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TECHNICAL EVALUATION REPORT ON THE SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN: FLORIDA POWER CORPORATION, CRYSTAL RIVER NUCLEAR PLANT, UNIT 3, DOCKET NUMBER 50-302

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ABSTRACT

This report presents the results of the evaluation of the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection (ISI) Program Plan*, submitted February 9, 1988, including the requests for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI requirements that the Licensee has determined to be impractical. The *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection Program Plan* is evaluated in Section 2 of this report. The ISI Program Plan is evaluated for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of examination sample, (c) correctness of the application of system or component examination exclusion criteria, and (d) compliance with ISI-related commitments identified during the Nuclear Regulatory Commission (NRC) review. The requests for relief are evaluated in Section 3 of this report.

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SUMMARY

The Licensee, Florida Power Corporation, has prepared the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection (ISI) Program Plan*, to meet the requirements of the 1983 Edition, Summer 1983 Addenda (83S83) of the ASME Code, Section XI, except that the extent of examination for Class 1, Examination Category B-J, and Class 2, Examination Category C-F and C-G welds in the Residual Heat Removal (RHR), Emergency Core Cooling (ECC), and Containment Heat Removal (CHR) systems has been determined by the requirements of the 1974 Edition through Summer 1975 Addenda (74S75) as permitted and required by 10 CFR 50.55a(b). The second 10-year interval began March 14, 1987 and ends March 13, 1997.

The information in the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection Program Plan*, submitted February 9, 1988, was reviewed. Included in the review were the requests for relief from the ASME Code Section XI requirements that the Licensee has determined to be impractical. As a result of this review, a request for additional information was prepared describing the information and/or clarification required from the Licensee in order to complete the review. The Licensee provided the requested information in the submittal dated June 7, 1991.

Based on the review of the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection Program Plan*, the Licensee's response to the Nuclear Regulatory Commission's request for additional information (RAI), and the recommendations for granting relief from the ISI examinations that cannot be performed to the extent required by Section XI of the ASME Code, it is concluded that the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection Program Plan* is acceptable and in compliance with 10 CFR 50.55a(g)(4).

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SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN:
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1. INTRODUCTION

Throughout the service life of a water-cooled nuclear power facility, 10 CFR 50.55a(g)(4) (Reference 1) requires that components (including supports) that are classified as American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Class 1, Class 2, and Class 3 meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code Section XI, *Rules for Inservice Inspection of Nuclear Power Plant Components* (Reference 2), to the extent practical within the limitations of design, geometry, and materials of construction of the components. This section of the regulations also requires that inservice examinations of components and system pressure tests conducted during successive 120-month inspection intervals shall comply with the requirements in the latest edition and addenda of the Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of the 120-month inspection interval, subject to the limitations and modifications listed therein. The components (including supports) may meet requirements set forth in subsequent editions and addenda of this Code that are incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein. The Licensee, Florida Power Corporation, has prepared the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection (ISI) Program Plan*, to meet the requirements of the 1983 Edition, Summer 1983 Addenda (83S83) of the ASME Code Section XI, except that the extent of examination of certain Code Class 1 and Code Class 2 piping welds has been determined by the 1974 Edition, Summer 1974 Addenda as permitted and required by 10 CFR 50.55a(b). The Second 10-year interval began March 14, 1987 and ends March 13, 1997.

As required by 10 CFR 50.55a(g)(5), if the licensee determines that certain Code examination requirements are impractical and requests relief from them,

the licensee shall submit information and justifications to the Nuclear Regulatory Commission (NRC) to support that determination.

Pursuant to 10 CFR 50.55a(g)(6), the NRC will evaluate the licensee's determination that Code requirements are impractical to implement. Alternatively, pursuant to 10 CFR 50.55a(a)(3), the NRC will evaluate he Licensee's determination that either (i) the proposed alternatives provide an acceptable level of quality and safety or that (ii) Code compliance would result in hardship or unusual difficulty without a compensating increase in safety. The NRC may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

The information in the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval ISI Program Plan*, (Reference 3), submitted February 9, 1988, was reviewed, including the requests for relief from the ASME Code Section XI requirements that the Licensee has determined to be impractical. Supplemental ISI information was received in a letter dated May 25, 1990 (Reference 4). Review was also completed on letters to the Licensee dated April 19, 1988 (Reference 5) and September 28, 1988 (Reference 6) regarding Requests for Relief Nos. 88-010, 88-030 and 88-040, and NRC Safety Evaluation Reports (SERs) dated May 26, 1987 (Reference 7), May 30, 1990 (Reference 8) and September 13, 1991 (Reference 9).

