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R. Walpole  
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March 26, 2008

Re: Indian Point Unit 2  
Docket No. 50-247

NL-08-053

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

Subject: 10 CFR 50.55a Request RR-CRV-75 – Relief from Examinations of  
Component Welds with Less Than Essentially 100% Examination  
Coverage for Third-Ten Year Inservice Inspection Interval Closeout

- Reference:
1. Con Edison Letter NL-94-006, "Third Ten-Year Interval Inservice Inspection Program," dated January 24, 1994.
  2. ASME Section XI, Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1"

Dear Sir or Madam:

Indian Point Unit 2 (IP2) Third ten-year inservice inspection interval ended on March 1, 2007. During the Third interval, IP2 completed the required in-service examinations in accordance with the program plan (Reference 1); except, certain components could not fully meet the volumetric examination requirements stipulated in the ASME Section XI Code, 1989 Code Edition, with No Addenda, including the clarifications provided in the ASME Code Case N-460 (Reference 2). 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 10 CFR 50.55a (g)(5)(iii), Entergy submits the attached IP2 Relief Request, RR-CRV-75, for NRC review and approval. Relief Request, RR-CRV-75, 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 attached relief request providing a list of components which requires relief pursuant to 10 CFR 50.55a. The alternatives and justifications provide acceptable level of quality and safety and will not adversely impact the health and safety of the public.

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NRR

There are no new commitments identified in this submittal. If you have any questions or require additional information, please contact Mr. R Walpole at (914) 734-6710.

Sincerely,



R Walpole  
Licensing Manager  
Indian Point Energy Center

Attachment:

- A. 10 CFR 50.55a Relief Request RR-CRV-75

cc: Mr. John P. Boska, Senior Project Manager, NRC NRR DORL  
Mr. Samuel J. Collins, Regional Administrator, NRC Region 1  
NRC Resident Inspector, IP2  
Mr. Paul D. Tonko, President NYSERDA  
Mr. Paul Eddy, New York State Dept. of Public Service

Attachment A to NL-08-053

**10 CFR 50.55A RELIEF REQUEST RR-CRV-75**

**RELIEF FROM EXAMINATIONS OF COMPONENT WELDS WITH LESS THAN  
ESSENTIALLY 100% EXAMINATION COVERAGE  
FOR THIRD-TEN YEAR INSERVICE INSPECTION INTERVAL CLOSEOUT**

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

10 CFR 50.55a Relief Request RR-CRV-75

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

**1. ASME Code Component(s) Affected**

Code Class: Class 1 (Quality Group A)  
Examination Categories: B-A, B-D, and R-A  
Item Numbers: B1.22, B1.40, B3.120, and R1.20

**2. Applicable Code Edition and Addenda**

The Code of Record for Indian Point Unit 2 Inservice Inspection Third Ten-Year Interval is the ASME Section XI Code, 1989 Edition, No Addenda.

**3. Applicable Code Requirements**

IWB-2500, states in part, "Components shall be examined and tested as specified in Table IWB-2500-1. The method of examination for the components and parts of the pressure retaining boundaries shall comply with those tabulated in Table IWB-2500-1, except where alternate examination methods are used that meet the requirements of IWA-2240". Table IWB-2500-1 requires that a volumetric and/or surface examination be performed on specified components based on Code Category and Item Number. The applicable examination area or volume and method required are shown below from Table IWB-2500-1:

ASME Examination Category	ASME Item Number	ASME Section XI Exam Requirements / Figure Number	NDE Examination Method
B-A	B1.22	IWB-2500-3	Volumetric
B-A	B1.40	IWB-2500-5	Volumetric & Surface
B-D	B3.120	IWB-2500-7	Volumetric
R-A	R1.20	IWB-2500-8	Volumetric

**4. Impracticability of Compliance**

Relief is requested from performing a complete coverage examination of the entire volume of area required. Entire volume or area required is defined by ASME Section XI Code Case N-460 titled "Alternative Examination Coverage for Class and Class Welds, Section XI, Division 1."

Code Case N-460 states in part, "...when the entire examination volume or area cannot be examined ...a reduction in examination coverage...may be accepted provided the reduction in coverage for that weld is less than 10%."

The NRC through, Information Notice 98-42 titled "Implementation of 10CFR50.55a(g) Inservice Inspection Requirements," termed the reduction in

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coverage of less than 10% to be essentially 100 percent.” Information Notice 98-42 states, in part, “The NRC has adopted and has further refined the definition of ‘essentially 100% percent’ to mean ‘greater than 90 percent’...has been applied to all examinations of welds or other areas required by ASME Section XI.”

The construction permit for Indian Point Unit 2 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.

10 CFR 50.55a 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:

*10 CFR 50.55a(g)(5)(iii): If the licensee has determined that conformance with certain code requirements is impractical for its facility, the licensee shall notify the Commission and submit, as specified in § 50.4, information to support the determinations.*

Accordingly, pursuant to 10 CFR 50.55a(g)(5)(iii), 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 as stated above. Entergy requests NRC approval of the proposed alternative as stated below.

Relief is requested from performing an examination of “essentially 100% of the required volume or area as applicable for the identified components in Table 1 below.

ASME Code Category and Item Numbers where previous relief requests were granted for coverage limitations not identified in Table 1 are as follows:

Class 1 (Quality Group A)

ASME Code Category B-A, “Pressure Retaining Welds in Reactor Vessel Head Welds,” (Item Nos. B1.21 and B1.22), are not listed in Table 1. Relief was submitted and granted for coverage limitations for meridional welds RVHM-1, RVHM-3, & RVHM-5 in the following approved relief request:

- Relief Request RR-06, Rev. 1, Reactor closure head circumferential welds. NRC Relief Granted, Date 6-3-97 3rd Int. TAC No. M88559.

ASME Code Category B-D and B-J, “Surface examination of Reactor Vessel Nozzle to Safe End Welds” (Item Nos. B5.10 and B9.11), are not listed in Table 1. Relief was submitted and granted for impracticality of examination in the following approved relief request:

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- Relief Request RR-11, Rev. 1, Surface examination of Reactor Vessel Nozzle to Safe End Welds. NRC Relief Granted, Date 6-3-97 3rd Int. TAC No. M88559.

ASME Code Category B-B, "Pressure Retaining Welds in Vessels Other than Reactor Vessels," (Item Nos. B2.11 and B2.12), Pressurizer Shell-to-Head welds, not listed in Table 1. Relief was submitted and granted for coverage in the following approved relief request:

- Relief Request RR-07, Pressurizer shell to head, circumferential and longitudinal welds. NRC Relief Granted, Date 6-3-97, TAC No. M88559.

ASME Code Category B-B, "Pressure Retaining Welds in Vessels Other than Reactor Vessels," and Category B-D, "Full Penetration Welds of Nozzles in Vessels," (Item Nos. B2.51, B2.80, B3.150, and B3.160), Regenerative Heat Exchanger vessel welds, not listed in Table 1. Relief was submitted and granted for coverage in the following approved relief requests:

- Relief Request RR-08, Rev. 2, Regenerative Heat Exchanger vessel welds and inner radius sections. ASME Cat: B-B, B-D. NRC Relief Granted, Date 6-3-97, TAC No. M88559.
- Relief Request RR-60, Alternative to eliminate ASME Cat. B-B and B-D weld examinations on regenerative heat exchanger. NRC Relief Granted, Date 1/17/2003, TAC No. MB5834.

ASME Code Category B-D "Pressure Retaining Welds in Vessels Other than Reactor Vessels," (Item No. B3.120), Pressurizer Nozzle Inside Radius, are not listed in Table 1. Relief was submitted and granted for coverage in the following approved relief request:

- Relief Request RR-09, Rev. 1, Pressurizer Inside Radius sections. ASME Cat B-D. NRC Relief Granted, Date 6-3-97, TAC No. M88559.

ASME Code Category B-J "Pressure Retaining Welds in Piping" (Item No. B9.11 and B9.12), are not listed in Table 1. Relief was submitted and granted for coverage in the following approved relief requests:

- Relief Request RR-27, Reactor coolant piping, longitudinal welds. ASME Cat: B-J. NRC Relief Granted, Date 6-3-97, TAC No. M88559.
- Relief Request RR-51, Line 351, Weld 351-2, >90% examination coverage. NRC Relief Granted, Date 11/7/2000, TAC No. MA6909.

ASME Code Category B-K, "Integral Attachments for Pumps," (Item No. B10.10), are not listed in Table 1. Relief was submitted and granted for coverage in the following approved relief request:

- Relief Request RR-38, Documentation of less than 90% coverage, RCP integral welded attachments. NRC Relief Granted, Date 3-21-00, TAC No. MA5918.

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Class 2 (Quality Group B)

ASME Code Categories C-A, C-B, C-C, (Item Nos. C1.10, C1.20, C2.31, C3.10), are not listed in Table 1. Relief was submitted and granted for coverage in the following approved relief requests:

- Relief Request RR-16, Residual Heat Exchange nozzle to vessel and integral attachment welds. NRC Relief Granted, Date 6-3-97, TAC No. M88559.
- Relief Request RR-52, RHRHX, Welds RHX C22-1 & C22-2. NRC Relief Granted, Date 11/7/2000, TAC No. MA6909.

**5. Burden Caused By Compliance**

Compliance with the examination coverage requirements of ASME Section XI would require extensive engineering, modification, redesign, or replacement of components where geometry is inherent to the component design.

