



May 24, 2001

L-2001-131
10 CFR 50.4
10 CFR 50.55a

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

RE: St. Lucie Unit 1
Docket No. 50-335
In-Service-Inspection Program
Third Ten-Year Interval
Replacement of RCS Hot Leg Instrument Nozzle RC-126

During the St. Lucie Unit 1 spring 2001 refueling outage (SL1-17), evidence of reactor coolant system (RCS) pressure boundary leakage was identified while the unit was shutdown. Further evaluation revealed that a 3/4-inch RCS instrument nozzle RC-126 for steam generator differential pressure on the hot leg had developed a leak. The nozzle was replaced using a half-nozzle technique and the bounding analytical evaluation described in Combustion Engineering Owners Group (CEOG) Topical Report CE NPSD-1198-P, *Low-Alloy Steel Component Corrosion Analysis Supporting Small-Diameter Alloy 600/690 Nozzle Repair/Replacement Programs*. FPL has reviewed the analytical evaluation and the evaluation procedures in CE NPSD-1198-P and has determined that they bound the conditions at St. Lucie.

The evaluation procedures used for the IWB-3600 analytical evaluation of flaws were submitted for generic NRC approval on February 15, 2001 by the CEOG letter CEOG-01-052. Section 3 of CEOG Topical Report CE NPSD-1198-P provides the carbon and low alloy steel evaluation. The CEOG requested the review of the topical report to be completed by June 15, 2001 to support CEOG member refueling outages. FPL is a member of the CEOG task for the topical report.

Attachment 1 provides the responses to specific NRC questions from the April 27, 2001 conference call discussing the St. Lucie Unit 1 hot leg nozzle replacement. Attachments 2 and 4 provide excerpted pages from the nonproprietary and proprietary versions of the Westinghouse Design Report DR-SL-9449-1260, Revision 00, respectively.

Attachment 4 Contains 10 CFR 2.790 Information

A047

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Westinghouse Electric Company, LLC has determined that the design report information contained in Attachment 4 is proprietary in nature. Therefore, it is requested that this document be withheld from public disclosure in accordance with the provisions of 10 CFR 2.790(a)(4). The Westinghouse reasons for the classification of this information as proprietary and the signed affidavit are included as Attachment 3.

This submittal contains no commitments. Please contact us if there are any questions.

Very truly yours,



Rajiv S. Kundalkar
Vice President
St. Lucie Plant

RSK/GRM

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

Attachment 4 Contains 10 CFR 2.790 Information

**St. Lucie Unit 1
Response to the NRC Information Request
Replacement of RCS Hot Leg Instrument Nozzle RC-126**

The following provides the responses to specific NRC questions discussed during the April 27, 2001 conference call discussing the St. Lucie Unit 1 hot leg nozzle replacement.

During the St. Lucie Unit 1 spring 2001 refueling outage (SL1-17) evidence of reactor coolant system (RCS) pressure boundary leakage was identified while the unit was shutdown. Further evaluation revealed that a 3/4-inch RCS instrument nozzle for steam generator differential pressure on the hot leg had developed a leak. The nozzle was replaced using a half-nozzle technique and the bounding analytical evaluation described in Combustion Engineering Owners Group (CEOG) Topical Report CE NPSD-1198-P, *Low-Alloy Steel Component Corrosion Analysis Supporting Small-Diameter Alloy 600/690 Nozzle Repair/Replacement Programs*. FPL has reviewed the analytical evaluation and the evaluation procedures in CE NPSD-1198-P and has determined that they bound the conditions at St. Lucie.

NRC Request 1:

Provide a flaw analysis to satisfy ASME Section XI requirements.

FPL Response 1:

The half-nozzle replacement technique is performed under ASME Section XI Article IWA-7000, Replacement. The half-nozzle replacement moves the pressure boundary to the outside diameter of the component and abandons the nozzle remnant, which contains a flaw. Although this replacement meets all ASME Section XI Code requirements and no flaw evaluation is specifically required by the Code, the CEOG conservatively prepared a bounding flaw evaluation and corrosion assessment using the guidance of ASME Section XI to address any open issues with this replacement method. The bounding generic analytical evaluation of flaws and evaluation procedures for the IWB 3600 analytical evaluation are contained in Section 3 of CEOG Topical Report CE NPSD-1198-P. The topical report was submitted for generic NRC approval on February 15, 2001 by the CEOG letter CEOG-01-052. Submittal of the topical report for generic approval by the CEOG is considered to meet the intent of ASME Section XI IWB-3610(e). Funding for the review of this topical report is also provided by the CEOG as identified in the February 15, 2001 letter. FPL is a member of the CEOG task for the topical report.

