U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-409/94001(DRSS)

Docket No. 50-409 License No. DPR-45

Licensee: Dairyland Power Cooperative
2615 East Avenue-South
LaCrosse, WI 54601

Facility Name: La Crosse Boiling Water Reactor

Inspection At: La Crosse Site, Genoa, Wisconsin

Inspection Conducted: February 8 - March 18, 1994

Inspectors: M.A. Kunowski for 3-21-94
T. Reidinger Date

M.A. Kunowski for 3-21-94
W. Forney Date

Approved By: M.A. Kunowski for 3-21-94
J. W. McCormick-Barger, Chief Date
Radiological Programs Section 1

Inspection Summary

Inspection on February 8 - March 18, 1994 (Report No. 50-409/94001 (DRSS))
Areas Inspected: Special inspection conducted to review the potential for a failure of the integrity of the Fuel Element Storage Well (FESW). The inspection included a walkdown of the FESW and FESW cooling system configuration and condition to determine if other fuel pool draining vulnerabilities existed.
Results: No violations were identified. One issue was identified regarding the adequacy of the seismic and stress analysis for the FESW check valve installation (Section 6). This concern will be tracked as an Inspection Followup Item. The general housekeeping and cleanliness of the containment was generally very good.

DETAILS

1. Persons Contacted

*J. Joseph, Security Supervisor
*J. Parkyn, Plant Manager
*M. Polsean, Senior Shift Supervisor
*B. Wery, Quality Assurance Supervisor
*A. Hansen, Health Physics Technician
*R. Christians, Technical Support Engineer
*S. Raffety, Reactor Engineer
*R. Cota, Senior Shift Supervisor

NRC Representatives

*T. Reidinger, Region III
*W. Forney, Deputy Division Director, Division of Reactor Safety

*Denotes those attending the exit meeting on February 9, 1994, after the conclusion of the onsite inspection.

The inspectors also interviewed other licensee personnel in various departments in the course of the inspection.

2. Control of Radioactive Material and Contamination (IP 83100)

The inspectors observed several instances of poor contamination monitoring techniques (frisking), i.e., workers grabbed the handle of the frisker pancake probe without first frisking their potentially contaminated hands. The licensee recognized that improper frisking techniques could increase the potential for spreading contamination and indicated that changes to this practice would be implemented shortly.

No violations or deviations were identified

3. Containment and the Spent Fuel Structure

The Fuel Element Storage Well (FESW) is located inside the heated reactor containment building. The dimensions of the FESW are approximately 11 feet by 11 feet by 40 feet deep. The FESW floor and walls are lined with 3/8 and 1/16 inch thick stainless steel (SS) plates respectively. In response to the inspectors' concerns regarding the possibility of freezing air temperatures in the containment threatening the integrity of the FESW piping, the licensee initiated an engineering analysis to review the worst postulated conditions that could affect containment temperatures, i.e., loss of the heating boiler combined with loss of site power under extreme weather conditions. Based on the results of the analysis, a contingency procedure is expected to be developed. The licensee committed to review a suggestion that containment temperatures be monitored on shift rounds with a standard large dial house thermometer placed in containment.

In the event of a seismic failure causing a rupture in the FESW piping system, water from the FESW will drain and uncover 333 spent fuel assemblies. One of the operator's immediate action was to position a hose with a spray head attachment over the FESW to initiate a cooling spray over the stored spent fuel assemblies. Radiation exposure to the operators rigging the spray attachment was estimated to be approximately 300 millirem per hour (3 milliSievert per hour). The licensee stated the spray will satisfactorily cool the assemblies without compromising fuel integrity based on predicted heat load calculations.

No violations or deviations were identified

4. FESW Leakage Background

Leakage through the FESW liner has been evident following construction of the La Crosse Boiling Water Reactor Plant (LACBWR) Facility. Up to 1970, water leakage increased to 14 gallons per hour (gph). Early attempts to locate and repair liner leaks by welding the FESW liner had not been successful. In 1980, to reduce or eliminate leakage through cracks in the liner and any erosion migration flow paths through concrete cold laps, along embedded piping, and along the FESW walls, grout was injected into injection holes drilled at selected locations between the FESW liner and surrounding concrete. Additionally, grout injection was anticipated to retard further liner degradation caused by the corrosion effects of leakage.