**6. Proposed Alternative and Basis for Use**

Proposed Alternative

- A) The components listed in Table 1 have already been examined by the available methods to the maximum extent practical. No additional volumetric or surface examinations will be performed on the components for the 3<sup>rd</sup> Inservice Inspection Interval.
- B) A visual inspection (VT-2) was performed by VT-2 qualified operators on the subject components during the system pressure tests (with no leakage detected) as required by code category B-P (each refueling outage).

Basis for Use

The Reactor Pressure Vessel and Pressurizer, and class 1 piping were designed and fabricated to Codes in effect during the late 1960's. These Codes did not require that there be full access for Inservice inspection, as was required by later Codes.

ASME Code Category B-A, Item No. B1.22, Meridional Welds RVHM-2, RVHM-4, & RVHM-6: The RV closure head peel segment to disc circumferential weld and portions of the intersecting meridional welds are completely enclosed within the pattern of CRDM penetrations inside the shroud and, as such, are completely Inaccessible for volumetric examination as would be required by IWB-2500. (See Attachment 1)

ASME Code Category B-A, Item No. B1.40, RV Head Flange Circ Weld RVHC-2: The Reactor Vessel Flang-to-Head circ weld has limited accessibility due to the contour of the flange head and the interference of the lifting lug. (See Attachment 2)

ASME Code Category B-D, Item No. B3.120, Pressurizer Spray & Surge Nozzle Inside Radius Welds PZRN-1 and PZRN-6: The nozzles of the pressurizer are cast with the vessel heads. The as-cast surface of the heads combined with the geometry of this area makes ultrasonic examination of the inner radii impractical.

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The spray nozzle inner radius (PZRN-1) is also covered by an array of nozzle heads. The surge nozzle inner radius (PZRN-6) is also inaccessible due to the area being covered by a retaining basket. (See Attachment 3)

ASME Code Category R-A, Item No. R1.20, RCS Pipe to Safe-End Circ Welds RCC-21-1, RCC-22-1, RCC-23-1, and RCC-24-1: These reactor vessel pipe to safe end had limitations due to the tapered area of the weld overlay on the ID of the pipe. (See Attachment 4)

Physical obstructions imposed by design, geometry and materials of construction are typical of vessel appurtenances, structural and component support members, adjacent component weldments in close proximity, and unique component configurations.

As a minimum, all components received the required examination(s) to the extent practical with regard to the limited or lack of access available. The examinations conducted confirmed satisfactory results evidencing no unacceptable flaws present, even though "essentially 100%" coverage was not attained. IP2 has concluded that if any active degradation mechanisms were to exist in the subject welds, those degradations would have been identified in the examinations performed.

For volumetric (ultrasonic) examinations, the transition to PDI examinations varied the means of coverage determination based on code requirements. Earlier Code examination coverage was determined by a simple average of the examination scans performed. Later examinations performed per PDI requirements identify coverage based on a simple average of the scans per the requirement of PDI and CFR. The attachments within identify the means of determining examination coverage and are based on the requirements at the time the examinations were performed.

To summarize, IP2 has examined all components in the 3<sup>rd</sup> 10-Yr Interval ISI Program and associated augmented programs to the maximum extent possible given the inspection limitations discussed above.

When the IP2 ISI Program is viewed in total, the overall degree of coverage obtained is still greater than 90%, i.e. essentially 100%. For this and the other reasons detailed in this request, Entergy believes that the limited coverage obtained on the components listed in Table 1 is not significant and will provide an adequate level of quality and safety for examination of the affected welds, and will not adversely impact the health and safety of the public.

#### **7. Duration of Proposed Alternative**

Relief is requested for the third ten-year interval of the Inservice Inspection Program for Indian Point Unit 2, which began July 1, 1995 and concluded March, 2007.

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**8. Attachment**

Indian Point Unit 2 Third Interval ISI program datasheets for examinations with less than "Essentially 100%" coverage are attached (Attachments 1 – 4)

**9. References**

1. NRC Information Notice 98-42, "Implementation of 10CFR50.55a(g) Inservice Inspection Requirements."
2. ASME Section XI Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds."
3. ASME Section XI Code Case N-613-1, "Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item No's. B3.10 and B3.90, Reactor Nozzle-To-Vessel Welds."
4. Relief Request RR-63, Risk-Informed In-service Inspection Program. ASME Cat B-F, B-J. Ref: EPRI TR-112657. NRC Relief Granted, Date 03/19/2004, TAC No. MC0624.
5. Relief Request RR-67, Code Case N-613-1: Alternative for reduced (UT) exam for Full Penetration Nozzles in Vessels, ASME Category B-D, item No's. B3.10 and B3.90. NRC Relief Granted, Date 7/7/2004, TAC No. MC1698.
6. Relief Request RR-73, Extend the Third 10-Yr Reactor Vessel Weld Examination Inservice Inspection one refueling cycle; including ASME Code Categories B-A Item B1.12, Item B1.21, Item B1.22, Item B1.30, ASME Code Category B-D, Item B3.90 , & Item B3.100. NRC granted via SER, TAC No. MC7306, dated February 22, 2006.

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Table 1

Summary of Components with Less than “Essentially 100% Code Required Coverage”

ASME Code Category	ASME Item No.	System	Component ID	Component Description	NDE Method	Condition Limiting Coverage	Percentage of Coverage Achieved	Remarks
B-A	B1.22	RCS	RVHM-2	RV Upper Head Meridional Welds	Volumetric (UT)	Inaccessible due to CRDM Penetration and Shroud area.	85%	Attachment 1
B-A	B1.22	RCS	RVHM-4	RV Upper Head Meridional Welds	Volumetric (UT)	Inaccessible due to CRDM Penetration and Shroud area.	85%	Attachment 1
B-A	B1.22	RCS	RVHM-6	RV Upper Head Meridional Welds	Volumetric (UT)	Inaccessible due to CRDM Penetration and Shroud area.	85%	Attachment 1
B-A	B1.40	RCS	RVHC-2	RV Upper Head Flange Weld	Volumetric (UT/MT)	One sided exam due to Flange and Head shroud interference	50%	Attachment 2
B-D	B3.120	RCS	PZRN-1	Pressurizer Spray Nozzle Inner Radius Weld	Volumetric (UT)	Covered by an array of nozzle heads	0%	Attachment 3
B-D	B3.120	RCS	PZRN-6	Pressurizer Surge Noz. Inner Radius Weld	Volumetric (UT)	Covered by a retaining basket	0%	Attachment 3
R-A	R1.20 <sup>1</sup>	RCS	RCC 21-1	RCS Pipe to Safe-End Circ Weld RO@202°	Volumetric (UT)	Limitation due to tapered area of the overlay on the ID	88%	Attachment 4

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ASME Code Category	ASME Item No.	System	Component ID	Component Description	NDE Method	Condition Limiting Coverage	Percentage of Coverage Achieved	Remarks
R-A	R1.20 <sup>1</sup>	RCS	RCC 22-1	RCS Pipe to Safe-End Circ Weld RO@158°	Volumetric (UT)	Limitation due to tapered area of the overlay on the ID	88.5%	Attachment 4
R-A	R1.20 <sup>1</sup>	RCS	RCC 23-1	RCS Pipe to Safe-End Circ Weld RO@338°	Volumetric (UT)	Limitation due to tapered area of the overlay on the ID	89%	Attachment 4
R-A	R1.20 <sup>1</sup>	RCS	RCC 24-1	RCS Pipe to Safe-End Circ Weld RO@022°	Volumetric (UT)	Limitation due to tapered area of the overlay on the ID	89%	Attachment 4

Notes:

- Indian Point Unit 2 received NRC approval on March 19, 2004 (TAC No. MC0624) to implement a risk-informed inspection program for Class 1 Category B-F and B-J piping welds based on the methodology detailed in EPRI Topical Report TR-112657, Revision B-A, and Code Case N-578 as an alternative to the requirements of the 1989 edition ASME XI code, No addenda. The risk-informed methodology used at IP2 includes all category B-F and B-J welds in the determination of the final risk-informed inspection sample of 61 Class 1 welds. In 2006, Class 1 circumferential piping welds were assigned alternate examination category and code item numbers that were consistent with ASME Section XI Code Case N-578-1. The numbering system established in Code Case N-578-1 is similar to the one used in Code Case N-578. However, the Code Case N-578-1 numbering system is more complete and more accurately reflects the technical criteria established in EPRI Topical Report No. TR-1 12657. For these reasons, the numbering system established in Code Case N-578-1 was used instead of the one shown in Code Case N-578; and is carried forward into the fourth interval. Item number RI.20 as shown in Table 1 of RR-CRV-75 is not listed in Code Case N-578 but was included in Code Case N-578-1 as a means to categorize elements that are not subject to a damage mechanism. Inclusion of item number R1 .20 in Table 1 has no substantive impact on relief request RR-CRV-75.

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Attachment 1

**Code Category B-A:**                      **Pressure Retaining Welds in Reactor Vessel**

Item No. B1.22                              Reactor Vessel Closure & Bottom Head Welds – Meridional

**Components Numbers:**

RVHM-2	Reactor Vessel Bottom Head Weld – Meridional
RVHM-4	Reactor Vessel Bottom Head Weld – Meridional
RPVM-6	Reactor Vessel Bottom Head Weld – Meridional

**Basis:**

Meridional welds RVHM-2, RVHM-4, & RVHM-6 exam coverage are obstructed by the CRDM penetrations, RV head shroud, and flange contour. Examinations of these meridional welds were conducted to inspect as much as reasonably practical. These exams were limited by geometry or access. (See Relief Request RR-06, Rev.1, Reference 1, below)

The total meridional weld length from the RV head flange weld to the top of the head peel segment weld is ~57 inches. With the head shroud cover in place, approximately 32 inches of weld length is inaccessible; therefore, only ~25 inches of weld length is accessible for examination. Of this accessible weld length of ~25 inches, only 85% of exam coverage was obtained, which is less than 91% coverage as stated in the NRC SER (Reference 1 below).

