



**FPL Energy**  
Seabrook Station

FPL Energy Seabrook Station  
P.O. Box 300  
Seabrook, NH 03874  
(603) 773-7000

**FEB 3 2004**

Docket No. 50-443

NYN-04007

United States Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Seabrook Station  
Undersized Emergency Feedwater Pump Shaft  
Report Pursuant to 10 CFR Part 21.21

On January 16, 2004, FPL Energy Seabrook, LLC (FPLE Seabrook) reported a condition involving an undersized shaft in a rotating assembly for an Emergency Feedwater Pump refurbished at the Flowserve Charlotte Service Center - Charlotte, NC. (Event #40453). Specifically, the defect was an undersized shaft that was .001 inches smaller than the minimum diameter specified by the vendor. The undersized shaft was discovered during post-maintenance testing following shaft replacement.

In accordance with the requirements of 10 CFR 21.21(d)(3), Attachment A provides the 30-day written report of an identified defect potentially associated with a substantial safety hazard

Should you have any questions regarding this letter, please contact Mr. James M. Peschel, Regulatory Programs Manager, at (603) 773-7194.

Very truly yours,

FPLE Energy Seabrook, LLC

Mark E. Warner  
Site Vice President

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cc: H. J. Miller, NRC Regional Administrator  
V. Nerses, NRC Project Manager, Project Directorate I-2  
G. T. Dentel, NRC Senior Resident Inspector

**Attachment A**

10CFR21.21(d)(4) requires that the written report required by this paragraph shall include, but need not be limited to, the following information, to the extent known:

**(i) Name and address of the individual or individuals informing the Commission.**

Mark E Warner  
Site Vice President  
FPL Energy Seabrook, LLC  
Seabrook Station Unit 1  
PO Box 300  
Seabrook, New Hampshire 03874

**(ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.**

Undersized shaft in a rotating assembly for an Emergency Feedwater Pump

**(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.**

The Emergency Feedwater Pump Shaft was refurbished at the Flowserve Charlotte Service Center, Charlotte, NC.

**(iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.**

The Emergency Feedwater System (EFW) provides the capability to remove heat from the Reactor Coolant System during emergency conditions when the Main Feedwater System is not available. The Emergency Feedwater System is comprised of two full-sized pumps (one motor- and one turbine-driven) whose water source is the Condensate Storage Tank (CST). Suction lines are individually run from the CST to each pump. Both pumps feed a common discharge header, which in turn supplies the four emergency feed lines. Additional redundant pumping capability is provided by a startup feed pump in the feedwater system, which has sufficient capacity to serve as backup for the emergency feedwater pumps. The motor-driven emergency feedwater pump is designed to maintain steam generator water inventory such that sufficient heat is removed from the steam

generators to prevent over-pressurization of the Reactor Coolant System, and allow for eventual system cooldown.

The component is the rotating assembly for 1-FW-P-37-B. Emergency Feedwater pumps P-37A and P-37B rotating assemblies include the shaft, the rotating pump impellers, and stationary diffusers and channel rings.

The undersize condition identified for the shaft for 1-FW-P-37-B and resultant bearing rub could have prevented the pump from fulfilling its safety function. This failure mechanism is not transportable to 1-FW-P-37-A due to the differences in the prime mover, however this pump must be assumed to be unavailable due to an additional single failure. The startup feedwater pump provides an EFW contingency function, but is not safety-related and cannot be credited to fulfill this function. This deviation could therefore result in the condition whereby the emergency feedwater system is not available to fulfill its safety function. Therefore, this condition could create a substantial safety hazard since the emergency feedwater system may not maintain the capability to perform its safety function.

- (v) The date on which the information of such defect or failure to comply was obtained.**

The 10CFR 21.21 reportability evaluation was completed on January 7, 2004.

- (vi) In the case of a basic component which contains a defect or fails to comply, the number and location of all such components in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part.**

Emergency Feedwater Pump 1-FW-P-37B was supplied to FPL Energy Seabrook by Ingersoll-Rand (now Flowserve). The extent of condition was determined to be applicable to Emergency Feedwater Pump 1-FW-P-37A as the pumps are identical with the driver being different. However, Emergency Feedwater Pump 1-FW-P-37A was determined not to be susceptible to the same potential failure mechanism(s) due to the differences in the prime mover.

The generic implications of the failure of 1-FW-P-37B are: 1) for other model pumps supplied by Ingersoll-Rand (Flowserve) to have undersized shafts, and 2) the related maintenance procedures lacking requirements to check the rotating assembly and hub measurements prior to establishing the interference fit. Additionally, during communication with Flowserve during the troubleshooting following the receipt of the high bearing temperature, it was identified that the design tolerances for the shaft and coupling hub could have resulted in a size-to-size (ie, 0.000" interference) fit had the shaft not been undersized.

- (vii) The corrective action, which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.**

Prior to returning the pump to operable status, a design change was implemented to secure the pump coupling hub to the pump shaft. This configuration eliminates axial movement between the pump coupling hub and the shaft.

Corrective actions have been established for FPL Energy Seabrook, LLC to evaluate the Ingersoll-Rand design and Quality Assurance Program and to revise the related station maintenance procedures to include measurement requirements prior to the establishment of an interference fit. These actions will be completed by July 31, 2004.

- (viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.**

None.