CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9610160296 DOC.DATE: 96/10/04 NOTARIZED: NO DOCKET #
FACIL:50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
AUTH.NAME AUTHOR AFFILIATION
STALL,J.A. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Requests approval of Interim Relief Request 20 re containment cooling unit repair,per ISI plan.

DISTRIBUTION CODE: A047D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 7
TITLE: OR Submittal: Inservice/Testing/Relief from ASME Code - GL-89-04

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD2-3 LA	1	1	PD2-3 PD	1	1
	WIENS,L.	1	1			
INTERNAL:	ACRS	1	1	AEOD/SPD/RAB	1	1
	FILE CENTER 01	1	1	NRR/DE/EMEB	1	1
	NUDOCS-ABSTRACT	1	1	OGC/HDS3	1	0
	RES/DET/EMMEB	1	1	RES/DSIR/EIB	1	1
EXTERNAL:	LITCO ANDERSON	1	1	NOAC	1	1
	NRC PDR	1	1			

CATEGORY 1 DOCUMENT

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTTR 14 ENCL 13

Florida Power & Light Company, P.O. Box 128, Fort Pierce, FL 34954-0128

October 4, 1996

L-96-246
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 Plan
Second Ten-Year Interval
Interim Relief Request 20

Pursuant to 10 CFR 50.55a (a)(3), Florida Power and Light Company (FPL) requests approval of Interim Relief Request 20. The interim relief requested is for the temporary non-code repair of the ASME Class 3 containment cooling unit coil, HVS-1B. FPL has determined pursuant to 10 CFR 50.55a (a)(3) that the proposed alternatives would provide an acceptable level of quality and safety, or that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Attachment A is Interim Relief Request 20 and Attachment B is the engineering basis for the temporary repair.

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: Stewart D. Ebneter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

Relief Request No. 20, Containment Cooling Unit Repair

A. Component Identification

Code Class 3

Containment Cooling Unit HVS-1B

B. Code Requirement

ASME Section XI, 1983 Edition with Addenda thru Summer 1983 IWD-4000 Repair Procedures - requires defects to be removed in accordance with IWD-4200

C. Relief Requested

During operation, leakage was detected on containment cooling unit HVS-1B. The leakage was found on a 3" brazed joint of a dissimilar metal weld, carbon steel to copper pipe.

Relief is requested from the repair requirements of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 Edition through the Summer 1983 Addenda, Articles IWA/IWD-4000.

D. Basis for Relief

See Attachment B.

E. Alternative Repair

FPL will perform a temporary non-code repair on the containment cooling unit as described in the basis for relief. This temporary repair will perform the function of leakage prevention and will remain in place no later than startup after the next scheduled refueling outage or scheduled outage greater than 30 days in length. At that time, a Code repair/replacement will be performed.

F. Implementation Schedule

St. Lucie Unit 1, Cycle 14, until the next refueling outage (SL1-15) or scheduled outage greater than 30 days in length.

G. Attachments to the Relief

Engineering basis for performing a temporary non-code repair.

ST. LUCIE UNIT 1

FLORIDA POWER & LIGHT COMPANY

ENGINEERING JUSTIFICATION

TEMPORARY NON-CODE REPAIR RELIEF REQUEST

FOR HVS-1B COOLING COIL SUPPLY LINE

**Interim Relief Request for
Containment Cooling Unit HVS-1B Repair**

Background

During plant operation, on August 26, 1996, a leak was discovered in a brazed joint on one of the six (6) cooling coil banks for the 1B containment cooling unit (HVS-1B). The leak was located in the brazed joint between the 3 inch carbon steel pipe stub and 3 inch copper coil header piping. The leak had been characterized as 6 to 8 separate pin hole leaks in the joint brazing material. The pin hole leaks are in close proximity to one another.

Florida Power and Light Company (FPL) has determined that an ASME Section XI repair is not practical at this time. In order to perform the necessary Code repair, one of the two containment cooling trains would have to be isolated and taken out of service. Containment cooling unit HVS-1B would have to be drained and the cooling coil removed to allow for joint disassembly. Complete disassembly of the brazed joint would be required in order to clean and re-braze the joint properly and eliminate the potential for any subsequent leakage. The cooling coil would have to be reinstalled and successfully leak tested prior to placing HVS-1B back in service. Due to the size and weight of the cooling coil, all of the necessary work would have to be performed inside containment while the unit is operating at power. Temperatures inside containment typically average up to 100°F. At this temperature, stay times of up to only 1 hour are allowed in order to avoid heat stress to plant personnel. Dose rates in the area of HVS-1B have been measured at 50 mR/hr. Performance of a Code repair while the unit is at power would also result in unnecessary personnel exposure. Due to the overall complexity of a Code repair, the Technical Specification allowed outage time (AOT) for the affected containment cooling train of 7 days may also be insufficient. FPL has determined a plant shutdown and cooldown with unnecessary cycling of facility systems and components would then be required to perform a Code repair. The proposed temporary non-Code repair alternative would provide an acceptable level of quality and safety. Compliance with ASME Section XI would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. A Code repair/replacement will be accomplished during the next scheduled outage exceeding 30 days and no later than the next scheduled St. Lucie Unit 1 refueling outage (SL1-15) which is currently scheduled for the Fall of 1997.