In summary, the reactor vessel closure head meridional welds were volumetrically examined to the extent practical. Three of the six meridional welds (RVHM-2, RVHM-4, & RVHM-6) were available for approximately 85% rather than 91% of their length for volumetric examination. Attachment 1 shows the Reactor Vessel drawing with the shroud and CRDM's covering most of the meridional welds and the

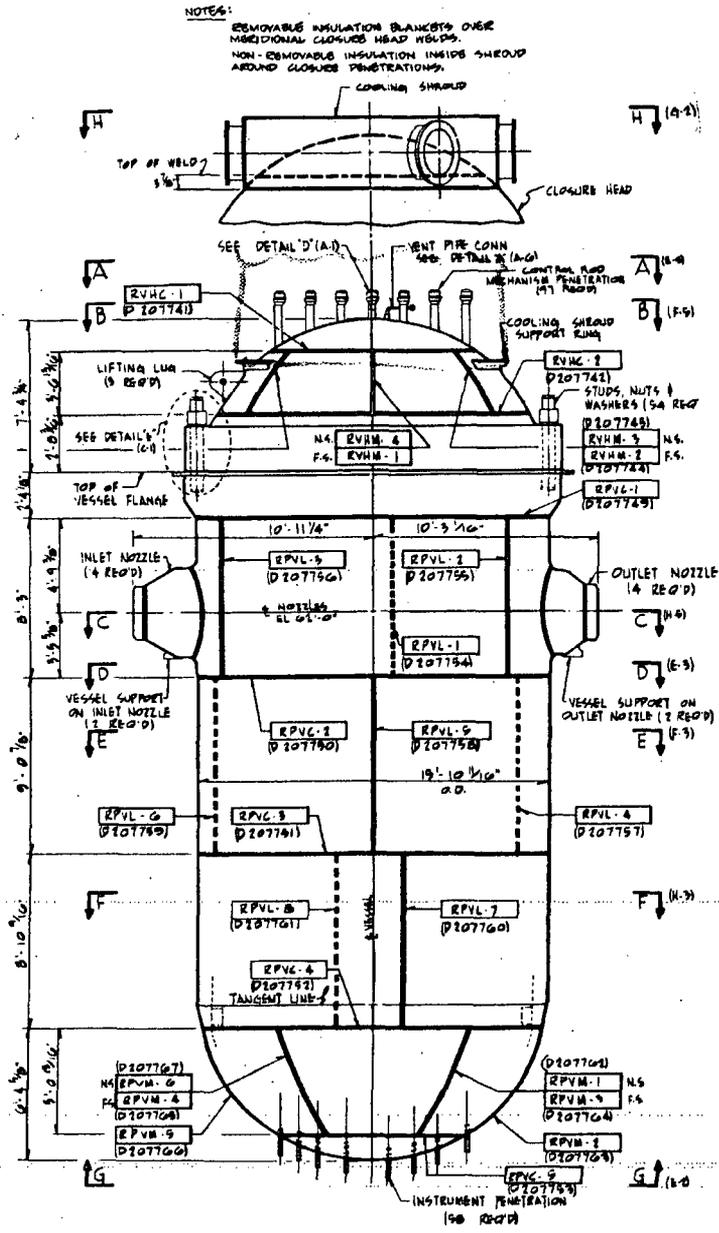
**References**

1. Relief Request RR-06, Rev. 1, for Items B1.21 and B1.22 has been previously granted for RVHM-2, RVHM-4, RVHM-6, RVHM-1, RVHM-3, & RVHM-5 via SER, TAC No. M88559, dated June 3, 1997.

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Attachment 1

**RV Upper Head CRDMs/Shroud Support (Ref. 206913)**



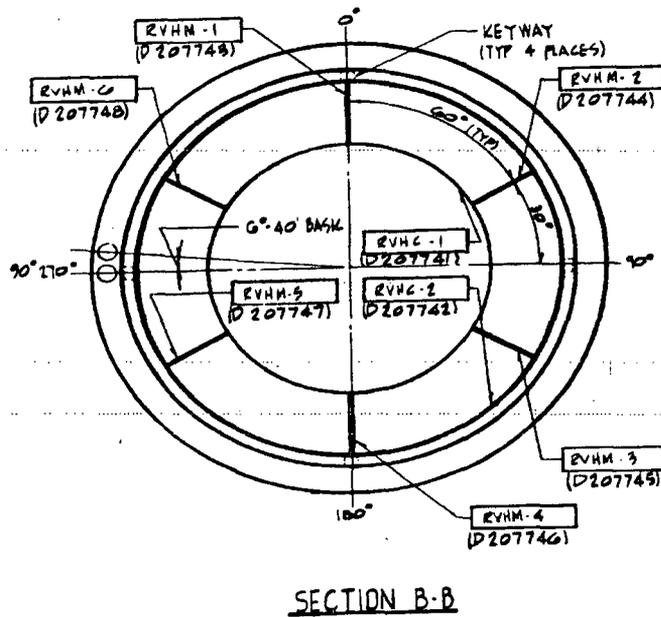
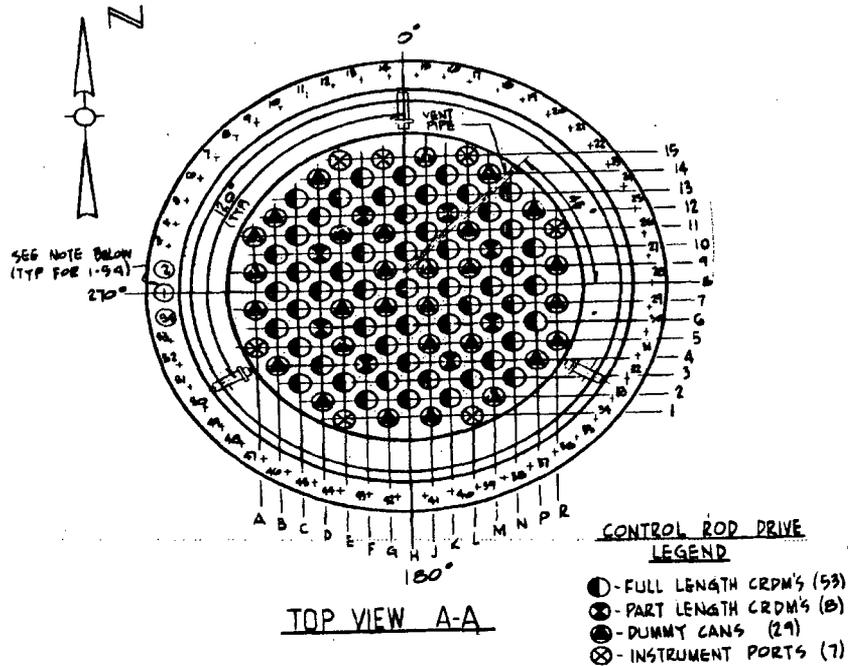
**REACTOR PRESSURE VESSEL**

NOT A TRUE ORIENTATION. FOR TRUE ORIENTATION SEE SECTIONS.

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Attachment 1

RV Upper Head Meridional Welds/CRDMs/Shroud (Ref. 206913)



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Attachment 1

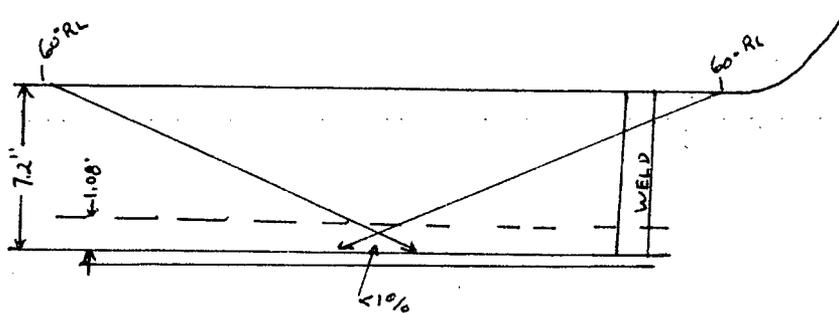
RV Upper Head Meridional Weld RVHM-2

Weld No.: RVHM2  
Summary No.: 206913-RVHM2  
Report No.: 04-UT097  
Page 5 of 5

04UT097  
3 of 3

**Coverage Plot**

1. The weld was scanned 100% perpendicular with a 60° RL using a Zone 1 and Zone 2 Cal.
2. < 100% coverage was achieved when scanned parallel to the weld due to the flange at the bottom of the weld and a taper 25" up on the weld.
3. < 1% of the lower 15% of the weld was scanned in all four directions.
4. Using one sided qualified personnel, 100% of the upper 85% was covered in one direction perpendicular and one direction parallel.
5. Weld coverage of the lower 25" of the weld = 85%.



