

Bechtel Associates Professional Corporation

Attachment to BLC-7971

SUBJECT: HCAR 30 (issued 7/11/79)

Service Water Supply Pressure for the Containment Air Coolers

INTERIM REPORT 1

DATE: August 2, 1979

PROJECT: Consumers Power Company
Midland Plant Units 1 and 2
Bechtel Job 7220Introduction

This report is submitted to advise of the interim status of the project's actions relating to the service water supply pressure for the containment air coolers.

Designation of Deficiency

During final system design review, project engineering discovered that the service water supply pressure to the containment air coolers following a loss-of-coolant accident (LOCA) or main steam line break (MSLB) is less than 40 psig (54.7 psia) at the outlet of the air cooling unit as stated in FSAR subsection 6.2.2.2.3. The final calculations indicate that the service water pressure at the containment air cooler outlet could be as low as 13 to 14 psia under emergency operation, with the ultimate heat sink at its design elevation of 604 feet (see FSAR subsection 9.2.5). The post-accident environment inside the containment reaches approximately 300°F and causes the service water inside the air coolers to boil, resulting in reduced performance of the containment air coolers. Consequently, the containment air coolers could not remove heat at the rate as described in FSAR subsections 6.2.2.2 and 9.2.1.3 following an MSLB or LOCA.

Potential Safety Implications

If the deficiency had not been detected, there would have been no effect on the normal safe operation of the plant. With the service water system as designed, the containment air coolers are capable of removing heat from the containment for all power generation modes. However, under post-LOCA or MSLB conditions, the containment air coolers would not have been able to meet their safety design bases to remove heat from the containment following a LOCA or MSLB. Analysis of the effects of complete loss of containment air cooler heat removal capability is incomplete, but the following preliminary conclusions can be drawn:

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1. Containment pressures and temperatures following a LOCA and MSLB with no air coolers and only one train of containment sprays operating are within the containment design basis. Therefore, containment integrity would not be jeopardized.
2. Following a MSLB or LOCA, the containment pressure and temperatures decrease more slowly when one spray train is used rather than one spray and one air cooler train. The temperature and pressure environmental qualification envelopes of various components inside the containment may be exceeded for LOCAs and large MSLBs. Therefore, the longer-term availability of various safety-related equipment and post-accident monitoring components cannot be ensured. Because this is a significant deficiency in the design as stated in the safety analysis report, it is concluded that this item is reportable in accordance with 10 CFR 50.55(e).

Corrective Action

Corrective action will be taken to ensure that boiling does not occur in the containment air coolers and that the design conforms to the safety analysis report. Specifically, a pump will be provided in each service water supply line to the containment air coolers to boost the service water pressure to a minimum of 40 psig at the outlet of the air coolers. A suitable flow control device will be provided to throttle the excess pressure before returning the service water to the main return header. Normally, the pump will not be running, it will start automatically on a reactor building cooling actuation signal.

Design for this corrective action is proceeding and is expected to be complete by September, 1979. Procurement of additional components has started. The cause of the deficiency and other corrective actions are under review and will be discussed in the next interim report.

Signed by: D. Manning

Approved by: J. R. Kestelberg

Concurrence by: Karl W. J. J. J.