

February 10, 2006

Mr. J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE NUCLEAR PLANT, UNIT 1 - SAFETY EVALUATION FOR RELIEF
REQUEST NO. 28 REGARDING STEAM GENERATOR MANWAY STUDS
(TAC NO. MC8815)

Dear Mr. Stall:

By a letter dated September 8, 2005, Florida Power and Light Company (the licensee) submitted Relief Request No. 28 for St. Lucie Unit 1, requesting relief from certain provisions of the American Society of Mechanical Engineers Code, Section XI. Specifically, the licensee proposed using surface examinations in lieu of the required volumetric examinations for the examination of steam generator primary manway studs.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's proposed alternative and has concluded that the proposed alternative provides an acceptable level of safety and quality. Therefore, pursuant to Title 10 of the *Code of Federal Regulations*, Part 50, Section 55a(a)(3)(i), the proposed alternative is authorized for the remainder of the third 10-year inservice inspection interval at St. Lucie Unit 1, which began on February 11, 1998, and ends on February 10, 2008.

Further details on the bases for the NRC staff's conclusions are contained in the enclosed safety evaluation. If you have any questions regarding this issue, please feel free to contact Brendan Moroney at (301) 415-3974.

Sincerely,

/RA/

Michael L. Marshall, Jr., Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-335

Enclosure: Safety Evaluation

cc: See next page

February 10, 2006

Mr. J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer
Florida Power and Light Company
P.O. Box 14000
Juno Beach, Florida 33408-0420

SUBJECT: ST. LUCIE NUCLEAR PLANT, UNIT 1 - SAFETY EVALUATION FOR RELIEF
REQUEST NO. 28 REGARDING STEAM GENERATOR MANWAY STUDS
(TAC NO. MC8815)

Dear Mr. Stall:

By a letter dated September 8, 2005, Florida Power and Light Company (the licensee) submitted Relief Request No. 28 for St. Lucie Unit 1, requesting relief from certain provisions of the American Society of Mechanical Engineers Code, Section XI. Specifically, the licensee proposed using surface examinations in lieu of the required volumetric examinations for the examination of steam generator primary manway studs.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's proposed alternative and has concluded that the proposed alternative provides an acceptable level of safety and quality. Therefore, pursuant to Title 10 of the *Code of Federal Regulations*, Part 50, Section 55a(a)(3)(i), the proposed alternative is authorized for the remainder of the third 10-year inservice inspection interval at St. Lucie Unit 1, which began on February 11, 1998, and ends on February 10, 2008.

Further details on the bases for the NRC staff's conclusions are contained in the enclosed safety evaluation. If you have any questions regarding this issue, please feel free to contact Brendan Moroney at (301) 415-3974.

Sincerely,

/RA/

Michael L. Marshall, Jr., Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-335

Enclosure: Safety Evaluation

cc: See next page

DISTRIBUTION:

PUBLIC	LPL II-2 R/F	RidsRgn2MailCenter (JMunday)
TChan	RidsNrrDorLpld	BClayton(paper copy)
DNaujock	RidsOgcRp	RidsAcrsAcnwMailCenter
BWetzel	RidsNrrDorl	RidsNrrPMBMoroney

ADAMS Accession No.:ML060270486

NRR-028

OFFICE	LPL2-2/PM	LPL2-2/LA	CPNB/C	OGC	LPL2-2/BC
NAME	BMoroney	BClayton	TChan by memo dated	LClark	MMarshall
DATE	1/30/06	1/30/06	1/ 18 /06	2/06/06	2/10/06

OFFICIAL RECORD COPY

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INSERVICE INSPECTION PROGRAM

RELIEF REQUEST NO. 28

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE NUCLEAR PLANT, UNIT 1

DOCKET NO. 50-335

1.0 INTRODUCTION

By letter dated September 8, 2005, Florida Power & Light Company (the licensee) submitted Relief Request No. 28 for the St. Lucie Nuclear Plant, Unit 1. The licensee proposed an alternative to certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) requirements. Specifically, the licensee proposed using surface examinations in lieu of the required volumetric examinations for the examination of steam generator primary manway studs. The request is for the third 10-year inservice inspection (ISI) interval, which began February 11, 1998, and ends February 10, 2008.

2.0 REGULATORY REQUIREMENTS

The ISI of ASME Code Class 1, Class 2, and Class 3 components will be performed in accordance with the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," and applicable edition and addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(g), except where specific written relief has been granted by the U.S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(g)(6)(i). Also, 10 CFR 50.55a(a)(3) states, in part, that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) will meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code

ENCLOSURE

incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The ASME Code of record for St. Lucie Unit 1 is the 1989 Edition with no Addenda. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

3.0 TECHNICAL EVALUATION

3.1 Component/Part for Which Relief is Requested

The applicable part is the steam generator primary manway studs

3.2 Applicable ASME Code Requirements

The applicable requirement is the 1989 Edition with no Addenda of Section XI of the ASME Code, Table IWB-2500-1, Examination Category B-G-1, Item B6.90, which requires volumetric examination of all retaining bolting greater than 2 inches in diameter.

3.3 Licensee's Proposed Alternative

The licensee proposed performing a surface examination of the steam generator primary manway studs in accordance with ASME Section V, 1989 Edition with no Addenda in lieu of the required volumetric examination. The acceptance standard applied for flaws identified during the surface examination will be IWB-3515 as defined by Table IWB-2500-1, Examination Category B-G-1, Item No. B6.90.

