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August 26, 1982

In reply, please
refer to LAC-8534

DOCKET NO. 50-409

U. S. Nuclear Regulatory Commission
ATTN: Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
Division of Operating Reactors
Washington, D. C. 20555

SUBJECT: DAIRYLAND POWER COOPERATIVE
LA CROSSE BOILING WATER REACTOR (LACBWR)
PROVISIONAL OPERATING LICENSE NO. DPR-45
SEP TOPIC XV.1
DECREASE IN FEEDWATER TEMPERATURE, INCREASE IN FEEDWATER FLOW, INCREASE IN STEAM FLOW AND ACCIDENTAL OPENING OF THE TURBINE BYPASS VALVE

REFERENCES: (1) DPC to NRC, Linder to Eisenhut, LAC-8138, dated March 5, 1982
(2) DPC to NRC, Linder to Crutchfield, LAC-7633, dated June 29, 1981
(3) DPC to NRC, Linder to Ziemann, LAC-7605, dated December 20, 1979

Gentlemen:

This letter contains additional information on SEP Topic XV-1 in answer to a question asked by the NRC.

NRC QUESTION

For the increase in feedwater flow event, the staff is concerned about the possibility of continued feedwater addition, such that water overflows into the steam line and thus potentially overstressing or rupturing the steam line. If no automatic features are available to terminate the increase in feedwater flow, provide the time frame to fill the vessel to overflow, and demonstrate that this is adequate time for oeprator action. Alternately, show that the steam line can withstand water overflow without rupture.

DPC RESPONSE

As discussed in Reference 1, feedwater at LACBWR is normally supplied at any one time by one of two pumps. For this analysis, however, it is assumed both Reactor Feed Pumps are in service, as would be the case when switching RFP's, and feedwater flow increases at a maximum rate to that available from both pumps. Assuming no increase in steam flow and no operator action, the water level in the reactor vessel would reach the steam line in 1-1/2 to 2 minutes.

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As water level continued to increase, water would fill the steam line and drain to the turbine. As discussed in Reference 2, a feedwater increase transient would not challenge the main steam relief valves due to the Shutdown Condenser's ability to remove decay heat and thus preclude pressurization to the relief valve setpoint. Even if the relief valves did lift and release steam into the Containment Building, safe shutdown could be achieved, as this event is bounded by the main steam line break transient. (Refer to Reference 3).

The steam line normally contains liquid water up to the Reactor Building Main Steam Isolation Valve during refueling operations and primary system hydrostatic tests, which are conducted at 1400 psig. Through the years, other portions of the main steam line have been filled with liquid water and pressurized. On December 17, 1970, following a system modification, the piping between the Reactor Building Main Steam Isolation Valve and Turbine Building Main Steam Isolation Valve was hydrostatically tested at 1950 psig. Based on the hydrostatic tests performed over the years, it can be concluded that the main steam line can withstand being flooded with liquid water without rupturing.

During the plant's history, more than ten transients have occurred which involved an increase in feedwater flow. Ten incidents which started with the plant at power were examined in detail. The turbine was not flooded in any instance. Operator action was taken during each incident which generally involved attempts to transfer and/or take manual control of the feedpump. During three of the ten events, a full recovery was made without scram. During five incidents a high water level scram occurred, during one incident there was a reactor power/flow trip, and during the remaining event a low water level scram occurred prior to the increase in feedwater flow. Therefore, though the time available for action is short, the operators can and have taken action to mitigate the consequences of an increase in feedwter flow transient.

Based on past experience with increase in feedwater flow transients and hydrostatic tests, it can be concluded that there is adequate time for operator action and the steam line can withstand water overflow without rupture.

If there are any questions, please contact us.

Yours truly,

DAIRYLAND POWER COOPERATIVE

Frank Linder

Frank Linder, General Manager

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cc: J. G. Keppler, Regional Administrator, NRC-DRO III
NRC Resident Inspector