

November 24, 2003

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

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

SUBJECT: SUMMARY OF NOVEMBER 5, 2003, MEETING WITH THE BOILING
WATER REACTOR OWNERS GROUP (BWROG) CONCERNING
STEAM DRYER INTEGRITY (TAC NO. MC0931)

During an August 21, 2003, meeting, the staff requested that the BWROG provide to the staff the supplement to Service Information Letter (SIL) 644, "Boiling Water Reactor Steam Dryer Integrity." On September 5, 2003, GE Nuclear Energy (GENE) provided the staff with SIL No. 644, Supplement 1. A teleconference was held on September 17, 2003, with the BWROG to discuss the SIL. As a result of that call, the staff issued a letter dated September 26, 2003, that contained several questions regarding the SIL. In addition, the staff requested that the BWROG meet with the staff in the near future to discuss the letter. The BWROG proposed this meeting be held during the BWR Vessel and Internals Program (BWRVIP) meeting on November 4 and 5, 2003. On November 5, 2003, an open meeting was held between the BWROG and the NRC staff to discuss the BWROG efforts related to the steam dryer integrity issue. Ledyard Marsh, Director, Division of Licensing Project Management, opened the meeting stating that the staff was concerned that the industry was being reactive rather than proactive. He noted that the SIL actions appear to require actions after the discovery of the failure. He stated that the NRC would prefer that industry resolve this issue, but if the NRC does not see a concrete plan being developed, it will consider the issuance of generic guidance, such as generic letters or bulletins to prevent future failures. He also noted the failures only occurred after the extended power uprates. The staff is concerned that the analyses to support the uprates may be deficient.

The BWROG noted that they have decided that the best group to manage this issue will be the BWRVIP. As such the BWRVIP is now the lead for the BWR owners to develop a plan to ensure the structural integrity of the steam dryer for the life of the plant. In addition, the BWRVIP will manage all aspects of steam dryer integrity as the SIL only addresses the Quad Cities failure mechanisms. The BWRVIP is preparing Steam Dryer Inspection and Evaluation (I&E) Guidelines. The I&E will address many aspects of the steam dryer issue including: (1) steam dryer configurations, (2) consequence analysis, (3) inspection guidelines, (4) flaw evaluation methods, (5) operational guidance, and (6) repair guidance. Again, the BWRVIP noted that the proposed program will be expanding its studies beyond the Quad Cities failures.

The BWRVIP proposed to divide the meeting in two parts: part one – discuss ongoing activities including recent inspections and extended power uprate analyses, and part two – discuss the September 26, 2003, letter. The BWROG stated an ad hoc committee on steam dryer integrity had been formed after the Quad Cities event. The committee reviewed recent steam dryer failures including root cause analyses, fleet wide operating experience, GE screening matrix for ranking susceptibility and potential impact of dryer failure on safety and operation. As noted earlier, the committee decided that the long-term plan should be developed by the BWRVIP. The BWRVIP presented recent inspection results from 4 plants with power uprates varying from 5 to 17 percent increase over the original licensed thermal power (OLTP). No indications were found in three of the plants and one plant had short fatigue cracks on the inner surface of the outer vertical hood panels at the diagonal brace brackets. The location of this crack is similar to the location where the Quad Cities 2 failure initiated and the location was predicted by structural load analyses. The staff requested the BWRVIP to develop a table with the breakdown of the plants by steam dryer type, power uprate, and actions taken in accordance with the SIL. The BWRVIP agreed to provide this information as part of the response to the September 26, 2003, letter. GENE noted that the most susceptible plants are the BWR3s with square dryers with internal braces. The staff was concerned that the emphasis was on these designs only and wanted to know what was being done to ensure the integrity of the other designs especially since the failures occurred only after uprates causing higher steam flows. The staff must assume that the higher flow rates caused the failures by increasing the loads to cause new cracks or exacerbate the failure of existing cracks. When flow is increased in the other steam dryer designs, how can the staff ensure that this same phenomena will not happen? GENE noted that plants with proposed uprates are performing more detailed structural analyses. The first opportunity for the staff to review these revised analyses will be Vermont Yankee. In addition, the BWRVIP has evaluated and will perform additional analyses to evaluate the effects of a power uprate on other reactor internals in the steam and feed flow path.

GENE then addressed the questions in the September 26, 2003, letter. The responses were provided in the handout. Some areas in the responses where the staff wanted additional information included:

- Where are the high stress locations on the slanted and curved hood designs?
- Is it possible to instrument the steam dryers to measure loadings?
- Provide the basis for why waiting as long as two outages before inspecting is acceptable.

