



**JAN 31 2007**

L-2007-013

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

Re: Florida Power and Light Company  
St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251

FPL Energy Seabrook, LLC  
Seabrook Station  
Docket No. 50-443

**Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds**

In October of 2006, while performing inspections of its pressurizer Alloy 82/182 butt welds in accordance with MRP-139, "Primary System Piping Butt Weld Inspection and Evaluation Guideline," a PWR licensee discovered several circumferential indications in its pressurizer surge, safety and relief nozzles. Because of the potential importance of this issue, Florida Power and Light Company (FPL), and FPL Energy Seabrook, LLC (FPL Energy Seabrook), are submitting this letter 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 Nuclear Plant, Units 1 and 2, Turkey Point Nuclear Plant, Units 3 and 4, and Seabrook Station.

The details of the Alloy 82/182 pressurizer connections and timeframe for full compliance with the MRP-139 guidelines for St. Lucie Units 1 and 2, Turkey Point Units 3 and 4, and Seabrook Station are provided in the attachments to this letter.

In summary, the pressurizers at Turkey Point Units 3 & 4 and St. Lucie Unit 1 do not incorporate Alloy 82/182 butt welds. The St. Lucie Unit 2 pressurizer Alloy 82/182 butt welds will be mitigated or inspected by 12/31/2007. The Seabrook Station Alloy 82/182 butt welds will be mitigated during the Spring 2008 refueling

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outage (OR12). The implementation schedules planned for St. Lucie Unit 2 and Seabrook Station will support continued safe plant operation.

FPL Energy Seabrook will support the industry efforts outlined in the Nuclear Energy Institute letter to the NRC, "Industry Actions Associated with Potential Generic Implications of Wolf Creek Inspection Findings," dated January 26, 2007. Site specific commitments are included in the attachments to this letter, as applicable.

If you have any questions concerning this submittal, please contact Rudy Gil at (561) 694-3370.

Sincerely yours,



J. A. Stall  
Senior Vice President, Nuclear and  
Chief Nuclear Officer

- Attachments:
1. Turkey Point Units 3 and 4 Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds.
  2. St. Lucie Units 1 and 2 Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds.
  3. Seabrook Station Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds.

cc: Regional Administrator, Region I  
Regional Administrator, Region II  
USNRC Project Manager, St. Lucie and Turkey Point  
Senior Resident Inspector, USNRC, St. Lucie  
Senior Resident Inspector, USNRC, Turkey Point  
USNRC Project Manager, Seabrook Station  
Senior Resident Inspector, Seabrook Station

## **ATTACHMENT 1**

### **TURKEY POINT UNITS 3 AND 4 Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds**

In October of 2006, while performing inspections of its pressurizer Alloy 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 potential importance of this issue, Florida Power and Light Company (FPL) is submitting this voluntary letter to notify the NRC of FPL's Turkey Point Units 3 and 4 position relative to the Alloy 82/182 pressurizer butt welds.

The pressurizers at Turkey Point Units 3 and 4 do not have Alloy 82/182 butt welds. Future inspections of pressurizer butt welds at Turkey Point Units 3 and 4 will be performed in accordance with the In-service Inspection Program and the ASME Code.

The NRC will be informed prior to any revision of the information for Turkey Point Units 3 and 4 contained in this letter.

## **ATTACHMENT 2**

### **St. Lucie Units 1 and 2 Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds**

In October of 2006, while performing inspections of its pressurizer Alloy 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 potential importance of this issue, FPL is submitting this voluntary letter to notify the NRC of the St. Lucie Unit 2 station's actions planned for mitigating or inspecting Alloy 82/182 pressurizer butt welds, specifically the pressurizer spray, surge, relief and safety (3) lines.

The pressurizer at St. Lucie Unit 1 has been replaced with a component that uses PWSCC resistant materials. This replacement occurred during the PSL 1-20 RFO (Fall 2005). Further inspections to address Alloy 82/182 butt weld concerns in the St. Lucie Unit 1 pressurizer are not necessary. Future inspections of pressurizer butt welds at St. Lucie Unit 1 will be performed in accordance with the In-service Inspection Program and the ASME Code.