The FESW leak rate was measured after the injection of 61 gallons of grout by monitoring FESW water level and was determined to be approximately 2 gph. The 1994 monthly average FESW leakage is approximately 1 gph; it has cycled from 0.3 gph to 2.2 gph. The average FESW leakage rate changes partly due to additional liner degradation caused by other leakage migration corrosion paths combined with varying degrees of equipment malfunctions, i.e., seal leakage from the two FESW cooling pumps.

Two alternate methods of water makeup from the control room was available with flow capacities of 300 gph each to restore normal FESW inventory.

No violations or deviations were identified.

5. Fuel Transfer Canal Shield Plug and Gate

The inspectors observed no visible deficiencies in the fuel transfer canal shield plug which was installed in the fuel transfer canal or in the installed fuel transfer gate. The gate, consisting of an aluminum plate, was installed as a water-tight barrier between the reactor cavity and the FESW. A stainless steel (SS) strip bolted to the each side of the aluminum plate on the FESW side provided a bearing surface for the 65 jack screws permanently installed in the frame of the gate. The visible number of 65 jack screws appeared to be sufficiently tightened to prevent any gasket leakage. The side of the gate towards the

transfer canal was gasketed with a black rubber gasket which was fastened to the gate by bolting through SS strips. Although, the rubber gasket had been installed for several years, no visible problems were noted. The gasket was not scheduled for replacement in the immediate future. The licensee will explore options for replacing the rubber gasket material when deterioration or water leakage was detected.

No violations or deviations were identified.

6. Fuel Element Storage Well Cooling System

During this inspection, a review was conducted to determine if other potential mechanisms for the loss of water from the FESW existed. The inspectors noted that fuel was currently stored in a two-tier rack configuration located in the FESW. With the exception of the FESW cooling water injection line, piping penetrations were located above the stored fuel region. Review indicated that the most vulnerable section of the injection line was approximately 10 feet in length, and located between the bottom of the FESW and the two check valves installed in series, which in the event of earthquake damage to the cooling piping, prevent drainage and backflow of FESW inventory into the FESW closed cooling system. The inspectors reviewed the FESW check valve installation procedure and Facility Change (FC) Request. The FC stated that the seismic and stress analysis had been performed for the installation of the two check valves. However, the seismic and stress analysis apparently failed to consider both check valves. The issue regarding the adequacy of the seismic and stress analysis for the check valve installation will be tracked as an Inspection Followup Item (No. 50-409/94001-01(DRSS)).

Additionally, during this inspection, it was identified that no leakage testing was conducted since the 1979 installation and leak testing of the two check valves. Subsequent to the inspection, the licensee satisfactorily leak tested the check valves with an approved procedure.

The inspectors observed a light rust colored corrosion layer at the nut-to-flange interface on both check valves. The corrosion was minor and posed no immediate concern. In addition, past FESW leakage left some minor white mineral-like deposits on the check valves and associated return piping. In response to the inspectors' concern whether FESW piping can be expected to degrade under the chemical effects from the mineral deposits, the licensee initiated a chemical analysis of the deposits. The results of that analysis will be reviewed during a future inspection.

No violations or deviations were identified.

7. Surveillance-Plant Tours (IP 83100)

The inspectors made tours of the control room. and the reactor, waste treatment, and turbine buildings. Observations of instrumentation and

recorder traces and selected control room annunciators were made; no problems were identified. A combination of containment sump level, FESW level, and radiation monitoring alarms was available to alert the operating staff to leakage from the FESW.

The inspectors, accompanied by the Technical Support Engineer, toured the reactor building and found it to be generally clean and adequately posted and controlled. Occupancy in the containment remained minimal except for routine surveillance and cutting out various piping systems scheduled for later disposal.

No violations or deviations were identified.

8. Exit Interview

The scope and findings of the inspection were reviewed with licensee representatives (Section 1) at the conclusion of the onsite inspection on February 9, 1994. The licensee did not identify any documents as proprietary. Following onsite inspection activities, several telephone discussions were held regarding the FESW check valves (Section 6).