



Program Management Office
102 Addison Road
Windsor, Connecticut 06095

WCAP-16168-NP, Rev. 1 (Non-Proprietary)
Project No. 694

December 1, 2009

OG-09-454

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

Attention: Matthew Mitchell, Chief
Vessels & Internals Integrity Branch
Division of Component Integrity
Office of Nuclear Reactor Regulation

Subject: PWR Owners Group
**Revised Plan for Plant Specific Implementation of Extended Inservice
Inspection Interval per WCAP-16168-NP, Revision 1, "Risk-Informed
Extension of the Reactor Vessel In-Service Inspection Interval." PA-MSC-
0120**

References:

1. WCAP-16168-NP-A, Revision 2, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval," June 2008 (ML08280046).
2. OG-06-356, "Plan for Plant Specific Implementation of Extended Inservice Inspection Interval per WCAP-16168-NP, Revision 1, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval." MUHP 5097-99, Task 2059," October 31, 2006.
3. Waterford Steam Electric Station, Unit 3 – Withdrawal of an Amendment Request (TAC NO. MD9669)," June 12, 2009 (ML091600132).

The purpose of this letter is to provide the NRC with a revised Pressurized Water Reactor Owners Group (PWROG) plan for implementation of WCAP-16168-NP-A, Revision 2, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval" (Reference 1). With this letter, the PWROG would also like to clarify our understanding of the NRC's change in

D048
NRC

position relative to Safety Evaluation implementation requirement to submit a license amendment request. The PWROG requests that the Safety Evaluation for Reference 1 be revised to address these two items which are discussed in more detail below and re-issued.

Revised Implementation Plan

Background

During meetings between the PWROG and the NRC Staff prior to the submittal of WCAP-16168-NP, "Risk-Informed Extension of the Reactor Vessel In-Service Inspection Interval," the NRC Staff indicated that they had a concern that implementation of an extended interval could result in emerging degradation mechanisms not being detected in a timely manner. More specifically the concern was that if all plants chose to implement the extended 20-year interval proposed in the WCAP, hypothetically a period of 10 years could pass with no examinations of the reactor vessel Category B-A and B-D welds. Due to this concern, the NRC Staff, as a condition of their acceptance of WCAP-16168-NP for review, requested that the PWROG develop and submit a coordinated implementation plan for the domestic fleet of PWRs. This implementation plan was to provide for a minimum number of vessel inspections (sampling) to be performed each year such that any potential emerging degradation mechanisms could be detected in a timely manner. The plan developed by the PWROG was submitted to the NRC on October 31, 2006 in PWROG letter OG-06-356 (Reference 2). To ensure compliance with this plan, the NRC included a Condition in the Safety Evaluation for WCAP-16168-NP-A, Revision 2 (Reference 1), that individual plant requests to implement the extended inspection interval must identify the date when they intend to perform their next inspection. Furthermore, the date identified in the implementation request had to be within plus or minus one refueling outage of the date included in the PWROG plan.

The PWROG implementation plan had to be developed in an expedited manner to satisfy a NRC requested submittal date of October 31, 2006. Because of this, many utilities simply did not have adequate time to evaluate all their outstanding commitments, industry initiatives, and contractual obligations and were forced to make their best estimate as to when the optimal time for implementation of the extended interval would be. In the three years that have transpired since the original implementation plan was developed, plants have been performing more detailed reviews and many of these plants have determined that the dates included in the PWROG plan of Reference 2 do not satisfy their current needs. The need to change many of the vessel inspection dates have come about as a result of three recent changes in inspection requirements:

1. MRP-139 and ASME Section XI Code Case N-770 – Inspection and Mitigation of Alloy 82/182 Reactor Vessel Nozzle Welds,
2. MRP-227 – Inspection and Evaluation Guidelines for PWR Reactor Vessel Internals, and
3. 10 CFR 50.61a – Alternate Pressurized Thermal Shock Rule

MRP-139 and Code Case N-770 require mitigation or inspection of reactor vessel inlet and outlet nozzle butt welds that have been fabricated using Alloy 82/182 weld metals. These activities are time intensive, require the use of inspection tooling that is typically used to perform the reactor vessel weld examinations, and may require removal of the reactor vessel upper internals. For these reasons, there are many plants that have determined that performing the inspection of the reactor vessel is best done at the same time the nozzle inspections or mitigations are performed. Performing these inspection activities coincident with one another provides for a reduction in dose and cost while improving safety by minimizing the number of times the internals have to be moved to perform the inspections. Movement of the reactor vessel internals is an activity that poses hazards to personnel and presents a possibility for damage to the internals. For this reason, several plants which had intended to implement the extended inservice inspection interval, have chosen to wait until after nozzle weld mitigation is completed to do so. In some cases, these plants have already performed the vessel weld inspections that they indicated that they would defer in the PWROG plan of Reference 2.

