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1CAN101005

October 26, 2010

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

SUBJECT: Request for Use of Non-ASME Code Repair to Service Water Piping in Accordance with Generic Letter 90-05
Relief Request ANO1-R&R-014
Arkansas Nuclear One, Unit 1
Docket No. 50-313
License No. DPR-51

Dear Sir or Madam:

Pursuant to the guidance of NRC Generic Letter (GL) 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping," Entergy Operations, Inc. (Entergy) is requesting relief in accordance with 10 CFR 50.55a(g)(6)(i) for a temporary non-code repair to an ASME Code Class 3 pipe in the Arkansas Nuclear One, Unit 1 (ANO-1) Service Water (SW) system. Attachment 1 provides justification for a temporary repair of this piping in accordance with the guidance provided in GL 90-05.

A code repair will be performed at the next scheduled outage exceeding 30 days, but no later than the next scheduled refueling outage. The next ANO-1 refueling outage is currently scheduled to begin September 25, 2011.

This letter contains commitments as summarized in Attachment 2. If you have any questions or require additional information, please contact me.

Sincerely,

Original signed by Stephenie L. Pyle

SLP/rwc

Attachments:
1. Relief Request ANO1-R&R-014
2. List of Regulatory Commitments

cc: Mr. Elmo Collins
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U. S. Nuclear Regulatory Commission
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NRC Senior Resident Inspector
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U. S. Nuclear Regulatory Commission
Attn: Mr. Kaly Kalyanam
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4815 West Markham Street
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Little Rock, AR 72205

ATTACHMENT 1

1CAN101005

RELIEF REQUEST ANO1-R&R-014

RELIEF REQUEST

ANO1-R&R-014

Component / Number:	HBD-2-18”
Code Class:	ANSI B31.1 Treated as Class 3 for the purpose of ASME Section XI Inservice Inspection, Repair/Replacement and Pressure Testing
References:	ASME Code, Section XI, 2001 Edition with the 2003 Addenda Piping Construction Code USAS B31.1, 1967 Edition
Description:	P-4A Service Water Pump Discharge Piping
Unit / Inspection Interval Applicability:	Arkansas Nuclear One, Unit 1 / Fourth (4th) 10-year interval, 1R23 Refueling Outage

I. CODE REQUIREMENTS

Paragraph IWA-4422.1 of the 2001 Edition with the 2003 Addenda of ASME Code, Section XI, “Defect Evaluation” states:

> A defect is considered removed when it has been reduced to an acceptable size. If the resulting section thickness is less than the minimum required thickness, the component shall be corrected by repair/replacement activities in accordance with this Article.

II. PROPOSED ALTERNATIVE

Background

On May 26, 2010, Operations personnel identified a pin-hole leak in the Service Water (SW) pump (P-4A) discharge piping line HBD-2-18” in the Arkansas Nuclear One, Unit 1 (ANO-1) Intake Structure. The leak is in the flange weld connecting P-4A discharge piping to valve CV-3646. The leak rate at the time of discovery was approximately 5 drops per minute (dpm) and later, following surface disturbance due to non-destructive evaluation, was observed as 40 dpm (0.0005 gallons per minute (gpm)). The leak rate has not changed since that time.

The through-wall defect is in the horizontal run of 18-inch diameter carbon steel piping, located approximately 45° off top dead center of the pipe. To evaluate the piping in the region of the leak, ultrasonic thickness (UT) measurements were taken on a 360° band around the circumference of the pipe. A more detailed UT mapping was conducted immediately around the leak. This thickness mapping provided the means of characterizing the flaw at the leak location and verification that the flaw could be treated

as a single flaw with respect to the proximity of other thinned regions. The data showed that the through-wall flaw originated from corrosion pitting on the interior surface of the pipe. The original nominal wall thickness was 0.375 inches. After almost 30 plus years of service the average overall pipe wall thickness circumferentially was determined to be greater than 0.375 inches. However, 0.370 inches average wall thickness is conservatively documented in the operability evaluation. The UT data shows that the through-wall leak is highly localized or "pit" like which is typical of Microbiologically Influenced Corrosion (MIC).

Using the guidance of Generic Letter (GL) 90-05, "Guidance for Performing Temporary Non-Code Repair of ASME Code Class 1, 2, and 3 Piping," the flaw and flaw area were evaluated to verify the structural integrity of the pipe. The evaluation concluded that the flawed piping satisfied the "through-wall flaw" stability criteria of the generic letter for all expected plant loading conditions.

Five additional locations, representative of the environment seen by the defect, were selected for the augmented inspection via UT. The locations inspected were both on the same train as the leak and the opposite train. The locations chosen were similar in configuration, service conditions and corrosion susceptibility. The inspection of these locations did not indicate serious pitting degradation or general wall loss. The inspection results for all inspection locations were acceptable.

This section of the ANO-1 SW system was constructed in accordance with the requirements of USAS B31.1 and is now treated as safety related Class 3 "moderate energy" piping.