JOSEPH SERTH LV II

*Joseph Serth* 11-6-04

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Attachment 1

RV Upper Head Meridional Weld RVHM-4



Supplemental Report

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Report No.: 06-UT097  
Page: 2 of 2

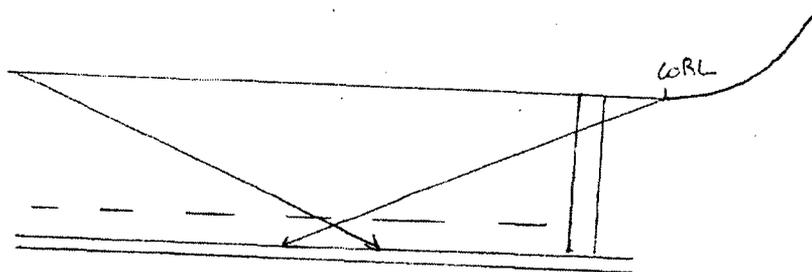
Summary No.: 206913-RVHM4

Examiner: Serth, Joseph P.	Level: I-PDI	Reviewer: [Signature]	Date: 5-27-06
Examiner: Gronewold, Douglas M.	Level: II-PDI	Site Review: [Signature]	Date: 5/21/06
Other: N/A	Level: N/A	ANII Review: [Signature]	Date: 5/2/06

Comments:

Coverage Plot

1. The weld was scanned 100% perpendicular with a 60° RL using a Zone 1 and Zone 2 Cal.
2. < 100% coverage was achieved when scanned parallel to the weld due to the flange at the bottom of the weld and a taper 25" up on the weld.
3. < 1% of the lower 15% of the weld was scanned in all four directions.
4. Using one sided qualified personnel, 100% of the upper 85% was covered in one direction perpendicular and one direction parallel.
5. Weld coverage of the lower 25" of the weld = 85%.



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Attachment 1

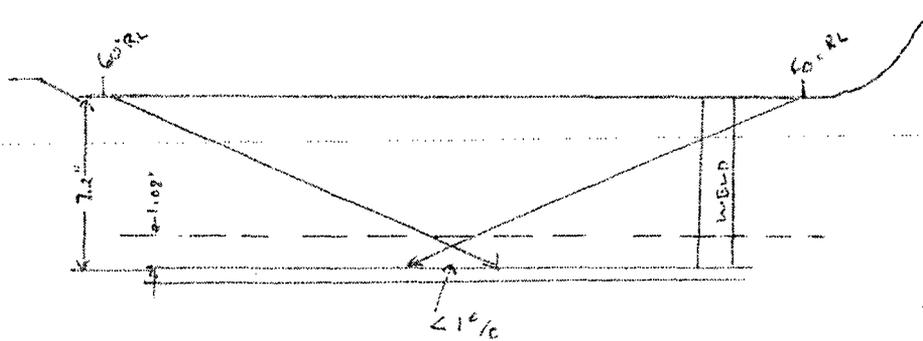
RV Upper Head Meridional RVHM-6

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Weld No.: RVHM6  
Summary No.: 206913-RVHM6  
Report No.: 04-UT084  
Page 6 of 6

Coverage Plot

1. The weld was scanned 100% perpendicular with a 60° RI using a Zone 1 and Zone 2 Cal.
2. < 100% coverage was achieved when scanned parallel to the weld due to the flange at the bottom of the weld and a taper 25" up on the weld.
3. < 1% of the lower 15% of the weld was scanned in all four directions.
4. Using one sided qualified personnel, 100% of the upper 85% was covered in one direction perpendicular and one direction parallel.
5. Weld coverage of the lower 25" of the weld = 85%.



JOSEPH SERTA LUII 11-2-04

*Joe Sertu*

REVIEWED 11/10/04 *James L. Bellamy*

*J. Sertu*

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Attachment 2

**RV Flange-to-Head Weld RVHC-2**

**Code Category B-A:**

**Pressure Retaining Welds in Reactor Vessel**

Item No. B1.40

Reactor Vessel Closure Head Flange-to-Head Weld –  
Circumferential

**Components Number:**

RVHC-2

Reactor Vessel Closure Head Weld – Circumferential

**Basis:**

Table IWB-2500-1, Examination Category B-A, Item B1.40, requires 100% volumetric and surface examination of the reactor vessel head-to-flange weld, as defined by Figure IWB-2500-5. Entergy performed the volumetric examination to the extent practical; resulting in approximately fifty percent (50%) of the weld volume was ultrasonically examined for 2/3 of the weld length in 1997. Eighty four percent (84%) coverage was obtained using updated equipment and better technique in the last 1/3 of the weld length in 2004 (See attached). The surface examination conducted confirmed satisfactory results evidencing no unacceptable flaws present. Based on the percent of the volumetric examination completed and the Code-required surface examination, it is reasonable to conclude that degradation, if present, would have been detected.

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Attachment 2

RV Flange-to-Closure Head Weld RVHC-2 & Lifting Lug (Ref. D207742)

MATERIALS				
NO.	PRODUCT FORM (CONFIGURATION)	MFG./WELD PROCESS	MATERIAL (TYPE)	MTL. SPEC (ASTM/SA)
1	CLOSURE HEAD			
	PEEL SEGMENT	PLATE	MN -MO	SA-302 GR. B*
2	CLADDING	WELD DPST	STA STL	TYPE 304 EQUIV
3	CLOSURE HEAD			
	FLANGE	FORGED	ALLOY STL	A-508-64
*NICKEL MODIFIED TO SA-593 GR B CLASS I				
CALIBRATION BLOCK NO. _____				
FABRICATION SPEC. _____				
FABRICATION CODE _____ CLASS _____ EDITION _____ ADDENDA _____				
SURFACE COATING _____				
SURFACE FINISH _____				
CROWN CONDITION _____				
SCANNING LIMITATIONS _____				
ACCESS RESTRICTIONS _____				
WELD MARKINGS _____				
SCAFFOLDING ROPTS. _____				
INSULATION DETS. _____				
EXPOSURE LEVELS				
	nr	ON CONTACT	DATE	nr @ X FT. DATE
COMMENTS _____				
<b>NOT FOR FABRICATION OR INSTALLATION</b>				

STATION - INDIAN POINT NO. 2  
 WELD DETAIL FOR INSERVICE INSPECTION  
 WELD NO. RVHC-2  
 DRAWN BY PD CHECKED NICHOLS  
 SCALE 1/2" = 1'-0" J.O. 7076-00-11

CHIEF DESIGNER  
 ENG. *[Signature]*  
 APPROVALS  
 DWG. NO. **D 207742-0**  
 RECORDED 11/21/74

REVISIONS  
 0  
 THIS ISSUE  
 15 NON-CLASS  
 PER  
 CI 240-1.  
 RELEASE  
 FOR RECORD  
 P.N. 7076  
 11-2-78

COMPONENT/LINE NO. REACTOR VESSEL  
 REF. DWGS. A206913  
 QUALITY GROUP A

LIFTING LUG (REF)

VESSEL HEAD STUD (REF)

