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May 30, 2017

NL-17-058

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike, OWFN-2 F1
Rockville, MD 20852-2738

SUBJECT: Request IP2-ISI-RR-21 for Relief from Examinations of Code Class 2
Component Welds with Less Than Essentially 100% Examination Coverage
for Fourth Ten-Year Inservice Inspection Interval Closeout
Indian Point Unit No. 2
Docket No. 50-247
License No. DPR-26

Dear Sir or Madam:

The Indian Point Unit No. 2 (IP2) Fourth Ten-Year inservice inspection interval ended on May 31, 2016. During the Fourth interval, IP2 completed the required in-service examinations in accordance with the program plan, except that certain components could not fully meet the volumetric examination requirements stipulated in the ASME Section XI Code, 2001 Edition, 2003 Addenda, including the clarifications provided in the ASME Code Case N-460. Entergy Nuclear Operations, Inc. (Entergy) has determined that conformance with the code requirement of essentially 100% coverage of weld volume or area examined was impractical due to various constraints and limitations.

Accordingly, pursuant to 10CFR 50.55a(g)(5)(iii), Entergy submits the attached IP2 Relief Request IP2-ISI-RR-21 for NRC review and approval. The relief request proposes alternatives where the requirement of "essentially 100%" volumetric examination was not feasible due to construction limitations, obstructions, accessibility and examination techniques." The alternatives and justifications are explained in the attachment which provides a list of components that require relief pursuant to 10 CFR 50.55a. The alternatives and justifications provide an acceptable level of quality and safety and will not adversely impact the health and safety of the public.

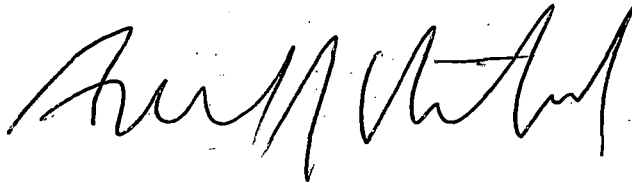
Entergy requests approval of the relief request by February 2018 to support the IP2 Refueling Outage 2R23.

A047
NRR

* Designated as Original, per R. Guzman *[Signature]* 22 Jun 2017.

Should you have any questions concerning this letter or require additional information, please contact Mr. Robert Walpole, Manager, Regulatory Assurance at (914) 254-6710.

Sincerely,



AJV/gd

Attachment 1: Request IP2-ISI-RR-21 for Relief from Examinations of Code Class 2
Component Welds with Less Than Essentially 100% Examination Coverage
for Fourth Ten-Year Inservice Inspection Interval Closeout

cc: Mr. Richard Guzman, Senior Project Manager, NRC NRR DORL
Mr. Daniel H. Dorman, Regional Administrator, NRC Region 1
NRC Resident Inspector's Office
Mr. John B. Rhodes, President and CEO, NYSERDA
Ms. Bridget Frymire, New York State Dept. of Public Service

ATTACHMENT 1

to NL-17-058

**Request IP2-ISI-RR-21 for Relief from Examinations of
Code Class 2 Component Welds with Less Than
Essentially 100% Examination Coverage for
Fourth Ten-Year Inservice Inspection Interval Closeout**

**ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247**

**Indian Point Unit No. 2
 Fourth 10-year ISI Interval
 Relief Request No. IP2-ISI-RR-21
 4th Interval Limited Examinations**

**Proposed Alternative In Accordance with 10 CFR 50.55a(g)(5)(iii)
 Inservice Inspection Impracticality**

1. ASME Code Component(s) Affected

Code Class: 2
References: IWC-2500-1
Examination Category: C-A, and C-F-1
Item Number: C1.10, C1.20, and C5.21

2. Applicable Code Edition and Addenda

The Code of Record for Indian Point Unit No. 2 (IP2) Inservice Inspection Fourth Ten-Year Interval is the ASME Section XI Code, 2001 Edition, 2003 Addenda.

