



**FPL**

November 09, 2017

L-2017-199  
10 CFR 50.55a

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington D C 20555-0001

RE: St. Lucie Units 1 and 2  
Docket Nos. 50-335 and 50-389  
Renewed Facility Operating Licenses DPR-67 and NPF-16  
Supplement for Fifth 10-Year Inservice Testing (IST) Program Interval  
Relief Request PR-06

Reference:

FPL letter L-2017-183, Fifth 10-Year Inservice Testing (IST) Program Interval Relief Requests PR-01 through PR-06, and PR-09, dated October 6, 2017 (ADAMS Accession No. ML17279A037)

In the letter referenced above, Florida Power & Light Company (FPL) submitted on behalf of St. Lucie Nuclear Plant Unit 1 and Unit 2, relief requests PR-01 through PR-06, and PR-09 for the Fifth Ten-Year Inservice Testing (IST) Program Interval. As agreed during clarification calls with the NRC on November 3, 2017 and November 6, 2017, FPL hereby submits this supplement to relief request PR-06, Boric Acid Makeup (BAM) Pumps Quarterly Flow Test. The supplement revises the relief category for which approval of PR-06 is sought, from 10 CFR 50.55a(f)(5)(iii), Inservice Testing Impracticality, to 10 CFR 50.55a(z)(1), Alternative Provides an Acceptable Level of Quality and Safety. The remaining information provided in relief request PR-06 is unchanged.

The enclosure to this letter provides the revised IST pump relief request, PR-06.

This letter contains no new regulatory commitments.

Should you have any questions regarding this submittal, please contact Mr. Ken Frehafer, St. Lucie Licensing, at (772) 467-7748.

Sincerely,

Michael J. Snyder  
Licensing Manager  
St. Lucie Plant

Enclosure - Relief Request PR-06

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Florida Power & Light Company

6501 S. Ocean Drive, Jensen Beach, FL 34957

cc: USNRC Regional Administrator, Region II  
USNRC Project Manager, St. Lucie Nuclear Plant, Units 1 and 2  
USNRC Senior Resident Inspector, St. Lucie Nuclear Plant, Units 1 and 2

**Pump Relief Request - PR-06**  
**Boric Acid Makeup (BAM) Pumps Quarterly Flow Test**  
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Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)  
Alternative Provides Acceptable Level of Quality and Safety

**1. ASME Code Component(s) Affected**

Pump	Description	Class	Category	Unit
BAM 1A	Boric Acid Makeup Pump 1A	2	Group A	1
BAM 1B	Boric Acid Makeup Pump 1B	2	Group A	1
BAM 2A	Boric Acid Makeup Pump 2A	2	Group A	2
BAM 2B	Boric Acid Makeup Pump 2B	2	Group A	2

**2. Applicable Code Edition and Addenda**

ASME OM Code 2004 Edition through 2006 Addenda

**3. Applicable Code Requirement**

ISTB-5121(b) - The resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to its reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.

**4. Reason for Request**

The Boric Acid Makeup (BAM) pumps have four available flowpaths for inservice testing. These are the primary flow path to the Charging Pumps' suction header, the Refueling Water Tank (RWT) recirculation line, the Volume Control Tank (VCT) flowpath line and the BAM Tank recirculation line. The flow paths are neither available nor equipped to support Group A testing during power operation or cold shutdowns for the reasons stated below:

- a) Operating the BAM Pumps when aligned to discharge to the Charging Pumps' suction header will result in the introduction of highly concentrated boric acid from the Boric Acid Makeup Tanks into the Charging Pumps' suction. During plant operation this would result in the addition of excess boron into the RCS. The rapid insertion of negative reactivity would result in RCS cooldown and de-pressurization and could result in an unscheduled plant trip and possible Safety Injection System actuation. During cold shutdowns, the introduction of excess quantities of boric acid into the RCS via this flowpath is also undesirable for the maintenance of proper plant chemistry and the inherent difficulties that may be encountered during the subsequent startup due to the over-boration. In addition, the waste management system would be overburdened by the large amounts of RCS coolant that would require processing to reduce boron concentration.

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- b) Operation of a BAM Pump aligned to recirculate water to the RWT would result in depletion of the associated BAM Tank inventory. During normal operation, the Technical Specifications require the BAM Tanks to be maintained with a specified volume and concentration of boric acid. The transfer of borated water from either one or both of the BAM Tanks could result in not only the loss of a required boration source as required by the Technical Specifications, but in the case of St. Lucie Unit 2, could result in an increase of boron concentration above the RWT concentration limit (the Unit 2 RWT boron concentration is required to be between 1900 and 2200 ppm). In addition the flow path is not equipped with flow measurement instrumentation, so flow could not be readily determined.
- c) Alignment of a BAM Pump to the VCT will also result in the same issues as described in (b) above in regards to the depletion of the associated BAM Tank inventory. In this case, not only could the transfer of borated water from either one or both of the BAM Tanks result in a loss of the required boration sources specified by the Technical Specifications, but injecting the highly borated water into the VCT would introduce highly borated water into the suction of the Charging Pumps, resulting in the addition of negative reactivity into the RCS with the possible same results as described in (a) above. Furthermore, while the flow path does contain a flow element, the attached instrumentation is not suitable for inservice testing measurements because the calibration consists of only a zero check.

It is noted that in justifications (b) and (c) above, transference of the BAM Tank's contents, a fixed and limited amount of volume, will result in the reduction of the pump's suction pressure over the course of the test with the result of producing a variable flowrate which could not be easily compared and trended to previous flow measurements (i.e. poor repeatability). The BAM Tanks' level typically varies from test to test by as much as 15% to 20%.

- d) Alignment of a BAM Pump to recirculate flow back to the BAM Tanks is accomplished through a fixed resistance circuit, which is essentially the pumps' minimum flow test line. This is the same flowpath utilized to periodically mix the contents of each BAM Tank in order to prevent stratification of the highly borated water. While operation of the BAM Pumps can be accomplished without the introduction of highly borated water to the RCS or affecting the limits associated with the maintenance of the required number of borated water sources, there is no flowrate measuring instrumentation installed in these lines.

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5. **Proposed Alternative and Basis for Use**

Quarterly Group A testing of the BAM Pumps will be accomplished utilizing the fixed-resistance BAM Tank recirculation line. Pump differential pressure and vibration will be measured and compared to their respective reference values per ISTB-5121(c) and (d).

The removal of quarterly flow testing of these pumps has been deemed acceptable per NRC Generic Letter 89-04, Position 9, which allows elimination of minimum flow test line flowrate measurements provided inservice tests are performed during cold shutdowns or refueling periods under full or substantial flow conditions and pump flowrate is recorded and evaluated. The proposed alternative testing is consistent with the philosophy and intent of Generic Letter 89-04, Position 9.

Full flow testing will continue to be performed on a comprehensive test frequency, during refueling outages.

6. **Duration of Proposed Alternative**

The proposed alternative will be applicable to the Fifth 10-Year IST Interval.

7. **Precedents**

The alternative testing was previously requested for the Fourth 10-Year IST Interval as Pump Relief Request PR-06. The request was approved in NRC Safety Evaluation Report dated September 25, 2008 [ADAMS Accession No. ML082470089].