Entergy Nuclear Northeast
Indian Point Energy Center
450 Broadway, GSB
P.O. Box 249
Buchanan, NY 10511-0249
Tel 914 254 6710

Robert Walpole
Manager
Regulatory Assurance

NL-14-005

January 13, 2014

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

SUBJECT: Relief Request IP3-ISI-RR-07 for Code Case N-770-1 Weld Inspection Frequency Extension
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. IP3-ISI-RR-07 (Attachment) for Indian Point Unit No. 3 (IP3). This relief request is for the Fourth 10-year Inservice Inspection Interval (ISI).

The purpose of this relief request is to extend the inspection of the reactor vessel cold leg nozzle to safe-end welds (1-4100-16(DM), 1-4200-16(DM), 1-4300-16(DM), 1-4400-16(DM)), which are Alloy 600 welds covered by Code Case N-770-1, Table 1, Inspection Item B. Baseline ultrasonic inspections of these welds were performed in March 2009 and met the Section XI, Appendix VIII requirements, including examination volume of essentially 100%. Table 1 of Code Case N-770-1 requires volumetric examination of essentially 100% of Inspection Item B pressure retaining welds once every second inspection period not to exceed 7 years. Additional circumstances have arisen affecting the scheduling for this request.

The requested extension is until Refueling Outage 20 (3R20) which is scheduled for Spring 2019. This request is made in accordance with 10 CFR 50.55a(a)(3)(i), an alternative provides an acceptable level of quality and safety.

Entergy requests approval of the relief request by August 2014. Performance of this inspection in 3R18 would require planning to start at that time.

A047
NRR

There are no new commitments being made in this submittal. If you have any questions or require additional information, please contact me at (914) 254-6710.

Sincerely,

RW/ai

Attachment: Relief Request IP3-ISI-RR- 07: Code Case N-770-1 Weld Inspection Frequency Extension

cc: Mr. Douglas Pickett, Senior Project Manager, NRC NRR DORL
Mr. William Dean, Regional Administrator, NRC Region 1
NRC Resident Inspectors
Mr. Francis J. Murray, Jr., President and CEO, NYSERDA
Ms. Bridget Frymire, New York State Dept. of Public Service

ATTACHMENT TO NL-14-005

RELIEF REQUEST IP3-ISI-RR-07:

CODE CASE N-770-1 WELD INSPECTION FREQUENCY EXTENSION

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

Indian Point Unit 3
Fourth 10-year ISI Interval
Relief Request No: IP3-ISI-RR-07
Code Case N-770-1 Weld Inspection Frequency Extension
Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)
-Alternative Provides Acceptable Level of Quality and Safety-

1. ASME Code Component(s) Affected

The affected component is the Indian Point Unit 3 (IP3) reactor vessel cold leg nozzle to safe-end welds (1-4100-16(DM), 1-4200-16(DM), 1-4300-16(DM), 1-4400-16(DM)) which are Alloy 600 welds covered by Code Case N-770-1, Table 1, Inspection Item B.

These welds had an Alloy 600 inside diameter (ID) onlay installed during original fabrication and do not join any cast stainless steel materials.

Examination Category	Item No.	Description
CC N-770-1	B	Weld 1-4100-16(DM) Loop 31 cold leg nozzle to safe-end weld
CC N-770-1	B	Weld 1-4200-16(DM) Loop 32 cold leg nozzle to safe-end weld
CC N-770-1	B	Weld 1-4300-16(DM) Loop 33 cold leg nozzle to safe-end weld
CC N-770-1	B	Weld 1-4400-16(DM) Loop 34 cold leg nozzle to safe-end weld

2. Applicable Code Edition and Addenda

Code Case N-770-1 as referenced in 10CFR50.55a(g)(6)(ii)(F).

3. Applicable Code Requirement

Table 1 of Code Case N-770-1 requires volumetric examination of essentially 100% of Inspection Item B pressure retaining welds once every second inspection period not to exceed 7 years.

4. Reason for Request

Relief is being requested at this time to extend the cold leg weld inspections until Refueling Outage 20 (3R20) scheduled for Spring 2019 to allow for this inspection to coincide with the MRP-227-A reactor vessel internals inspections.

Examination of Item A-2 (Hotleg) and Item B (Coldleg) welds are performed from the inside surface of the pipe (ID) at IP3 due to limited access provisions from the outside surface of the pipe. The IP3 Item A-2 and Item B welds are located inside a "sandbox" which was installed during original plant construction after all welding was completed. As a result of physical interferences, the ultrasonic examinations of the welds cannot be performed from the outside diameter (OD). The inspection of the Item A-2 (Hotleg) welds from the ID does not require the removal of the reactor vessel core barrel, while the inspection of the Item B (Coldleg) welds from the ID does require removal of the reactor vessel core barrel.

