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W3F1-2008-0049

July 24, 2008

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

SUBJECT: 60-Day Report for Waterford Steam Electric Station, Unit 3 Reactor  
Pressure Vessel Head and Pressurizer Inspection/Repair for the Spring  
2008 Refueling Outage  
Waterford Steam Electric Station, Unit 3  
Docket No. 50-382  
License No. NPF-38

- REFERENCES:
1. NRC letter to Entergy dated March 20, 2007, *Confirmatory Action Letter – Waterford Steam Electric Station, Unit 3 (TAC NO. MD4196)* (CAL No. NRR-07-006)
  2. Entergy letter to NRC dated February 21, 2007, *Inspection and Mitigation of Alloy 600/82/182 Pressurizer Butt Welds* (CNRO-2007-00005)
  3. Entergy letter to NRC dated February 26, 2007, *60-Day Report for Waterford Steam Electric Station, Unit 3 Reactor Pressure Vessel Head and Pressurizer Inspection for the Fall 2006 Refueling Outage* (W3F1-2007-0009)
  4. Entergy letter to NRC dated July 27, 2004, *Response to NRC Bulletin 2004-01 Regarding Inspection of Alloy 82/182/600 Materials Used In Pressurizer Penetrations and Steam Space Piping Connections* (W3F1-2004-0058)

Dear Sir or Madam:

On March 20, 2007, NRC transmitted Confirmatory Action Letter CAL No. NRR-07-006 to Entergy to confirm commitments made regarding Alloy 82/182 butt welds in the Waterford Steam Electric Station, Unit 3 (Waterford 3) pressurizer. In Reference 2, Entergy committed to report the results of the mitigation actions taken on the remaining Alloy 82/182 Pressurizer butt welds associated with the pressurizer spray, surge, and relief lines to the NRC within 60 days following startup from the Spring 2008 refueling outage. In Reference 3, Entergy provided inspection results for the Fall 2006 refueling outage, as required by NRC Order EA-03-009, Reactor Pressure Vessel head inspection requirements, and commitments

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associated with the bare metal visual (BMV) inspections of the pressurizer penetrations, as stated in Entergy's response to NRC Bulletin 2004-01 (Reference 4).

Waterford 3 resumed operation on June 2, 2008 from the Spring 2008 refueling outage. The results of the RPV head inspection (NRC Order EA-03-009), Bulletin 2004-01 Pressurizer bare metal inspections, and the mitigation actions taken on the remaining Alloy 82/182 Pressurizer butt welds associated with the pressurizer spray, surge, and relief lines are summarized in the attachment.

In summary, Entergy did not identify any boric acid leakage or primary water stress corrosion cracking of the reactor vessel head or the pressurizer during the inspections of welded connections. In addition, the remaining Alloy 82/182 Pressurizer butt welds had structural weld overlays installed.

This letter contains no additional NRC commitments. If you have any questions or require additional information, please contact Robert Murillo at 504-739-6715.

Sincerely,

A handwritten signature in black ink, appearing to read "T. J. Gandert". The signature is fluid and cursive, with a large initial "T" and "J".

TJG/RLW/

Attachment: 60-Day Report for Reactor Vessel Head and Pressurizer Inspection for the Waterford 3 Spring 2008 Refueling Outage

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**Attachment**

**To**

**W3F1-2008-0049**

**60-Day Report for Reactor Vessel Head and Pressurizer  
Inspection for the Waterford 3 Spring 2008 Refueling Outage**

### 60-Day Report for Reactor Vessel Head and Pressurizer Inspection for the Waterford 3 Spring 2008 Refueling Outage

Waterford Steam Electric Station, Unit 3 (Waterford 3) is a Combustion Engineering (CE) designed unit with Alloy 600 reactor pressure vessel (RPV) head and pressurizer penetrations which are subject to NRC First Revised Order EA-03-009, NRC Bulletin 2004-01 and Confirmatory Action Letter CAL No. NRR-07-006 (Reference 1). Entergy performed inspections of the Waterford 3 RPV head and pressurizer during the Spring 2008 Refueling Outage 15 and completed the mitigation actions on the remaining Alloy 82/182 Pressurizer butt welds associated with the pressurizer spray, surge, and relief lines. The RPV head inspections were conducted in accordance with Section IV.C of the Order; the pressurizer inspections were conducted in accordance with Response 1(c) of Entergy's response to Bulletin 2004-01 (Reference 4); and the remaining Alloy 82/182 Pressurizer butt welds had structural weld overlays installed in accordance with Entergy letter CNRO-2007-00005 (Reference 2) and CAL No. NRR-07-006 (Reference 1). The following provides the results of the RF-15 inspections and repairs.

