



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 41 TO PROVISIONAL OPERATING LICENSE NO. DPR-45  
DAIRYLAND POWER COOPERATIVE  
LA CROSSE BOILING WATER REACTOR (LACBWR)  
DOCKET NO. 50-409

1.0 INTRODUCTION

By letter dated December 19, 1983 (LAC-9480), Dairyland Power Cooperative (DPC), licensee for the La Crosse Boiling Water Reactor (LACBWR) submitted several proposed Technical Specification (TS) changes relating to issues arising from the Systematic Evaluation Program (SEP) Integrated Assessment.

A Notice of Consideration of Issuance of Amendment to License and Proposed No Significant Hazards Consideration Determination related to these actions was published in the Federal Register on March 22, 1984 (49 FR 10733). No request for hearing and no comments were received.

2.0 BACKGROUND

The Integrated Plant Safety Assessment Report for LACBWR was issued in June 1983 (NUREG-0827). This report summarizes staff findings from the SEP review and identifies required safety improvements, including TS changes. Three of these TS changes are presented below; the remaining items remain under staff review and will be addressed in separate correspondence.

2.1 Exclusion Area Authority and Control

In Section 4.1 of NUREG-0827, the staff concluded that DPC should revise the TS to require that the licensee notify the NRC of any changes in occupancy on the two privately owned land parcels within the exclusion area. The two parcels of land are unoccupied with restrictive land easements associated with the La Crosse site. Since the licensee is required by 10 CFR 100.3(a) to have the authority to determine all activities, including exclusion or removal of personnel and property from the exclusion area, the staff concluded that notification of any changes in occupancy of this land is appropriate.

In the December 19, 1983 submittal, the licensee proposed the following addition to Section 1.2.1 of the TS: "Any changes in occupancy of the exclusion area which lead to residential uses shall be noticed to the NRC." This proposed change is responsive to the NRC request and is an additional constraint on the licensee. Therefore, the staff finds the proposed change acceptable.

B505310262 B50528  
PDR ADOCK 05000409  
P PDR

## 2.2 Containment Airlock Leak Testing

In Section 4.22 of NUREG-0827, the need for TS changes on inspection of air lock door seals was identified. By letter dated September 27, 1984, the staff issued an exemption to Section III.D.2.b.iii of Appendix J to 10 CFR Part 50. This section requires airlock leakage tests within 3 days of each opening. The exemption was approved provided that: (a) leakage tests of containment airlocks are performed every 4 months (current TS requirement); (b) door seals on containment airlocks are visually inspected for degradation after each opening but not required more often than once every 72 hours, and (c) door seals on containment airlocks are replaced periodically in accordance with manufacturer's recommendations. This license amendment implements items (b) and (c) above. The December 19, 1983 letter submitted a proposed change which would add TS 5.2.10 and 5.2.11 to read as follows:

"5.2.10 The door seals on the containment personnel and emergency airlocks will be visually inspected for degradation every 72 hours.

5.2.11 The door seals on the containment personnel and emergency airlocks will be replaced periodically in accordance with manufacturer's recommendations."

These proposed TS changes provide the necessary assurance of airlock door seal integrity in response to the staff's request. Therefore, the staff finds the proposed changes acceptable.

## 2.3 Water Chemistry Limits

In Section 4.20 of NUREG-0827, the staff requested TS changes relating to limits and sampling frequencies for chlorides, pH and conductivity for the reactor coolant. The objective of such limits is to control coolant chemistry to minimize the possibility of corrosion-induced failures.

The present TS have limits on conductivity and chlorides, but the sampling frequencies are not given in the TS and the limits do not agree with current staff practice as given in Regulatory Guide 1.56. No limits presently exist in the TS for pH.

### 2.3.1 Chloride limits

The licensee has proposed to revise TS 4.2.2.2 to include normal and maximum chloride concentration limits, including limitations on time above the normal limits, and action statements if the maximum limits are exceeded. The proposed TS requirements are in accordance with Regulatory Guide 1.56 recommendations.

The limits are given as a function of core condition, e.g., Power Operation, Hot Shutdown, etc. A sampling frequency of once every 72 hours for Conditions 1, 2 and 3 (Power Operation, Startup, Hot Shutdown) and once every 7 days in Conditions 4 and 5 (Cold Shutdown and Refueling) is proposed. These frequencies are consistent with requirements for other operating reactors. The staff thus finds the proposed changes acceptable.

### 2.3.2 pH Limits

The existing TS do not have any limits on pH. The licensee has proposed that pH be maintained between 5.3 and 8.6 under all plant conditions. If pH is outside these limits for more than 72 hours, an orderly shutdown shall be initiated. The proposed sampling frequency for pH is the same as given above for chlorides.

The proposed limits and action statements are in accordance with the Regulatory Guide 1.56 recommendations. The staff thus finds these proposed changes acceptable.