3. Applicable Code Requirements

ASME Section XI, Sub-article IWC-2500 states in part, "Components shall be examined and tested as specified in Table IWC-2500-1." Table IWC-2500-1 requires an examination of applicable Class 2 pressure retaining-welds, which includes essentially 100% of weld length once during the ten-year interval for the following Code Categories:

Table 1

ASME Examination Category	ASME Item Number	ASME Section XI Exam Requirements / Figure Number	Non Destructive Examination (NDE) Method
C-A	C1.10	IWC-2500-1	Volumetric
C-A	C1.20	IWC-2500-1	Volumetric
C-F-1	C5.21	IWC-2500-7	Volumetric /Surface

Code Case N-460 permits a reduction in examination coverage of Class 2 welds provided the coverage reduction is less than 10%. IP2 has adopted Code Case N-460 in the Inservice Inspection (ISI) Program Plan, as permitted by USNRC Regulatory Guide 1.147.

4. Impracticality of Compliance

The construction permit for IP2 was issued on October 14, 1966. At that time, the ASME Boiler and Pressure Vessel Code covered fabrication of only nuclear vessels. Piping, pumps, and valves were built primarily to the rules of USAS B31.1.0-1955, Power Piping. The IP2 systems and components were designed and fabricated before the examination requirements of ASME Section XI were formalized and published. Therefore, IP2 was not specifically designed to meet the requirements of ASME Section XI and full compliance is not feasible or practical within the limits of the current plant design.

10CFR50.55a recognizes the limitations to inservice inspection of components in accordance with Section XI of the ASME Code that are imposed due to early plants design and construction, as follows: 10CFR50.55a(g)(1), "For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued before January 1, 1971, components (including supports) must meet the requirements of paragraphs (g)(4) and (g)(5) of this section to the extent practical."

10CFR50.55a(g)(4) states, "Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of editions and addenda of the ASME BPV Code ... to the extent practical within the limitations of design, geometry and materials of construction of the components."

Further, 10CFR50.55a(g)(5)(iii) states that , "If the licensee has determined that conformance with a Code requirement is impractical for its facility, the licensee must notify the NRC and submit, as specified in § 50.4, information to support the determinations."

IP2 has determined that the following welds were limited from achieving greater than 90% of the required examination volume for in-service examinations due to component configuration or physical barriers which would require a major modification to the existing hardware.

Table 2

Cat	Item	Component ID	System	Dia (in)	Thk (in)	Mat	Coverage %age (Note 1)	Description
C-A	C1.10	RHXC 22-1	RHR	34.5	0.75	SS	66.5	RHR Heat Exchanger Shell Circumferential Weld
C-A	C1.20	RHXC 22-2	RHR	34.5	0.75	SS	81	RHR Heat Exchanger Head Circumferential Weld
C-F-1	C5.21	56 170	HIS	4	0.337	SS	50	Safety Injection Valve to Pipe Circumferential weld

Note 1: For detailed information on each weld, see the writeup on the following pages.

C1.10 Residual Heat Removal Heat Exchanger Shell Circumferential Weld; RHXC 22-1

The Residual Heat Removal (RHR) Heat Exchanger Shell circumferential weld RHXC 22-1 is 108.4" long and attaches the heat exchanger shell to a flange. Code coverage of the Code Required Volume (CRV) was only credited for those areas that were ultrasonically examined in accordance with the procedure requirements. The ASME Section XI Code requirement is to examine essentially 100% of the weld.

Due to the proximity of the heat exchanger flange to weld RHXC 22-1, the weld could not be scanned from the flange side. This physical limitation resulted in approximately 66.5% coverage, which is less than the required coverage of the CRV.

Weld RHXC 22-1 was inspected using 45 degree shear and 70 degree longitudinal wave transducers, 0% axial coverage from the flange side and 66% axial coverage on the shell side (due to inlet /outlet nozzles) was obtained and 100% circumferential coverage was obtained on both sides. The weld is further limited by the inlet and outlet nozzle reinforcing pads. The total coverage for the entire weld was calculated as 66.5%.

See the Enclosure (Item A) for the cross-sectional view of the weld and a sketch of the limitations.

C1.20 Residual Heat Removal Heat Exchanger Head Circumferential Weld; RHXC 22-2

The Residual Heat Removal Heat Exchanger Head Circumferential Weld RHXC 22-2 is 108.3" long. Code coverage of the CRV was only credited for those areas that were ultrasonically examined in accordance with the procedure requirements. The ASME Section XI Code Requirement is to examine essentially 100% of the weld.

