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November 20, 2013

NL-13-147

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

SUBJECT: Relief Request 3-008 From ASME Section XI, Subsection IWA-4422.1 to Allow Temporary Non-Code Repair to Service Water Piping
Indian Point Unit Number 3
Docket No. 50-286
License No. DPR-64

Dear Sir or Madam:

Entergy Nuclear Operations, Inc. (Entergy) is submitting Relief Request No. 3-008 (Attachment) for Indian Point Unit No. 3 (IP3). This relief request is from ASME Section XI, Subsection IWA-4422.1 to allow a temporary non-code repair to an ASME Code Class 3 pipe in the Indian Point 3 (IP3) Service Water System.

This request is made in accordance with 10 CFR 50.55a(a)(3)(ii), compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

There are no new commitments identified in this submittal.

A047
NRR

If you have any questions or require additional information, please contact me.

Sincerely,

RW/sp

Attachment: Relief Request 3-008 From ASME Section XI, Subsection IWA-4422.1 to Allow Temporary Non-Code Repair to Service Water Piping

Enclosures: 1. IP-CALC-13-00062, R1, Evaluation of Leak at Line 1093 in Unit 3 Moat

2. IP-CALC-13-00070, R1, Leak Repair Clamp Evaluation for Line 1093 In 32 Main Transformer Moat

3. IP-CALC-13-00063, R2, Hydraulic Evaluation of Identified Indication in IP3 Service Water 10" Line #1093

cc: Mr. Douglas Pickett, Senior Project Manager, NRC NRR DORL
Mr. William M. Dean, Regional Administrator, NRC Region I
NRC Resident Inspector's Office Indian Point
Ms. Bridget Frymire, New York State Department of Public Service
Mr. Francis J. Murray, Jr., President and CEO, NYSERDA

ATTACHMENT TO NL-13-147

RELIEF REQUEST NO 3-008

FROM ASME SECTION XI, SUBSECTION IWA-4422.1 TO ALLOW

TEMPORARY NON-CODE REPAIR TO SERVICE WATER PIPING

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286

Indian Point Unit 3
Relief Request No: IP3- 008
Relief from ASME Section XI, Subsection IWA-4422.1

Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(ii)
- Hardship Without a Compensating Increase in the Level of Quality and Safety -

A. ASME Code Component Affected

Ten inch Service Water supply line number 1093 from the 409 header to the Emergency Diesel Generators (EDGs), to the Instrument Air Closed Cooling (IACC) Heat Exchangers (HX) and the Central Control Room (CCR) Air Conditioning Condensers. This line is one of two lines which supplies Hudson River water to the EDGs which are used to provide emergency power to safety related equipment following a design bases accident.

B. Applicable Code Edition and Addenda

The applicable Code of Record for current IP3, 10 year inservice inspection interval is the ASME Section XI Code, 2001 Edition with the 2003 Addenda.

The affected portion of the service water piping was designed and constructed in accordance with the requirements of the USAS B31.1.0, 1967 Edition of the Power Piping Code.

C. Applicable Code Requirement

Subsection IWA-4422.1 of the ASME Section XI Code requires that defects be removed or reduced to an acceptable size prior to implementing a repair or replacement in accordance with the requirements of IWA-4000. Since the current through wall defects are beyond the acceptance criteria of IWD-3000 and removal is not practical without system depressurization, the proposed temporary repair method would not be consistent with the requirements of IWA-4422.1. The proposed backfill of the area for freeze and other (e.g., missile, fire) protection is consistent with the requirements of ASME Code Case N-513-3 with the exception of monitoring requirements.

D. Reason for Request

As a result of the on-going modification to the 32 Main Transformer Moat to seal the inside of the moat from the surrounding environment, the soil and gravel inside the moat was removed to allow access to the walls and floor exposing the underground piping located inside the moat. Once the piping became exposed, the IPEC Underground Piping and Tanks (UPT) Program required that the exposed piping be visually inspected to assess the condition of the protective coating and that follow up actions be taken to address coating anomalies.