The SW system for ANO-1 consists of two independent full capacity 100 percent redundant loops. Each SW loop is capable of supplying cooling water to the required components during normal and emergency conditions. This redundancy allows continued plant operation when a single component failure occurs. System crosstie valves provide additional redundancy by allowing one of the three SW pumps to be removed from service for maintenance. The remaining two pumps provide total system flow for both SW loops.

ANO-1 Technical Specification (TS) 3.7.7 requires that two SW loops shall be operable and powered from independent essential buses to provide redundant and independent flow paths.

It was determined that conducting a code qualified repair during power operation is not feasible since the loop of SW that contains the flaw would have to be declared inoperable and removed from service. The inoperable loop is required to be restored within 72 hours or the unit must be placed in Hot Shutdown within 6 hours per ANO-1 TS 3.7.7. Based on the insignificance of the leak, it appears inappropriate to challenge the operation of the plant to support a code repair.

Due to the fact that the original flaw is through-wall, and based on previous experience of similar flaws, consideration of flaw growth is not a significant concern since the projected wall thinning is only 0.0007 inches per year based on established wall thinning rates at pit locations. Therefore, it has been concluded that the overall condition of the associated SW loop until the next ANO-1 refueling outage is acceptable.

Proposed Alternative

At the current time a clamp device has been installed over the defect area as a "stop gap" measure to limit leakage for housekeeping purposes. The installed clamp does not alter the structural integrity of the piping. Entergy plans to maintain this clamp, or a similar configuration, as the temporary repair. In addition, if the temporary repair were to fail, there is no equipment in close proximity to the leak location that would be adversely affected by water spray, and the leak rate would be sufficiently small that local floor drains are expected to mitigate any potential for flooding. The loss of system flow through the leak would not reduce the ability to provide cooling water to critical equipment since the leak rate would be insignificant compared to the overall capacity and margin of the SW system. Because failure of the temporary repair would have no adverse safety impact, the structural condition of the clamp does not require a rigorous structural analysis. No credit is taken for the additional structural strength contribution from the clamp.

In addition to the augmented inspections, weekly walk down of the leak location is being performed and the location is being re-examined every 90 days using UT per the requirements of GL 90-05.

III. BASIS FOR ALTERNATIVE

In addition to the structural evaluations discussed above, the proposed alternative was evaluated for:

- Flooding / Spray Concerns
- Reduction in flow to SW supplied components
- Emergency cooling pond inventory concerns

The results of these evaluations are presented below.

Flooding / Spray Concerns

Due to the small size of the leak, 2 milliliters/minute (0.0005 gpm) in the worst observed case, there was minimal spray and no flooding concerns. The leakage at present is insignificant and does not present a flooding concern. No equipment susceptible to water damage is under or adjacent to the leakage site. The magnitude of the water loss can easily be accommodated by the room drainage system and does not pose a flooding concern. Even if the leak increased several orders of magnitude, there are no flooding or spray impingement concerns. The leak is located in a well lighted area (ANO-1 Intake Structure Building) that is frequented by Operations personnel on rounds. Thus if the leak rate experienced a rapid increase it would be quickly identified and addressed. A floor drain is located approximately 3 feet from the leak and is sized to remove normal leakage from this area of the plant. However, based on the structural assessment and engineering experience with respect to flaw growth, no significant leak rate increase is expected to occur.

Reduction in Flow to SW Supplied Components

Due to the small leak magnitude there is no appreciable impact on flow to other components in the ANO-1 SW System. The flow margin above that required for the minimum margin component is 1 gpm which is bounded, assuming all leakage in this condition were taken from that component, per the latest SW flow test.

Emergency Cooling Pond (ECP) Inventory Concerns

The ECP inventory analysis accounts for leakage from the SW boundary valves and sluice gates for both units. Per the Performance Monitoring maintained by the site, the current measured boundary leakage on ANO-2 is 8.3 gpm and on ANO-1 (and common) is 7.3 gpm for a total leakage of 15.5 gpm. The total ECP leakage assumed in the ECP inventory loss analysis is 80 gpm. The current leak is essentially imperceptible relative to ECP inventory (< 1 gpm) and thus has no impact on ECP inventory.

IV. CONCLUSION

Pursuant to the guidance of GL 90-05, Entergy is requesting the NRC staff's evaluation of this relief request in accordance with the provisions of 10 CFR 50.55a(g)(6)(i). Entergy believes that to comply with the requirements of ASME Section XI for performing an online code repair of the subject piping is impractical as demonstrated by this request for relief.

ATTACHMENT 2

1CAN101005

LIST OF REGULATORY COMMITMENTS

LIST OF REGULATORY COMMITMENTS

This table identifies actions discussed in this letter for which Entergy commits to perform. Any other actions discussed in this submittal are described for the NRC's information and are not commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
Perform a code repair on Service Water line HBD-2-18"	**X**		During the next scheduled outage exceeding 30 days, but no later than the next scheduled refueling outage which is scheduled to begin September 25, 2011
Weekly walk down the leak location		**X**	This walkdown will be performed until the code repair is implemented
Re-exam the leak location every 90 days using UT per the requirements of GL 90-05		**X**	This examination will be performed until the code repair is implemented