The examination was limited in one direction on the heat exchanger shell side by the integrally welded component supports. The total length of the limitation is 63.3" (31.5" on one side and 31.8" on the other side). Due to the integrally welded supports which are used to support the Residual Heat Removal Heat Exchanger, the head to shell weld could not be scanned from the supports side. This physical limitation resulted in approximately 81% coverage, which is less than the required coverage of the CRV.

See the Enclosure (Item B) for the cross-sectional view of the weld and a sketch of the limitations.

C5.21 Safety Injection Circumferential Pipe Weld: 56 170

Weld 56 170 was ultrasonically examined using 45, 60 and 70 degree shear wave transducers, with 100% axial and circumferential coverage obtained from the pipe side of the weld. The weld is a valve to pipe weld and it is not possible to perform the ultrasonic examination from both sides of the weld since one side of the weld was not suitable for scanning due to the OD surface geometry of the component (Valve). Therefore, the weld only received a single sided examination resulting in less than 90% coverage of the required examination volume. This physical limitation resulted in approximately 50% coverage, which is less than the required coverage of the CRV.

The required surface exam was determined to be not needed by evaluation per Code Case N-663.

See the Enclosure (Item C) for the cross-sectional view of the weld and limitation.

5. Burden Caused By Compliance

In order to inspect all of the required volume for these welds, the components would have to be redesigned to allow scanning from both sides of the weld, which is impractical. There were no unacceptable indications found during the inspection of these welds. Based on the components designed configuration, the available coverage will not meet the requirements of the ASME Code, or Code Case N-460.

In accordance with 10 CFR 50.55a(g)(5)(iii), relief is requested for the components listed in Table 2 on the basis that the required examination coverage of "essentially 100 percent" is impractical due to physical obstructions and the limitations imposed by design, geometry, and materials of construction. IP2 utilized examination techniques as required in 10 CFR 50.55a(g)(6)(ii)(C) that achieved the maximum practical amount of coverage obtainable within the limitations imposed by the design of the components and examination techniques. Additionally, VT-2 examinations are performed on the subject components during system leakage tests on an inspection period frequency. Those examinations were completed and no evidence of leakage was identified for these components.

Based on the design configuration of the components and available examinations techniques, IP2 was not able to achieve greater than 90% Code coverage of the required examination volume for the components listed above without major modifications to the components.

6. Proposed Alternative and Basis for Use

No alternative examinations were performed for the welds during the completed inspection interval. The use of radiography as an alternate volumetric examination for all the above listed components is not practical due to component thickness and/or geometric configurations, or the system being water filled resulting in the inability to achieve the code-required radiographic sensitivity. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of the source and film.

Based on the above, with due consideration of the earlier plant design, the underlying objectives of the Code-required examinations have been met. The examinations were completed to the extent practical and evidenced no unacceptable flaws present. IWC-2500, Table IWC-2500-1, Examination Category C-H System Leakage Tests with VT-2 visual examinations performed each inspection period provide adequate assurance of pressure boundary integrity. In addition to the above Code-required examinations, there are other activities which provide a high level of confidence that, in the unlikely event that leakage did occur through these welds, it would be detected and proper action taken. Specifically, system leak rate limitations imposed by Technical Specifications as well as containment building normal sump rate monitoring provide additional assurance that any leakage would be detected prior to gross failure of the component. The component welds were inspected by volumetric and surface NDE methods during construction and verified to be free from unacceptable fabrication defects.

Therefore, reasonable assurance of quality and safety has been demonstrated.

7. Duration of Proposed Alternative

Relief is requested for the Fourth Ten-year Interval of the Inservice Inspection Program for IP2 which was effective from March 1, 2007, through May 31, 2016.

8. Enclosure

Indian Point Unit 2 Fourth Ten-year Interval ISI program datasheets for examinations with less than "Essentially 100%" coverage are provided in the Enclosure titled "Weld Limitation Views and Details."