The initial visual inspection identified several areas where the coating was degraded requiring coating removal to assess the condition of the piping under the defective coating. Two of the pipes where coating degradation was identified were the two 10" Service Water (SW) supply lines from the two main SW headers to the Emergency Diesel Generators (EDGs) and other safety related equipment (10"-Line #1093 and 10"-Line #1099). Line 1093 which provides SW from the 409 header to the 31, 32 and 32 EDGs, the 31 and 32 IACC HX and the 31 and 32

CCR Air Conditioning Condensers had 5 locations with coating degradation while Line 1099 which provides SW from the 408 header to the same components had 4 locations with coating degradation. After removing the coating from these 9 areas an ultrasonic testing (UT) examination was performed to characterize the degradation of the piping directly under the coating.

The UT examination identified two locations in Line 1093 with degradation which exceeded the allowable limits of the ASME Section XI Code. Both of these locations were evaluated using the rules provided in ASME Code Case N-513-3 and both were found to be within the flaw allowable limits of the Code Case through the next refueling outage (3R18) which is currently scheduled for March 2015 (calculation Enclosure 1). However, the Code Case requires that daily walkdowns be performed and UT examinations be performed at least once every 90 days to ensure that the assumptions and inputs used in the evaluation remain valid until the affected piping is repaired or replaced in accordance with the IWA-4000 rules.

Since Line 1093 provides SW to the three EDGs, it cannot be isolated from the SW header and these two defects can only be repaired during a plant shutdown. This requires that daily walkdowns and 90 day UT inspections be performed through March 2015 to satisfy the requirements of the Code Case. Leaving this piping exposed to the environment to allow the daily walkdowns and the 90 UT inspections would expose the pipe to freeze conditions during the winter months (as well as missiles and transformer fire). To protect this pipe, Entergy proposes to implement temporary measures to coat and protect this pipe and backfill the moat until the March 2015 refueling outage when the pipe would be excavated and a permanent repair would be implemented as required by IWA-4000 of the ASME Section XI Code. This approach requires relief from Subsection IWA-4422.1 of the ASME Section XI Code which requires that defects be removed or reduced to an acceptable size prior to implementing a repair or replacement in accordance with the requirements of IWA-4000 and relief from IWA-4000 to allow for a non-code repair. The relief would prevent compliance with ASME Code Case N-513-3 monitoring requirements.

E. Proposed Alternative and Basis for Use

10 CFR 50.55a(a)(3) requires that safety related components meet the requirements of the applicable Edition of the ASME Section XI Code unless an alternative is submitted to and approved by the NRC. For ASME Class III, low or moderate energy piping ASME Code Case N-513-3 has been approved as documented in Regulatory Guide 1.147. Although the structural requirements of this Code Case have been demonstrated through the next scheduled refueling outage in March 2015 (calculation in enclosure 2), the monitoring requirements of the Code Case cannot be satisfied because of the concerns associated with maintaining this pipe exposed to environmental conditions during the winter months.

Entergy is hereby requesting relief from the repair/replacement requirements of sub-section IWA-4000 of the ASME Section XI as provided in 10CFR50.55a(a)(3)(ii) since implementing a plant shutdown to perform a Code repair of the above pipe would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety. As stated above, the affected pipe has been demonstrated to remain structurally capable of performing its intended safety function through the March 2015 refueling outage using the methodology and the flaw allowable limits provided in ASME Code Case N-513-3. The following provides details of the evaluations performed to demonstrate the continued acceptability of this pipe:

1. Characteristics of the Detected Flaws

The inspections of the affected pipe identified two areas of corrosion in Line 1093 which exceeded the flaw allowable limits of the ASME Section XI Code. The first area (Area 1 in the attached IP3-UT-13-058 Inspection Report) was approximately 8" long by approximately 2.5" wide. The remaining pipe wall thickness in this area ranged from a low of 0.109" up to 0.438". All thickness readings were above the minimum required design thickness of 0.073" and therefore did not exceed the design allowable limits. However, this area was still classified as exceeding the limits of the ASME Section XI Code because minor weepage was observed in the area.

