



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 13, 1996

ORGANIZATION: Babcock and Wilcox Owners Group (BWOG)

SUBJECT: SUMMARY OF MEETING BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND THE BWOG REPRESENTATIVES TO DISCUSS THEIR PROPOSED RESOLUTION OF STAFF OPEN ITEMS IN THE DRAFT SAFETY EVALUATION FOR BAW-2244, "DEMONSTRATION OF MANAGEMENT OF AGING EFFECTS FOR THE PRESSURIZER". (TAC NOS. M 96277, M96278, & M 96279).

On November 6, 1996, the NRC staff met with representatives of the Babcock and Wilcox Owners Group (BWOG) to discuss their proposals to resolve the three open items in the staff's September 13, 1996 draft safety evaluation for the B&WOG, Generic License Renewal Program topical report, BAW-2244, "Demonstration of the Management of Aging Effects for the Pressurizer." The list of meeting attendees is contained in Attachment (1) and the meeting handouts are contained in Attachment (2).

On the issue of potential pressurizer clad cracking, the BWOG asserted that it is not a potential aging effect for B&WOG and that the incident of clad cracking at one plant is not relevant because that incident was caused by a low pressurizer level event. The NRC staff expressed their belief that the one incident raises a concern that even normal level fluctuations in the pressurizer may lead to an increased potential for such cracking over time. B&WOG stated that there is no experience with clad cracking due to normal pressurizer level transients and believed that the staff's concern is inappropriate given the fact that the NRC has not taken any generic action for current operating plants. The B&WOG agreed to attempt to provide additional justification why pressurizer clad cracking is not likely at B&WOG plants or propose a one-time inspection of the cladding.

On the issue of cracking of stainless steel safe-ends, the B&WOG agreed to consider the chemistry control program as an aging management program rather than as justification that the aging effect of cracking is not plausible. However, the B&WOG objected to the staff's characterization of chemistry control as only capable of "inhibiting" cracking in one section of the draft safety evaluation. The staff agreed to revise its safety evaluation to use the term "prohibits cracking" consistent with the other sections of the report.

On the issue of pressurizer heater partial penetration welds, the B&WOG stated that they perform a Category B-P examination because the welds are part of the bolted closure for the heater bundle. Additionally, they stated that the B-P inspection is equivalent to B-E. The staff questioned whether the B-P inspection for the heater bundle really is a focused look for leakage, since the heater bundle may not be considered a bolted connection due to the existence of the seal weld modification. The B&WOG committed to confirming that the B-P inspection that is actually performed is in fact a focused leakage inspection around the heater bundle and is equivalent to B-E. The staff still expressed their belief that a more intrusive inspection of the condition of the heater partial penetration welds, at least on a one time

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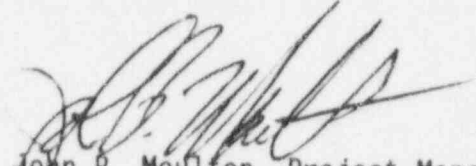
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basis, is appropriate to determine their susceptibility to cracking. The B&WOG agreed to consider committing to a one-time inspection of these welds in the course of the original operating term of a B&W plant when a replacement of a heater bundle is necessary.

Additionally, the B&WOG stated that they intended for the staff to make a finding on the adequacy of the scope of pressurizer components and did not believe that a renewal applicant action item to perform "scoping" on the pressurizer was appropriate. The staff stated that they would consider this request.

Lastly, the B&WOG stated that they would provide their responses to the staff's open items in writing by November 22, 1996.

Project No. 683



John P. Moulton, Project Manager  
License Renewal Project Directorate  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

Attachments: 1. Meeting Handouts  
2. Meeting Attendees

cc: Service List (with all enclosures) plus R.L. Gill, Duke Power

Project No. 683

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December 13, 1996

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basis, is appropriate to determine their susceptibility to cracking. The B&WOG agreed to consider committing to a one-time inspection of these welds in the course of the original operating term of a B&W plant when a replacement of a heater bundle is necessary.