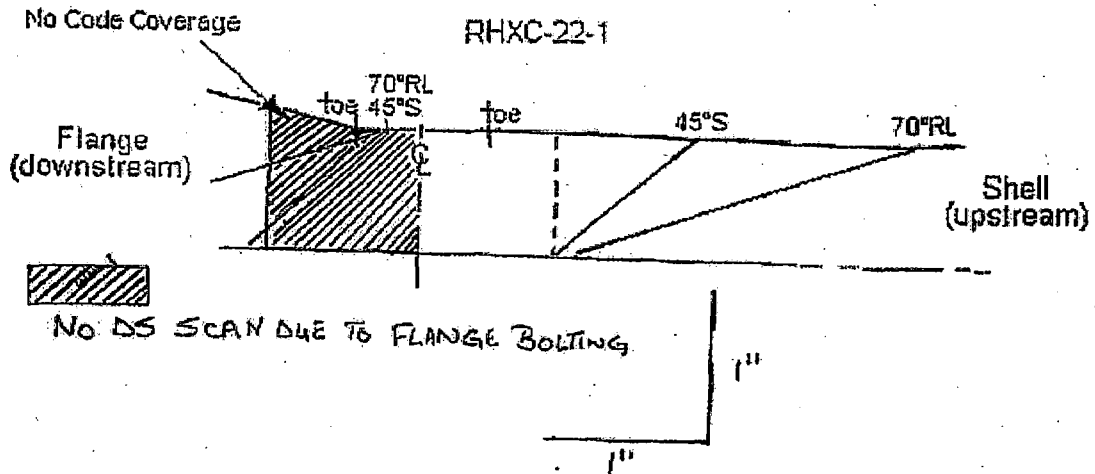
ENCLOSURE

WELD LIMITATION VIEWS AND DETAILS

A. Residual Heat Removal Heat Exchanger Shell Circumferential Weld RHXC 22-1

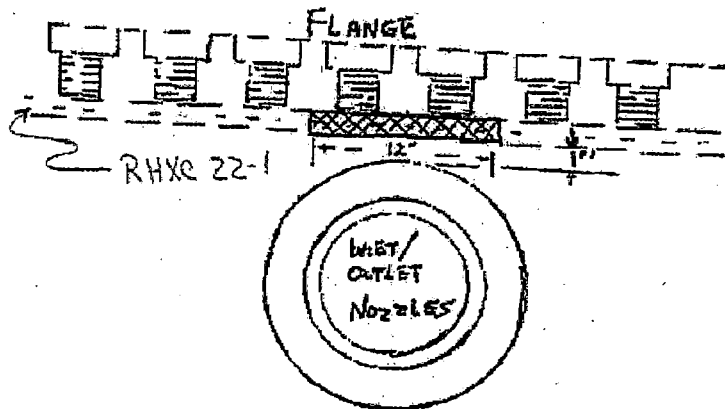
RHR Heat Exchanger Shell Circumferential Weld RHXC 22-1

Sketch 1 of 1



LIMITATION SHEET

RHXC 22-1



Examination is single-sided and is further limited by inlet & outlet nozzle reinforcing pads (to "W" of 1" from welds toe, for 6" either side of TDC).

Total Code Required Examination Volume = 158.70 sq/in.

Total Volume of Limitations = 53.36 sq/in.


Axial Scan U/S = 66%

Axial Scan D/S = 0%

Circ Scan CW = 100%

Circ Scan CCW = 100%

Total Code Required Examination Volume Coverage = 66.5%

 NO UPSTREAM SCAN DUE TO INLET/OUTLET NOZZLES

B. Residual Heat Removal Heat Exchanger Shell Circumferential Weld RHXC 22-2

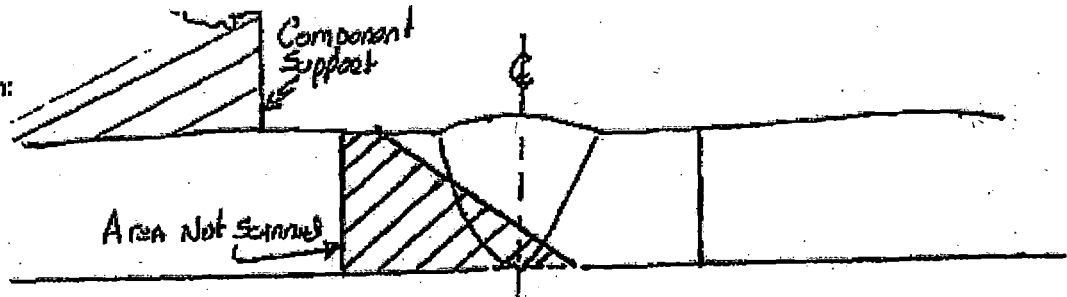
RHR Heat Exchanger Head Circumferential Weld RHXC 22-2