It should be noted that a similar evaluation was submitted by FPL in 1995¹ and approved by an SER dated August 23, 1995². CEOG Topical Report CE NPSD-1198-P would also be applicable to that replacement.

NRC Request 2:

Provide the analysis to demonstrate that requirements for reinforcement and area reduction for depth of flaw satisfy ASME Section III and Section XI.

FPL Response 2:

The design of the replacement of this hot leg nozzle was addressed in Design Report Number DR-SL-9449-1260 Revision 00, Addendum to CENC-1253, *Analytical Report for Florida Power and Light Company St. Lucie Plant Unit 1 Piping*. Attachments 2 and 4 provide the applicable pages from Design Report Number DR-SL-9449-1260 Revision 00, which addresses the ASME Section III required reinforcement area calculation. The calculation conservatively assumes no reinforcement area for the abandoned Alloy 600 internal attachment weld, weld prep buttering, or cladding.

¹ FPL Letter L-95-72, D. A. Sager to US NRC, *St. Lucie Unit 2 Docket No. 50-389, Fracture Mechanics Analysis of Pressurizer Instrument Nozzle Flaws*, March 2, 1995.

² NRC Letter to J. H. Goldberg *Safety Evaluation by the Office of NRR of the FPL Submittal dated March 2, 1995, St. Lucie Unit 2, Fracture Mechanics Evaluation of Pressurizer Instrument Nozzles*, August 23, 1995.

Excerpt from Calculation DR-SL-9449-1260, Rev 0
WESTINGHOUSE NON-PROPRIETARY

It is hereby certified that the analyses described
in this design report have been properly and completely
reconciled with the requirements of Section III of the
ASME Boiler and Pressure Vessel Code, 1971 Edition,
with addenda through Summer 1972.

Report: 35 pages
Appendices: 0 pages
Attachments: 18 pages
Diskettes Attached: Yes ☒ No

DESIGN REPORT NO. DR-SL-9449-1260, REV. 00

ADDENDUM TO CENC-1253

ANALYTICAL REPORT FOR

FLORIDA POWER AND LIGHT COMPANY

ST. LUCIE PLANT UNIT NO. 1 PIPING

Quality Class: QC-1 (Safety-Related)

This document is the property of Westinghouse Electric Co., Nuclear Services, Chattanooga, Tennessee, and is to be used only for the purposes of the agreement with Westinghouse pursuant to which it is furnished.

PREPARED BY: K. E. Coe *K E Coe* DATE: 4/20/01

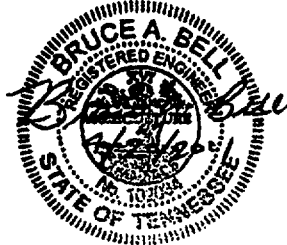
VERIFICATION STATUS: COMPLETE

The Safety-Related design information contained in this document has been verified to be correct by means of Design Review using the Checklist in QP-3.9 of QPM-101.

Name J. W. Bass Signature *JW Bass* Date 4/20/01
Independent Reviewer

APPROVED BY: D. P. Siska *DP Siska* DATE: 4-20-2001

This design report is certified to be in compliance with the requirements of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, Nuclear Power Plant Components, 1971 Edition, up to and including the 1972 Summer Addenda.



Certified by BRUCE A. BELL
Registration No. 102034
State of TENNESSEE
Date 4/20/2001

**WESTINGHOUSE ELECTRIC COMPANY
CHATTANOOGA, TENNESSEE**

CSE-01-035

NON-PROPRIETARY

3.0 REFERENCES

1. CENP Report No. CENC-1253, "Analytical Report for Florida Power and Light Company Unit No. 1 Piping", January 1976.
2. ASME Boiler and Pressure Vessel Code, Section III, Nuclear Power Plant Components, 1971 Edition and Addenda through Summer of 1972.
- 3.
- 4.
- 5.
- 6.
7. ASME Boiler and Pressure Vessel Code, Section III, Nuclear Power Plant Components, 1989 Edition.
- 8.
- 9.
10. ASME Boiler and Pressure Vessel Code, Section III for Nuclear Vessels, Code Case N-474-1, March 5, 1990, Supplement 5, for Inconel 690 material.
- 11.
- 12.
- 13.
- 14.

