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Docket No. 50-305

V. Stello, Assistant Director for Reactor Safety, TR

CONTAINMENT BACKPRESSURE FOR ECCS KEWAUNEE POWER PLANT (TAR-1557)

Originating Organization: Wisconsin Public Service Corporation  
Responsible Branches: RSB; ORB-1  
Principal Reviewers: A. Thadani, RSB; L. McDonough, ORB-1  
Requested Completion Date: Being Revised  
Review Status: Complete

In accordance with TAR-1557, the Containment Systems Branch has reviewed the ECCS containment pressure calculations dated April 15, 1975 for the Kewaunee Nuclear Power Plant with the specific containment assumptions submitted December 2, 1974. Our draft Safety Evaluation Report is enclosed.

The ECCS containment pressure calculations for Kewaunee were done using the Westinghouse ECCS evaluation model which has been approved on a generic basis under Appendix K of 10 CFR Part 50. We require that certain plant-dependent information be submitted for our review of each plant. Justification for the containment volume, passive heat sinks and operation of the containment heat removal systems were submitted for Kewaunee dated December 2, 1974. We have concluded that this plant-dependent information is reasonably conservative and therefore the containment pressures calculated for the Kewaunee ECCS analysis are in accordance with Appendix K.

Original signed by:  
Robert L. Tedesco

Robert L. Tedesco, Assistant Director  
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Enclosure:  
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NRR Reading File  
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Docket Files

OFFICE >	TR:CSB	TR:CSB	TR:CSB	TR:CS		
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DRAFT SAFETY EVALUATION  
(CONTAINMENT SYSTEMS)  
KEWAUNEE NUCLEAR POWER PLANT  
DOCKET NO. 50-305

ECCS Containment Pressure Evaluation

Appendix K to the 10 CFR Part 50 of the Commission's regulations requires that the effect of operation of all the containment installed pressure reducing systems and processes be included in ECCS evaluation. For the purpose of ECCS evaluation it is conservative to minimize the containment pressure which affects the reflood rate in the core because of the resistance to steam flow in the reactor coolant loops; i.e., it will reduce steam flow.

Following a loss-of-coolant accident, the pressure in the containment building will be increased by the addition of steam and water from the primary reactor system to the containment atmosphere. Subsequently, following the initial blowdown, heat transfer from the core, primary metal structure, and steam generators to the ECCS water, will produce additional steam. This steam together with any ECCS water spilled from the primary system will flow through the postulated break into the containment. This energy will be released to the containment during both the blowdown and later ECCS operational phases; i.e., reflood and post-reflood.

Energy removal occurs within the containment by several means. Steam condensation on the containment walls and internal structures serves as a passive energy heat sink that becomes effective early in the blowdown transient. Subsequently, the operation of the containment heat removal systems such as containment sprays and fan coolers will remove steam from the containment atmosphere. When the steam removal rate exceeds the rate

of steam addition from the primary system, the containment pressure will decrease from its maximum value.

The ECCS containment pressure calculations for Kewaunee were done using the Westinghouse ECCS evaluation model. The NRC staff reviewed Westinghouse's model and published a Status Report on October 15, 1974, which was amended November 13, 1974. We concluded that Westinghouse's containment pressure model was acceptable for ECCS evaluation. We required, however, that justification of the plant-dependent input parameters used in the analysis be submitted for our review of each plant.

This information was submitted for Kewaunee by letter dated December 2, 1974. Wisconsin Public Service Corporation has reevaluated the containment net-free volume, the passive heat sinks, and operation of the containment heat removal systems with regard to the conservatism for ECCS analysis. This evaluation was based on measurements within the containment and from as-built drawings to which a margin was added. The containment heat removal systems were assumed to operate at their maximum capacities and minimum operational values for the spray water and service water temperatures were assumed.

We have concluded that the plant-dependent information used for the ECCS containment pressure analysis for the Kewaunee plant is reasonably conservative and therefore the calculated containment pressures are in accordance with Appendix K to 10 CFR Part 50 of the Commission's regulations.