Industry has also recently completed the development of inspection and evaluation (I&E) guidelines for reactor vessel internals. These guidelines have been captured in MRP-227, which is currently under NRC review. Most, if not all, plants that have been approved for license renewal have made a commitment to develop an aging management program and perform inspections of the reactor vessel internals. There are a number of plants that need to perform the inspections recommended in MRP-227 in the near future. Similar to the situation regarding the requirements relative to Alloy 82/182 reactor vessel nozzle welds, there are plants that now need to perform these inspections coincident with the reactor vessel weld inspection. For this reason, several plants which had intended to defer the reactor vessel inservice inspection through implementation of the extended interval, have decided that it is more advantageous to perform the inspection at the same time as the internals inspection and then implement the extended interval afterwards.

Finally, the NRC has recently approved the Alternate PTS Rule (10 CFR 50.61a). This alternate rule requires that an ASME Section XI Appendix VIII qualified inspection be performed prior to implementation of the alternate rule. Requests to implement the rule must be submitted no less than three years prior to the date at which the current PTS rule (10 CFR 50.61) is expected to be exceeded. At least one plant has already deviated from their date identified in Reference 2 in order so that they can satisfy these new requirements.

As a result of the three new sets of requirements discussed above, several plants have deviated or have requested to deviate from the PWROG implementation plan. The need for these deviations in vessel inspection dates was discussed during a meeting between representatives of the PWROG and the NRC Staff on June 2, 2009. It was agreed at that time that a revision to the implementation plan would be beneficial to the PWR fleet and would also be beneficial to the NRC by reducing the number of plants requesting to deviate from the PWROG implementation plan in Reference 2.

Revised Implementation Plan

The revised PWROG implementation plan for vessel weld inspections is provided in this letter. It is based on NRC approved requests to implement the extended inservice inspection interval and updated PWROG utility input. The utility input was provided with consideration of all the competing inspection requirements discussed previously in this letter. The revised plan, along with the original plan, is shown in Table 1. Figures 1 and 2 display the numbers of inspections to be performed each year with the original and the revised plans, respectively. Figure 3 provides a side-by-side comparison of the two implementation schedules.

While differences exist between the two plans, both plans would provide for detection of emerging degradation mechanisms in a timely manner. However, the most accurate method for comparing the plans is to compare the plans on a "rolling" three year window. Since the average refueling cycle is 18 months, this three year window accounts for the allowance to move the inspection dates plus or minus one-refueling outage from the date identified in the plan. To make this comparison, the number of inspections for each particular year was added to the number of inspection for the previous and subsequent year. That number of inspections was then divided by three to determine an average number of exams for that year. This was done for both the original plan and the revised plan. A comparison of the averaged results is shown in Figure 4. When the plus or minus one refueling outage allowance is considered, the differences between the original and revised plans are negligible. It is on this basis that the PWROG believes that the revised implementation plan provides for a minimum number, or sampling, of inspections each year, that provides for an adequate detection of any emerging degradation mechanisms.

License Amendment Request

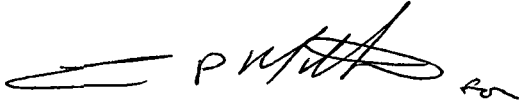
The Safety Evaluation (SE) for WCAP-16168-NP-A, Revision 2 (Reference 1), provides the following implementation requirement:

"Licensees that do not implement 10 CFR 50.61a must amend their licenses to require that the information and analyses requested in Section (e) of the final 10 CFR 50.61a (or the proposed 10 CFR 50.61a, given in 72 FR 56275 prior to issuance of the final 10 CFR 50.61a) will be submitted for NRC staff review and approval. The amendment to the license shall be submitted at the same time as the request for alternative."

As discussed in Reference 3 for Waterford Unit 3, the NRC has decided to grant inservice inspection (ISI) interval extensions based on WCAP-16168-NP, Revision 2, on an interval-by-interval basis for a period of up to 20 years. Therefore, the requirement in the staff's SE for Reference 1 for a license amendment to address the evaluation of future ISI data is no longer necessary. Therefore, the PWROG requests that the Safety Evaluation for WCAP-16168-NP-A, Revision 2, be revised to reflect this change in the NRC's requirements for licensees requesting to implement the extended ISI interval.