Non-Proprietary

4.5 TENTATIVE SIZING

Reference Pages A-42 – A-44 of Reference 1

4.5.1 Design Requirements (Per Paragraph NB-3324.1, Reference 2)

Flow Measurement Nozzle:

4.5.2 Required Reinforcement Area (Per Paragraph NB-3333.2, Reference 2)

In the required area of reinforcement calculation, a maximum hole diameter of 1.000 inches (Reference 5) is used in the place where the half-nozzle penetrates the pipe and the repair weld is to be made.

Where: L_A = Limit of Reinforcement on each side of penetration in the MNSA clamp hole plane angle

Therefore, the reinforcement area requirement is acceptable.

Non-Proprietary

4.5 TENTATIVE SIZING (Continued)

4.5.2 Required Reinforcement Area (Continued)

Limits of Reinforcement: Reference 2, Paragraph NB-3643.3(c)(1)(b) and NB-3332.1(b)

Reinforcement Overlap Considerations (Reference 2, NB-3643.3(d)(3) and NB-3335(f))

Metal available for reinforcement shall not be considered as applying to more than one opening. For the partial penetration nozzles and the neighboring Shutdown Cooling Outlet

I, Philip W. Richardson, depose and say that I am the Licensing Project Manager of Westinghouse Electric Company, LLC, duly authorized to make this affidavit, and have reviewed or caused to have reviewed the information that is identified as proprietary and described below.

I am submitting this affidavit in conformance with the provisions of 10 CFR 2.790 of the Commission's regulations for withholding this information. I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged, or as confidential commercial or financial information.

The information for which proprietary treatment is sought, and which document has been appropriately designated as proprietary, is contained in the following:

- *Excerpted pages to address required reinforcement area from Design Report No. DR-SL-9449-1260, Rev 00, "Addendum to CENC-1253, Analytical Report for Florida Power & Light Co., St Lucie Plant, Unit No. 1 Piping," dated 4/20/01.*

Pursuant to the provisions of Section 2.790(b)(4) of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information included in the document listed above should be withheld from public disclosure.

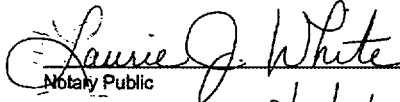
- i. The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse. It consists of information concerning the application, qualification and evaluation of repairs to Alloy 600 instrumentation nozzles at St. Lucie-1.
- ii. The information consists of specifications, design reports and calculations or other similar data for the design, evaluation of, or application to instrumentation nozzle assemblies, the application of which results in substantial competitive advantage to Westinghouse.
- iii. The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public.
- iv. The information is being transmitted to the Commission in confidence under the provisions of 10 CFR 2.790 with the understanding that it is to be received in confidence by the Commission.
- v. The information, to the best of my knowledge and belief, is not available in public sources, and any disclosure to third parties has been made pursuant to regulatory provisions or proprietary agreements that provide for maintenance of the information in confidence.
- vi. Public disclosure of the information is likely to cause substantial harm to the competitive position of Westinghouse because:
 - a. A similar product is believed under development by major competitors of Westinghouse.
 - b. Development of this information by Westinghouse required hundreds of thousands of dollars and thousands of manhours of effort. A competitor would have to undergo similar expense in generating equivalent information.
 - c. The information consists of technical data and qualification information for repair or replacement of Alloy 600 nozzle assemblies, the application of which provides Westinghouse a competitive economic advantage. The availability of such information to competitors would enable them to design their product to better compete with Westinghouse, take marketing or other actions to improve their product's position or impair the position of Westinghouse's product, and avoid developing similar technical analysis in support of their processes, methods or apparatus.

- d. In pricing Westinghouse's products and services, significant research, development, engineering, analytical, manufacturing, licensing, quality assurance and other costs and expenses must be included. The ability of Westinghouse's competitors to utilize such information without similar expenditure of resources may enable them to sell at prices reflecting significantly lower costs.
- e. Use of the information by competitors in the international marketplace would increase their ability to market competing systems by reducing the costs associated with their technology development.

Sworn to before me this
9th day of May 2001



Philip W. Richardson
Licensing Project Manager
Westinghouse Electric Company, LLC


Notary Public

My commission expires: 8/31/04