



Northern States Power Company

Monticello Nuclear Generating Plant
2807 West Hwy 75
Monticello, Minnesota 55362-9637

July 2, 1997

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Request for Information Regarding MNGP License Amendment
Dated June 19, 1997 (TAC No. 97781)

The following responses are intended to address NRR questions concerning the subject license amendment which were communicated to NSP via a June 30, 1997 telephone conversation by T.J. Kim, Monticello NRC Project Manager, to J. Beres, MNGP Licensing.

Please submit a copy of the vendor report for the Core Spray Pump.

Attached is a copy of Hydraulic Report: 12.5.487, "NPSH - Report of Sulzer Bingham Pump."
The following discussion addresses the basis for revising the core spray pump NPSH_R curve.

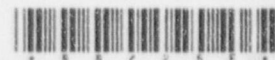
The Net Positive Suction Head Required (NPSH_R) curve for a pump is determined by manufacturer testing. The NPSH_R for a pump at a specific flow rate is determined by throttling suction flow and observing a decrease in the total developed head. The Hydraulics Institute Standard requirement for determining NPSH_R is an observed 3% decrease in total dynamic head.

A review of the MNGP Core Spray pump test data from the original manufacturer, Bingham Pump Co., indicated that the NPSH_R curves were based on a 1% degradation in total dynamic head. This pump test data was for a "witness test" by which the pump manufacturer demonstrated specific purchase order requirements for flow, total developed head, and NPSH_R. The manufacturer was not performing a standard NPSH test per se to determine the minimum required NPSH. The witness test NPSH_R curves, which are based on a 1% decrease in total dynamic head, are considered overly conservative with respect to the standard 3% decrease.

The Core Spray pump manufacturer, now Sulzer Bingham Pumps Inc., was retained to determine the minimum NPSH_R for these pumps using the Hydraulics Institute Standards. A

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new NPSH_R curve (# 2) is provided for the Core Spray pumps which is based on test data for these pumps in which there was a 3% decrease in total dynamic head. The curve is only valid for flow rates between 4,000 gpm and 5,300 gpm due to range of test data. For flow rates less than 4,000 gpm, the original NPSH_R curve was used to provide values for NPSH_R.

As a precautionary measure, NSP also requested that Sulzer evaluate the operation of the pumps with less than the required NPSH. This additional effort required an evaluation of the similarity of the MNGP Core Spray pumps to the Quad Cities pump which was tested under degraded NPSH conditions. The attached pump report provides the results of these evaluations. Since the NPSH_R value for the Core Spray pumps at maximum system flow could be satisfied by the containment pressure available for the short term accident scenario, the evaluation of the pumps with less than required NPSH is not being utilized at this time.

By Exhibit E of the license amendment request, NSP revised the Duke Engineering and Services calculation output to determine the required containment pressure necessary to assure adequate NPSH for the B Core Spray pump. This revision used an NPSH_R value for the B Core Spray pump determined from a pump curve for a Quad Cities RHR pump (Curve #26895). This was based on information from Sulzer Bingham Pump indicating that the NPSH_R requirements were identical. The NPSH_R value used to make that revision was 27 ft for a flow rate of approximately 4300 gpm. In light of the new data, the previous NPSH_R value of 27 ft at 4,300 gpm is still valid as demonstrated by Curve #2 of the attached pump report. The NPSH_R value, however, is now based on test data for the MNGP Core Spray pumps rather than similarity.

The test data for the Residual Heat Removal (RHR) pump NPSH_R curves was reviewed, and there are no plans to develop new NPSH_R curves for the RHR pumps. The containment pressure required to assure adequate NPSH for the Core Spray pumps bounds that required for the RHR pumps for the accident conditions evaluated in Exhibit E of the license amendment request. The existing NPSH_R curves for the RHR pumps were used as inputs to the NPSH calculation of Exhibit E.

Please submit a copy of the RHR room temperature calculation.

Attached is a copy of NSP Calculation CA 97-157, "RHR Room Temp Response to General Electric Letters GLN 97-017 and GLN -97-019." Some additional information from a separate calculation is included with this calculation to clarify modeling techniques and assumptions. The production runs, which are voluminous, are not included. These runs and the referenced attachments are available for inspection on site.

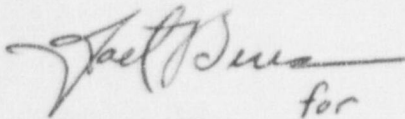
Please justify the use of the 600 hp heat input for the 700 hp RHR pump motor in the above calculation.

Two separate studies validate the conservatism of this assumption. The actual operating electric horsepower (EHP) for each motor was recently measured, and the resulting BHP for each pump was calculated. All operating BHP values were found to be less than the rated value of 600 hp. In addition, the rated BHP, which was used in the calculation, is greater than the manufacturer's measured BHP at design operating conditions. The rated BHP value is used to

determine the heat added. Consequently the 600 hp assumption is conservative with respect to heat added.

This letter contains no new NRC commitments.

Please contact Joel Beres, Licensing Engineer, at (612) 295-1436 if you require further information.

A handwritten signature in cursive script, appearing to read "Joel Beres", with the word "for" written below it.

William J. Hill
Plant Manager
Monticello Nuclear Generating Plant

c: Regional Administrator - III, NRC
NRR Project Manager, NRC
Sr Resident Inspector, NRC
State of Minnesota, Attn: Kris Sanda

Attachments:

Hydraulic Report: 12.5.487, "NPSH - Report of Sulzer Bingham Pump"

NSP Calculation CA 97-157, "RHR Room Temp Response to General Electric Letters GLN 97-017 and GLN -97-019"