

September 15, 2003

MEMORANDUM TO: Stephen Dembek, Chief, Section 2  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

FROM: Alan Wang, Project Manager, Section 2 **/RA/**  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MEETING HELD ON JULY 25, 2003, WITH  
GE NUCLEAR ENERGY (GENE) REGARDING STEAM DRYER  
FAILURES

On July 25, 2003, representatives of GENE met with the NRC staff to discuss the generic implications of the Quad Cities steam dryer failures. The staff had invited GENE to share some of their preliminary analyses and insights to date with regard to the generic implications of the Quad Cities steam dryer failures. GENE stated that the steam dryer does not perform any safety function. The staff did not disagree, but noted that the concern is not the failure of the steam dryer itself but the potential to damage or interfere with the ability of the plant to shut down the reactor. In addition, the staff was concerned that the failures could be a result of the increased steam flow due to the power uprate. GENE provided their root cause analyses for the two failures. GENE stated that the first failure was due to high cycle fatigue due to high frequency acoustic resonance and the second failure was due to high cycle fatigue due to low frequency pressure loading. GENE agreed that the increased flow contributed to both failures. GENE stated that a failure modes and effects analysis (FMEA) was performed to evaluate the likelihood and consequences for loose parts. This analysis determined that no loose part from a dryer failure would affect plant safety. In addition, GENE performed additional analyses to determine if the increased flow could potentially impact any other components in the reactor coolant system. This analyses determined for the identified components that they are acceptable at extended power uprate conditions.

GENE's root cause determined that there are three basic hood types: square hoods used in BWR/3 designs, slanted hoods in early BWR/4 designs and curved hoods in BWR/4 and later designs. GENE stated that they have determined that this is the critical factor in determining the failure susceptibility of the steam dryers. GENE is developing a service information letter (SIL) to incorporate the lessons learned from the Quad Cities failures. The staff had several comments and questions regarding the FMEA and root cause analyses. GENE stated that much of this work was still preliminary. GENE proposed that the staff wait for the issuance of the SIL, so that the various analyses could be discussed in detail at a later meeting. The staff agreed and requested GENE to provide the SIL when available. GENE stated they expect the SIL to be issued in mid-August 2003 (the SIL was issued in early September).

Joe Conen, Vice-Chairman of the Boiling Water Reactors Owners Group (BWROG) noted that the industry is taking these failures seriously even though the equipment is not safety-related. He stated that the BWROG is holding discussions with the BWR Vessels and Internals Projects to determine a course of action for accelerating activities related to cracking on non-safety components. A BWROG meeting is planned in late August when a draft of the GENE SIL becomes available.

The staff stated that it would like a meeting in September to discuss industry plans regarding the steam dryer failures and its impact on current and future uprates. In addition, the staff requested GENE to provide the SIL when available. The staff thanked GENE and the BWROG for the presentation and emphasized the need for an update on developments after the SIL has been issued. This meeting was informational. No regulatory decisions were made. The BWROG agreed to meet in 4 to 6 weeks. The meeting handout can be found in ADAMS under Accession No. ML032390172. The attendance list is attached.

Project No. 710

Attachment: Meeting Attendees

cc w/att: See next page

GE Nuclear Energy

Project No. 710

cc:

Mr. George B. Stramback  
Regulatory Services Project Manager  
GE Nuclear Energy  
175 Curtner Avenue  
San Jose, CA 95125

Mr. Charles M. Vaughan, Manager  
Facility Licensing  
Global Nuclear Fuel  
P.O. Box 780  
Wilmington, NC 28402

Mr. Glen A. Watford, Manager  
Nuclear Fuel Engineering  
Global Nuclear Fuel  
P.O. Box 780  
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Mr. James F. Klapproth, Manager  
Engineering & Technology  
GE Nuclear Energy  
175 Curtner Avenue  
San Jose, CA 95125

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**ADAMS Accession No.: ML032650830**

**NRR-106**

**NRC-001**

OFFICE	PDIV-2/PM	PDIV-2/LA	SRXB/BC	PDIV-2/SC
NAME	AWang	EPeyton	WHBateman for JWermiel	SDembek
DATE	9/3/03	9/3/03	9/12/03	9/12/03

DOCUMENT NAME: C:\ORPCheckout\FileNET\ML032650830.wpd

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## MEETING WITH GE NUCLEAR ENERGY

ATTENDANCE LIST – JULY 25, 2003

### **GE NUCLEAR ENERGY**

D. Pappouk  
T. Hurst

### **EXELON**

R. Gesien  
A. Uhamkarant  
J. Meister  
K. Jury  
U. Bohlke  
G. DeBos  
T. Talon  
S. Eldridge  
T. Wojcik  
K. Nicely

### **OTHER**

J. Conen (Vice Chairman, BWROG)  
L. Collins (Westinghouse)  
M. Grantham (Progress Energy)  
L. Yemma (Progress Energy)  
C. Nichols (Entergy)  
B. Hobbs (Entergy)  
D. Girrour (Entergy)  
G. Ohlemacher (Detroit Edison)  
J. Brown (Framatome ANP)  
E. Martwis (TVA Browns Ferry)  
R. Hermann (SI)  
B. Sherman (State of Utah)  
D. Atwood (SNC)  
D. Tubbs (Mid-American Energy)  
G. Twachtman (McGraw-Hill)

### **NRC**

J. Nakoski  
S. Bloom  
B. Elliot  
H. Chernoff  
L. Rossbach  
M. Shuaibi  
Z. Abdullahi  
E. Kendrick