The review of the ISI Program Plan was performed using the Standard Review Plans of NUREG-0800 (Reference 10), Section 5.2.4, "Reactor Coolant Boundary Inservice Inspections and Testing," and Section 6.6, "Inservice Inspection of Class 2 and 3 Components."

In a letter dated April 25, 1991 (Reference 11), the NRC requested additional information that was required in order to complete the review of the ISI Program Plan. The requested information was provided by the Licensee in the "Response to Request for Information Related to the Inservice Inspection Program Plan" dated June 7, 1991 (Reference 12).

The *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval ISI Program Plan* is evaluated in Section 2 of this report. The ISI Program Plan is evaluated for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of examination sample, (c) correctness of the application of system or component examination exclusion criteria, and (d) compliance with ISI-related commitments identified during the NRC's previous reviews.

The requests for relief are addressed in Section 3 of this report. Unless otherwise stated, references to the Code refer to the ASME Code, Section XI, 1983 Edition, including Addenda through Summer 1983. Specific inservice test (IST) programs for pumps and valves are being evaluated in other reports.

2. EVALUATION OF INSERVICE INSPECTION PROGRAM PLAN

This evaluation consisted of a review of the applicable program documents to determine whether or not they are in compliance with the Code requirements and any previous license conditions pertinent to ISI activities. This section describes the submittals reviewed and the results of the review.

2.1 Documents Evaluated

Review has been completed on the following information regarding the Second 10-year ISI Program Plan:

(a) *Crystal River Nuclear Plant, Unit 3, Second 10-year Interval ISI Program Plan*, submitted February 9, 1988 (Reference 3);

(b) Letter (Reference 4) dated May 25, 1990, containing supplemental ISI information.

(c) Letter (Reference 5) dated April 19, 1988, containing approval for Licensee to use ASME Code Case N-356.

(d) Letter (Reference 6) dated September 28, 1988, containing approval for Licensee to use ASME Code Case N-416 and N-424.

(e) Letter (Reference 7) dated May 26, 1987, containing Safety Evaluation of Relief Requests #220 and #230.

(f) Letter (Reference 8) dated May 30, 1990, containing Safety Evaluation of Relief Request 90-10.

(g) Letter (Reference 9) dated September 13, 1991, Containing Safety Evaluation of Relief Requests 90-020, 90-050 and 90-060.

(h) Letter (Reference 12) dated June 7, 1991, containing Licensee's response to NRC's RAI.

2.2 Compliance with Code Requirements

2.2.1 Compliance with Applicable Code Editions

The Inservice Inspection Program Plan shall be based on the Code editions defined in 10 CFR 50.55a(g)(4) and 10 CFR 50.55a(b). Based on the starting date of March 14, 1987, the Code applicable to the second interval ISI program is the 1983 Edition, Summer 1983 Addenda. As stated in Section 1 of this report, the Licensee has prepared the *Crystal River Nuclear Plant, Unit 3, Second 10-Year ISI Program Plan* to meet the requirements of 1983 Edition, Summer 1983 Addenda of the Code, except that the extent of examination for Class 1, Examination Category B-J, and Class 2, Examination Category C-F and C-G welds in the Residual Heat Removal (RHR), Emergency Core Cooling (ECC), and Containment Heat Removal (CHR) systems has been determined by the requirements of the 1974 Edition through Summer 1975 Addenda (74S75) as permitted and required by 10 CFR 50.55a(b).

2.2.2 Acceptability of the Examination Sample

Inservice volumetric, surface, and visual examinations shall be performed on ASME Code Class 1, 2, and 3 components and their supports using sampling schedules described in Section XI of the ASME Code and 10 CFR 50.55a(b).

In the NRC request for additional information, the Licensee was requested to confirm that a representative sampling of welds was being examined in the Reactor Building Spray System (RBS) (equivalent to CHR at Crystal River, Unit 3) during the second 10-year inspection interval. In a letter dated June 7, 1991 (Reference 12), the Licensee committed to performing volumetric examinations of 7.5% of the welds in the RBS system during the subject interval.

