



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 1, 2011

Mr. Mano Nazar
Executive Vice President, Nuclear and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE UNIT NOS. 1 AND 2 – RELIEF FROM THE REQUIREMENTS OF
THE ASME CODE, RELIEF REQUEST NO. 9
(TAC NOS. ME5190 AND ME5191)

Dear Mr. Nazar:

By letter dated September 14, 2010, as supplemented by letter dated March 31, 2011, Florida Power and Light Company (the licensee) submitted Relief Request PR-9 for St. Lucie Unit Nos. 1 and 2 (St. Lucie 1 and 2), requesting the use of an alternative to certain requirements of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code). Specifically, pursuant to Title 10 of the *Code Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the subject request and has concluded, as set forth in the enclosed safety evaluation, that the proposed alternative described in Request PR-9 provides an acceptable level of quality and safety for the pumps listed in Table 3-1. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i), and is in compliance with the ASME OM Code's requirements. All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject request remain applicable.

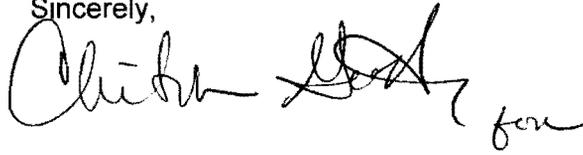
Therefore, the NRC staff authorizes the alternative described in Relief Request PR-9 for the remainder of the St. Lucie 1 and 2 fourth 10-year inservice testing (IST) program interval, which began on February 11, 2008, and ends on February 10, 2018.

M. Nazar

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If you have any questions regarding this matter, please contact Project Manager, Tracy Orf at (301) 415-2788 or by e-mail at tracy.orf@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Douglas A. Broaddus", followed by a stylized flourish and the word "for" written in a cursive script.

Douglas A. Broaddus, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-335 and 50-389

Enclosure: Safety Evaluation

cc w/enclosure: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ON REQUEST FOR RELIEF

THE FOURTH 10-YEAR INSERVICE TESTING INTERVAL

ST. LUCIE NUCLEAR POWER PLANT, UNIT NOS. 1 AND 2

FLORIDA POWER AND LIGHT COMPANY, ET AL.

DOCKET NOS. 50-335 AND 50-389

1.0 INTRODUCTION

By letter dated September 14, 2010 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML102700172), as supplemented by letter dated March 31, 2011 (ADAMS Accession No. ML110940043), Florida Power & Light Company (the licensee), submitted relief request PR-9 to the U.S. Nuclear Regulatory Commission (NRC) for relief from certain requirements of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) at St. Lucie Unit Nos. 1 and 2 (St. Lucie 1 and 2) for the St. Lucie 1 and 2 fourth 10-year inservice testing (IST) program interval. The licensee proposed an alternative testing method and acceptance criteria for the Intake Cooling Water (ICW) pumps ICW 1A, ICW 1B, ICW 1C, ICW 2A, ICW 2B, and ICW 2C.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i), the licensee requested to use the proposed alternative, request PR-9, on the basis that the alternative provides an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

Section 50.55a(f) of 10 CFR, "Inservice Testing Requirements," requires in part, that IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with the specified ASME Code and applicable addenda incorporated by reference in the regulations. In proposing alternatives or requesting relief under 10 CFR 50.55a(a)(3)(i), the licensee must demonstrate that the proposed alternatives provide an acceptable level of quality and safety. Section 50.55a allows the NRC to authorize alternatives and to grant relief from ASME OM Code requirements upon making necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides acceptable alternatives to ASME Code requirements. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, Revision 1, "Guidance for Inservice Testing at Nuclear Power Plants." ASME OM Code cases that are approved for use by the NRC are listed in Regulatory

ENCLOSURE

Guide (RG) 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," dated June 2003 (10 CFR 50.55a(b)(6)).

The Code of record for the St. Lucie 1 and 2 fourth 10-year IST program interval is the ASME OM Code, 2001 Edition through the 2003 Addenda, as required by 10 CFR 50.55a(f)(4)(ii). The St. Lucie 1 and 2 fourth 10-year IST interval began on February 11, 2008, and ends on February 10, 2018.

