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F. G. Burford
Acting Director
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CNRO-2007-00005

February 21, 2007

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

SUBJECT: Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds

Waterford Steam Electric Station, Unit 3
Docket No. 50-382
License No. NPF-38

REFERENCES:

1. NEI letter to the NRC, *industry Actions Associated with Potential generic Implications of Wolf Creek Inspection Findings,* dated January 26, 2007

2. Entergy Operations, Inc. letter CNRO-2007-00002 to the NRC, *Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds,* dated January 31, 2007

Dear Sir or Madam:

In October 2006, while performing inspections of its pressurizer Alloy 600/82/182 butt welds in accordance with MRP-139, a PWR licensee discovered several circumferential indications in its pressurizer surge, safety, and relief nozzles. Because of the importance of this issue, Entergy Operations, Inc. (Entergy) notified the NRC staff of actions planned for Waterford Steam Electric Station, Unit 3 (Waterford 3) to mitigate Alloy 600/82/182 butt welds on pressurizer spray, surge, and relief lines via Reference #2.

On February 13, 2007, representatives from Entergy and the NRC staff discussed the Waterford 3 action plan. As a result of that call, Entergy has revised its action plan and commitments. This letter supersedes Reference #2. Entergy will inform the NRC prior to revising any of the committed actions identified in Enclosure 1.

Entergy is aligned with positions pertaining to this issue as discussed in Reference #1 from NEI to the NRC and is actively participating with the industry to address them.

Our staff is available to meet with the NRC to discuss any of the information in this letter. Should you have any questions pertaining to this letter, please contact Guy Davant at (601) 368-5756.

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This letter contains commitments identified in Enclosure 2. These commitments supersede those provided in Reference #2.

Sincerely,

FGB/GHD/ghd

Enclosures:
1. Mitigating Actions and Associated Schedule for Alloy 600/82/182 Pressurizer Butt Welds at Waterford 3
2. Licensee-Identified Commitments

cc: Mr. W. A. Eaton (ECH)
Mr. K. T. Walsh (W3)

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NRC Senior Resident Inspector
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ENCLOSURE 1

CNRO-2007-00005

MITIGATING ACTIONS AND ASSOCIATED SCHEDULE FOR ALLOY 600/82/182 PRESSURIZER BUTT WELDS AT WATERFORD 3

MITIGATING ACTIONS AND ASSOCIATED SCHEDULE FOR ALLOY 600/82/182 PRESSURIZER BUTT WELDS AT WATERFORD 3

Mitigation activities of the pressurizer Alloy 600/82/182 dissimilar metal (DM) butt welds at Waterford Steam Electric Station, Unit 3 (Waterford 3) have not yet been completed, but are scheduled to be completed during the upcoming spring 2008 refueling outage (RF-15). Entergy Operations, Inc. (Entergy) will perform and complete the following mitigative activities at Waterford 3 pertaining to these welds on the pressurizer:

1. If Waterford 3 enters an outage of sufficient duration prior to RF-15, Entergy will visually inspect pressurizer DM butt welds for signs of leakage. Entergy will also re-baseline the unidentified leakage rate following any such outage and incorporate the new information into the Waterford 3 primary system leakage monitoring program.

2. During RF-15:

   a. Entergy will visually inspect pressurizer DM butt welds for signs of leakage; and

   b. To permanently mitigate potential degradation of these welds, Entergy will install full structural weld overlays on these welds.

3. Entergy will report the results of the mitigation actions performed to the NRC within 60 days following startup from the associated outage.

4. If Waterford 3 should shut down due to primary system unidentified leakage prior to RF-15, Entergy shall either confirm that the leak does not originate from the pressurizer DM butt welds (including quantifying the leak from the suspected location) or will perform, prior to restart, a bare metal visual examination of the pressurizer DM butt weld locations to determine whether the leakage originated at these locations.

5. Entergy will report the results of any bare metal visual inspections of the pressurizer DM butt welds to the NRC within 60 days following startup from the associated outage.

6. Entergy will develop plans and strategies to shutdown before December 31, 2007 and perform mitigation actions on the pressurizer DM butt welds if either:

   a. The results of on-going analytical work [Materials Reliability Project (MRP) advanced finite element analysis (FEA)] do not provide reasonable assurance to the NRC that primary water stress corrosion cracking (PWSCC) conditions will remain stable and not lead to rupture without significant time from the onset of detectable leakage; or

   b. New findings from inspections performed by industry during 2007 outages that challenge current analytical assumptions.

These actions will be incorporated into the ANO-1 primary system leakage monitoring program by March 1, 2007 and remain in place until the mitigation actions for the pressurizer DM butt welds are completed.

The methods of leak detection described above are sufficient to ensure RCS leakage is readily detected and corrective actions initiated prior to conditions degrading to a level resulting in a failure of the RCS pressure boundary.