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Original Signed By:

John P. Moulton, Project Manager  
License Renewal Project Directorate  
Division of Reactor Program Management  
Office of Nuclear Reactor Regulation

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2. Meeting Handouts

cc: Service List (with all enclosures) plus R.L. Gill, Duke Power

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LICENSE RENEWAL PROJECT DIRECTORATE

MEETING WITH THE B&WOG

PRESSURIZER DRAFT SAFETY EVALUATION OPEN ITEMS

November 6, 1996

ATTENDANCE LIST

NAME	AFFILIATION
John P. Moulton	NRC/NRR/DRPM/PDLR
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Christopher M. Regan	NRC/NRR/DRPM/PDLR
H.L. Brammer	NRC/NRR/DE

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B&WOG GLRP  
Pressurizer Report (BAW-2244)

Responses to  
Draft Safety Evaluation Open Issues  
November 6, 1996



# Agenda

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- Introduction Staff/GLRP
- Open Issues GLRP
  - » Pressurizer Clad Cracking
  - » Cracking of Stainless Steel Safe Ends
  - » Pressurizer Heater Partial Penetration Welds
- Additional Item GLRP
  - » Scoping
- Written Response Schedule GLRP
- Closing Comments Staff/GLRP

## #1 Pressurizer Clad Cracking

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### DSE

- Experience at one plant indicates potential aging effect.
- Clad cracking could propagate into base metal.
- Aging management program necessary.

### GLRP

- Cracking occurred due to spray of cold water during a low-level event as documented by utility and industry reports.
- Inspection done at similar plant. As reported to NRC, no flaws detected.
- No generic communications issued regarding event.
- Crack indications have been reexamined and shown not to propagate during normal operation.
- Clad cracking not an aging effect for period of extended operation.



## #1 Pressurizer Clad Cracking

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### Recommended path to closure

- Recommend SE be written to reflect follow up industry inspection activities.
- Closed.

## #2 Cracking of Stainless Steel Safe Ends

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### DSE

- SCC of SS safe ends is an applicable aging effect.
- Water chemistry program inhibits cracking, does not preclude cracking.
- B&WOG propose program to manage general SCC of stainless steel safe ends.

### GLRP Response

- SCC of SS safe ends is not an applicable aging effect due to water chemistry.
- SCC of SS safe ends not observed at any B&W operating plant.
- GLRP position consistent with RCS piping report.
- Effective water chemistry precludes SCC for SS safe ends.
- GLRP will revise report to credit primary water chemistry program as an aging management program.

## #2 Cracking of Stainless Steel Safe Ends

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### Recommended Path to Closure

- BAW-2244 to be revised to credit primary water chemistry program as an aging management program.
- Closed.

