

DUKE POWER COMPANY

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February 25, 1983

Mr. James P. O'Reilly, Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, Suite 2900  
Atlanta, Georgia 30303

Re: McGuire Nuclear Station, Unit 1  
Docket No. 50-369

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-369/83-05 (Interim). This report concerns T.S. 3.6.5.1, "The ice bed shall be operable...". This incident was considered to be of no significance with respect to the health and safety of the public.

A followup report will be submitted upon completion of an evaluation after Row 8 and 9 ice weights are corrected and the ice condenser returned to service.

Very truly yours,

*H.B. Tucker / BTU*

Hal B. Tucker

PBN:jfw  
Attachment

cc: Director  
Office of Management and Program Analysis  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Records Center  
Institute of Nuclear Power Operations  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, Georgia 30339

Senior Resident Inspector  
McGuire Nuclear Station

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DUKE POWER COMPANY  
McGUIRE NUCLEAR STATION  
REPORTABLE OCCURRENCE REPORT NO. 83-05 (Interim)

REPORT DATE: February 25, 1983

FACILITY: McGuire Unit 1, Cornelius, NC

IDENTIFICATION: Inoperability of the Unit 1 Ice Condenser Due to Light Ice Basket Weights

DESCRIPTION: The Unit 1 Ice Condenser was declared inoperable on January 27, 1983 as a result of low ice weights identified in accessible Row 8 and 9 ice baskets. Numerous Row 8 and 9 baskets in each of the 24 bays were found to have net ice weights of less than the Technical Specification requirement of 1269 pounds. Pursuant to Technical Specification 3.6.5.1, operation under this condition is less conservative than the minimal requirement.

The initial ice weights were completed on January 27 per procedure, "Ice Basket Weight Determination" and evaluated per periodic test "Ice Bed Analysis". At this time Unit 1 was in Mode 5 following a scheduled maintenance outage which began on January 21 for steam generator modification and thermal sleeve removals.

This incident is a result of Design Deficiency, due to excessively high sublimation rates in Rows 8 and 9 that are attributed to heat loading from the crane wall area and subsequent air currents in the ice bed.

EVALUATION: Sublimation is a generic problem associated with the operation of ice containments throughout the industry and is a documented phenomenon with the MNS Ice Condenser. Low ice weights, attributed to sublimation, resulted in a similar incident, RO-369/82-59, in June 1982. At that time ice weights were increased by addition of flaked ice and borated water. This "fix" was temporary; however, it allowed the Ice Condenser to be returned to an operable status and provided additional time to develop techniques for removing and reloading the ice.

Light ice weights were anticipated for Row 8 and 9 baskets due to heat loading associated with their location near the crane wall and previous experiences. Rows 1 through 7 ice weights have not indicated excessive sublimation rates in the past and were expected to be above the minimum ice weight. Therefore, only accessible Row 8 and 9 baskets were weighed for the initial evaluation. The high incidence of low ice weights resulted in initiation of ice removal and addition prior to completing the required Ice Condenser ice weights evaluation.

Ice removal is being accomplished by grinding the ice with an auger which is lowered into the baskets. The ground ice falls through the basket mesh to the lower Ice Condenser compartment and is removed. Pneumatic impact tools were initially used to chip the ice so that it could be vacuumed from the baskets. Problems with the chippers becoming brittle in the Ice Condenser environment

and the excessive weight of the chipper extensions proved that these tools were not suitable for ice removal.

Reloading of the baskets is to be accomplished with cylinders of compressed flake ice. These cylinders are approximately 11 x 11 1/2 inches and weigh 32 to 37 pounds. Baskets loaded with these cylinders will have a higher net ice weight than baskets loaded with flake ice due to the density of the cylinders. Increased ice weights should increase the time between ice loads.

Cruciforms, internal X-shaped ice supports spaced at 6 feet intervals, are being removed from the baskets as they are encountered. These stationary supports are being replaced by spring locking supports as the baskets are reloaded. Future removal of cruciforms should be expedited by this modification.

SAFETY ANALYSIS: Row 8 and 9 ice weights taken prior to the Ice Condenser being declared inoperable are not representative of the total ice content. Therefore, an evaluation of the effect of the low ice weights on the Ice Condenser System is premature at this time. This evaluation will be delayed until Row 8 and 9 ice weights are corrected and the Ice Condenser is returned to service. A followup to this report will be submitted.

CORRECTIVE ACTION: Deficient Row 9 ice baskets will be completely unloaded, if possible, and reloaded with compacted ice cylinders. This should restore the ice weight to approximately the maximum allowed weight, 1627 pounds of ice per basket. Light weight Row 8 ice baskets will be unloaded to the third cruciform, 18 feet, and reloaded with the ice cylinders. Additional weight gained from this addition should increase the ice baskets weights sufficiently above the minimum weight of 1269 pounds of ice per basket.

Row 8 and 9 ice baskets will be weighed after the ice additions to verify their weights conform to Technical Specification Surveillance Requirements 4.6.5.1.

A representative cross section of ice baskets will be weighed after completion of ice additions. These weights will be evaluated to verify the operability of the Ice Condenser pursuant to Technical Specification 3.6.5.1. Should this evaluation identify a deficiency, additional ice or borated water will be added to increase the weight of light ice baskets.