WELD

CRDH NOS:  
 E-1, L-1, R-5, R-11  
 L-15, E-15, A-11, A-5

STATION INDIAN POINT NO. 2  
 DWG. NO. **D207742**

10 CFR 50.55a Relief Request RR-CRV-75

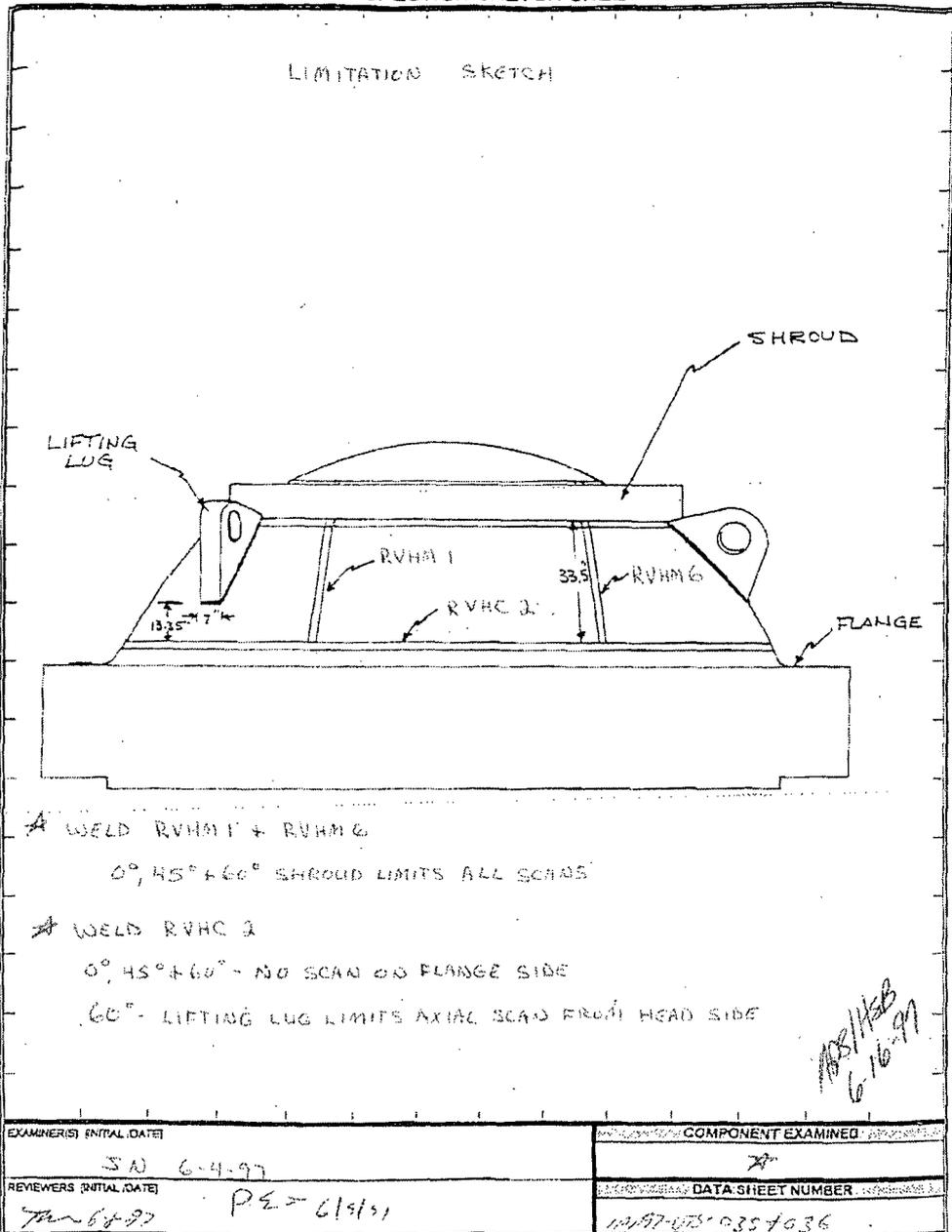
Attachment 2

**RVHC-2 Flange to Head**

**meon** Engineers &  
 Constructors

Page 1 of 2

INSPECTION SKETCH SHEET



**Weld**

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 2

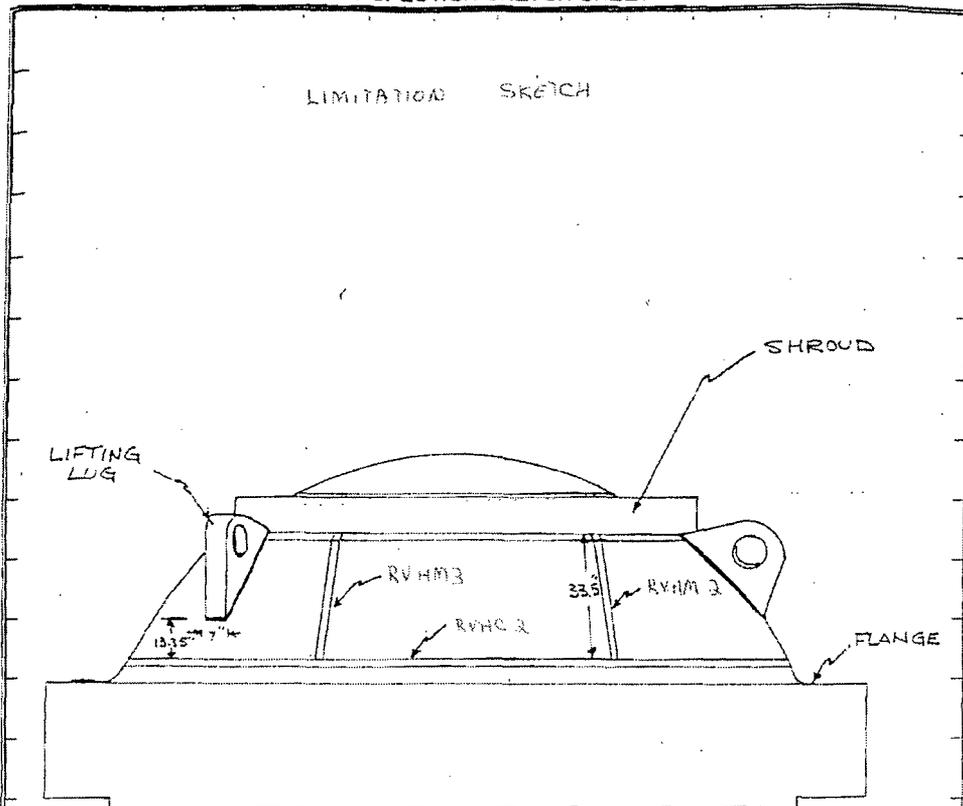
**RVHC-2 Flange to Head Weld**

**Raytheon** Engineers & Constructors

Page 2 of 2

INSPECTION SKETCH SHEET

LIMITATION SKETCH



- \* WELD RVHM 3 + RVHM 2  
 0°, 45° & 60° SHROUD LIMITS ALL SCANS
- \* WELD RVHC 2  
 0°, 45° & 60° - NO SCAN ON FLANGE SIDE  
 60° - LIFTING LUG LIMITS AXIAL SCAN FROM HEAD SIDE

*Handwritten:* 11/21/97  
6/16/97

11R97-070

EXAMINER(S) (INITIAL, DATE)	COMPONENT EXAMINED
JN 6-4-97	*
REVIEWERS (INITIAL, DATE)	DATA SHEET NUMBER
Tom 6-5-97 PS - 6/3/97	11R97-070-035 & 036 11R97-RVH-007



LIMITATION TO EXAMINATION

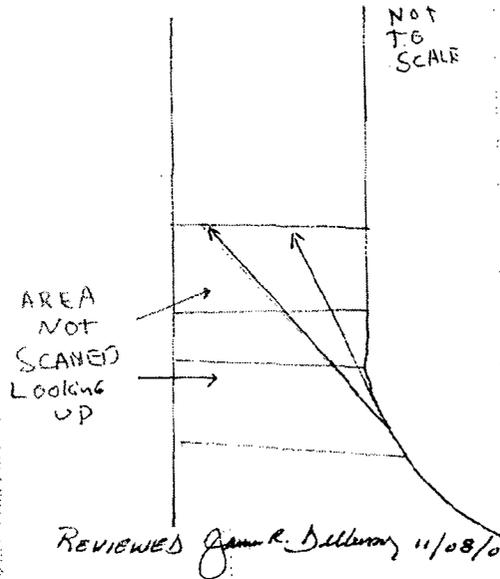
PLANT INDIAN POINT UNIT 2 SKETCH A206913-1

SYSTEM/COMP. RPV PROCEDURE IPEC-UT-210, Rev. 1

EXAMINER [Signature] DATE 11/4/2004

RELATED TO: UT X PT MT VT IDENT. NO. RVHC2 'Head to Flange'

PROVIDE GENERAL INFORMATION TO DESCRIBE APPROXIMATE SIZE, LOCATION AND TYPE OF LIMITATION.



	0°	100%
CCW	45°	100%
CW	45°	100%
LK DN	45°	100%
LKUP	45°	39%
CCW	60°	100%
CW	60°	100%
LK DN	60°	100%
LKUP	60°	21%

760 + 9 = 84%

REVIEWED [Signature] 11/08/04

INTERVIEW REVIEW / DATE P.E. [Signature] 11/11/04 ANII REVIEW / DATE [Signature] 11/12/04

RVHC-2 Flange to Head Weld

Attachment 2

10 CFR 50.55a Relief Request RR-CRV-75

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 3

**Code Category B-D:**                    **Full Penetration Welds of Nozzles in Vessels**

Item No. B3.120                            Pressurizer Nozzle Inside Radius Section

**Components Number:**

PZRN-1                                    Pressurizer Spray Nozzle Inner Radius  
PZRN-6                                    Pressurizer Surge Nozzle Inner Radius

**Basis**

During the remote visual examinations of the Pressurizer inner radius examinations conducted in May of 1997; an assessment of the ability to remote visually examine the PZRN-1 & PZRN-6 nozzles were conducted by a Level III visual examiner. The remote visual examination revealed that the thermal shield used in the manufacture of the PZRN-1 nozzle completely blocks the view of the inner radius. PZRN-1 is also covered by an array of nozzle heads. PZRN-6 is also inaccessible due to the area being covered by a retaining basket. Further, discussions that were had with the two ISI examination vendors that serviced Indian Point 2 during the Third Interval confirmed our earlier opinion that the nozzle configuration of both the PZRN-1 and PZRN-6 nozzles precluded the examination of those locations, even with the most advanced ultrasonic systems, currently in use. No coverage was obtained. (See Attachment 3).

In lieu of the Code-required volumetric examination once in ten years, the Pressurizer Spray and Surge nozzle areas, PZRN1 & PZRN-6, were visually examined (VT-2) after each refueling outage for evidence of leakage during system pressure tests performed in accordance with IWB-2500, Category B-P, and Code Case N-498. As a result no evidence of leakage were detected these areas. It is expected than any through wall defects would be detected by this examination prior to failure of the pressurizer. This is based on the expectation that the component would experience leakage before a catastrophic failure ("leak before break").

The inner radius area of pressurizer nozzles PZRN-2, PZRN-3, PZRN-4, and PZRN-5 were examined as proposed by Indian Point 2 Relief Request 9, Rev. 1, Reference 1. Nozzles PZRN-2, PZRN-4, and PZRN-5 were completed in May of 1997, and Nozzle PZRN-3 completed in April of 2006; with no recordable indications.

References:

1. NRC SER Relief Request RR-09 Rev. 1, Granted Date 6-3-97, TAC No. M88559.
2. Westinghouse Drawing No. 681J281, "General Assembly & Final Machining (1800 CU FT) Pressurizer.



