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January 31, 1986

NUCLEAR LICENSING & SAFETY DEPARTMENT

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-13
File: 0272/L-350.0/01052/
L-860.0
GGNS Feedwater and Main Steam
Line Flued Head Analysis;
SER 6.2.8
AECM-86/0016

References:
1) AECM-81/340, Letter to H. R. Denton from L. F. Dale dated September 1, 1981
2) SER section 6.2.8
3) AECM-83/0026, Letter to H. R. Denton from L. F. Dale dated July 20, 1983

As discussed in References 1 and 2, Mississippi Power & Light (MP&L) committed to analyze the Grand Gulf Nuclear Station (GGNS) feedwater line and main steam line flued heads to determine the minimum design thicknesses and lowest permissible service metal temperatures (LSMT). This completed analysis was documented in Reference 3 and shows that the temperature of the Train B flued heads in the feedwater system could exceed the LSMT by 5°F. Based on this analysis, MP&L committed in Reference 3 to the following actions:

1) install temperature sensors on the condensate storage tank (CST) which alarm in the control room when falling temperatures reach 70°F and 66°F;

2) make provisions to reject water from the condenser hotwell to the CST when the temperature decreases to 70°F or lower and transfer Reactor Core Isolation Cooling (RCIC) suction to the suppression pool at temperatures of 66°F or lower;

3) heat trace and insulate the exposed 20" RCIC suction piping from the CST.

These actions provide assurance that RCIC system operation with the plant shutdown during cold weather will not result in feedwater flued head temperatures of less than the permissible 65°F, LSMT.

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Subsequently MP&L completed an analysis to determine the likelihood of the CST water being colder than 65°F. Calculations were performed assessing realistic heat and mass balances on the CST. The heat balance considered ambient meteorological conditions and mass/energy flows into and out of the CST. Two base cases and an extended "worst case" condition were considered. The results of all three cases are shown on the attached table. In the "worst case" condition the record low temperature and average wind were used to calculate heat losses to the environment. In order to be conservative in considering heat entering the system for the "worst case" condition, liquid radwaste and condensate pump reject flows were ignored, and only the Control Rod Drive (CRD) return was considered. The continuous CRD return flow was conservatively assumed to be 130°F rather than 140°F as in the two base cases. The resulting steady state temperature was above 75°F.

The evaluation shows that during normal plant operations the likelihood of experiencing prolonged ambient conditions resulting in CST water temperatures below 65°F is very low. During periods of extended plant shutdown (i.e., assuming no heat inputs to the CST) with minimum ambient temperatures, the CST water temperature could slowly fall below 65°F. Calculations show the cooling rate under the worst case ambient conditions to be approximately 1°F per eight hour shift when the CST is at 70°F. This condition in combination with a requirement to activate RCIC following startup from an extended shutdown in cold weather could result in the LSMT being reached. Therefore MP&L believes that the following reduced scope of work is justified:

1) Install a local temperature sensor on the CST which will be monitored once per shift during cold weather operations. If the CST temperature decreases to 70°F, procedures will require that the RCIC suction be transferred to the suppression pool or that CST temperature be increased by makeup/reject from the condenser hotwell.

2) Install insulation on the exposed 20" RCIC suction piping from the CST.

Justification for this revision is based on the improbability of the CST reaching the alarm temperature and the fact that since any temperature change of the CST will be very gradual, no significant response time would be lost by monitoring of CST temperature once per shift. This revised commitment provides the required function without adding to the complexity of Control Room instrumentation.

This change will help to simplify work done during the first refueling outage by reducing the scope of work in the control room where cold shutdown surveillances, system testing, and panel modifications will make it a work intensive area.

MP&L requests that the NRC concur on this matter by March 1, 1986 to allow for final planning and scheduling of RF01 work items. Temperature monitoring will commence prior to system startup following the first refueling outage when cold weather conditions exist.

In accordance with 10CFR170.21, a $150.00 application fee is included.

Yours truly,

L. F. Dale
Director

TWS/GWS/SHH:bms
Attachment

cc: Mr. O. D. Kingsley, Jr. (w/a)
Mr. T. H. Cloninger, (w/a)
Mr. R. B. McGehee (w/a)
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CONDENSATE STORAGE TANK

HEAT BALANCE

	METEROLOGICAL PARAMETERS	HEAT INPUT	STEADY STATE TEMPERATURE
Case 1	Temperature 49°F(Note 1) Wind Speed 5.5 mph(Note 2)	40 gpm @ 88°F(Note 3) 15 gpm @ 130°F(Note 4) 20 gpm @ 140°F(Note 5)	102°F
Case 2	Temperature 5°F(Note 7) Wind Speed 5.5 mph	40 gpm @ 88°F 15 gpm @ 130°F 20 gpm @ 140°F	96°F
Extended Case:	Temperature 5°F Wind Speed 5.5 mph	20 gpm @ 130°F(Note 6)	>75°F

1) 49°F equals the average temperature during the year's coldest month January (FSAR 2.3-3) at Grand Gulf Nuclear Station (GGNS).

2) 5.5 mph equals the average wind speed at GGNS.

3) Liquid radwaste flow and temperature to the Condensate Storage Tank (CST).

4) Condensate pump reject flow and temperature to the CST.

5) Control rod drive reject flow and temperature to the CST.

6) Control rod drive reject flow to the CST, with a Temperature 10°F more conservative.

7) 5°F equals the approximate record low for the GGNS based on a record low of 2°F at Vicksburg and 7°F at Jackson between 1964 and 1975 (FSAR Tables 2.3-2 and 2.3-3).