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September 6, 2004

Mr. James L. Caldwell  
US Nuclear Regulatory Commission  
Suite 210  
2443 Warrenville Road  
Lisle, IL 60532-4352

Dear Mr. James L. Caldwell :

Here are some comments on the Perry Emergency Service Water pump problem.

First off, I am disappointed that the material used for shaft keys was not selected so that they would fail before more expensive parts. The engineering design provided for the keys, and the review of that design is, in my opinion, totally unacceptable.

The main problem, however, appears to be that they are not operating the pump in accordance with the instructions in the operating manual, as far as I can see.

The manual calls for starting up the pump with a pump discharge valve partially closed.  
(P. 53, Pump Startup #1)

The manual calls for venting air that may be in the pump (casing) before any further opening of the discharge valve.  
(P. 53, Pump Startup #3 & P. 54, #5)

The manual does not call for the installation of vacuum breaker valves to allow water to drain downward (in the pump) when the pump is not running.

Reference: Goulds Pumps, Installation, Operation, and Maintenance Instructions Model VII, VIT IOM 8/04

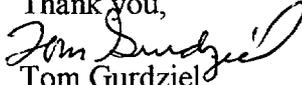
In fact, I have concluded that it is likely that if these instructions had been followed, the previously installed couplings (and keys) would have worked.

Specifically, I believe that starting the pump as they did caused increased resistance to rotation in each of the dry bearings inside the pump casing. Additionally, it may have caused what we used to call "runout flow" (for centrifugal pumps) and loaded impellers, keys, and shafts above what they were designed to handle with a decent factor of safety.

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(It makes sense to me that, if you have trouble with a piece of equipment and don't know the cause, you would read the vendor manual. If this was done at Perry, they may have found out that there is another version of this pump that would have protected the coupling from the unfavorable environment blamed for the coupling failure. It is the enclosed lineshaft version.)

No reply needed.

Thank you,  
  
Tom Gurdziel

Copy:

D. Lochbaum