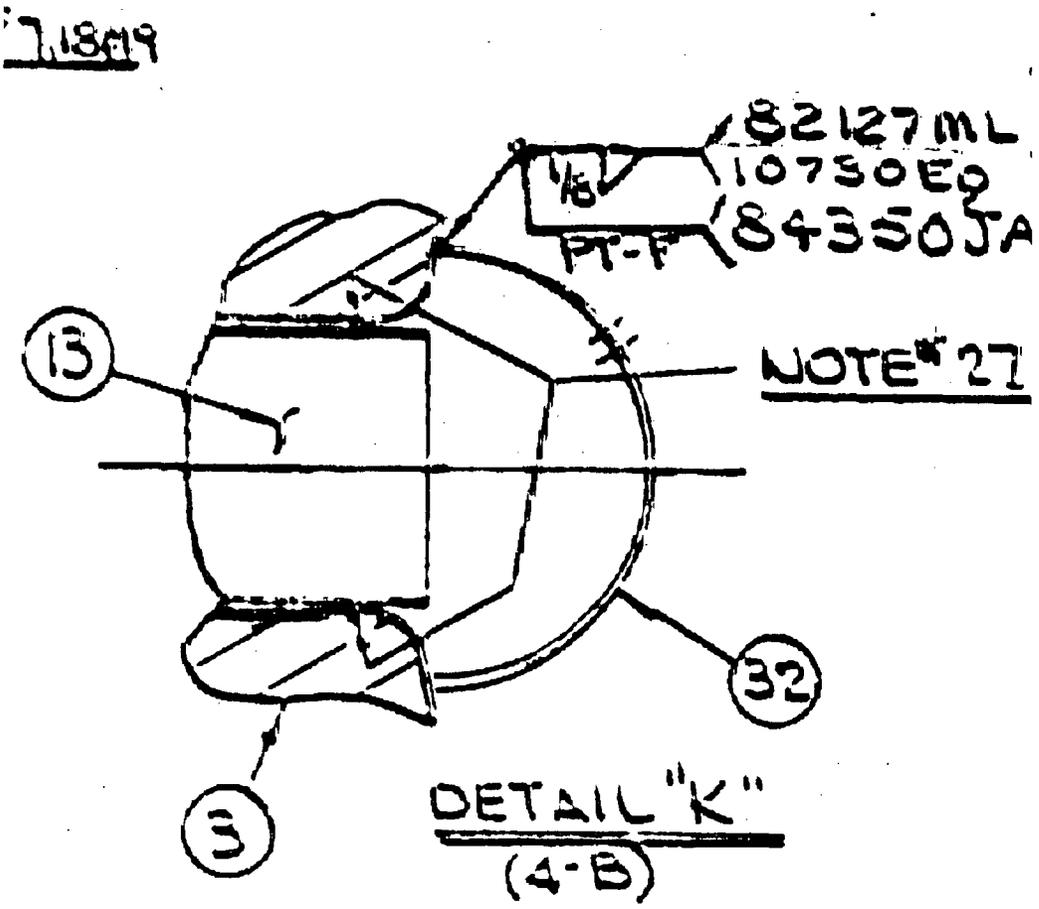




10 CFR 50.55a Relief Request RR-CRV-75

Attachment 3

IP2 Pressurizer Surge Nozzle Basket  
(Ref. Westinghouse Drawing No. 681J281)



Detail "K"

- 3 - Lower Head Assembly (Inner Radius)
- 13 - Thermal Sleeve (Surge Nozzle)
- 32 - Retaining Basket

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

**Code Category R-A :**

(Formally Category B-F)

Item No. R1.20

**Risk-Informed RV Nozzle Safe-End Weld**

Reactor Vessel Nozzle Safe-End Welds –  
Circumferential

**Components Number:**

RCC 21-1	RCS Pipe to Safe-End Circ Weld RO @ 202°
RCC 22-1	RCS Pipe to Safe-End Circ Weld RO @ 158°
RCC 23-1	RCS Pipe to Safe-End Circ Weld RO @ 338°
RCC 24-1	RCS Pipe to Safe-End Circ Weld RO @ 022°

**Basis**

**Examination Data Summary**

All automated ultrasonic examinations (implementation of Appendix VIII) were conducted in accordance with the ASME Code, Section XI, 1995 Edition with 1996 Addenda as modified by 10CFR50.55a(b)(2Xxiv, xv and xvi). Examination scan plans were prepared to the requirements of procedure PDI-ISI-254-SE Rev. 2.

**Code Examinations**

Examinations were conducted completely by the contact technique using two WesDyne PARAGON multi-channel data acquisition systems, one interfaced to each SUPREEM robot and scanning platform. All examinations were conducted to the maximum extent practical with the access provided and within the limitation of component geometry.

Ultrasonic detection scans for the primary nozzle to safe-end and safe-end to pipe/elbow welds were examined from the ID surface using 70° L- wave transducers applied four-directionally. Axial scans were performed at a 0.25" increment and the circumferential scans were conducted at a 0.080" incremental distance. This exam interrogated the inner 1/3 thickness volume. The safe-end to nozzle welds (RCC-21-1, RCC-22-1, RCC-23-1, & RCC-24-1) had limitations due to the tapered area of the weld overlay on the ID (See Attachment 4). Eddy current techniques were also employed to examine the inner surfaces of the dissimilar metal and pipe/elbow welds and the adjacent examination volumes where ID geometry presents a limitation to the detection of axial flaws as defined in the PDQS for the qualified Appendix VIII technique. As a result, all areas of limitations were fully examined by the supplemental eddy current techniques with no recordable indications.

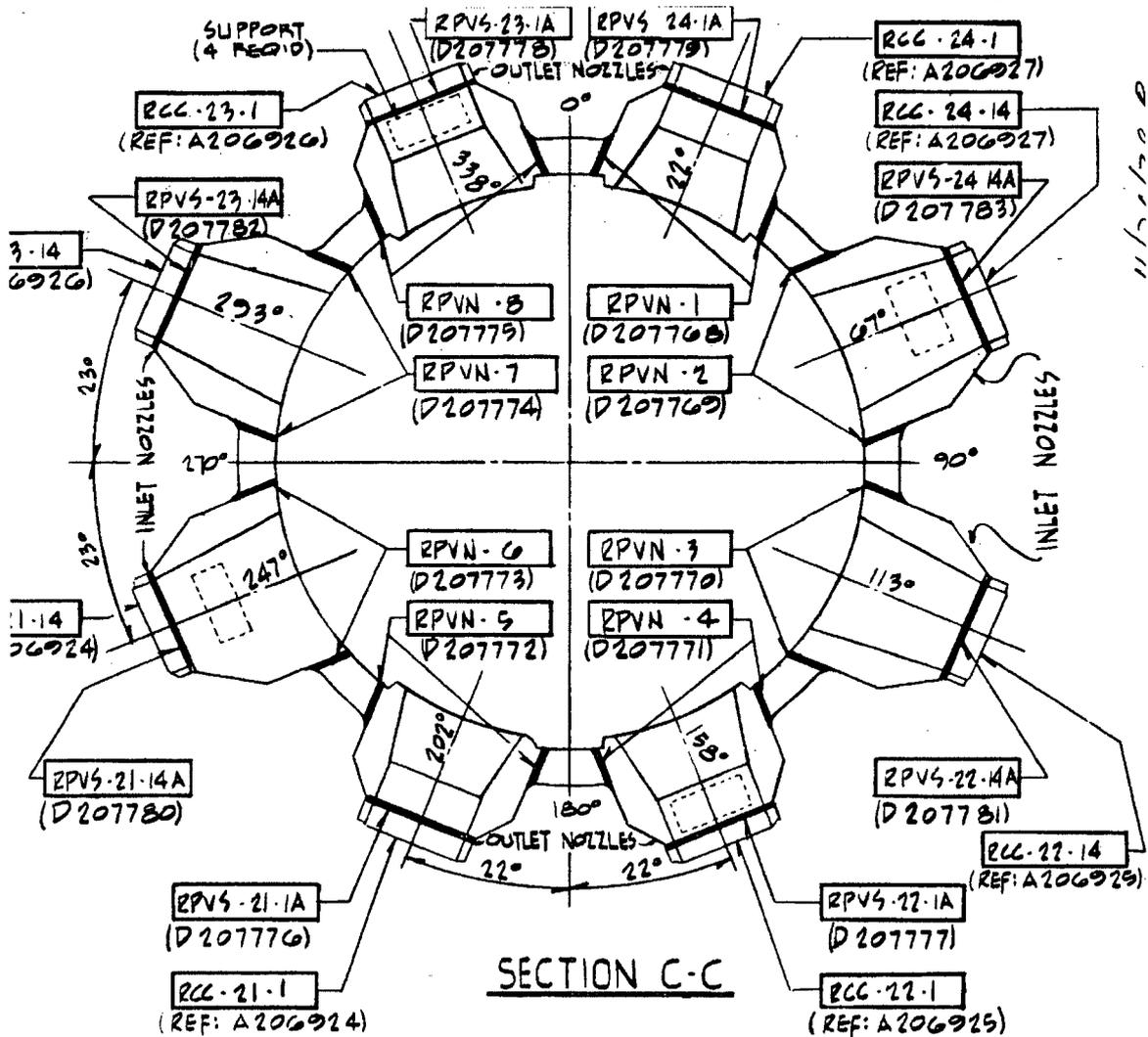
**Examination Results (primary Inlet and Outlet Nozzles)**

Automated ultrasonic examinations of the Indian Point Unit 2 Primary Inlet and Outlet RV Nozzle welds had no recordable indications. Supplemental eddy current examinations of the Nozzle to Safe End and Safe End to Pipe/Elbow welds from the nozzle bore yielded no recordable indications.

