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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 51 TO FACILITY OPERATING LICENSE NO. DPR-24

AND AMENDMENT NO. 57 TO FACILITY OPERATING LICENSE NO. DPR-27

WISCONSIN ELECTRIC POWER COMPANY

POINT BEACH NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-266 AND 50-301

Background

In a letter dated March 31, 1981, Wisconsin Electric Power Company proposed changes in the Technical Specifications of Point Beach Nuclear Plant Units 1 and 2. The proposed changes for both Units 1 and 2 include revisions in the reactor coolant system temperature and pressure operating curves and revisions in the reactor vessel surveillance specimen capsule removal schedules.

Discussion

10 CFR Part 50, Appendix G "Fracture Toughness Requirements", requires that pressure-temperature limits be established for reactor coolant system heatup and cooldown operations, inservice leak and hydrostatic tests, and reactor core operation. These limits are required to ensure that the stresses in the reactor vessel remain within acceptable limits. They are intended to provide adequate margins of safety during any condition of normal operation, including anticipated operational occurrences.

The pressure-temperature limits depend upon the metallurgical properties of the reactor vessel materials. The properties of materials in the vessel beltline region vary over the lifetime of the vessel because of the effects of neutron irradiation. One principal effect of the neutron irradiation is that it causes the vessel material nil-ductility temperature (RT_{NDT}) to increase with time. The pressure-temperature operating limits must be modified periodically to account for this radiation induced increase in RT_{NDT} by increasing the temperature required for a given pressure. The operating limits for a particular operating period are based on the material properties at the end of the operating period. By periodically revising the pressure-temperature limits to account for radiation damage, the stresses and stress intensities in the reactor vessel are maintained within acceptable limits.

The magnitude of the shift RT_{NDT} is proportional to the neutron fluence to which the materials are subjected. The shift in RT_{NDT} can be predicted from Regulatory Guide 1.99. To check the validity of the predicted shift in RT_{NDT}, a reactor vessel material surveillance program is required. Surveillance specimens are periodically removed from the vessel and tested. The results of these tests are compared to the predicted shifts in RT_{NDT}, and the pressure-temperature operating limits are revised accordingly.

Evaluation

The proposed revisions in the heatup and cooldown limitations for Units 1 and 2 are based on methods and data provided in Westinghouse Electric Corporation Topical Reports WCAP-8743 and 8738 respectively. The revised temperature and pressure curves are to be applicable through fourteen (14) effective full power years (EFPY) of operation for Point Beach Unit 2 which is estimated to end in September 1990. The licensee stated that it is desirable for plant operational reasons that the temperature and pressure curves and heatup and cooldown limitations for both units be identical. Accordingly, the temperature and pressure limitations developed for Unit 2 for 14 EFPY are applicable to Unit 1 for 21.5 EFPY of operation.

We have performed independent calculations to verify the validity of the proposed limits. Our calculations are based on information contained in the March 21, 1981 letter, WCAP-8738 and WCAP-8743 and information received from the reactor vessel manufacturer; we found the proposed operating limits acceptable for operation through 14 EFPY, for both Units 1 and 2, instead of 21.5 EFPY and 14 EFPY respectively as specified in the licensee letter of March 21, 1981. Therefore, we find the licensee's proposed reactor coolant system temperature and pressure operating curves for Unit 2 to be acceptable and for Unit 1 to be unacceptable. The above mentioned curves for Unit 2 are in conformance with Appendix G to 10 CFR Part 50 in establishing safe operating limits and will ensure adequate safety margins during operation, testing, maintenance and postulated accident conditions and constitue an acceptable basis for satisfying the requirements to NRC General Design Criteria 31, Appendix A, 10 CFR Part 50.

If the reactor coolant system temperature and pressure operating curves for Unit 1 are revised to limit operation to 14 EFPY, we conclude that they will be in conformance with the above requirements.

We further conclude that the proposed Technical Specification changes in the reactor vessel surveillance specimen capsule removal schedules as listed in Tables 15.3.1-1 and 15.3.1-2 are in accordance with Appendix H of 10 CFR 50 and therefore are acceptable.

We have discussed our findings with members of the licensee's staff, and at their request we are issuing an amendment to incorporate the Technical Specification changes for the Unit 2 temperature and pressure operating curves, which we find acceptable. We will defer issuance of an amendment incorporating the Technical Specification changes requested for the Unit 1 temperature and pressure operating curves pending the result of further discussions with the licensee's staff.

Environmental Consideration

We have determined that the amendments do 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 amendments involve 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 these amendments.

Conclusion

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

Date: July 10, 1981

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