Inspection of the pressurizer Alloy 82/182 butt welds at St. Lucie Unit 2 has not yet been completed, but FPL intends to complete all inspection or mitigation activities on these locations at St. Lucie Unit 2 by December 31, 2007. Details concerning the St. Lucie Unit 2 inspection and mitigation activities are provided in Table 1. Results of completed ASME Section XI and augmented inspections are provided in Tables 2 and 3. Future inspections of pressurizer butt welds at St. Lucie Unit 2 will be performed in accordance with industry guidance (MRP-139). The results of future inspections or mitigations of pressurizer Alloy 82/182 butt weld locations will be reported to the NRC within 60 days of startup from the outage during which they were performed.

Reactor Coolant System (RCS) leakage monitoring methods at St. Lucie Unit 2 include the cavity sump inlet flow monitoring system, and 2 gaseous and 2 particulate containment atmospheric radioactivity monitors. In accordance with Plant Technical Specifications, these monitors are checked at least once per 12 hours. Additionally, a RCS water inventory balance and reactor head flange leak-off system monitoring are performed at least once per 24 hours pursuant to site operating procedures. FPL requires daily reporting of unidentified RCS leakage to senior plant and Nuclear Division management.

Current site operating procedures define the following for Action Levels 1 and 2:

#### Criteria for Action Level 1

- 1) RCS unidentified leakage greater than 0.15 gpm;
- 2) RCS identified leakage greater than 0.2 gpm;
- 3) Unidentified leak rate increases by 0.05 gpm from the previous leak rate; or
- 4) An adverse trend over time is observed.

#### Responses to Action Level 1

- 1) Perform a confirmatory leak rate;

- 2) Review the containment radiation monitor trends;
- 3) Review the Volume Control Tank level trend;
- 4) Review the cavity leakage recorder trend;
- 5) Perform a field walkdown to identify possible sources of leakage;
- 6) Notify the Operations Supervisor (if increased leakage is confirmed);
- 7) Notify the System Engineer (if increased leakage is confirmed);
- 8) Document the investigation; and
- 9) Enter the condition in the Corrective Action Program (if increased leakage is confirmed).

Criteria for Action Level 2

- 1) RCS unidentified leakage greater than 0.2 gpm; or
- 2) RCS identified leakage greater than 0.25 gpm.

Responses to Action Level 2

- 1) Perform actions of Action Level 1; and
- 2) Notify the Engineering Manager to determine if an Event Response Team is required.

Based on the information and commitments provided above, FPL's plans to implement mitigation or inspection of the St. Lucie Unit 2 pressurizer butt weld locations in Fall 2007 will support continued safe plant operation.

The NRC will be informed prior to any revision of the information for St. Lucie Units 1 and 2 contained in this letter.

**Table 1**  
**St. Lucie Unit 2-**  
**Inspection and Mitigation Summary for Alloy 82/182 Pressurizer Butt Welds**

| Nozzle                 |                                  | MRP-139 Volumetric Inspection Requirement Met or to be Met |                      | Mitigation Completed or to be Completed | Comments  |
|------------------------|----------------------------------|--|----------------------|---|---|
| Function / Designation | Susceptible Material Description | Outage Designation   | Start Date (MM/YYYY) | Outage Designation                      |   |
| Surge<br>RC-514-671    | Nozzle-to-safe end weld only     | PSL 2-17   | 10/2007              | PSL 2-17                                | Weld to be mitigated with Full Structural Weld Overlay                        |
| Spray<br>RC-504-671    | Nozzle-to-safe end weld only     | PSL 2-17   | 10/2007              | PSL 2-17*                               | Weld to be mitigated with Full Structural Weld Overlay or replacement with SS |
| Safety<br>503-671-A    | Nozzle-to-safe end weld only     | PSL 2-17   | 10/2007              | PSL 2-17*                               | Weld to be mitigated with Full Structural Weld Overlay or replacement with SS |
| Safety<br>503-671-D    | Nozzle-to-safe end weld only     | PSL 2-17   | 10/2007              | PSL 2-17*                               | Weld to be mitigated with Full Structural Weld Overlay or replacement with SS |
| Safety<br>503-671-C    | Nozzle-to-safe end weld only     | PSL 2-17   | 10/2007              | PSL 2-17*                               | Weld to be mitigated with Full Structural Weld Overlay or replacement with SS |
| Relief<br>RC-506-671   | Nozzle-to-safe end weld only     | PSL 2-17   | 10/2007              | PSL 2-17*                               | Weld to be mitigated with Full Structural Weld Overlay                        |

\* Implementation of PDI qualified volumetric inspections in accordance with MRP-139 remains an option during PSL 2-17.

