



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

AMENDMENT NO. 68 TO FACILITY OPERATING LICENSE NO. DPR-3

YANKEE NUCLEAR POWER STATION (YANKEE-ROWE)

YANKEE ATOMIC ELECTRIC COMPANY

DOCKET NO. 50-29

1.0 Introduction

By letter dated October 22, 1980, Yankee Atomic Electric Company (the licensee) requested an amendment to Facility Operating License No. DPR-3 for Yankee Nuclear Power Station (Yankee-Rowe). The amendment would defer Inservice Inspection and testing requirements for four different component types past the normal 18 month interval until the completion of the 1981 refueling outage, which is scheduled to start May 2, 1981, and end approximately July 1, 1981. The following components would be affected: reactor shroud tubes, pressurizer cladding, steam generator tubing, and low pressure safety injection pumps.

2.0 Background

During 1980, Yankee Rowe experienced a nine month shutdown because of a failure of its main turbine generator. This failure caused the refueling outage originally scheduled for the Summer of 1980 to be delayed. Therefore, the reactor was not refueled during the nine-month turbine repair outage, but rather it was left in a cold shutdown condition with the primary coolant boundary remaining intact. Since the main coolant system has remained closed during the nine month outage, performance of certain inservice inspection and testing (scheduled to coincide with the refueling outage) would require an opening of the main coolant system and would significantly increase radiation exposure for workers performing these tests. The licensee decided not to open the main coolant system solely to perform these inspections in order to minimize personnel radiation exposure.

By letter dated October 22, 1980, the licensee requested an amendment to the operating license for Yankee Rowe Nuclear Plant to defer this inservice inspection and testing until the next refueling outage, which commenced in May 1981. The licensee has justified his request on the basis of Commission's policy to reduce radiation exposure to levels as low as reasonably achievable (ALARA).

### 3.0 Steam Generator Tube Inspections

#### Discussion and Evaluation

Yankee Rowe Nuclear Plant is the oldest licensed pressurized water reactor in the United States. Since the beginning of power operation, steam generator inservice inspections at Yankee Rowe have been conducted about every 18 calendar months. The cumulative number of tubes plugged to date (over a 19 year period) is 113 in all four steam generators. This can be broken down to 43, 6, 21 and 43 plugged tubes in Steam Generators #1, #2, #3, and #4, respectively. The last steam generator inservice inspection at Yankee Rowe was conducted in November of 1978. Subsequent to the November 1978 inspection, Yankee Rowe was shutdown for three months in 1979 for TMI Lessons Learned and other related maintenance.

The results of the most recent inspection (November 1978) at Yankee Rowe Nuclear Station indicate that caustic stress corrosion continue to occur at a rate consistent with that observed previously. Seventeen tubes in Steam Generator #1 and 13 tubes in Steam Generator #4 were plugged as a result of 100% inspection. The plugging implemented in November 1978 and in previous inspections has proven successful in removing from service severely degraded tubes which are the most likely candidates to develop inservice leaks. Degradations resulting in tube wall thinning and tube restriction activity (denting) remain low as compared to other similarly degraded units. Therefore, it is our evaluation that the November 1978 inspection results, implemented plugging, together with the existing licensing conditions restricting steam generator operation in the event that detectable leaks occur, provide adequate support to the existing practice of allowing an 18 month operating interval.

Since restart in November 1978, 28 calendar months have gone by without steam generator inservice inspection at the Yankee Rowe Nuclear Plant. However, of the 28 calendar months, the plant was in a cold shutdown, depressurized condition for a total of 12 calendar months. Therefore, the actual operating time for Yankee Rowe is only 16 calendar months. By June 1981, the Yankee Rowe Nuclear Plant will have completed approximately 18 months of power operation. Considering the facts that 18 calendar months is a normal operating interval for the Yankee Rowe Nuclear Plant and has been previously accepted by the NRC, continued operation of this unit until June 1981 without a steam generator inservice inspection will not alter our conclusion that the steam generator tubes will maintain an acceptable degree of integrity. The above considerations together with the secondary water chemistry control program, a program which has resulted in a small number of defective tubes during the plant's operating history, will provide reasonable assurance that the health and safety of the public will be protected.

On this basis, and in keeping with the Commission's policy to reduce radiation exposure to levels as low as reasonably achievable (ALARA), we conclude that the steam generator tube inservice inspection may be deferred until July 1981 without undue hazard to the health and safety of the public.

#### 4.0 Low Pressure Safety Injection (LPSI) Pumps

##### Discussion and Evaluation

Inservice flow testing of the LPSI pump is usually performed during the refueling outage when the main coolant system is normally opened. Surveillance testing of the LPSI pump requires removal of the reactor head and hence opening of the main coolant system. This would significantly increase radiation exposure to personnel performing these tests. The amount of radiation would be in the range of 300 mrem/hr-man and it takes approximately 1248 man-hours to complete the required surveillance testing. The licensee's commitment to ALARA philosophy requires that the radiation exposure to personnel be minimized, if practicable. Since significant radiation exposure is involved during surveillance testing of the LPSI pump, the proposed change to Yankee Rowe technical specifications, as mentioned in Page 3/4 5-8 of Appendix A of the specification is acceptable, and we conclude that the inservice flow testing of the LPSI pumps may be deferred until July 1981 without undue hazard to the health and safety of the public.

#### 5.0 Reactor Intervals and Pressurizer Cladding

##### Discussion and Evaluation

Section 4.4.9.2 and 4.4.9.3, respectively, of the Technical Specifications require certain reactor intervals and the pressurizer interior cladding be inspected for abnormalities and cracking. These inspections are normally performed once per 18 months and are done at refueling outages because they require opening of the Reactor Vessel and Pressurizer. Because Yankee Rowe was shutdown for nine months due to a turbine failure which did not affect these components, because the primary system was cooled down and depressurized with no primary coolant flow, and because of the large radiation exposure required to perform these inspections, we feel that delaying the calendar timing of the inspections to coincide with the 1981 refueling outage is reasonable, and in accordance with the original intent of the Technical Specifications. We, therefore, conclude that this testing may be deferred until July 1981 without hazard to the health and safety of the public.

## 6.0 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.

## 7.0 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: June 8, 1981