The NRC's findings with respect to authorizing the proposed alternative to the ASME OM Code are given below:

3.0 TECHNICAL EVALUATION

3.1 Alternative Request PR-9

3.1.1 Licensee's Relief Request and Proposed Alternative

ISTB-3300, "Reference Values," states, in part, that "Reference values shall be established within ± 20 percent of pump design flow rate for the comprehensive test," and "Reference values shall be established within ± 20 percent of pump design flow for the Group A and Group B tests, if practicable."

Table ISTB-3400-1, "Inservice Test Frequency," specifies that a Group A test be performed quarterly for Group A pumps and a comprehensive test be performed biennially for Group A and Group B pumps.

Table ISTB-3500-1, "Required Instrument Accuracy," specifies the instrument accuracies for Group A and comprehensive tests.

Table ISTB-5200-1, "Vertical Line Shaft and Centrifugal Pumps Test Acceptance Criteria," provides, in part, the acceptance criteria for Group A and comprehensive tests for vertical line shaft pumps.

ISTB-5221, "Group A Test Procedure," provides the specific requirements for the Group A test for vertical line shaft pumps.

ISTB-5223, "Comprehensive Test Procedure," provides the specific requirements for the comprehensive test for vertical line shaft pumps.

ASME OM Code Case, OMN-18, "Alternate Testing Requirements for Pumps Tested Quarterly Within ± 20 percent of Design Flow," states, in part, that "the Group A test may be performed quarterly within ± 20 percent of pump design flow rate, with instrumentation meeting the requirements of Table ISTB-3500-1 for the comprehensive and preservice tests, and no comprehensive test is required." This Code Case was published in the 2009 Edition of the ASME OM Code.

The licensee requested to use a modified quarterly Group A test for the IST in lieu of a quarterly Group A test and a biennial comprehensive test for the following pumps:

Table 3-1

Pump	Description	Category	Unit
ICW 1A	ICW Pump 1A	Group A	1
ICW 1B	ICW Pump 1B	Group A	1
ICW 1C	ICW Pump 1C	Group A	1
ICW 2A	ICW Pump 2A	Group A	2
ICW 2B	ICW Pump 2B	Group A	2
ICW 2C	ICW Pump 2C	Group A	2

The pumps listed in Table 3-1 are vertical line shaft pumps. The licensee proposes that in lieu of the requirements of ISTB-5221 and ISTB-5223, a modified Group A test would be performed quarterly, with instrumentation meeting the instrument accuracy requirements of Table ISTB-3500-1 for the biennial comprehensive test, and the comprehensive test would not be performed. The modified Group A test will be in accordance with ASME OM Code Case OMN-18, except that the acceptable range will be tighter than the Group A test ranges listed in Table ISTB-5200-1. The acceptable range for differential pressure (ΔP) would be 0.95 to 1.06 of the reference value (r), and the alert range would be $0.93\Delta P_r$ to less than $0.95\Delta P_r$.

All of the pumps in Table 3-1, tested quarterly using this alternative, would be tested within ± 20 percent of pump design flow rate, as is required for the biennial comprehensive test.

Use of this alternative provides for consistent acceptance criteria for pump ΔP tests. The licensee would consistently utilize the modified Group A test acceptance criteria (discussed above) for pump IST rather than having to utilize the comprehensive test criterion for one biennial test. The acceptance criteria for vibration tests would be the same as for Group A tests shown in Table ISTB-5200-1.

3.1.2 NRC Staff Evaluation

The licensee is proposing to perform a quarterly IST for all the pumps listed in Table 3-1 in accordance with a modified Group A test procedure, in lieu of a quarterly Group A test and a biennial comprehensive test.