**Table 2**  
**St. Lucie Unit 2 Pressurizer - Most Recent ASME Section XI**  
**Examinations**

| <b>Pressurizer Nozzle</b> | <b>Inspection Method</b> | <b>Inspection Year</b> | <b>Outage Designation</b> | <b>Code Coverage</b> | <b>Inspection Results</b> |
|---------------------------|--------------------------|------------------------|---------------------------|----------------------|---------------------------|
| Surge<br>RC-514-671       | Surface                  | 1994                   | PSL 2-8                   | 100%                 | Acceptable                |
| Surge<br>RC-514-671       | Volumetric               | 1994                   | PSL 2-8                   | 100% CRV*            | Acceptable                |
| Spray<br>RC-504-671       | Surface                  | 1995                   | PSL 2-9                   | 100%                 | Acceptable                |
| Spray<br>RC-504-671       | Volumetric               | 1995                   | PSL 2-9                   | 100% CRV             | Acceptable                |
| Safety<br>503-671-A       | Surface                  | 1995                   | PSL 2-9                   | 100%                 | Acceptable                |
| Safety<br>503-671-A       | Volumetric               | 1995                   | PSL 2-9                   | >90% CRV             | Acceptable                |
| Safety<br>503-671-D       | Surface                  | 1995                   | PSL 2-9                   | 100%                 | Acceptable                |
| Safety<br>503-671-D       | Volumetric               | 1995                   | PSL 2-9                   | >90% CRV             | Acceptable                |
| Safety<br>503-671-C       | Surface                  | 1995                   | PSL 2-9                   | 100%                 | Acceptable                |
| Safety<br>503-671-C       | Volumetric               | 1995                   | PSL 2-9                   | >90% CRV             | Acceptable                |
| Relief<br>RC-506-671      | Surface                  | 1995                   | PSL 2-9                   | 100%                 | Acceptable                |
| Relief<br>RC-506-671      | Volumetric               | 1995                   | PSL 2-9                   | 81% CRV              | Acceptable                |

\*CRV = Code Required Volume

**Table 3**  
**St. Lucie Unit 2 Pressurizer – NRC Bulletin 2004-01 Inspection Results**

| <b>Pressurizer Nozzle</b> | <b>Inspection Method</b> | <b>Inspection Year</b> | <b>Outage Designation</b> | <b>Inspection Results</b> |
|---------------------------|--------------------------|------------------------|---------------------------|---------------------------|
| Surge<br>RC-514-671       | BMV (VT-2)               | 2005                   | PSL 2-15                  | No evidence of leakage    |
| Spray<br>RC-504-671       | BMV (VT-2)               | 2005                   | PSL 2-15                  | No evidence of leakage    |
| Safety<br>503-671-A       | BMV (VT-2)               | 2005                   | PSL 2-15                  | No evidence of leakage    |
| Safety<br>503-671-D       | BMV (VT-2)               | 2005                   | PSL 2-15                  | No evidence of leakage    |
| Safety<br>503-671-C       | BMV (VT-2)               | 2005                   | PSL 2-15                  | No evidence of leakage    |
| Relief<br>RC-506-671      | BMV (VT-2)               | 2005                   | PSL 2-15                  | No evidence of leakage    |



## **ATTACHMENT 3**

### **Seabrook Station Inspection and Mitigation of Alloy 82/182 Pressurizer Butt Welds**

In October of 2006, while performing inspections of its pressurizer Alloy 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 potential importance of this issue, FPL Energy Seabrook, LLC (FPL Energy Seabrook) is submitting this voluntary letter to notify the NRC of FPL Energy Seabrook's commitment to the following actions planned for mitigating Alloy 82/182 pressurizer butt welds, specifically the pressurizer spray, surge, relief and safety (3) lines.

Inspection of pressurizer Alloy 82/182 butt welds at Seabrook Station has not yet been completed, but all inspection and mitigation activities for these locations will be completed during the Spring 2008 refueling outage (OR12) which is scheduled to start April 1, 2008. Details concerning Seabrook Station's MRP-139 Alloy 82/182 pressurizer butt weld inspection and mitigation activities are provided in Table 1. The results of recently completed inspections are provided in Tables 2 and 3. Future inspections of pressurizer butt welds at Seabrook Station will be performed in accordance with industry guidance (MRP-139). The results of future inspections or mitigations of pressurizer Alloy 82/182 butt weld locations will be reported to the NRC within 60 days of startup from the outage during which they were performed.