Sketch 1 of 1

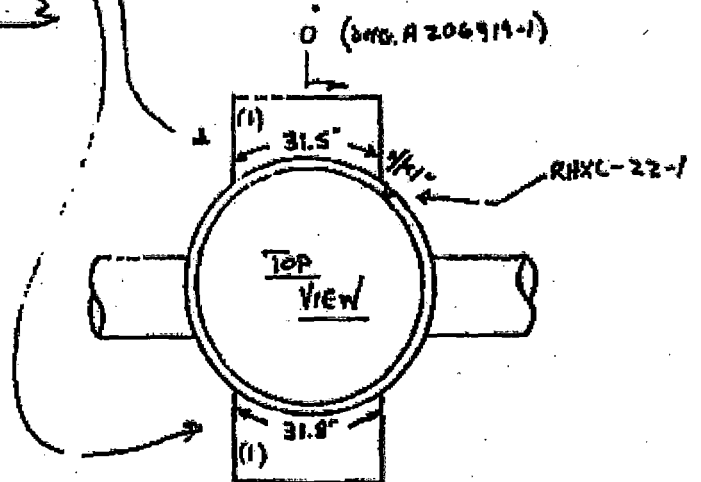
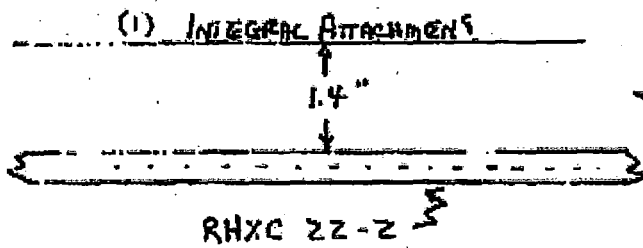
Description of Limitation:

The examination was limited in one direction on the heat exchanger shell side by the integrally welded component supports. The total length of the limitation is 63.3" (31.5" on one side and 31.8" on the other side). The total required examination area volume is 173.4 sqin. The limitation volume is 32.91sqin. (one direction, half of the required examination volume). The total percent coverage is 81%.

Sketch of Limitation:



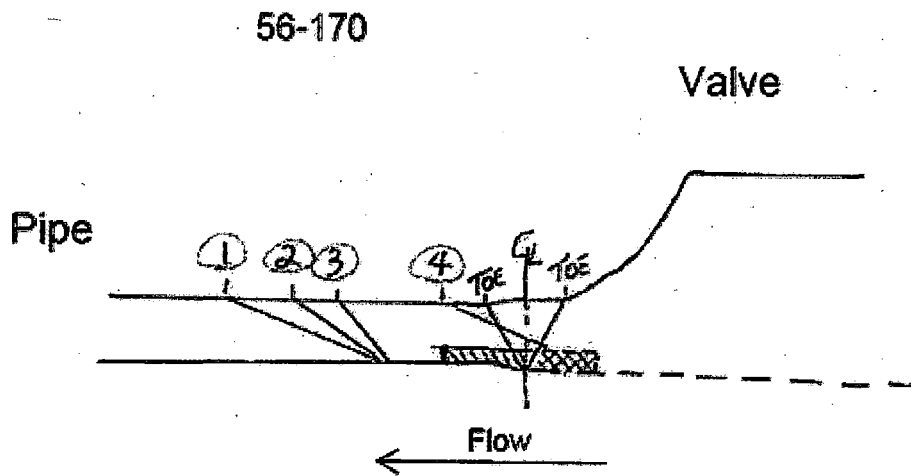
SIDE VIEW



C. Safety Injection Circumferential Pipe Weld 56 170

Safety Injection Circumferential Weld Valve to Pipe 56 170

Sketch 1 of 1





US - AX, CW, CCW = 100%
DS - AX, CW, CCW = 0%
 100 / 2 = 50%



70° - 5 mHz
 60° - 5 mHz
 45° - 5 mHz
 70° - 2.25 mHz + 5mHz

Weld Crown Width .5"

-  CRV Obtained LK DN, CW, CCW
-  No Coverage Obtained Due To Config. LK UP, CW, CCW