**Table 1 Summary of Waterford 3 Spring 2006 Refueling Outage Alloy 600 Inspections**

Inspection Area	Inspection Method	Extent of Inspection	Results
<b>BMV Inspection of RPV Head</b>  [NRC Order]	RPV Head BMV	Inspect the RPV head surface 360° around each penetration for boric acid.	BMV performed on 91 CEDM nozzles, 10 ICI nozzles, vent line, and general head condition. No boric acid deposits were identified.
	Pressure Retaining Components	Inspect the CEDM and ICI housings for potential boric acid leakage.	No boric acid deposits were identified from welded connections.
<b>NDE of CEDM Nozzles</b>  [NRC Order and NRC approved Relaxation]	UT/ECT of 91 CEDM nozzles	Inspect 2" above the J-weld to the blind zone of the CEDM nozzle.	91 CEDM nozzles were examined and analyzed from the ID using Westinghouse UT/ECT probes. No flaws were detected.
	UT of Nozzle Annulus (leak path)	Review interference fit in nozzle annulus above J-weld for leakage path.	As part of the CEDM ID exams a zero degree UT probe was used to establish that there was no leak path (wastage) from the nozzle annuli.
<b>NDE of ICI Nozzles</b>  [NRC Order]	UT/ECT of ICI Nozzles	Inspect 2" above the J-weld to the end of the ICI nozzle.	The 10 ICI nozzles were UT/ECT examined from the ID. A zero degree UT probe was used to establish that there was no leak path (wastage). No flaws were detected.
	UT/ECT of ICI Nozzle Face	Perform UT/ECT exam of ICI nozzle face where ID delivered UT/ECT tooling does not provide inspection coverage.	An automated UT/ECT on the face of the ICI nozzles was performed. No flaws were detected.
<b>NDE of Vent Line</b> [NRC Order]	ECT of wetted surface area	Perform ECT of entire wetted surface of vent line.	The ECT exam of the vent line did not reveal any flaws.

### 60-Day Report for Reactor Vessel Head and Pressurizer Inspection for the Waterford 3 Spring 2008 Refueling Outage

Inspection Area	Inspection Method	Extent of Inspection	Results
<b>Pressurizer Inspection</b>  [Bulletin 2004-01]	Heater Sleeve	N/A	All J-welded nozzles on the pressurizer were replaced or repaired by the end of RF-13.
	Side Shell, Steam Space & Bottom Instrument Nozzle	N/A	All J-welded nozzles on the pressurizer were replaced or repaired by the end of RF-13.
	Pressurizer nozzle to safe end welds and large bore steam space welds-BMV	Removed insulation and performed bare metal visual inspection.	BMV of large bore nozzles and safe ends did not reveal any leakage.
<b>Pressurizer Inspection/Repair</b>  [Confirmatory Action Letter CAL No. NRR-07-006 and Entergy Letter CNRO-2007-00005]	Pressurizer nozzle to safe end welds	<ol style="list-style-type: none"> <li>1. Removed insulation and performed bare metal visual inspection</li> <li>2. Install weld overlays.</li> </ol>	<ol style="list-style-type: none"> <li>1. BMV of nozzle to safe end welds did not reveal any leakage.</li> <li>2. Completed installation of structural weld overlays over the remaining PZR nozzle to Stainless Steel Safe-End alloy 82/182 butt welds. <ol style="list-style-type: none"> <li>a. PZR to Safety Relief Valve (RC-317A), 6"</li> <li>b. PZR to Safety Relief Valve (RC-317B), 6"</li> <li>c. PZR Spare Safety Relief (Capped), 6"</li> <li>d. PZR to Spray Line, 4"</li> <li>e. PZR to Surge Line, 12"</li> </ol> </li> </ol> <p>Note: Additional structural weld overlays were also installed on: (a) Hot Leg 1 to Shutdown Cooling Line, 14"; (b) Hot Leg 2 to Shutdown Cooling Line, 14"; (c) Hot Leg 1 to Surge Line, 12"; and (d) Hot Leg 1 to Drain, 2"</p>

**Legend:**

BMV = Bare Metal Visual  
CEDM = Control Element Drive Mechanism  
ECT = Eddy Current Examination  
ICI = Incore Instrument  
ID = Inside Diameter

MNSA = Mechanical Nozzle Seal Assembly  
NDE = Non-Destructive Examination  
RPV = Reactor Pressure Vessel  
TE = Temperature Element  
UT = Ultrasonic Examination