#### **Basis for Inspection/Mitigation Schedule**

Inspection and mitigation activities at Seabrook Station will be completed after December 31, 2007. A deviation from the MRP-139 recommended implementation date was prepared in accordance with NEI 03-08, "Guideline for Management of Materials Issues, Addendum D, Materials Guidelines Implementation Protocol." This deviation received independent review and concurrence from an independent industry expert. The NRC was notified by FPL Energy Seabrook letter SBK-L-06044, dated March 6, 2006, of FPL Energy Seabrook's plans and scope of the deviation. The FPL Energy Seabrook decision to schedule the implementation of MRP-139 requirements for the pressurizer butt welds in the spring of 2008 was based on the following:

- The Seabrook Station weld configurations cannot be inspected in accordance with MRP-139 inspection requirements due to as-built geometry of the welds and safe ends. Mitigation (Weld Overlays) is required to satisfy the MRP-139 inspection requirements at all six pressurizer locations.
- The top of the Seabrook Pressurizer has significant structural interferences that need to be removed in order to implement the mitigation effort.
- The timing of the issuance of MRP-139 did not allow for an outage to properly plan the mitigation effort and to identify and address the significant interference issues with the mitigation equipment.
- Since primary water stress corrosion cracking (PWSCC) is a time at temperature mechanism and Seabrook Station is one of the youngest plants in the US PWR industry, there was sound basis to schedule the mitigation in the spring of 2008.

MRP-139 was issued with requirements for inspection with only one refueling outage for Seabrook Station before the December 31, 2007 deadline. The following is a timeline of events

related to inspection of Alloy 82/182 pressurizer butt welds relative to the Seabrook Station refueling outages.

- SBK OR09 (October 2003) - No specific Alloy 82/182 butt weld inspection requirements.
- MRP Letter 2003-039 (January 20, 2004) - Requested Bare Metal Visuals (BMVs) & determination of configuration of Alloy 82/182 butt welds within two refueling outages.
- MRP Letter 2004-05 (April 2, 2004) - Requested BMVs (Needed) & determination of configuration (Good Practice) of Alloy 82/182 butt welds within two refueling outages.
- SBK OR10 (April 2005) – Performed BMVs and profiling of pressurizer butt welds. Support structure obstructions identified as significant.
- MRP-139 issued (September 12, 2005) - Requires PDI UT or justification until mitigation by December 31, 2007.
- SBK receives weld coverage assessment from EPRI (November 2005) – Pressurizer butt welds will not meet 90% coverage criteria required by MRP-139.
- SBK MRP-139 deviation completed (February 7, 2006) – Justified mitigation implementation in April, 2008.
- SBK Notifies NRC of Deviation & new schedule (March 6, 2006) - Letter SBK-L-06044.
- SBK OR11 (October 2006) - Performed BMVs of pressurizer butt welds and performed pre-implementation walk down with three prospective vendors.

Based on the configuration data collected for the Seabrook Station Alloy 82/182 pressurizer butt welds during OR10 (April 2005) the 90% inspection volume required by MRP-139 was not achievable without weld overlays to provide an inspectable geometry. As shown on the timeline above, Seabrook Station had only one refueling outage prior to the December 31, 2007 MRP-139 deadline. In order to have the best chance at success, a pre-implementation walk down was required to address the numerous interferences associated with the Seabrook Station pressurizer. This schedule put the mitigation outage in the spring of 2008. A deviation was prepared following the NEI-03-08 process considering all the relevant information available at the time. Since PWSCC is a time at temperature mechanism and Seabrook Station is one of the youngest plants in the US PWR fleet, there was sound basis to schedule the mitigation in the spring of 2008.

The deviation to justify implementation during OR12 was based on the following:

**Previous Inspection Results:** The results of the most recent ASME Section XI surface and volumetric examinations of the pressurizer Alloy 82/182 butt welds are provided in Table 2. The results of augmented bare metal visual (BMV) inspections of the Alloy 82/182 butt welds performed during the Spring 2005 (OR10) and Fall 2006 (OR11) refueling outages, as committed to in FPL Letters L-2004-160, dated July 27, 2004, and L-2005-11, dated January 18, 2005, in the response to Bulletin 2004-01, are provided in Table 3. There were no reportable or recordable flaws, or evidence of leakage identified during any of the above pressurizer Alloy 82/182 weld examinations.