The second area of corrosion (Area 3 in the attached IP3-UT-13-058 Inspection Report and supplemental dimensions provided in the attached IP3-VT-13-021 Inspection Report) was approximately 8.25" long and 2" wide. Because of the surface condition within the degraded area, a UT wall thickness measurement could not be performed. Instead, a "Pit Gage" was used to estimate the remaining wall thickness of the degraded area. Based on these measurements, it was estimated that the portion of the degraded area which resulted in a remaining wall thickness of less than the minimum required wall thickness was approximately ¾" wide by 6" long. Note that UT examinations were performed in the area surrounding the degradation and these examinations confirmed that the surrounding area had not experienced any measurable wall loss. This confirms that the degradation is limited to the outside surface of the pipe and no inside surface corrosion is expected.

Note that area 2 in the attached IP3-UT-13-058 Inspection Report did not show any wall thickness readings less than the minimum required thickness of 0.073" and therefore this area did not exceed the limits of the ASME Section Code.

2. Structural Evaluation

The two flaws which exceeded the limits of the ASME Section XI Code were evaluated in accordance with the requirements of ASME Code Case N-513-3 to ensure that the area remains structurally acceptable until the March 2015 refueling outage when a Code repair is expected to be implemented. As discussed above, the UT inspection of Area 1 did not identify any wall thickness measurements below the minimum required wall thickness. For Area 3 the remaining wall thickness could not be measured by UT because of the surface condition and therefore, it was conservatively assumed that the entire degraded area of 2" by 8.25" was 100% through wall. Additional flaw growth was also assumed until the March 2015 refueling outage based on the previously estimated corrosion rates for these soil conditions and pipe material. The evaluation for Area 3 demonstrated that the margins required by the Code Case will be maintained through the March 2015 refueling outage when a permanent Code repair will be implemented. The details of this evaluation are provided in the attached calculation No. IP-CALC-13-00062.

3. Degradation Mechanism

The observed degradation which resulted in the above defects was outside diameter (OD) initiated general corrosion caused by the interaction between the carbon steel SW piping and the surrounding soil in the areas where the coating had degraded. There were no indications of inside surface initiated corrosion since the UT examinations performed on the surrounding material did not identified any measurable pipe wall loss. This is

consistent with the fact that inside surface of the pipe is coated with cement lining which has proven extremely effective as a corrosion barrier and also consistent with other OD initiated corrosion of other similar piping at this site elevation (i.e. 15' elevation which is in proximity to the ground water level).

4. System Hydraulics Considerations

Even though no leakage was observed from any of the above defects (other than the slight weepape in Area 1), a system hydraulic analysis was still performed to ensure that the SW system is capable of delivering the required accident design flows to the various safety related components under worst case leakage conditions. This analysis calculated the leakage through a hole with an area equivalent to the dimensions of the area where the remaining wall thickness was less than the minimum required wall thickness estimated from "pit gage" measurements. The analysis assumed a hole with an area equivalent to a through wall defect ¾" wide by 6" long. The details of this evaluation which are documented in calculation No. IP-CALC-13-00063 (Enclosure 3) confirmed that the SW system remains capable of delivering the required design flow rates even assuming the loss of flow through this conservatively assumed hole size. If the clamp is not in place and the flaw is on the 31, 32 and 33 pump header, the calculation shows the Appendix R response will change. The component water heat exchanger discharge valves have to be opened to 15 degrees rather than 13 degrees to maintain flow using the 38 backup service water pump.

5. Temporary Corrective Actions Until a Code Repair is Implemented

Even though the above system hydraulic evaluation concluded that the SW system would still be capable of performing its intended safety function even assuming a loss of flow through a ¾" wide by 6" long hole, an engineered leakage mitigation clamp has been installed over the area to provide additional margin against the potential loss of flow. The clamp and the surrounding area will be coated with corrosion resistant coating to minimize the probability of additional corrosion until the March 2015 refueling outage. Note that all other areas where the coating was degraded will also be repaired prior to backfilling the moat.

6. Monitoring of the Moat

The moat area where the affected piping is located will be monitored through the March 2015 refueling outage by periodically inspecting the monitoring wells. This will ensure that any unanticipated degradation such as increased leakage will be detected in a timely manner and appropriate corrective actions implemented.

F. Duration of Proposed Alternative

The duration of this proposed alternative is limited until the next refueling outage currently scheduled for March 2015 when the pipe will be excavated and a permanent repair will be implemented consistent with the repair/replacement requirements of sub section IWA-4000 of the ASME Section XI Code.

G. References - None