3.4 Licensee's Basis for Relief

The configuration of the steam generator primary manway studs has four different diameters ranging from 2.25-inch minor thread diameter to 1.75-inch shank diameter. There is a 0.25-inch diameter center-drilled hole for the entire length of the stud. ASME Section XI, Table IWB-2500-1, Examination Category B-G-1, requires a volumetric examination for this Class 1 stud. Typically, the ultrasonic testing (UT) method is employed for this examination. An alternative examination volume is identified in ASME Code Case N-307-2, "Revised Ultrasonic Examination Volume for Class 1 Bolting, Table IWB-2500-1, Examination Category B-G-1, When the Examinations are Conducted from the End of the Bolt or Stud or From the Center-Drilled Hole," which is endorsed by Regulatory Guide 1.147, Revision 13, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1." The examination volume as defined by Code Case N-307-2 is the cylindrical region 0.25-inch deep from the base of the threads, by the length extending from the edge of the nut in the bolted position to the bottom of the threaded section in the flange. The purpose of the volumetric examination is to detect surface-breaking flaws. Implementation of a surface examination method as an alternative to the UT method will detect surface-breaking flaws.

Other Class 1 studs, such as the reactor vessel closure studs, when removed, require surface and volumetric examinations in the 1989 Edition of the ASME Code, Section XI. However, in the 2000 Addenda and later editions of ASME Code Section XI, the examination method to be employed was changed to either surface or volumetric. Implementation of a surface

examination in lieu of the volumetric examination for the examinations of the St. Lucie Unit 1 steam generator primary manway studs will provide an equivalent level of integrity assurance as that required by the ASME Code, Section XI for the reactor vessel head closure studs.

Therefore, implementation of the proposed alternative will provide an adequate level of quality and safety for examination of the steam generator primary manway studs.

3.5 NRC Staff Evaluation

The licensee is requesting to use a surface examination in lieu of the ASME Code-required volumetric examinations to detect cracks in steam generator primary manway studs. The concentration of stress at the root of the stud threads (minor thread diameter) are stress risers and preferred sites for crack initiation. Cracks at the root tend to grow perpendicular to the stud ends. If a crack were to initiate, it can easily be detected using a UT technique that was qualified to Section XI, Appendix VIII, Supplement 8, either at the stud end or from the center-drilled hole. The benefit of UT is that it provides an examination method for inspecting the studs without removing them. If cracks are detected with UT, paragraph IWB-3515.2(c) requires the licensee to remove the affected studs and confirm the presence of the cracks using surface examination methods.

The function of a surface examination is to find surface-connected cracks. If any cracks are detected, the ASME Code provides acceptance criteria in paragraph IWB-3515(a). The ASME Code recognizes the effectiveness of surface examinations as an independent examination for detecting cracks. In the 1998 Edition with 2000 Addenda of the ASME Code, Section XI, Examination Category B-G-1, Item B6.30, the examination of the reactor pressure vessel closure studs was changed from volumetric and surface to either a volumetric or surface examination. The NRC staff incorporated the 1998 Edition with 2000 Addenda by reference in 10 CFR 50.55a without taking exception to Item B6.30. Based on the above, the licensee's proposed alternative to use a surface examination in lieu of volumetric examination does not diminish the effectiveness in detecting cracks in the steam generator primary manway studs.

4.0 CONCLUSION

The NRC staff has determined that the proposed alternative to use a surface examination in lieu of a volumetric examination of the steam generator primary manway studs will provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), Relief Request No. 28 is authorized for St. Lucie Unit 1 for the third 10-year ISI interval, which began February 11, 1998, and ends February 10, 2008.

All other requirements of the ASME Code for which relief has not been specifically requested remain applicable, including third party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Don Naujock

Date: February 10, 2006

Mr. J. A. Stall
Florida Power and Light Company

cc:
Senior Resident Inspector
St. Lucie Plant
U.S. Nuclear Regulatory Commission
P.O. Box 6090
Jensen Beach, Florida 34957

Craig Fugate, Director
Division of Emergency Preparedness
Department of Community Affairs
2740 Centerview Drive
Tallahassee, Florida 32399-2100

M. S. Ross, Managing Attorney
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Marjan Mashhadi, Senior Attorney
Florida Power & Light Company
801 Pennsylvania Avenue, NW.
Suite 220
Washington, DC 20004

Mr. Douglas Anderson
County Administrator
St. Lucie County
2300 Virginia Avenue
Fort Pierce, Florida 34982

Mr. William A. Passetti, Chief
Department of Health
Bureau of Radiation Control
2020 Capital Circle, SE, Bin #C21
Tallahassee, Florida 32399-1741

Mr. William Jefferson, Jr.
Site Vice President
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957-2000

ST. LUCIE PLANT

Mr. G. L. Johnston
Plant General Manager
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957

Mr. Terry Patterson
Licensing Manager
St. Lucie Nuclear Plant
6351 South Ocean Drive
Jensen Beach, Florida 34957

Mark Warner, Vice President
Nuclear Operations Support
Florida Power and Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Mr. Rajiv S. Kundalkar
Vice President - Nuclear Engineering
Florida Power & Light Company
P.O. Box 14000
Juno Beach, FL 33408-0420

Mr. J. Kammel
Radiological Emergency
Planning Administrator
Department of Public Safety
6000 Southeast Tower Drive
Stuart, Florida 34997