Discussion

St. Lucie Unit 1 has four (4) containment cooling units located inside containment. The safety related functions of the cooling units is to provide heat removal from the containment air/steam mixture following a loss of coolant accident (LOCA) or main steam line break (MSLB) to prevent the containment building from exceeding its design pressure and temperature limits. The cooling units also provide for circulation of the containment atmosphere post-accident to prevent stratification and formation of hydrogen gas pockets inside containment.

Each cooling unit contains 6 cooling coil banks that are supplied with cooling water from the safety related closed loop component cooling water (CCW) system. The affected portion of the CCW system piping also functions to maintain containment integrity.

The cooling coils and associated CCW system piping for the containment cooling units are classified as Quality Group C (Class 3). In accordance with the guidance specified in NRC Generic Letter 90-05, *Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping*, the subject piping is classified as moderate energy (maximum operating temperature less than 200°F and maximum operating pressure less than 275 psig).

Once the operational leakage was discovered, an evaluation was performed which concluded that an operability concern does not exist. Continued monitoring and additional visual inspections of the leakage were performed. Subsequent inspections concluded that the leakage had not worsened.

In accordance with the guidance of Generic Letter 90-05, a leak repair enclosure has been installed as a stopgap measure to eliminate the leakage. Once written relief is granted by the NRC, this leak repair enclosure is intended to function as a temporary non-code repair in the interim period until a Code repair can be accomplished.

Flaw Characterization And Root Cause Analysis

As stated above, the subject leak had been characterized as 6 to 8 separate pin hole leaks in the joint brazing material which are in close proximity to one another. The approximate leak rate was initially measured to be 1.5 gallons per hour. Subsequent and more accurate leak rate measurements yielded a leak rate of less than 1 gallon per hour. The flaws were initially characterized by visual inspection. While performing the visual inspections, it was determined that additional volumetric examinations were not feasible based on the joint geometry and the copper pipe to carbon

steel pipe stub brazed joint construction. The visual inspections have provided sufficient information to characterize the flaws without the use of additional volumetric examinations.

A similar pin hole leak was discovered in essentially the same location during the recent St. Lucie Unit 1 refueling outage. Brazing of the joint was performed during the refueling outage and the leak was initially eliminated. However, subsequent inspections performed during plant operation identified additional pin hole leaks in the repaired area. The failure mechanism has been determined to most likely be the propagation of subsurface defects in the brazed joint filler material. Brazing defects can include flux inclusions, lack of adhesion or porosity. A subsurface defect likely propagated through the repair brazing filler material resulting in the subject leak.

Flaw Evaluation

Based on the location and size of the current and past leaks and postulated causative failure mechanisms, it is unlikely that the current flaws will propagate significantly in the near term. Rapid propagation of the defects as a result of external loads is not expected based on the restrained configuration of the associated piping system. Flaw propagation due to overload is unlikely since joint loading conditions are not expected to change significantly during plant operation.

The flaw evaluation methodology contained in NRC Generic Letter 90-05 is not applicable since the flaws are located in the brazed joint filler material and are not believed to be flaws through the copper or steel piping base material. In addition, volumetric examinations are not considered feasible based on the joint geometry and the copper pipe to carbon steel pipe stub brazed joint construction.

Additional walkdowns/inspections of the leak have been performed since initial discovery. The results of the inspections concluded that additional flaw propagation had not occurred and the leak had not worsened. In accordance with the guidance of NRC Generic Letter 90-05 for Class 3 moderate energy piping, a leak repair enclosure has been installed as a stopgap measure to eliminate the leakage while preparing this relief request. Subsequent inspections have indicated that the stopgap leak repair enclosure has been successful in eliminating the leakage.

Description of Temporary Non-Code Repair

The interim method for eliminating the subject leakage is the installation of an engineered leak repair enclosure. The enclosure has been designed for the maximum internal and external design

pressure and temperature conditions. The enclosure is constructed of standard carbon steel plate material and alloy bolting. The enclosure has been designed to encapsulate both the copper header piping and the carbon steel pipe stub. This design assures that the entire brazed joint is contained within the enclosure. Injection compound approved for use in the subject application is utilized as a supplemental sealing mechanism.

The installation of the leak repair enclosure has been evaluated for potential impact on the structural integrity of the affected components/piping system. The additional loads (dead weight and seismic) imposed by the leak repair enclosure are acceptable and it has been concluded that the structural integrity of the existing components/piping system is unaffected.

The proposed non-Code repair will remain in place until a permanent ASME Section XI Code repair/replacement is performed. In accordance with the guidance of NRC Generic Letter 90-05, the Code repair/replacement will be completed no later than the next scheduled Unit 1 outage exceeding 30 days or during the next scheduled refueling outage.

Augmented Inspection

As required by NRC Generic letter 90-05, fifteen (15) additional potentially susceptible locations were visually inspected for signs of leakage. The inspections were limited to the CCW supply piping connections to the cooling coils on containment cooling units HVS-1A, 1B and 1D. No leakage was identified from these additional locations. Also in accordance with the guidance of NRC Generic Letter 90-05, the structural integrity of the proposed temporary non-Code repair will be assessed periodically during the normally scheduled containment anomaly inspection. The containment anomaly inspections are typically performed once every two weeks.