

December 20, 2001

MEMORANDUM TO: Stuart A. Richards, Director
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: Jack Cushing, Project Manager, Section 2 /RA/
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MEETING HELD ON NOVEMBER 13, 2001, WITH THE
COMBUSTION ENGINEERING OWNERS GROUP AND THE
WESTINGHOUSE OWNERS GROUP REGARDING REACTOR
PRESSURE VESSEL INSPECTION INTERVAL EXTENSION

On November 13, 2001, a public meeting was held at the NRC Headquarters office in Rockville, Maryland, between the Combustion Engineering Owners Group (CEOG), the Westinghouse Owners Group (WOG) and the NRC staff. The list of attendees is attached. The slides presented at the meeting are available in ADAMS under accession number ML013470416.

As described by the CEOG, the purpose of the meeting was to update the progress of an approach to extend the reactor pressure vessel (RPV) inspection interval from the current 10-year requirement to 20 years or more. The approach will use the guidance outlined in Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to Licensing Basis." The CEOG and the WOG are sponsoring the effort representing approximately seventy operating plants. Industry vendors, two utility sponsors and several NRC staff members attended the meeting. The presenters at the meeting are listed below.

Presenters

John Ghergurovich	Task Manager
Chris Hoffmann	RPV Materials/Probabilistic Fracture Mechanics (PFM)
Steve Byrne	RPV Materials/Pressurized Thermal Shock (PTS)
Pete Riccardella	Probabilistic Risk Assessment (PRA)/PFM
Stan Tang	PRA/PFM
Dave Ayres	PFM

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Steve Welp	Calvert Cliffs Nuclear Power Plant
Kevin Hall	Entergy-Arkansas Nuclear One (ANO)

The meeting opened with introductions followed by an overview and background of the proposed approach. This was followed by the ongoing program status leading into more in-depth technical discussions. Early in the presentation, Calvert Cliffs and Beaver Valley were identified as the pilot plants for this issue with upcoming inspections in the 2008 timeframe. Both of these plants recently participated in the staff's pressurized thermal shock (PTS) re-evaluation effort and would be representative of up-to-date examples of two vendor designs.

The CEOG/WOG concluded their presentation stating that the evaluations to date using the proposed methodology would justify extension of the RPV inspection interval beyond the current 10-year requirement.

Summary of Highlights

The in-depth technical discussions provided a current status of the reactor vessel inservice inspection (ISI) interval extension methodology to date and also introduced an approach to address the non-beltline regions of the vessel typically inspected during a 10-year ISI. It was also noted that the CEOG/WOG have initiated a parallel pursuit of this topic through an American Society of Mechanical Engineers (ASME) code case.

The major points brought up at the meeting are presented below:

- 1) *With respect to the pilot plant analyses, the staff pointed out that RG 1.99, "Radiation Embrittlement of Reactor Vessel Materials," Revision 2, Position 1.1 would be non-conservative for Beaver Valley because that plant is plate (versus weld) limited and that the use of Position 2.1 for Beaver Valley is more appropriate.***

CEOG/WOG acknowledged that Position 2.1 would be used in some cases such as Beaver Valley. In further discussion, CEOG/WOG noted that they could include plate material in their sampling, but that plate materials currently receive only a minimal inspection, so it probably will not have a significant effect on the conclusions regarding inspection interval.

- 2) *The staff asked how it was determined which pressurized thermal shock (PTS) events should be evaluated.***

The CEOG/WOG response was that all appropriate events will be considered and will most likely be determined by the PTS screening methodology.

- 3) *The staff asked whether the VIPWR code has been reviewed and approved and how it differed from the BWR version of the code.***

CEOG/WOG responded that the BWR VIPER code has been approved as part of the BWR vessel inspection program (VIP) and that the current derivative, the VIPWR code, is an extension of the BWR code. The intent is that CEOG/WOG will ask for review and approval of the code in conjunction with the topical report submittal. It was also noted

that the VIPWR code would have to be benchmarked against the FAVOR code currently under development in the ongoing PTS re-evaluation effort.

- 4) ***The staff asked about our assumptions regarding inspection reliability probability of detection (POD) and what actions are taken when inspections reveal problems.***

The CEOG/WOG responded that, for purposes of comparing inspection options, it is conservative to assume a high POD, and to assume that any indications that are detected are repaired.

- 5) ***With respect to the approach addressing the treatment of the non-beltline regions of the vessel, the Staff asked whether there were any accident scenarios outside the beltline region that could effect the evaluation.***

The general consensus of the group was that they were unaware of any.

- 6) **The staff indicated that flaw density, distribution and location used in the probabilistic fracture mechanics analyses should be based on the data generated in the PTS re-evaluation performed by the Office of Regulatory Research (RES).**

The CEOG/WOG indicated that they were aware of this effort and would utilize the data.

- 7) **The staff asked if the CEOG/WOG were going to follow the guidance contained in WCAP-15731, "Self Assessment of the CEOG Topical Report Process," Rev 01.**

The CEOG/WOG responded that they were following the guidance in the topical report.

At the conclusion of the meeting, the staff expressed the opinion that the approaches presented are workable but is concerned about the anticipated schedule for review and approval of a topical report submittal on this issue. To that end, the staff requested that a time-line be developed to better define the interactions of the ongoing PTS re-evaluation effort, the ASME code case submittal and pilot plant needs. The CEOG/WOG noted that the published schedules for these ongoing tasks generally coincide with the proposed schedule for this task and that the proceedings of these tasks are being closely followed via participation in these efforts.

The staff indicated that flaw density, distribution and location used in the probabilistic fracture mechanics analyses should be based on the data generated in the PTS re-evaluation performed by RES. The personnel from the Owners Groups indicated that they were aware of this effort and would utilize the data.

Action Item: The CEOG/WOG is to provide a timeline with schedule estimates showing the interactions of the various parts of this process.

- Topical report submittal
- ASME code case submittal
- Pilot plant needs
- PTS re-evaluation

Project No. 692

Attachment: Meeting Attendees

cc w/att: See next page

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- ASME code case submittal
- Pilot plant needs
- PTS re-evaluation

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CE Owners Group

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**ATTENDANCE LIST FOR MEETING BETWEEN
NRC AND THE CEOG/WOG
REGARDING REACTOR VESSEL ISI
INTERVAL EXTENSION
NOVEMBER 13, 2001**

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John Ghergurovich
David Ayres
Chris Hoffman
Steve Byrne
James Molkenntain
Bruce Bishop

STRUCTURAL INTEGRITY

Pete Riccadella
Stan Tang

SCIENTECH

Deanna Ralieggh

LICENSEES

Steve Welp - Calvert Cliffs
Kevin Hall - Entergy

NRC

Jack Cushing
Barry Elliot
Stephen Dembek
Michael Snodderly
Jim Davis
Mark Rubin