If you require further information, please contact the program technical lead Mr. Nathan Palm at (412) 374-2685 or Mr. James Molkenthin in the PWR Owners Group Program Management Office at (860) 731-6727.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Buschbaum", followed by a small "for" and a signature.

Dennis E. Buschbaum, Chairman
PWROG Owners Group

DEB:JPM:las

Attachments (2)

cc: PWROG Steering Committee
PWROG Materials Subcommittee
J. Rowley, USNRC
C. Brinkman, Westinghouse
N. Palm, Westinghouse

J. Andrachek, Westinghouse
B. Bishop, Westinghouse
PWROG Project Management Office
P. Paesano, Westinghouse

Table 1: Implementation Plan							
Utility	Plant Name	OG-06-356 (Reference 2) Dates			Revised Dates ¹		
		Current ISI Date	Proposed ISI Date	Subsequent ISI Date	Current ISI Date	Proposed ISI Date	Subsequent ISI Date
AEP	D. C. Cook Unit 1	2009	2019	2039	2010	2010	2029
	D. C. Cook Unit 2	2009	2009	2029		2019	2039
AmerenUE	Callaway	2014	2023	2043			
APS	Palo Verde Unit 1	2008	2016	2036		2016	2036
	Palo Verde Unit 2	2008	2008	2028		2027	2047
	Palo Verde Unit 3	2009	2013	2033		2009	2028
Constellation	Calvert Cliffs Unit 1	2008	2018	2038		2018	2038
	Calvert Cliffs Unit 2	2009	2019	2039		2019	2039
	R. E. Ginna	2009	2011	2031		2011	2031
Dominion	Kewaunee	2014	2014	2034			
	Millstone Unit 2	2008	2009	2029		2028	2048
	Millstone Unit 3	2017	2027	2047		2027	2047
	North Anna Unit 1	2009	2009 ²	2019 ²			
	North Anna Unit 2	2010	2010 ²	2020 ²			
	Surry Unit 1	2013	2013 ²	2023 ²		2023	2043
	Surry Unit 2	2015	2015 ²	2025 ²	2014	2024	2044
Duke	Catawba Unit 1	2014	2024	2044			
	Catawba Unit 2	2013	2023	2043		2024	2044
	McGuire Unit 1	2011	2011	2031		2020	2040
	McGuire Unit 2	2014	2024	2044			

Table 1: Implementation Plan							
Utility	Plant Name	OG-06-356 (Reference 2) Dates			Revised Dates ¹		
		Current ISI Date	Proposed ISI Date	Subsequent ISI Date	Current ISI Date	Proposed ISI Date	Subsequent ISI Date
	Oconee Unit 1	2012	2012	2032			
	Oconee Unit 2	2013	2013	2033			
	Oconee Unit 3	2014	2024	2044		2014	2034
Entergy	Palisades	2006	2015	2035		2010	2030
	Indian Point Unit 2	2006	2012	2032		2012	2032
	Indian Point Unit 3	2009	2015	2035		2015	2035
	ANO Unit 1	2018	2028	2048			
	ANO Unit 2	2009	2017	2037		2018	2038
	Waterford Unit 3	2008	2015	2035		2015	2035
Exelon	Braidwood Unit 1	2017	2027	2047			
	Braidwood Unit 2	2008	2018	2038		2028	2048
	Byron Unit 1	2015	2025	2045			
	Byron Unit 2	2017	2027	2047			
	Three Mile Island Unit 1	2011	2021	2041		2015	2035
FENOC	Beaver Valley Unit 1	2017	2027	2047			
	Beaver Valley Unit 2	2006	2010	2030		2028	2048
	Davis Besse	N/A	2014	2034	2012	2012	2032
FPL	Point Beach Unit 1	2018	2028	2048		2010	2030
	Point Beach Unit 2	2018	2028	2048		2009	2029
	St. Lucie Unit 1	2018	2028	2048		2017	2037
	St. Lucie Unit 2	2010	2012	2032		2010	2030

