

January 12, 2005

MEMORANDUM TO: Darrell J. Roberts, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: Daniel S. Collins, Senior Project Manager */RA by G. Wunder for/*
Project Directorate I, Section 2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: FLOWSERVE RESPONSE TO NRC QUESTIONS ABOUT HOPE
CREEK GENERATING STATION 'B' RECIRCULATION PUMP (TAC
NO. MC5111)

The purpose of this memorandum is to docket information provided to the Nuclear Regulatory Commission (NRC) staff during their review of the Hope Creek Generating Station 'B' recirculation pump high vibration issue. This information was provided via e-mail by Mr. Frank Costanzo of Flowserve in response to NRC questions asked on December 30, 2004.

Docket No. 50-354

Enclosure: As Stated

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January 5, 2005 Responses

Q1. Has Flowserve performed a review of the current pump vibration levels?

R1. Flowserve has not conducted an in-depth technical evaluation of the current measured vibration levels. However, the overall vibration levels have been discussed qualitatively during several recent discussions with Hope Creek Plant personnel.

Q2. Considering the current pump condition where the pump shaft is suspected to have a "bow" and the existence of shaft cracks is quite likely, does Flowserve feel it is prudent to replace the pump shaft at this time or to wait until the next fuel cycle?

R2. From Flowserve's perspective, the potential ability for the pump to operate without distress until the next fuel cycle is indeterminate. However, Reactor Recirculation Pumps in the same category as the Hope Creek pump are considered to be at elevated risk due to the accumulated number of operating hours and resultant high-probability of shaft thermal cracking in conjunction with uncertain mechanical and hydraulic loading.

Q3. In the event of a shaft failure, does Flowserve have any Nuclear Safety concerns?

R3. Flowserve was not directly involved with either the recent PRA nor UFSAR performed by the Plant and cannot comment in detail. However, should a shaft failure occur, the results of a shaft break and/or seizure potentially include damage to the pump case, a release of metallic particles into the Reactor Water system and mechanical seal leakage.

Q4. Since the mounting location for the pump vibration probes was changed from the lower flange of the coupling spacer to the upper flange of the pump-half coupling, does Flowserve recommend that the vibration levels at this new location be correlated to the previous location?

R4. For reference, Flowserve recommends that acceptable locations for pump vibration probes are either the lower flange of the coupling spacer or the upper flange of the pump-half coupling. Whenever vibration probes are relocated to an alternate location, Flowserve recommends that the vibration levels at this revised location be reconciled and evaluated in conjunction with the measurements and levels at the previous location for consistency and to ensure the validity of the data. However, in the specific case of the Hope Creek coupling assembly, this reconciliation is difficult due to alignment and assembly concerns with the coupling train that resulted from modified and reworked critical coupling fits by a 3rd party.

Q5. What is the technical basis for the 25 mil vibration limit?

R5. The 25 mil vibration limit was a PSE&G misinterpretation of Flowserve published recommendations for a similar style of pump. This has been clarified with Plant personnel in recent discussions and the Flowserve recommended vibration limits are 11 mils alert and 16 mils shutdown.