TABLE 1

Mitigation Summary for Waterford 3 Alloy 600/82/182 Pressurizer Butt Welds

Nozzle		MRP-139 Volumetric Inspection Requirement to be Met		Mitigation to be Completed	Comments
Function / Designation	**Susceptible Material Description**	**Outage Designation**	**Start Date**	**Outage Designation**	
Spray - #RC-301A/B	Nozzle-to-safe end weld	RF-15	Spring 2008	RF-15	SA-508 carbon steel nozzle with 182 butter to stainless steel safe end with 182 butt weld
Surge	Nozzle-to-safe end weld	RF-15	Spring 2008	RF-15	SA-508 carbon steel nozzle with 182 butter to stainless steel safe end with 182 butt weld
Relief Valve - #RC-317A	Nozzle-to-safe end weld	RF-15	Spring 2008	RF-15	SA-508 carbon steel nozzle with 182 butter to cast stainless steel safe end with 182 butt weld
Relief Valve - #RC-317B	Nozzle-to-safe end weld	RF-15	Spring 2008	RF-15	SA-508 carbon steel nozzle with 182 butter to cast stainless steel safe end with 182 butt weld
Relief Valve - capped nozzle	Nozzle-to-safe end weld	RF-15	Spring 2008	RF-15	SA-508 carbon steel nozzle with 182 butter to cast stainless steel safe end with 182 butt weld

ENCLOSURE 2

CNRO-2007-00005

LICENSEE-IDENTIFIED COMMITMENTS

LICENSEE-IDENTIFIED COMMITMENTS

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
1. Entergy will inform the NRC prior to revising any of the committed actions identified in Enclosure 1.		✓ Until the end of RF-15	
2. If Waterford 3 enters an outage of sufficient duration prior to RF-15, Entergy will visually inspect pressurizer DM butt welds for signs of leakage. Entergy will also re-baseline the unidentified leakage rate following plant startup and incorporate the new information into the Waterford 3 primary system leakage monitoring program.		✓ Until the end of RF-15	
3. During RF-15: a. Entergy will visually inspect pressurizer DM butt welds for signs of leakage; and b. To permanently mitigate potential degradation of these welds, Entergy will install full structural weld overlays on these welds.	✓		End of RF-15
4. Entergy will report the results of the mitigation actions (structural weld overlays) performed to the NRC within 60 days following startup from the associated outage.	✓		60 days following startup from the associated outage
5. If Waterford 3 should shut down due to primary system unidentified leakage prior to RF-15, Entergy shall confirm that the leak does not originate from the pressurizer DM butt welds (including quantifying the leak from the suspected location) or will perform, prior to restart, a bare metal visual examination of these weld locations to determine whether the leakage originated at these locations.		✓ Until the end of RF-15	
6. Entergy will report the results of any bare metal visual inspections of the pressurizer DM butt welds to the NRC within 60 days following startup from the associated outage.		✓ Until the end of RF-15	

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
7. Entergy will develop plans and strategies to shutdown before December 31, 2007 and perform mitigation actions on the pressurizer DM butt welds if either: a. The results of on-going analytical work [Materials Reliability Project (MRP) advanced finite element analysis (FEA)] do not provide reasonable assurance to the NRC that primary water stress corrosion cracking (PWSCC) conditions will remain stable and not lead to rupture without significant time from the onset of detectable leakage; or b. New findings from inspections performed by industry during 2007 outages that challenge current analytical assumptions.	✓		December 31, 2007
8. Until the pressurizer DM butt welds are mitigated, Entergy will revise the Waterford 3 primary system leakage monitoring program to include the following actions: • Daily measurement and recording of unidentified leakage while in Modes 1, 2, and 3. • If unidentified leakage exceeds either of the two limits below and is sustained for 72 hours, and if the source of the leakage cannot be verified to be from a location other than the pressurizer DM butt welds, then Waterford 3 will shutdown and perform a bare metal visual examination of all such weld locations. ➢ 0.25 gpm greater than a baseline value. The baseline value should be established using leakage rates measured within 7 days after achieving 100% reactor power following the most recent bare metal visual examination of the pressurizer Alloy 600/82/182 butt weld locations.		✓ Until the end of RF-15	

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
➢ 0.1 gpm increase over the preceding day's 7-day average unidentified leakage. • Following initiation of a shutdown, the plant shall be in HOT STANDBY in 6 hours and in COLD SHUTDOWN in the next 36 hours. • Should the leakage return to within limits or be confirmed to be from a source other than the pressurizer DM butt welds, then the shutdown actions may be halted and a return to normal operating conditions may commence.			
9. The new primary system unidentified leakage criteria will be incorporated into the Waterford 3 primary system leakage monitoring program by March 1, 2007 and remain in place until the mitigation actions for the pressurizer DM butt welds are completed.	✓		March 1, 2007