**Plant Age:** The susceptibility to primary water stress corrosion cracking (PWSCC) of Alloy 600/82/182 is largely a function of time at temperature when all other variables are constant. Due to the high temperature, the pressurizer is the most highly susceptible location in an operating plant. Since the pressurizers in a PWR operate at saturated conditions, PWRs that operate at 2250 psi have a pressurizer operating temperature within a few degrees of 653° F,

and can therefore be compared directly to each other. The EPRI MRP prepared a response to NRC Bulletin 2001-01 (Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles) on PWSCC that lists hours of operation for each of the 69 operating PWRs (MRP-48, Table 2-1). The EFPY data from the MRP-48 survey is shown below. Seabrook Station Unit 1 is one of the youngest plants compared to the other US PWRs, at 67<sup>th</sup> out of 69 US PWRs.

### Comparison of EFPY of US PWRs Reported in MRP-48

| Rank | Unit Name        | EFPYs as of 2/2001 | Rank | Unit Name       | EFPYs as of 2/2001 | Rank      | Unit Name       | EFPYs as of 2/2001 |
|------|------------------|--------------------|------|-----------------|--------------------|-----------|-----------------|--------------------|
| 1    | Ginna            | 23.9               | 24   | North Anna 2    | 16.7               | 47        | Waterford 3     | 12.4               |
| 2    | Point Beach 1    | 22.9               | 25   | Farley 2        | 16.4               | 48        | Sequoyah 2      | 12.1               |
| 3    | Point Beach 2    | 22.5               | 26   | Cook 1          | 16.0               | 49        | Byron 1         | 12.0               |
| 4    | Prairie Island 1 | 22.4               | 27   | ANO 2           | 15.9               | 50        | Vogtle 1        | 11.9               |
| 5    | Prairie Island 2 | 22.3               | 28   | Palisades       | 15.6               | 51        | Sequoyah 1      | 11.9               |
| 6    | Kewaunee         | 21.6               | 29   | Beaver Valley 1 | 15.2               | 52        | Catawba 2       | 11.7               |
| 7    | Robinson 2       | 20.6               | 30   | Crystal River 3 | 14.9               | 53        | Shearon Harris  | 11.6               |
| 8    | Oconee 1         | 20.4               | 31   | Davis-Besse     | 14.7               | 54        | Byron 2         | 11.3               |
| 9    | Oconee 2         | 20.3               | 32   | St. Lucie 2     | 14.7               | 55        | Palo Verde 1    | 11.1               |
| 10   | Oconee 3         | 20.1               | 33   | Millstone 2     | 14.0               | 56        | Palo Verde 2    | 11.0               |
| 11   | Fort Calhoun     | 19.9               | 34   | Summer          | 13.9               | 57        | Salem 2         | 10.8               |
| 12   | Surry 1          | 19.5               | 35   | Callaway        | 13.8               | 58        | Palo Verde 3    | 10.7               |
| 13   | Surry 2          | 19.4               | 36   | Indian Point 3  | 13.6               | 59        | Vogtle 2        | 10.4               |
| 14   | Turkey Point 3   | 19.3               | 37   | McGuire 1       | 13.6               | 60        | Braidwood 2     | 10.3               |
| 15   | Turkey Point 4   | 19.0               | 38   | San Onofre 2    | 13.5               | 61        | Beaver Valley 2 | 10.2               |
| 16   | St. Lucie 1      | 18.8               | 39   | McGuire 2       | 13.4               | 62        | Braidwood 1     | 9.9                |
| 17   | Calvert Cliffs 1 | 18.3               | 40   | San Onofre 3    | 13.3               | 63        | Millstone 3     | 9.3                |
| 18   | Farley 1         | 18.2               | 41   | Cook 2          | 13.3               | 64        | South Texas 1   | 9.2                |
| 19   | ANO 1            | 18.0               | 42   | Salem 1         | 13.1               | 65        | South Texas 2   | 8.9                |
| 20   | Calvert Cliffs 2 | 17.9               | 43   | Diablo Canyon 1 | 13.1               | 66        | Comanche Peak 1 | 8.9                |
| 21   | North Anna 1     | 17.1               | 44   | Diablo Canyon 2 | 12.8               | <b>67</b> | <b>Seabrook</b> | <b>8.6</b>         |
| 22   | Indian Point 2   | 16.9               | 45   | Wolf Creek      | 12.7               | 68        | Comanche Peak 2 | 6.4                |
| 23   | TMI 1            | 16.8               | 46   | Catawba 1       | 12.5               | 69        | Watts Bar 1     | 4.3                |