Table ISTB-3400-1 of the ASME OM Code requires that for Group A pumps, a Group A test is performed every quarter, and a comprehensive test is performed biennially. Per ISTB-3300, Table ISTB-3510-1, and Table ISTB-5221-1, the Group A test is performed within ± 20 percent of the pump design flow rate (if practicable), the pressure instrument accuracy is ± 2 percent, and the upper limit for the acceptable range for differential pressure is $1.10\Delta P_r$. Also, per ISTB-3300, Table ISTB-3510-1, and Table ISTB-5221-1, the comprehensive test is performed within ± 20 percent of the pump design flow rate, the pressure instrument accuracy is $\pm 1/2$ percent, and the upper limit of the acceptable range for differential pressure is $1.03 \Delta P_r$. Vibration monitoring is performed during both the Group A test and the comprehensive test.

The licensee proposes that for the pumps listed in Table 3-1, a modified Group A quarterly test will be performed using ASME OM Code Case OMN-18, with modified Acceptable and Required Action ranges, and the biennial comprehensive test will not be performed. OMN-18 was published in the 2009 Edition of the ASME OM Code. This edition of the ASME OM Code has not been incorporated by reference into 10 CFR 50.55a, and OMN-18 has not been incorporated into RG 1.192. However, the NRC staff has reviewed OMN-18, and currently has no concerns with its usage, providing that the upper end values of the Group A test "Acceptable Ranges" for flow (Q) and differential pressure are $1.06Q_r$ and $1.06\Delta P_r$, respectively, and the high values of the "Required Action Ranges" for flow and differential pressure are greater than $1.06Q_r$ and $1.06\Delta P_r$, respectively. The licensee stated that these limits for the Acceptable Ranges and high values for the Required Action Ranges will be used in the modified Group A testing for the pumps listed in Table 3-1. The NRC staff has determined that, with the NRC-imposed conditions, OMN-18 can be used for the proposed alternative.

The modified Group A quarterly test will be performed within ± 20 percent of the pump design flow rate and the "Acceptable Range" for the modified Group A quarterly test is tighter than the "Acceptable Range" for the normal ASME OM Group A quarterly test. More accurate pressure instrumentation than is required for a comprehensive test ($\pm 1/2$ percent, versus ± 2 percent for the Group A test) will also be used. One of these modified quarterly tests will replace the comprehensive test every 2 years. The licensee will use a more limiting upper bound of $1.06\Delta P_r$ for the "Acceptable Range" for differential pressure, in lieu of $1.10\Delta P_r$, that is normally required by the ASME OM Code for Group A tests. However, this proposed upper bound of $1.06\Delta P_r$ is greater than the upper bound of $1.03\Delta P_r$ for the biennial comprehensive test. Using more accurate pressure gauges and a more limiting Acceptable Range during every modified quarterly Group A test compensates for the elimination of the comprehensive test (with its more limiting Acceptable Range upper bound for differential pressure of $1.03\Delta P_r$). Regular testing with more accurate instrumentation and tighter acceptance criteria will provide for better trending of pump performance. Instead of performing seven tests with pressure instruments with ± 2 percent accuracy and an Acceptable Range of 0.95 to $1.10\Delta P_r$, and then performing the eighth test with pressure instruments with $\pm 1/2$ percent accuracy and an Acceptable Range of 0.95 to $1.03\Delta P_r$, all eight tests will be performed with the same $\pm 1/2$ percent accurate instruments and an Acceptable Range of 0.95 to $1.06\Delta P_r$. Therefore, the NRC staff determined that the proposed alternative provides an acceptable level of quality and safety for testing the pumps listed in Table 3-1.

4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternative described in Request PR-9 provides an acceptable level of quality and safety for the pumps listed in Table 3-1. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(i), and is in compliance with the ASME OM Code's requirements. All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject request remain applicable.

Therefore, the NRC staff authorizes the alternative described in Request PR-9 for the remainder of the St. Lucie 1 and 2 fourth 10-year IST program interval, which began on February 11, 2008, and ends on February 10, 2018.

Principle Contributor: Robert Wolfgang

Date: July 1, 2011

M. Nazar

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If you have any questions regarding this matter, please contact Project Manager, Tracy Orf at (301) 415-2788 or by e-mail at tracy.orf@nrc.gov.

Sincerely,

/RA by CGratton for/

Douglas A. Broaddus, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-335 and 50-389

Enclosure: Safety Evaluation

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