BWROG stated it would try to have a response to the September 26, 2003, letter in 2 to 3 weeks. Again they noted they felt the BWRVIP is the correct organization to address this issue. The BWRVIP process will develop an I&E which would be adopted by its members. The BWRVIP will keep constant interactions with the NRC in the development of this I&E. Once it is adopted, any member that wishes to deviate from this I&E must inform the NRC. The BWRVIP noted this meeting was useful in understanding the staff's concerns.

S. Dembek

- 3 -

The staff thanked the BWROG, BWRVIP and GENE for the presentation. This meeting was informational. No regulatory decisions were made. The meeting handouts can be found in ADAMS under Accession No. ML033110600.

Project No. 691

Attachment: Meeting Attendees

cc w/att: See next page

The staff thanked the BWROG, BWR VIP and GENE for the presentation. This meeting was informational. No regulatory decisions were made. The meeting handouts can be found in ADAMS under Accession No. ML033110600.

Project No. 691

Attachment: Meeting Attendees

cc w/att: See next page

DISTRIBUTION:

PUBLIC

PDIV-2 Reading

RidsNrrPMAWang

RidsOgcRp

RidsAcrcAcnwMailCenter

RidsNrrDlpm (TMarsh/ELeeds)

RidsNrrDlpmLpdiv (HBerkow)

RidsNrrLAEPeyton

TMensha (NRR/PMAS)

DTERao

JWu

KManoly

JWermiel

TScarborough

JVora

Package No.: ML033290370

Meeting Notice No.: ML033000041

ADAMS Accession No.: ML033290346

NRC-001

OFFICE	PDIV-2/PM	PDIV-2/LA	EMEB/SC	PDIV-2/SC
NAME	AWang	EPeyton	DTERao	SDembek
DATE	11/19/03	11/18/03	11/21/03	11/24/03

DOCUMENT NAME: C:\ORPCheckout\FileNET\ML033290346.wpd

OFFICIAL RECORD COPY

MEETING WITH THE BOILING WATER REACTORS OWNERS GROUP

STEAM DRYER INTEGRITY ISSUE

NOVEMBER 5, 2003

BWROG

K. Putnam, Chairman

BWRVIP

G. Inch

GE NUCLEAR ENERGY

R. Horn

D. Pappone

OTHER

B. Wilton (Progress Energy)

D. Potter (Nuclear Management Company)

L. Hay (SERCH Bechtel)

J. Weil (McGraw Hill)

R. Carter (EPRI)

NRC

L. Marsh

J. Wermiel

S. Dembek

A. Wang

D. Terao

T. Scarborough

J. Wu

K. Manoly

J. Vora

cc:

Mr. Joseph E. Conen
Vice Chairman, BWR Owners Group
DTE Energy – Fermi 2
200 TAC
6400 N. Dixie Highway
Newport, MI 48166

Mr. J. A. Gray, Jr.
Regulatory Response Group Chairman
BWR Owners Group
Entergy Nuclear Northeast
440 Hamilton Avenue Mail Stop 12C
White Plains, NY 10601-5029

Mr. H. Lewis Sumner
Southern Nuclear Company
40 Inverness Center Parkway
P.O. Box 1295
Birmingham, AL 35242

Mr. Carl D. Terry
Vice President, Nuclear Engineering
Nine Mile Point - Station
OPS Building/2nd Floor
P.O. Box 63
Lycoming, NY 13093

Mr. Thomas G. Hurst
GE Nuclear Energy
M/C 782
175 Curtner Avenue
San Jose, CA 95125

Mr. Thomas A. Green
GE Nuclear Energy
M/C 782
175 Curtner Avenue
San Jose, CA 95125

Mr. James Meister
Exelon
Cornerstone II at Cantera
4300 Winfield Road
Warrenville, IL 60555

Mr. William A. Eaton
ENTERGY
Grand Gulf Nuclear Station
P.O. Box 756
Port Gibson, MS 39150

Mr. Mark Reddeman
Vice President Engineering
Point Beach Nuclear Plant
6610 Nuclear Road
Two Rivers, WI 54241

Mr. Richard Libra
DTE Energy
Fermi 2
M/C 280 OBA
6400 North Dixie Highway
Newport, MI 48166

Mr. James F. Klapproth
GE Nuclear Energy
M/C 706
175 Curtner Avenue
San Jose, CA 95125

Mr. Kenneth Putnam, Chairman
BWR Owners Group
Nuclear Management Company
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324