The MRP-48 list was current as of February 28, 2001; however, there have been no new through wall butt weld leaks in the US attributed to PWSCC since this compilation of data. Most plants have continued to operate without any prolonged outages other than refueling and scheduled equipment replacements. In the MRP-48 list, Seabrook Station was ranked as one of the least susceptible plants at 67<sup>th</sup> with 8.6 effective full power years (EFPY). Seabrook Station's relative position in the table has not changed significantly as all the plants have gained hours since the table was compiled. Over 20% of the operating plants have greater than 10 EFPY more operating time at temperature than Seabrook Station. The rest of the US PWR fleet also provides a significant indicator for the potential onset of PWSCC relative to Seabrook

Station. Since none of those plants have identified pressure boundary leakage from the pressurizer welds, the near term susceptibility to PWSCC cracks is considered relatively low. Therefore, deviation from the December 31, 2007 deadline until the spring 2008 RFO will meet the intent of performing a timely UT inspection (and mitigation) with a reasonable degree of margin before PWSCC degradation would lead to a pressure boundary leak or a safety issue.

**Assessment of original fabrication welds:** A review of the fabrication records was performed by Westinghouse as part of a PWR Owners Group subgroup project to document the locations of Alloy 600/82/182. In addition, FPL Energy Seabrook, LLC personnel reviewed shop radiographic inspection reports, site records, and shop fabrication records assembled by Westinghouse. Only two of the nozzles (surge and safety C) had repairs involving welding of the inside diameter (ID) surface, neither of which received post weld heat treatment (PWHT). The repair areas on the "C" safety nozzle was limited to less than 22% of the circumference based on the subsequent RT acceptance reshoot. The repairs to the surge line nozzle were also minor, limited to less than 10% of the circumference. The spray and the relief had repairs involving welding of the outside diameter (OD) surface, also without PWHT. Weld repairs performed to the butter of any nozzle were not considered relevant because they all received post weld heat treatment (PWHT). The remaining repairs involved only minor grinding, brushing or polishing of the nozzles' ID and OD surfaces.

**Industry Safety Assessment:** As a result of the circumferential indications found in October 2006, the industry through EPRI MRP, reviewed the Alloy 82/182 Pipe Butt Weld Safety Assessment (MRP-113) and the Primary System Piping Butt Weld Inspection and Evaluation Guideline (MRP-139). The results of the review were transmitted to the NRC by EPRI MRP letter 2007-003, dated January 22, 2007. The conclusions from the industry review included:

- MRP-113 and MRP-139 remain valid.
- Critical flaw sizes are several times larger than the indications observed in October 2006.
- Bare metal visual examinations during that last refueling outage and improved leak monitoring ensure a low risk of leaks and an extremely low risk of rupture through the spring 2008.

**Primary Water Chemistry:** At Seabrook Station, lithium is maintained using a coordinated boron/lithium program to control primary chemistry. This program is designed to maintain RCS pHt as close to 7.2 as possible without exceeding a maximum target lithium concentration of 3.5 ppm with a 5% variation. The purpose is to minimize crud deposition on in-core surfaces (by maximizing cobalt solubility), and minimize general corrosion rates of primary metal surfaces. Hydrogen is maintained between 25 and 50 cc/Kg. Its purpose is also to mitigate corrosion by scavenging oxygen.

**RCS Leak Rate Monitoring:** In addition to the bare metal visual inspections at the past two refueling outages, and mitigation actions described above, enhanced procedures for monitoring primary system leakage are already in place at Seabrook Station. The main attributes of the Seabrook leak monitoring program are:

- Particulate and gas radioactivity monitors, and sump level monitoring.