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

Reactor Vessel Nozzle Safe-End Welds (A206913)





10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

**RV Nozzle Circ Weld RCC-21-1 (Datasheet)**

REACTOR VESSEL WELD RESULTS SUMMARY			
PLANT NAME	<u>Indian Point</u>	Unit	<u>2</u>
WELD NO.	<u>RCC-21-1</u>	COMPONENT	<u>Outlet Pipe @ 202°</u>
LIMITATIONS:	NO <input type="checkbox"/>	YES <input checked="" type="checkbox"/>	<u>See Coverage Breakdown Sheet</u>
RESULTS		NO. OF INDICATIONS	<u>N/A</u>
NI	<u>X</u>	STATUS	<u>N/A</u>
RI	<u>      </u>		
<u>EXAM DOCUMENTATION</u>		<u>INDICATION DOCUMENTATION</u>	
<input checked="" type="checkbox"/> PARAGON ANALYSIS LOG		<input type="checkbox"/> ASSESSMENT SHEET	
<input checked="" type="checkbox"/> PARAGON ACQUISITION LOG		<input type="checkbox"/> PARAGON HARD COPY	
<input checked="" type="checkbox"/> SCAN PRINT OUT		<input type="checkbox"/> OTHER (Specify)	
<input checked="" type="checkbox"/> COVERAGE BREAKDOWN			
Comments:			
<u>Procedure limited for the detection of axial flaws per the PDI issued PDOS</u>			
<u>document. CW/CCW scans were performed and areas of limitation were fully</u>			
<u>examined by supplemental Eddy Current Techniques.</u>			
Utility Review <u>[Signature]</u> Date <u>5-4-06</u>		Analyst <u>[Signature]</u> Date: <u>5/4/06</u>	
ANII Review <u>[Signature]</u> Date <u>5/4/06</u>			

**R.V. COVERAGE ESTIMATE BREAKDOWNS**

PLANT NAME Indian Point

WELD NO. RCC-21-1

COMPONENT Outlet Pipe @ 202°

**WesDyne  
International**

**BEAM ANGLE BREAK DOWN**

BEAM DIRECTION	70 L						
	Code	MRP					
Perpendicular	97.00	97.00					
Parallel	79.00	77.00					
AVERAGE	88.00	87.00					

Comments: Procedure limited for the detection of axial flaws per the PDI issued PDQS document. CW/CCW scans were performed and areas of limitation were fully examined by supplemental Eddy Current Techniques.  
Limitation due to tapered area of the overlay on the ID, See sketch in Tab B

COMBINED AVERAGE 87.50 Analyst [Signature] Date 5/4/02

RV Nozzle Circ Weld RCC-21-1 (Datasheet)

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

**WesDyne International**

**10 Year Reactor Pressure Vessel ISI  
Limited Examination Coverage Summary Table**

Weld/ Component ID	Scan Direction (Ax or Circ)	CODE COVERAGE			MRP COVERAGE			Reason for Limited Examination Coverage	Eddy Current (ET) Exam Coverage
		Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)	Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)		
RCC-21-1	Ax	206.81	5.3	97	N/A	N/A	N/A	Lift-Off due to overlay transition	N/A
RCC-21-1	Circ	206.81	43.65	79	N/A	N/A	N/A	Lift-Off due to overlay transition	100

Comments: The Ultrasonic Examination is limited due to lift off in the transition slope of the overlay on the ID surface.  
The perpendicular scans were limited in select areas around the circumference and not 360 degrees. The circ scans were limited 360 degree in the effected areas. Eddy Current examination was used to supplement the limited areas and obtained 100% coverage

Examiner: *[Signature]* Date: *6/20/04*

*[Handwritten initials]*

**RV Nozzle Circ Weld RCC-21-1 (Datasheet)**

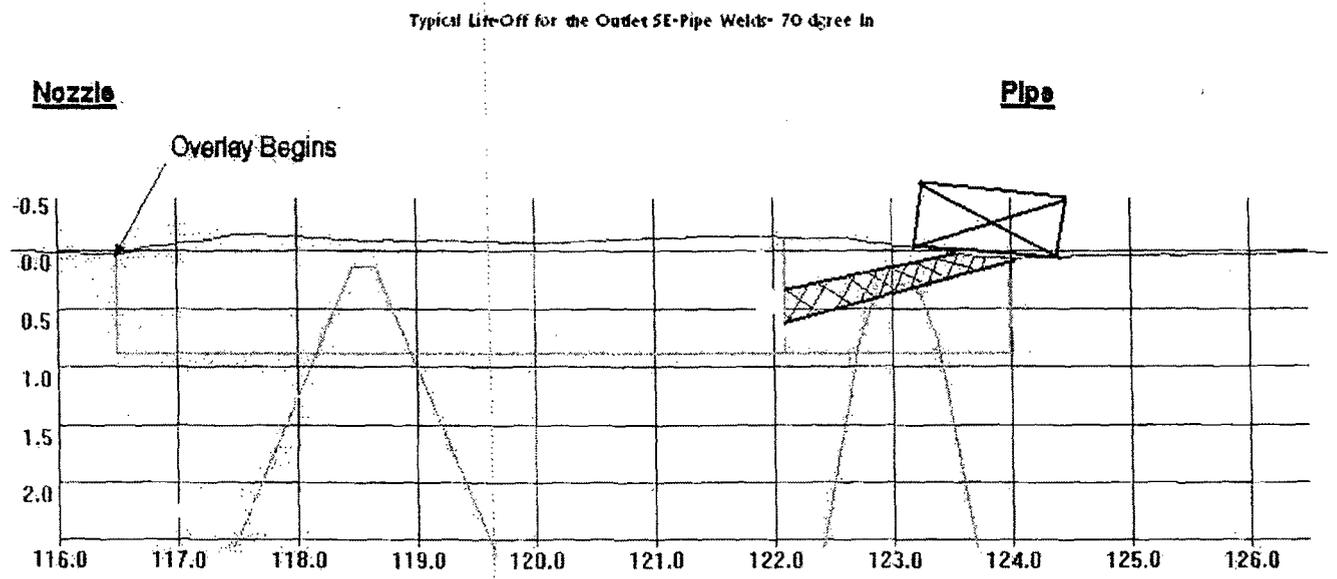
Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-21-1 (Datashet)

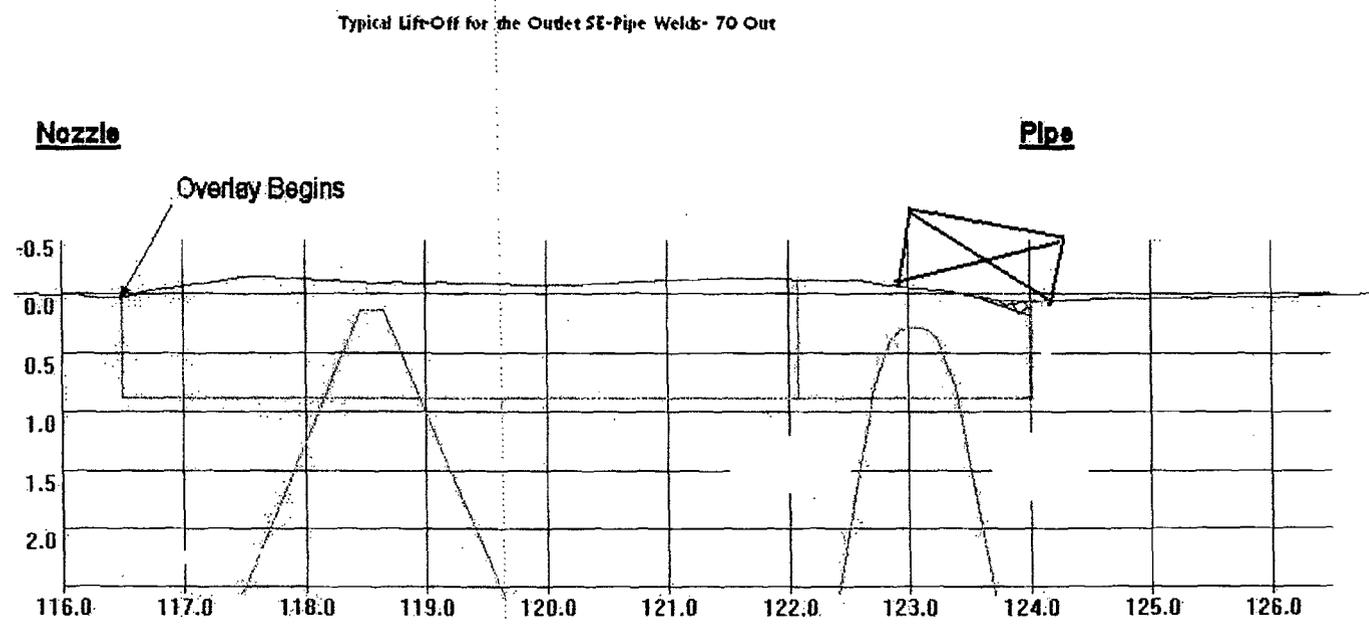


1 Quad 2 6/29/86  
DB King / WSK Entry at Level III 7-26-86  
WEL/H

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-21-1 (Datashet)