Baseline inspections of Code Case N-770-1 Inspection Item B welds 1-4100-16(DM), 1-4200-16(DM), 1-4300-16(DM) and 1-4400-16(DM) were performed in March 2009. The ultrasonic examinations performed in 2009 met the Section XI, Appendix VIII requirements, including examination volume of essentially 100%.

Welds 1-4100-16(DM), 1-4200-16(DM), and 1-4300-16(DM) had no recordable indications. Weld 1-4400-16(DM) had a recordable circumferential indication in the vicinity of the Alloy 600 and stainless steel cladding interface near the dissimilar metal weld. The indication was determined to be entirely embedded in the Alloy 600 clad material and therefore not in the ASME XI Code required examination volume. Since the indication was in the MRP-139 examination volume, a conservative approach was used and the indication was assessed in terms of the criteria in the ASME Code Section XI, 1989 Edition, no Addenda, Article IWB-3000, Paragraph IWB-3500 (the code used at the time of inspection). The indication was found to be within the allowable limits specified in IWB-3500 with no further evaluation required.

Since inspection of these welds requires that the core barrel be removed from the reactor vessel, performing these inspections concurrently with the vessel shell weld inspections and the vessel internals inspections required by MRP-227-A during refuel outage in 2019 will result in personnel dose savings. A separate IP3 Relief Request IP3-ISI-RR-06 has been submitted to the NRC staff to allow deferral of the vessel shell weld inspections from 2015 to 2019.

IP3 is currently planning to perform the MRP-227-A (i.e. Vessel Internals) inspections in 3R20 (2019) since the actual inspection scope has not yet been finalized (i.e. Entergy is still performing internals evaluations in response to NRC RAIs and these evaluations have the potential to impact the MRP-227-A inspection scope). In addition, a significant pre-outage effort will be required to finalize inspection tooling and acceptance criteria which cannot be completed prior to 3R18 which is currently scheduled to begin in March 2015.

5. Proposed Alternative and Basis for Use

10 CFR 50.55a(a)(3) states:

> "Proposed alternatives to the requirements of (c), (d), (e), (f), (g), and (h) of this section or portions thereof may be used when authorized by the Director of Nuclear Reactor Regulation. The applicant shall demonstrate that:

(i) the proposed alternatives would provide an acceptable level of quality and safety, or

(ii) compliance with specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Entergy believes that the proposed alternatives of this request provide an acceptable level of quality and safety.

Indian Point Unit 3 proposes a one time extension to the Code Case N-770-1, Table 1, Inspection Item B, volumetric examinations from a period of 7 years to a period of 10 years. The inspections which are currently required to be performed will be performed not later than March 2019 refueling outage.

Based on the Primary Water Stress Corrosion Cracking (PWSCC) crack growth analysis results from Reference 2, the maximum allowable undetected flaw sizes for the reactor vessel inlet nozzle DM welds are tabulated below. These allowable undetected axial and circumferential flaw sizes have been shown to be acceptable in accordance with the ASME Section XI IWB-3640 acceptance criteria through the Spring 2019 RFO taking into account of potential PWSCC crack growth since the last volumetric examination during the Spring 2009 RFO. In accordance with the detection and sizing requirements in Supplement 10 of ASME Section XI Appendix VIII pertaining to the qualification of inspection procedures, the minimum required detectable flaw depth is 10% of the wall thickness (i.e.0.25"). Therefore, based on the current inspection detection capability, these maximum allowable undetected flaw sizes are larger than the flaw sizes that could have been reasonably missed during the last volumetric examination of the RV inlet nozzle DM welds in Spring 2009 RFO. As a result, deferring the volumetric examination for the RV inlet nozzle DM welds from 7 years allowed by Code Case N-770-1 to 10 years is technically justified. This is because the maximum allowable undetected flaw sizes that have been shown to be acceptable for a service life of 10 years from the Spring 2009 RFO to Spring 2019 RFO in accordance with the ASME Section XI IWB-3640 acceptance criteria are larger than the flaw sizes that might have been reasonably missed during the Spring 2009 RFO.

Maximum Allowable Undetected Flaw Sizes

	Axial Flaw (Aspect Ratio = 2)	**Circumferential Flaw (Aspect Ratio = 10)**
Percent through wall (a/t)	0.38	0.41
Flaw Depth (inches)	0.95	1.025
Flaw Length (inches)	1.90	10.25
Minimum Detection Capability (inches)	0.25	0.25

6. Duration of Proposed Alternative

This request is applicable to Entergy's inservice inspection program for the fourth interval for Indian Point Unit 3. The proposed alternative is until March 2019.

7. References

1. Code Case N-770-1, Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of listed Mitigation Activities Section XI, Division 1.
2. Westinghouse LTR-PAFM-13-115-P Rev. 0, "Technical justification to Support Extended Volumetric Examination Interval for Indian Point Generating Station Unit 3 Reactor Inlet Nozzle to Safe End Dissimilar Metal Welds," dated November, 2013.