Based on the review of the *Crystal River, Unit 3, Second 10-year Interval ISI Program Plan* and the commitment to perform augmented volumetric examinations on the RBS system, it has been determined that sample size and weld selection have been implemented in

accordance with the Code and 10 CFR 50.55a(b) and appear to be correct.

2.2.3 Exclusion Criteria

The criteria used to exclude components from examination shall be consistent with Paragraphs IWB-1220, IWC-1220, IWC-1230, IWD-1220, and 10 CFR 50.55a(b). With the commitments made by the Licensee in the June 7, 1991 submittals (Reference 12) in response to the NRC concerns regarding the exclusion of the RBS system, the exclusion criteria have been applied by the Licensee in accordance with the Code as discussed in the ISI Program Plan, and appear to be correct.

2.2.4 Augmented Examination Commitments

In addition to the requirements as specified in Section XI of the ASME Code, the Licensee has committed to perform the following augmented examinations:

(a) The reactor pressure vessel will be examined to the requirements of Regulatory Guide 1.150, *Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination*, Revision 1 (Reference 13);

(b) Augmented volumetric examinations will be performed on a minimum sampling of 7.5% of the piping welds on the Reactor Building Spray (RBS) system; and

(c) Eddy current inspection of steam generator tubes, inspection of high pressure injection thermal sleeve, and ultrasonic inspections of upper core barrel bolts, lower core barrel bolts, lower thermal shield studs, upper thermal shield studs, SSHT bolts and studs, flow distributor bolts and guide block bolts.

2.3 Conclusions

Based on the review of the documents listed above, it is concluded that the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval ISI Program Plan*, is acceptable and in compliance with 10 CFR 50.55a(g)(4).

3. EVALUATION OF RELIEF REQUESTS

The requests for relief from the ASME Code requirements that the Licensee has determined to be impractical for the second 10-year inspection interval are addressed in the following sections.

3.1 Class 1 Components

3.1.1 Reactor Pressure Vessel

3.1.1.1 Request for Relief No. 90-010, Examination Category B-F, Item B1.6, Core Flood Nozzle-to-Safe End Weld

Note: Request for relief 90-10 was previously granted in a NRC Safety Evaluation Report (SER) dated May 30, 1990. (Reference 8)

3.1.1.2 Request for Relief No. 90-060, Examination Category F-A, Item F1.30, Reactor Vessel Support Skirt

Note: Request for relief 90-60 was previously granted in a NRC SER dated September 13, 1991. (Reference 9)

3.1.2 Pressurizer (No relief requests)

3.1.3 Heat Exchangers and Steam Generators (No relief requests)

3.1.4 Piping Pressure Boundary (No relief requests)

3.1.5 Pump Pressure Boundary

3.1.5.1 Request for Relief No. 90-050, Examination Category B-L-1 and B-L-2, Items B12.10 and B12.20, Pressure Retaining Welds and Internal Surfaces of Class 1 Pump Casings

Note: Request for relief 90-050 was previously granted in a NRC SER dated September 13, 1991. (Reference 9)

3.1.6 Valve Pressure Boundary (No relief requests)

3.1.7 General (No relief requests)

3.2 Class 2 Components (No relief requests)

3.3 Class 3 Components (No relief requests)

3.4 Pressure Tests

3.4.1 Class 1 System Pressure Tests

3.4.1.1 Request for Relief No. 90-020, Examination Category B-P and C-H, Items 15.51 and 7.20, Hydrostatic Testing of Class 1 and Class 2 Components

Note: Request for relief 90-020 was previously granted in a NRC SER dated September 13, 1991. (Reference 9)

3.4.2 Class 2 System Pressure Tests

3.4.2.1 Request for Relief No. 88-030, Hydrostatic testing of Class 2 piping per ASME Code Case N-416

Note: Request for relief 88-030 was previously evaluated and granted in a letter dated September 28, 1988. (Reference 6)

