



February 21, 2008

L-2008-018  
10 CFR 50.4

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

Re: St. Lucie Unit 2  
Docket No. 50-389  
Unit 2 SL2-17 Pressurizer Butt Weld Alloy 82/182  
Mitigation Status and SWOL Inspection Results

On January 31, 2007, Florida Power and Light Company (FPL) submitted letter L-2007-013 to notify the NRC of the actions taken or planned for inspecting or mitigating Alloy 82/182 butt welds on pressurizer connections for St. Lucie Unit 2. Additionally, via letters L-2007-045, L-2007-148, and L-2007-172, dated March 29, 2007, September 24, 2007, and October 24, 2007, respectively, FPL sought relief from certain requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code to allow the use of full structural weld overlays (SWOLs) to mitigate select pressurizer Alloy 82/182 butt welds. Within the letters, FPL committed to provide the results of future inspections or mitigations of the St. Lucie Unit 2 pressurizer butt welds within 60 days of startup from the outage in which they were performed. St. Lucie Unit 2 commenced commercial power operations from the SL2-17 refueling outage on January 4, 2008.

As required by FPL letter L-2007-148 and the NRC SER for TAC NO. MD5114, dated December 12, 2007, Attachment 1 provides the report of the structural weld overlay (SWOL) Ultrasonic (UT) examinations and a discussion and reason for any repairs to the SWOL and/or base metal. Attachment 2 provides the results of future inspections or mitigations of pressurizer alloy 82/182 butt weld locations as committed to in L-2007-013.

Please contact Ken Frehafer at 772-467-7748 if there are any questions about this submittal.

Very truly yours,

  
Gordon L. Johnston  
Site Vice President  
St. Lucie Plant



Attachments

GLJ/KWF

A110  
LRR

PSL-2  
 SL-2-17 Weld Overlay Installation Examination Results

Location	PT of Base Metal Results	PT of Barrier Layer and In-Process Repair Results	Post Overlay Surface Exam Results	Post Overlay UT Exam Results
Surge Line to Hot Leg B Pipe Nozzle	No Recordable Indications (NRI)	NRI	NRI	NRI
Shutdown Cooling Outlet to Hot Leg A Pipe	NRI	NRI	NRI	NRI
Shutdown Cooling Outlet to Hot Leg B Pipe	NRI	NRI	NRI	NRI
Hot Leg A Drain	NRI	NRI	NRI	NRI
Pressurizer Surge Line Nozzle (at pressurizer)	NRI	PT of barrier layer identified numerous rejectable rounded and linear indications resulting in repair PT of barrier layer excavation – NRI PT of barrier layer after repair- NRI	NRI	NRI

Location	PT of Base Metal Results	PT of Barrier Layer and In-Process Repair Results	Post Overlay Surface Exam Results	Post Overlay UT Exam Results
<p>Pressurizer Relief Line Nozzle</p>	<p>PT of base metal identified one rejectable indication approximately 3/16" long near toe of safe end</p> <p>PT results after buffing - NRI</p>	<p>PT of barrier layer identified one linear indication approximately 1/8 inch in length.</p> <p>PT of barrier layer after buffing- NRI</p> <p>PT of SWOL excavation to remove volumetric (UT) indications - NRI</p>	<p>Pre excavation final PT of surface-NRI</p> <p>Final PT of surface-NRI</p>	<p>Three circumferential indications (3.0", 9.0", 5.5") in length by (0.20") in width of lack of bond (LOB) between the overlay and the base material at same axial location were identified. All indications were outside of structural and examination area. The indications were evaluated as rejectable in accordance with the acceptance criteria of FPL's relief request 10, revision 1. A repair of the indications was performed.</p> <p>After repair, UT identified three remaining circumferential indications (0.3", 1.2", 0.3") in length by (0.20") in width of LOB between the overlay and the base material at the same axial location. The indications were evaluated as acceptable in accordance with Table IWB-3514-3 and FPL's relief request 10, revision 1. All indications are outside of structural and ISI examination area.</p> <p>There was no reduction of the PSI or ISI angle beam UT coverage due to presence of the remaining LOB.</p>

St. Lucie Unit 2  
 Alloy 82/182 Pressurizer Butt Weld Inspection and Mitigation Summary Results

The St. Lucie Unit 2 pressurizer has 6 piping nozzle welds that were originally made with alloy 82/182 as identified in the table below. During the SL2-17 refueling outage all 6 piping nozzle welds were mitigated by the method shown in the table below:

Nozzle		Mitigation Completed (Note 1)	Mitigation performed (Note 2)
Function / Designation	Susceptible Material Description	Outage Designation	
Surge RC-514-671	Nozzle-to-safe end weld only	SL 2-17	Structural Weld Overlay (SWOL)
Spray RC-504-671	Nozzle-to-safe end weld only	SL 2-17	Cut out and replacement with Stainless Steel (SS)
Safety 503-671-A	Nozzle-to-safe end weld only	SL 2-17	Cut out and replacement with SS
Safety 503-671-D	Nozzle-to-safe end weld only	SL 2-17	Cut out and replacement with SS
Safety 503-671-C	Nozzle-to-safe end weld only	SL 2-17	Cut out and replacement with SS
Relief RC-506-671	Nozzle-to-safe end weld only	SL 2-17	Structural Weld Overlay

Notes:

- 1) Refueling Outage started 10-2007 and returned to service 1-4-2008.
- 2) No evidence of leakage was noted from these butt welds during the preparation for the pressurizer butt weld mitigations identified. In addition, PT was performed prior to SWOL of 2 pressurizer butt welds with the results noted in Attachment 1.