### 2.3.3 Conductivity Limits

As a result of the NUREG-0827 requirements, the licensee performed a review of the primary cleanup system capability to determine appropriate conductivity limits for the primary coolant. The existing TS limit for conductivity is specified as 5 micromhos/cm; however, this limit may be exceeded for 24 hours provided the chloride concentration remains below 1.0 ppm. Based on cleanup system capability, the licensee proposes for Condition 1 (Power Operations), a normal limit of 3  $\mu$ mhos/cm with a maximum limit of 10  $\mu$ mhos/cm. The allowable time above 3  $\mu$ mhos/cm is 72 hours per incident, but no more than 2 weeks per year. If the maximum limit of 10  $\mu$ mhos/cm is exceeded, an orderly shutdown would be initiated immediately. Similar requirements are specified for the other operating modes except that the normal limit is 5  $\mu$ mhos/cm for Conditions 2 (Startup) and 3 (Hot Shutdown), with no maximum limit and a limit of 10  $\mu$ mhos/cm in Cold Shutdown. The sampling frequencies are consistent with those for chlorides and pH.

The proposed limits, allowable time above the normal limits and action statements are consistent with Regulatory Guide 1.56 recommendations with the following exception which is dictated by existing cleanup system capability: For Condition 1 (Power Operation), the proposed normal limit is 3  $\mu$ mhos/cm; the recommended value is 1  $\mu$ mhos/cm. Similarly for Conditions 2 and 3, the proposed normal limit is 5  $\mu$ mhos/cm whereas the recommended limit is 2  $\mu$ mhos/cm. These proposed limits are however at least as stringent as required by the current TS.

The objective of conductivity limits for primary coolant water in boiling water reactors (BWR) is to minimize the possibility of corrosion-induced failures from impurities in the coolant system. As discussed below, the staff concludes that the licensee has taken adequate steps to minimize stress corrosion cracking problems such that the proposed conductivity limits are acceptable.

(a) Replacement of Susceptible Material

All furnace sensitized nozzle safe-ends have been removed.

(b) Inservice Inspection of Piping.

The NRC through NUREG-0313 (Reference 1) implemented an augmented inservice inspection (ISI) and leak detection program in BWR ASME Code Class I and II pressure boundary austenitic stainless steel piping which could be susceptible to intergranular stress corrosion cracking (IGSCC). Susceptible materials were identified as "non-conforming". The degree of augmented ISI depends upon whether the nonconforming lines had been identified as "service sensitive." "Service sensitive" lines are defined as the BWR Class I and II pressure boundary piping which experienced cracking in service or are considered to be particularly susceptible because of high stress and relatively stagnant, intermittent, or low coolant flow conditions. Nonservice sensitive lines are all BWR Class I and II pressure boundary nonconforming lines not classified as service sensitive.

In a letter dated July 10, 1980 (Reference 2), the DPC summarized its operating and inspection experience with nonconforming lines during 10 years of operation from 1969 to 1979. Examination of nonservice sensitive lines had been completed according to the accelerated examination requirements of NUREG-0313. Nonconforming, service sensitive lines had been examined at least once during 1969-1979 and some had been examined more than once from 1969 to 1979. No unacceptable indications were observed during examinations of the nonconforming service sensitive lines. In addition, LACBWR completed 10 years of operation from 1969-1979 without having any welds in the reactor coolant system (RCS) pressure boundary piping develop a leak.

The augmented inspection requirements of NUREG-0313 for nonconforming lines have been incorporated into the LACBWR TS (Reference 3).

(c) Leak Detection Requirements

The RCS leak detection program for the LACBWR TS is more stringent than the model TS provided by NUREG-0313.

(d) Operational History of Recirculation Piping

The recirculation piping at LACBWR is made of either low-alloy (Cr-Mo) steel or carbon steel with stainless cladding and has shown no indication of stress corrosion cracking during the plant's 16 years of commercial operation.



Therefore, the staff concludes that the proposed conductivity limits in conjunction with the other TS requirements discussed above provide reasonable assurance that IGSCC will not result in unacceptable degradation of RCS pressure boundary piping.

In summary, the proposed changes to the water chemistry requirements will bring the facility into closer conformance with staff guidance. The staff finds these proposed changes acceptable.

### 3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and changes to the surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

### 4.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) 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.

### 5.0 ACKNOWLEDGEMENT

This Safety Evaluation has been prepared by E. McKenna and R. Dudley.

### 6.0 REFERENCES

1. NUREG-0313, Revision 1, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping, July 1980.
2. Letter from F. Linder (DPC) to D. M. Crutchfield (NRC), LAC-7022 dated July 10, 1980.
3. Amendment No. 34 to DPR-45, dated October 14, 1983.

Dated: May 28, 1985.