3.4.3 Class 3 System Pressure Tests (No relief requests)

3.4.4 General (No relief requests)

3.5 General

3.5.1 Ultrasonic Examination Techniques (No relief requests)

3.5.2 Exempted Components (No relief requests)

3.5.3 Other

3.5.3.1 Request for Relief 88-010, Recertification of Level II Personnel, Extended per ASME Code Case N-356

Note: Request for relief 88-010 was previously evaluated and granted in a letter dated April 19, 1988. (Reference 5)

3.5.3.2 Request for Relief 88-040, Certification of visual examination personnel, ASME Code Case N-424 applies

Note: Request for relief 88-040 was previously evaluated and granted in a letter dated September 23, 1988. (Reference 6)

4. CONCLUSION

Pursuant to 10 CFR 50.55a(g)(6) or, alternatively, 10 CFR 50.55a(a)(3), it has been determined that certain inservice examinations cannot be performed to the extent required by Section XI of the ASME Code. In these cases for which relief is requested, the Licensee has demonstrated that specific Section XI requirements are impractical. Request for Relief No. 90-010 was previously granted in a NRC SER dated May 30, 1990. Request for Relief Nos. 88-030 and 88-040 were previously granted in a letter dated September 28, 1988. Request for Relief No. 88-010 was previously granted in a letter dated April 19, 1988. Request for Relief Nos. 90-020, 90-050 and 90-060 were previously granted in a NRC SER dated September 13, 1991. No new relief requests were evaluated in this report.

The Licensee should continue to monitor the development of new or improved examination techniques. As improvements in these areas are achieved, the Licensee should incorporate these techniques in the ISI program plan examination requirements.

Based on the review of the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection Program Plan*, the Licensee's response to the NRC's Request for Additional Information, and the recommendations for granting relief from the ISI examination requirements that have been determined to be impractical, it is concluded that the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection Program Plan*, is acceptable and in compliance with 10 CFR 50.55a(g)(4).

5. REFERENCES

1. Code of Federal Regulations, Title 10, Part 50.

2. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Division 1:

   1974 Edition through Summer 1975 Addenda
   1983 Edition through Summer 1983 Addenda

3. *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection Program Plan*, dated February 9, 1988.

4. Letter, dated May 25, 1990, L. V. Cecilia (FPC) to H. Silver (NRC), containing supplemental ISI information.

5. Letter, dated April 19, 1988, H. Silver (NRC) to W.S. Wilgus (FPC), containing approval to use ASME Code Case N-356.

6. Letter, dated September 28, 1988, H. N. Berkow (NRC) to W. S. Wilgus (FPC), containing approval to use ASME Code Case N-416 and N-424.

7. Letter, dated May 26, 1987, L. S. Rubenstein (NRC) to W. S. Wilgus (FPC), forwarding SER containing evaluations of Relief Requests #220 and #230.

8. Letter, dated May 30, 1990, H. N. Berkow (NRC) to P. M. Beard (FPC), forwarding SER containing evaluation of Relief Request 90-10.

9. Letter, dated September 13, 1991, H. N. Berkow (NRC) to P. M. Beard (FPC), forwarding SER containing evaluations of Relief Requests 90-020, 90-050 and 90-060.

10. NUREG-0800, Standard Review Plans, Section 5.2.4, "Reactor Coolant Boundary Inservice Inspection and Testing," and Section 6.6, "Inservice Inspection of Class 2 and 3 Components," July 1981.

11. Letter, dated April 25, 1991, H. Silver (NRC) to P. M. Beard (FPC), containing request for additional information on ISI Program Plan.

12. Letter, dated June 7, 1991, G. L. Boldt (FPC) to Document Control Desk (NRC), containing response to RAI.

13. NRC Regulatory Guide 1.150, *Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination*, Revision 1, dated February 1983

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10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less)

This report presents the results of the evaluation of the *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval Inservice Inspection (ISI) Program Plan*, submitted February 9, 1988, including the requests for relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI requirements that the Licensee has determined to be impractical. The *Crystal River Nuclear Plant, Unit 3, Second 10-Year Interval ISI Program Plan* is evaluated in Section 2 of this report. The ISI Program Plan is evaluated for (a) compliance with the appropriate edition/addenda of Section XI, (b) acceptability of examination sample, (c) correctness of the application of system or component examination exclusion criteria, and (d) compliance with ISI-related commitments identified during previous Nuclear Regulatory Commission (NRC) reviews. The requests for relief are evaluated in Section 3 of this report.

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