

CATEGORY 1

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AUTH. NAME AUTHOR AFFILIATION
STALL, J.A. Florida Power & Light Co.
RECIP. NAME RECIPIENT AFFILIATION
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SUBJECT: Requests approval of Interim Relief Request 21 for non-code repair of Class 3 intake cooling water pump piping, per ISI plan second 10-yr interval.

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February 21, 1997

L-97-48
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 2
Docket No. 50-389
In-Service-Inspection Plan
Second Ten-Year Interval
Interim Relief Request 21 -
Non-Code Repair of Class 3 ICW Piping

Pursuant to 10 CFR 50.55a(a)(3) and 50.55a(g)(5)(iii), Florida Power and Light Company (FPL) requests approval of Interim Relief Request 21 "Non-Code Repair of Class 3 ICW Piping." The piping is on the 2B intake cooling water (ICW) pump discharge header. Attachment 1 is Interim Relief Request 21. Attachment 2 is the engineering disposition of the non-Code repair of ASME Class 3, Intake Cooling Water (ICW) Piping I-30"-CW-11.

FPL determined that an ASME Section XI Code repair is not practical within the Technical Specification allowed outage time of the ICW system. As discussed in the relief request, the Technical Specification allowed outage time of 72 hours for the affected headers may be insufficient to accomplish a Code repair. A plant shutdown and cooldown with unnecessary cycling of facility systems and components would be required to perform a Code repair of the piping. A Code repair/replacement will be accomplished during the upcoming Unit 2 refueling outage (SL2-10) which is scheduled to start on April 14, 1997. FPL has determined pursuant to 10 CFR 50.55a (a)(3) that the proposed alternatives would provide an acceptable level of quality and safety, and that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Please contact us if there are any questions about this submittal.

Very truly yours,

J. A. Stall
Vice President
St. Lucie Plant

JAS/GRM

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

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Relief Request No. 21

Non-Code Repair on ICW Class 3 Piping

A. Component Identification

ASME Class 3, Intake Cooling Water (ICW) Piping I-30"-CW-11

B. Examination/Repair/Replacement Requirements

The 1989 Edition, Section XI, IWA-4000

C. Relief Requested

Relief is requested from performing a Code required repair or replacement on an ICW piping leak.

D. Basis for Relief

See Attachment 2 the Final Engineering Disposition.

E. Alternatives

FPL has installed a temporary non-Code repair on the ICW piping leak. This repair meets the guidelines of NRC GL 90-05. It consists of a passive device installed for pressure boundary integrity only, using adequate and suitable materials acceptable for system temperature and pressure. It is removable, and does not compromise the structural integrity of the piping system and its associated supports.

An augmented examination was performed in the area of the leak to look for additional flaws within 15 days of the initial discovery. These identified two individual flaws. FPL then examined eleven additional points, in the most susceptible locations, based on the root cause analysis. These augmented examinations did not reveal any additional flaws.

F. Implementation Schedule

The temporary non-Code repair has been installed as a stop-gap measure in accordance with the guidelines of NRC GL 90-05. It will remain in place until the next St. Lucie Unit 2 refueling outage, currently scheduled to begin April 14, 1997. During that outage, FPL will perform a Code repair.

The augmented examinations have been completed.

G. Attachments to the Relief

Final Engineering Disposition

FINAL ENGINEERING DISPOSITION

BACKGROUND:

While conducting blast cleaning of the 2B intake cooling water (ICW) Pump discharge line I-30"-CW-11 for potential corrosive degradation, a through wall flaw was detected. FPL examination personnel conducted an inspection and UT examination of the flawed area. An additional wall thinning flaw was detected in close proximity to the through wall flaw noted in this evaluation. These areas were examined and mapped such that an appropriate evaluation could be conducted by Engineering in accordance with the guidelines in NRC Generic Letter (GL) 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2 and 3 Piping." The assessment of operability for the above flaws demonstrated that:

- the through wall flaw has been evaluated using the guidelines delineated within GL 90-05 and was found acceptable. The wall thinning flaw is bounded by this evaluation.
- potential inventory losses based on the as-found size of the through wall flaw are bounded by the existing evaluations assuming a 3/4 inch instrument line rupture.