Table 1: Implementation Plan							
Utility	Plant Name	OG-06-356 (Reference 2) Dates			Revised Dates ¹		
		Current ISI Date	Proposed ISI Date	Subsequent ISI Date	Current ISI Date	Proposed ISI Date	Subsequent ISI Date
	Turkey Point Unit 3	2014	2022	2042		2013	2023
	Turkey Point Unit 4	2015	2017	2037		2014	2024
	Seabrook Unit 1	2009	2019	2039		2009	2029
OPPD	Fort Calhoun	2013	2023	2043		2014	2034
PGE	Diablo Canyon Unit 1	2015	2025	2045		2015	2035
	Diablo Canyon Unit 2	2006	2026	2046		2015	2035
Progress	Crystal River Unit 3	2017	2027	2047			
	H. B Robinson Unit 2	2011	2020	2040			
	Shearon Harris Unit 1	2006	2024	2044			
PSEG	Salem Unit 1	2010	2020	2040		2020	2040
	Salem Unit 2	2012	2012	2032		2022	2042
SCE	San Onofre 2	2012	2022	2042			
	San Onofre 3	2013	2023	2043			
SCE&G	V. C. Summer	2013	2023	2043	2014		
Southern	Farley Unit 1	2017	2027	2047			
	Farley Unit 2	2010	2010	2020		2020	2040
	Vogtle Unit 1	2006	2016	2036		2026	2046
	Vogtle Unit 2	2017	2026	2046			
STPNOC	South Texas Unit 1	2009	2019	2039		2009	2029
	South Texas Unit 2	2010	2020	2040		2010	2030
TVA	Sequoyah Unit 1	2006	2015	2035			

Table 1: Implementation Plan							
Utility	Plant Name	OG-06-356 (Reference 2) Dates			Revised Dates¹		
		Current ISI Date	Proposed ISI Date	Subsequent ISI Date	Current ISI Date	Proposed ISI Date	Subsequent ISI Date
	Sequoyah Unit 2	2015	2024	2044			
	Watts Bar Unit 1	2015	2020	2040			
TXU	Comanche Peak Unit 1	2008	2018	2038		2019	2039
	Comanche Peak Unit 2	2012	2012	2032		2021	2041
WCNOC	Wolf Creek	2015	2025	2045			
Xcel	Prairie Island Unit 1	2014	2014	2034		2012	2033
	Prairie Island Unit 2	2013	2013	2033		2012	2034

Note 1: Only revised dates are shown. Where no information is provided, dates are the same as those provided in Reference 2.

Note 2: These dates reflect no implementation of the extended inservice inspection interval.