- An automated calculational program for leak rate determination. This program automatically executes every 15 minutes and calculates a 10 hour average RCS leak rate. There is no operator or plant staff input required by the calculation.
- A predefined graphic screen display in the computer system that shows RCS leakage over the past 72 hours. In addition, standard computer archive functions allow plant staff to evaluate RCS leak rate trends over the entire operating cycle(s).
- Compliance with FPL corporate administrative limits on RCS unidentified leak rate monitoring. These limits are as follows:
  - Unidentified leak rate results greater than 0.15 gpm require investigation as to the source and initiation of a condition report.
  - An increase of 0.05 gpm from the previous leak rate or adverse trends over time requires investigation into the cause.
- The Seabrook Station calculation for RCS leak rates incorporates automated "warning alarms" set at FPL corporate administrative limit (0.15 gpm for unidentified leak rate).
- FPL requires daily reporting of unidentified RCS leakage to senior plant and Nuclear Division management.

The RCS leak rate monitoring performed at Seabrook Station provides assurance that any unidentified leakage is monitored and addressed at levels that are an order of magnitude more sensitive than the Technical Specification 1 gpm unidentified leakage action levels.

Consistent with industry actions, FPL Energy Seabrook is evaluating improvements to its leakage monitoring program and will provide an update to the NRC regarding any changes to the current program by March 31, 2007. In addition, FPL Energy Seabrook is evaluating the feasibility of plant modifications to install diverse leakage detection capability. Plans for any additional capability which reliably and meaningfully adds to the ability to diagnose primary system leakage, and associated implementation schedules, will be submitted to the NRC by May 31, 2007.

Based on the information and commitments provided above, Seabrook Station's plans to implement mitigation of its pressurizer butt weld locations in April, 2008 will support continued safe plant operation. Seabrook Station will accelerate its Alloy 82/182 butt weld mitigation outage currently scheduled for 2008 if the results of additional analysis being pursued by the industry do not demonstrate to the NRC that current schedules are adequate. The schedule could also be accelerated if new information is obtained during upcoming industry inspections that challenge current assumptions.

The NRC will be informed prior to any revision of the information for Seabrook Station contained in this letter.

#### **Commitment Summary:**

The following are FPL Energy Seabrook's regulatory commitments as provided in this Attachment.

1. FPL Energy Seabrook will implement mitigation actions for the Seabrook Station pressurizer butt welds during refueling outage 12 (OR12) that is currently scheduled for April 2008.

2. FPL Energy Seabrook is evaluating improvements to its leakage monitoring program and will provide an update to the NRC regarding any changes to the current program by March 31, 2007.
3. FPL Energy Seabrook is evaluating the feasibility of plant modifications to install diverse leakage detection capability. Plans for any additional capability which reliably and meaningfully adds to the ability to diagnose primary system leakage, and associated implementation schedules, will be submitted to the NRC by May 31, 2007.
4. FPL Energy Seabrook will accelerate its Alloy 82/182 butt weld mitigation outage currently scheduled for April 2008 if analytical results do not demonstrate to the NRC that current schedules are adequate. The schedule could also be accelerated if new information is obtained during upcoming industry inspections that challenge current assumptions.
5. FPL Energy Seabrook will provide the results of the pressurizer butt weld inspection or mitigation actions within 60 days following the completion of the plant outage during which the actions are completed.

**Table 1**  
**Inspection and Mitigation Summary for Seabrook**  
**Alloy 82/182 Pressurizer Butt Welds**

| Nozzle                        |  | MRP-139 Volumetric<br>Inspection Requirement to<br>be Met |                         | Mitigation<br>Completed or to be<br>Completed | Comments   |
|-------------------------------|--|---|-------------------------|---|--|
| Function /<br>Designation     | Susceptible<br>Material<br>Description | Outage<br>Designation                                     | Start Date<br>(MM/YYYY) | Outage<br>Designation                         |  |
| Surge "S"<br>Line # RC-49-01  | Nozzle to safe<br>end (NSE)<br>weld    | OR12  | 04/2008                 | OR12  | Weld to be mitigated<br>with Full Structural<br>Weld Overlay |
| Spray "SP"<br>Line # RC-48-03 | NSE weld                               | OR12  | 04/2008                 | OR12  | Weld to be mitigated<br>with Full Structural<br>Weld Overlay |
| Safety "A"<br>Line # RC-74-01 | NSE weld                               | OR12  | 04/2008                 | OR12  | Weld to be mitigated<br>with Full Structural<br>Weld Overlay |
| Safety "C"<br>Line # RC-75-01 | NSE weld                               | OR12  | 04/2008                 | OR12  | Weld to be mitigated<br>with Full Structural<br>Weld Overlay |
| Safety "D"<br>Line # RC-76-01 | NSE weld                               | OR12  | 04/2008                 | OR12  | Weld to be mitigated<br>with Full Structural<br>Weld Overlay |
| Relief "B"<br>Line # RC-80-01 | NSE weld                               | OR12  | 04/2008                 | OR12  | Weld to be mitigated<br>with Full Structural<br>Weld Overlay |