ROOT CAUSE/ANALYSIS OF PROBLEM:

In response to concerns of corrosive degradation to an inaccessible portion of the 2B ICW Pump discharge line I-30"-CW-11, the piping configuration and material condition was evaluated. The configuration of support CW-3000-7003 prohibited access to the underside of the pipe for inspection, maintenance, or repair. This condition, coincident with the salt-laden environment of the ICW valve pit, had accelerated corrosion effects to the piping. The support was removed to facilitate the appropriate non-destructive examinations of the degraded pipe wall. It was during the cleaning evolution of this task that the subject flaws were found. The apparent cause of the flaws is advanced external corrosion as a result of coating breakdown.

Line I-30"-CW-11 is associated with the intake cooling water system which is classified as safety related, Quality Group C. NRC Generic Letter 90-05 and follow up NRC correspondence to GL 90-05 (Letter From J. Strosnider to F. J. Hebdon, dated February 16, 1993, "Structural Integrity Reporting Requirements for ASME Code Class 3 Components") state that with respect to the timing and execution of the GL 90-05 relief request process for moderate energy Class 3 pipes, the following has been adopted:

1. Prompt flaw and structural evaluation (Operability Assessment).

2. If the provisions of the GL are met, a reversible leak mitigating measure may be applied. The licensee must provide a thorough safety evaluation and structural analysis of the proposed temporary actions.
3. Augmented inspection completed within 15 days of discovery of the initial leak.
4. Relief Request submittal to NRC in a timely manner.

Flaw and Structural Evaluation

Item 1 above includes the flaw characterization, determination of acceptable spacing criteria for multiple flaw determination, area (or size) of flaw acceptance, and the linear fracture mechanics evaluation. These attributes have been evaluated within calculation PSL-2FSC-97-005, Revision 0 and found acceptable. Accordingly, the provisions of the GL were met using "through wall" criteria, and an appropriate leak mitigating device could then be applied to the flaw as a stopgap leak limiting measure.

Installation of Stopgap Leak Limiting Measure

Item 2 above was achieved by an engineering evaluation. The evaluation established that the affected system was an ASME Class 3 system of moderate energy, the location of the leak was unisolable, demonstrated that the leak mitigating device installed as a stopgap measure, was a passive device installed for pressure boundary integrity only, used adequate and suitable materials acceptable for system temperature and pressure, was removable, and did not compromise the structural integrity of the piping system and its associated supports. In addition, provisions were included in the safety evaluation to qualitatively assess the integrity of the leak limiting device by visual inspection on a weekly basis, which satisfies GL 90-05 Enclosure I, Paragraph B3, Specific Considerations. The provision in this paragraph for NDE assessment by UT or RT of the non-Code repair is not required since the Unit 2 Cycle 10 outage will occur before the specified 3 month interval has elapsed, at which time the appropriate Code repair will be made. Based on the above, the appropriate safety evaluation and structural analysis of the temporary repair have been completed.

Augmented Inspections

Item 3 above reflects the requirements of 90-05 Enclosure I, Paragraph C4, Augmented Inspection. These requirements stipulate the most susceptible locations, based on root cause determination, should be identified and examined to assess the overall degradation of the affected system. The augmented inspection should be performed within 15 days of initial flaw detection and include at least 5 susceptible locations for Class 3 moderate energy systems. The GL also discusses sample expansion should additional flaws be found. Note that the inspections and subsequent flaw spacing criteria evaluation determined that two individual flaws were identified. Accordingly, a minimum of 10 additional susceptible locations should be specified in the augmented inspection plan. The original inspection plan called for gridding the suspect area using

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the 2 inch square grid method as described in Standard MN-3.9, Revision 1, "Evaluation of Erosion/Corrosion in Power Plant Piping." The grid extent encompassed the entire underside of the pipe where support CW-3000-7003 was installed (approximately 2 ft x 12 ft) and an area within the well that exhibited gross coating holidays. In addition, several suspect areas showing evidence of heavy scale corrosion within the intake well were also identified, cleaned, and inspected. In all, eleven additional points were inspected, along with the gridded area below the pipe support. Therefore, it is concluded that the appropriate augmented inspections have been conducted and no additional flaws were identified.

Code Repair Method

The necessary Code repair shall be made during the upcoming Unit 2 refueling outage (SL2-10) using the repair guidelines of Appendix B to Specification SPEC-M-023, "ICW System Inspection and Repairs for St. Lucie Units 1 and 2," Revision 1. This repair procedure will ensure compliance with the ASME Code.

MODE RESTRICTIONS:

There are no mode restrictions associated at this time. The Code repair to the affected ICW piping will be conducted while the affected portion of the 'B' header of ICW is declared out of service. This repair will be made prior to reaching Mode 1 in the upcoming Unit 2 refueling outage (SL2-10).