Figure 1: Inspections Per Year - Current

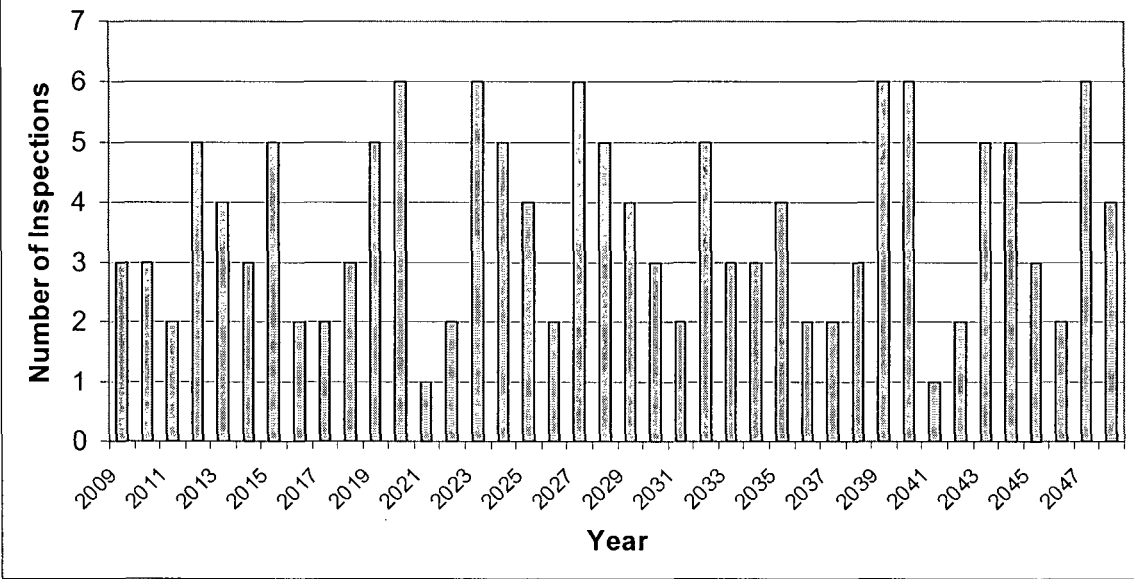


Figure 2: Inspections Per Year - Revised

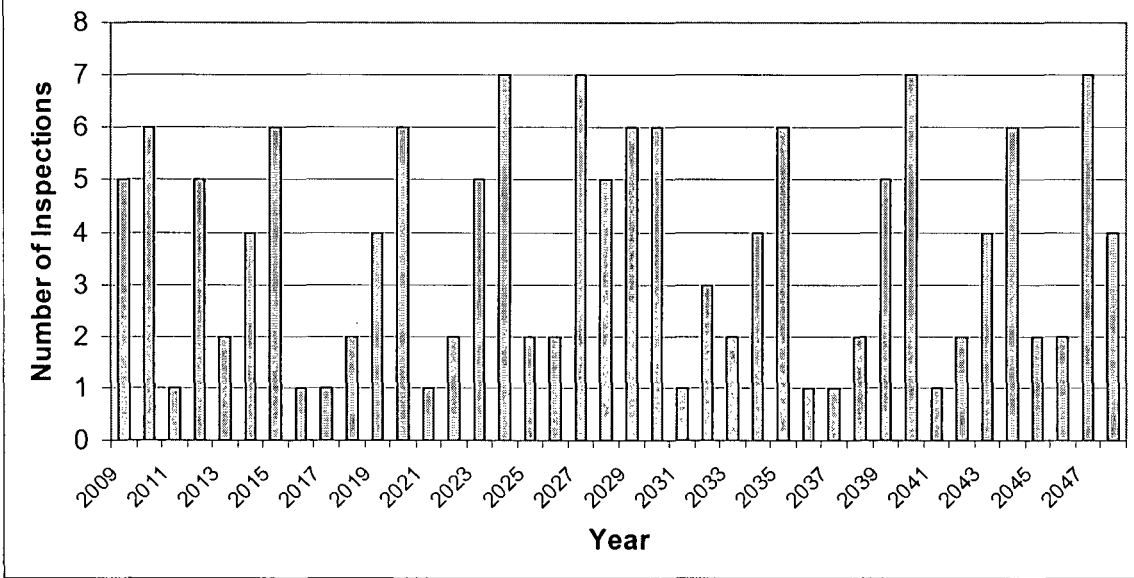


Figure 3: Inspections Per Year - Comparison

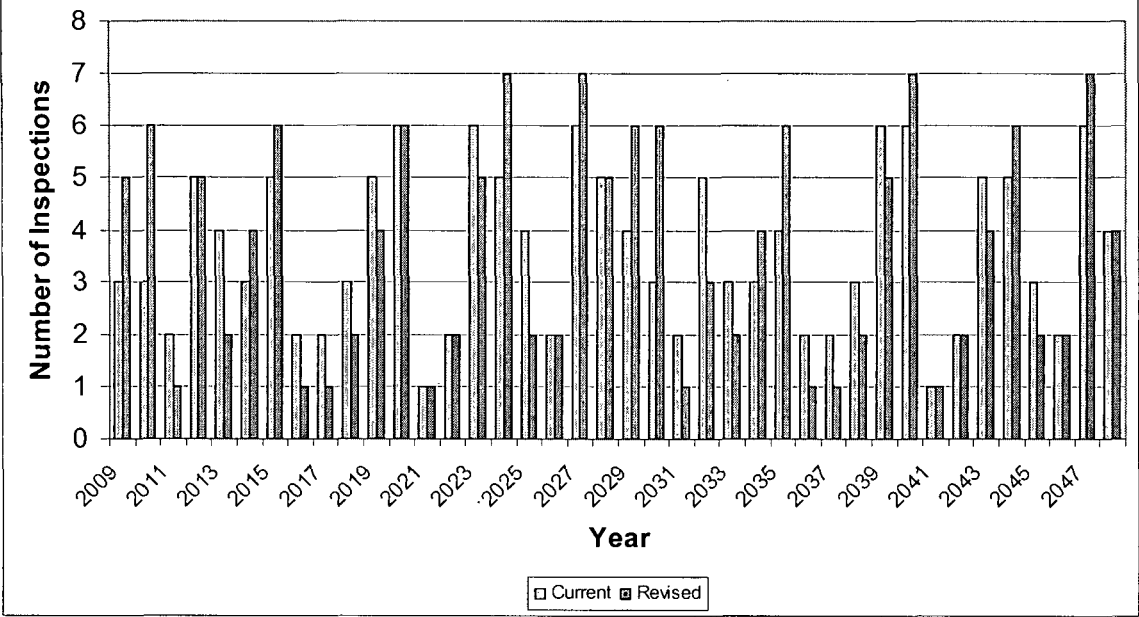


Figure 4: Average Inspections Per Year (With Allowance for +/- One Refueling Outage) - Comparison