## #3 Pressurizer Heater Partial Penetration Welds

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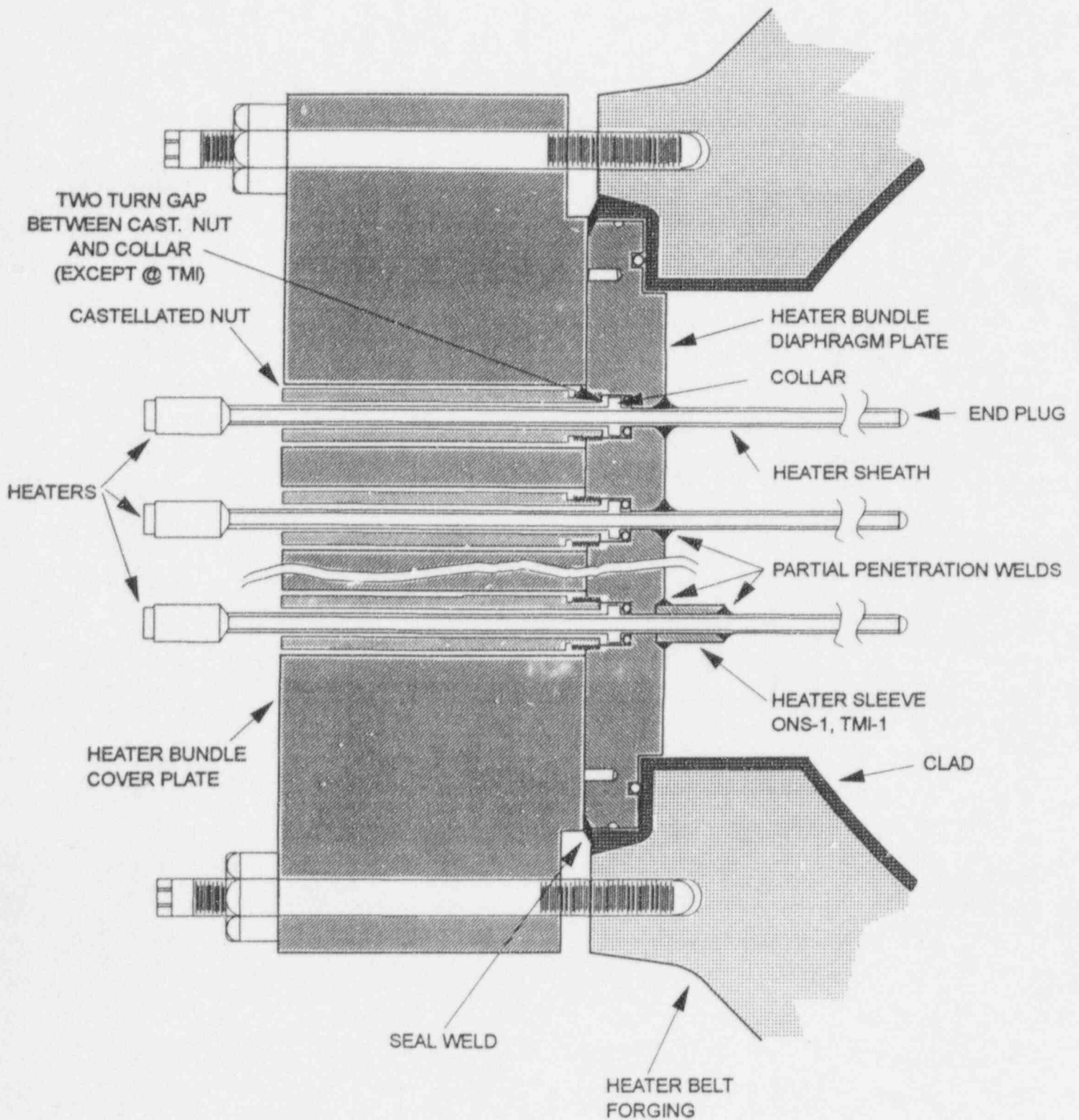
### DSE

- Category B-E an applicable inspection.
- Staff does not believe that B&W heater welds substantially different from other vendors.
- A more intrusive exam necessary along with Category B-E.

### GLRP

- Category B-P performed since part of bolted closure.
- Category B-P equivalent or superior to BE.
- 1993 Section XI Addenda recognizes duplicity and eliminates Category B-E.
- B&W design different from other vendors; replacement bundles versus individual heater nozzle welds.
- Inspection requires heater bundle removal. Leads to increase in critical path time, radiation dose, and cost.
- Examination is a hardship, not justifiable.
- Category B-P in concert with leakage detection adequate.

## HEATER BUNDLE PRESSURE BOUNDARY DETAILS



## #3 Pressurizer Heater Partial Penetration Welds

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### Recommended path to closure

- If welds fail, leakage will be detected. Structural integrity of bolted closure will not be compromised.
- Category B-P in concert with leakage detection adequate.
- Closed.



## Action Item #7 - Screening

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### DSE

- "Since the report was not meant to be a complete listing..." (DSE Sect. 4.1)

### RESPONSE

- BAW-2244 completely covers the pressurizer components.
- This Action Item should be dropped.

## Issue Summary

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- Issues Proposed to be Closed
  - #1 - Pressurizer Clad Cladding
  - #2 - Cracking of Stainless Steel Safe Ends
  - #3 - Heater Partial Penetration Welds
  
- Action Item #7 Proposed to be Dropped

## Written Response Schedule

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- Letter documenting GLRP response will be submitted by November 15, 1996.