**Table 2**  
**Seabrook Station**  
**Most Recent ASME Section XI Examinations**

| <b>Pressurizer Nozzle</b>     | <b>Inspection Method</b> | <b>Inspection Year</b> | <b>Outage Designation</b> | <b>Code Coverage</b> | <b>Inspection Results</b> |
|-------------------------------|--------------------------|------------------------|---------------------------|----------------------|---------------------------|
| Surge "S"<br>Line # RC-49-01  | Surface                  | 1994                   | OR04                      | 100%                 | Acceptable                |
| Surge "S"<br>Line # RC-49-01  | Volumetric*              | 1994                   | OR04                      | 100 CRV**            | Acceptable                |
| Spray "SP"<br>Line # RC-48-03 | Surface                  | 1992                   | OR02                      | 100%                 | Acceptable                |
| Spray "SP"<br>Line # RC-48-03 | Volumetric*              | 1994                   | OR04                      | 61% CRV              | Acceptable                |
| Safety "A"<br>Line # RC-74-01 | Surface                  | 1992                   | OR02                      | 100%                 | Acceptable                |
| Safety "A"<br>Line # RC-74-01 | Volumetric*              | 1994                   | OR04                      | 63% CRV              | Acceptable                |
| Safety "C"<br>Line # RC-75-01 | Surface                  | 1994                   | OR04                      | 100%                 | Acceptable                |
| Safety "C"<br>Line # RC-75-01 | Volumetric*              | 1994                   | OR04                      | 71% CRV              | Acceptable                |
| Safety "D"<br>Line # RC-76-01 | Surface                  | 1994                   | OR04                      | 100%                 | Acceptable                |
| Safety "D"<br>Line # RC-76-01 | Volumetric*              | 1994                   | OR04                      | 64% CRV              | Acceptable                |
| Relief "B"<br>Line # RC-80-01 | Surface                  | 1994                   | OR04                      | 100%                 | Acceptable                |
| Relief "B"<br>Line # RC-80-01 | Volumetric*              | 1994                   | OR04                      | 56% CRV              | Acceptable                |

\* The ultrasonic testing (UT) was a non-PDI examination as PDI did not exist. The nozzles had coverage plots (non-PDI methodology) calculated in 1994 with the results noted in the table.

\*\* CRV = Code Required Volume



**Table 3**  
**Seabrook Station Pressurizer**  
**NRC Bulletin 2004-01 Inspection Results**

| <b>Pressurizer Nozzle</b>     | <b>Inspection Method</b> | <b>Inspection Year</b> | <b>Outage Designation</b> | <b>Inspection Results</b> |
|-------------------------------|--------------------------|------------------------|---------------------------|---------------------------|
| Surge "S"<br>Line # RC-49-01  | BMV (VT-2)               | 2005                   | OR10                      | No evidence of leakage    |
|                               |                          | 2006                   | OR11                      | No evidence of leakage    |
| Spray "SP"<br>Line # RC-48-03 | BMV (VT-2)               | 2005                   | OR10                      | No evidence of leakage    |
|                               |                          | 2006                   | OR11                      | No evidence of leakage    |
| Safety "A"<br>Line # RC-74-01 | BMV (VT-2)               | 2005                   | OR10                      | No evidence of leakage    |
|                               |                          | 2006                   | OR11                      | No evidence of leakage    |
| Safety "C"<br>Line # RC-75-01 | BMV (VT-2)               | 2005                   | OR10                      | No evidence of leakage    |
|                               |                          | 2006                   | OR11                      | No evidence of leakage    |
| Safety "D"<br>Line # RC-76-01 | BMV (VT-2)               | 2005                   | OR10                      | No evidence of leakage    |
|                               |                          | 2006                   | OR11                      | No evidence of leakage    |
| Relief "B"<br>Line # RC-80-01 | BMV (VT-2)               | 2005                   | OR10                      | No evidence of leakage    |
|                               |                          | 2006                   | OR11                      | No evidence of leakage    |