low reactor coolant flow rates and the absence of power operation should cause little flow-induced wear or crud deposition.

We have reviewed the record of the reactor coolant chemistry for the shutdown period and find that the temperature, pH, Cl, Crud, Boron levels have been maintained at adequate levels so that any corrosion that has occurred is not expected to be significant.

As result of reviewing of the licensee submittals we concluded that any corrosion that can be expected to occur during this extended shutdown period or during Cycle 5 power operation will be insignificant to where valve operability will not be adversely affected and reasonable confidence exists that the valves will function as intended during an accident condition. This conclusion is based on our review of the Construction Materials of the valves, the primary water chemistry conditions being maintained during this shutdown period and the chemistry conditions that will be maintained during power operation and past operating experience of these valves. On this basis we find the licensee's proposed change to extend the surveillance of the reactor internal vent valve to completion of the 5th fuel cycle is 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 §1.5(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: April 19, 1981