1 Aug 2 6/27/06

D.B. King / H.B. King Entanglers UT Level III 7-26-06

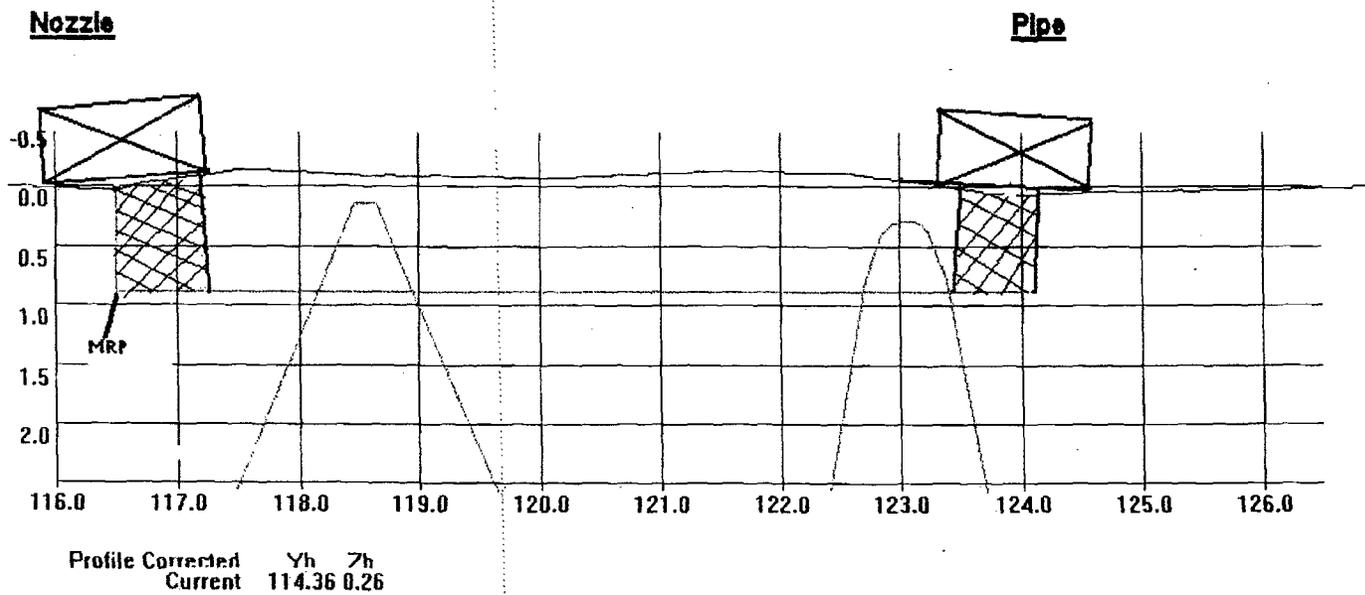
AS/HS/ST  
1.8/06

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-21-1 (Datashet)

Typical Life-Off for the Outlet Nozzle to Safe End Circ Scans



*Drawn 6/23/06  
D.R.V. 11/11*

*11/11*





ANALYSIS LOG # 202-SE

Utility: Entergy		Plant: Indian Point		Unit: 2	Outage: R17	Disk No: N/A
Procedure No: PDI-HSI-254-SE				Procedure Rev. No.: 2		
Weld No: RCC-21-1		Weld Type: SE		Exam. Surface: ID		
Applicable Sensitivity Calibration Data Sheet No: DET-SE-01		Acquisition Log No: 202-SE		PARAGON Anal. Release: 6.1.6		
UT Examiner Signature: <i>[Signature]</i>				Level: III	Date: 05-02-06	
Data File Name	UT Channel No.	Beam Angle / Beam Direction <small>(In or out, CW or CCW)</small>	NI	RI	RI Resolution / Comments / Limitations	Examiner ID / Date
WN202-SE-PRP-ON	1	70 IN	X			DAM 05-01-06
WN202-SE-PRP-ON	2	70 OUT	X			DAM 05-01-06
WN202-SE-PRP-ON	3	0			NO WASTAGE DETECTED	DAM 05-01-06
WN202-SE-PRP-ON	4	0			NO WASTAGE DETECTED	DAM 05-01-06
WN202-SE-PAR-ON	1	70 CCW	X			DAM 05-02-06
WN202-SE-PAR-ON	2	70 CW	X			DAM 05-02-06
WN202-SE-PAR-ON	3	70 CCW	X			DAM 05-02-06
WN202-SE-PAR-ON	4	70 CW	X			DAM 05-02-06
WN202-SE-PAR-ON1	1	70 CCW	X			DAM 05-02-06
WN202-SE-PAR-ON1	2	70 CW	X			DAM 05-02-06
WN202-SE-PAR-ON1	3	70 CCW	X			DAM 05-02-06
WN202-SE-PAR-ON1	4	70 CW	X			DAM 05-02-06

Entergy Review: *[Signature]* Date 5-4-06

ANII Review: *[Signature]* Date 5/8/06

RV Nozzle Circ Weld RCC-21-1 (Datasheet)

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75



ET Analysis Log: SE-202-1

Utility: Entergy		Plant: Indian Point		Unit: 2	Outage: 2R17	
Procedure No: WDI-STD-146			Procedure Rev. No.: 5			
Weld No. RCC-21-1			Weld Type: SAFE END			
Applicable Sensitivity Calibration Data Sheet No: ET.1				Acquisition Log No: SE-202		
ET Examiner Signature: <i>JDF</i>		Level II		Date: 5-2-06		
Data File Name	ET Probe No.	ET Probe Scan Direction (Axial/Circ)	NI	RI	RI Resolution / Comments / Limitations	Examiner ID / Date
WN202-SE-PAR-ON	1	CIRC	X			JDF / 5-2-06
WN202-SE-PAR-ON	2	CIRC	X			JDF / 5-2-06
WN202-SE-PRP-ON	1	AXIAL	X			JDF / 5-2-06
WN202-SE-PRP-ON	2	AXIAL	X			JDF / 5-2-06

Entergy Level III *DAK* / *[Signature]*

Date 5/2/06

ANI *[Signature]* / *[Signature]*

Date 5/5/06

**RV Nozzle Circ Weld RCC-21-1 (Datasheet)**

Attachment 4

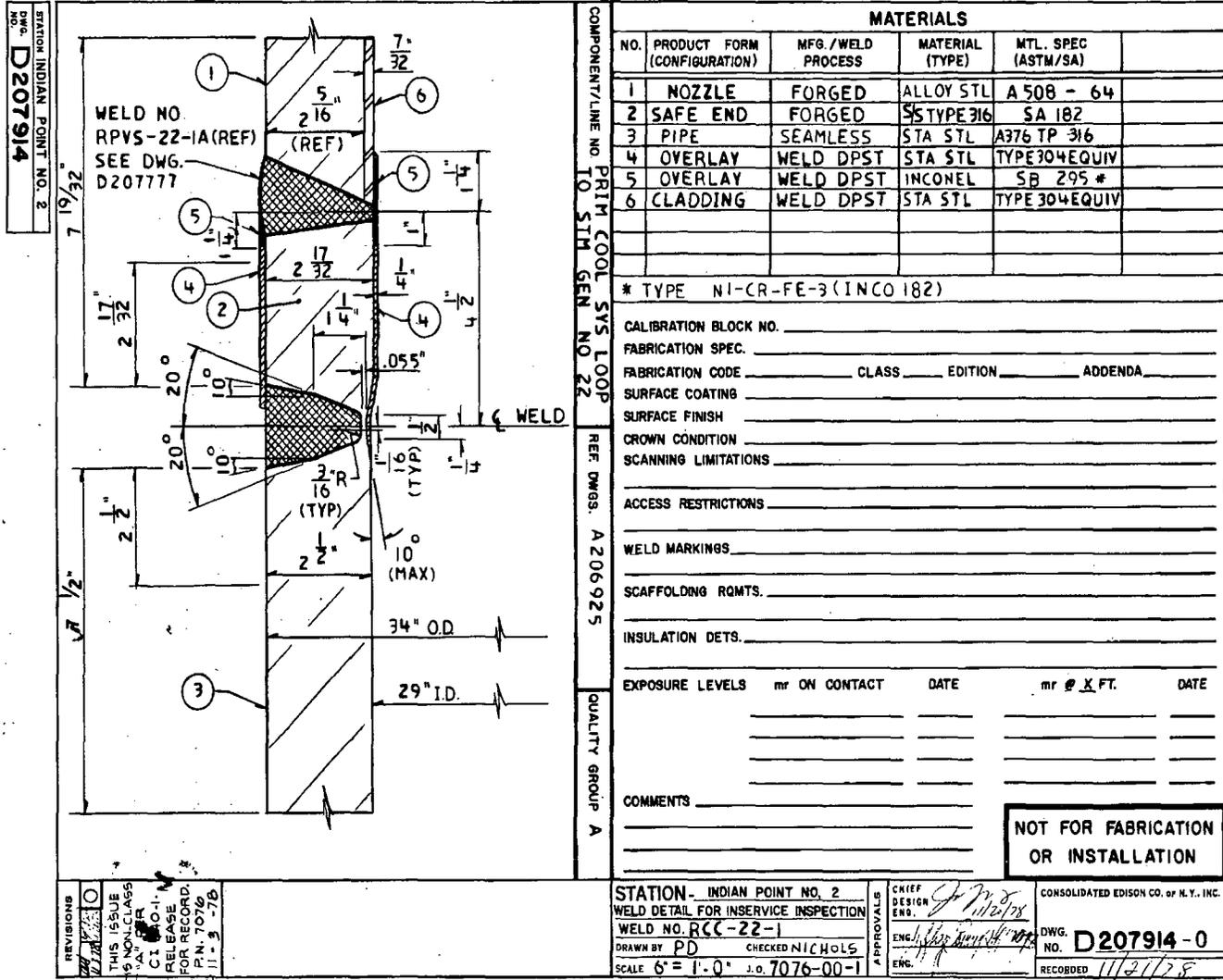
10 CFR 50.55a Relief Request RR-CRV-75

2/23/2004 11:52:43 AM 207914-0-0.dwg

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-22-1 (D207914)



10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

**RV Nozzle Circ Weld RCC-22-1 (Datasheet)**

<b>REACTOR VESSEL WELD RESULTS SUMMARY</b>			
PLANT NAME	<u>Indian Point</u>	Unit	<u>2</u>
WELD NO.	<u>RCC-22-1</u>	COMPONENT	<u>Outlet Pipe @ 158°</u>
LIMITATIONS:	NO <input type="checkbox"/>	YES <input checked="" type="checkbox"/>	<u>See Coverage Breakdown Sheet</u>
RESULTS	NO. OF INDICATIONS	<u>N/A</u>	
NI <u>X</u>	STATUS	<u>N/A</u>	
RI			
<u>EXAM DOCUMENTATION</u>		<u>INDICATION DOCUMENTATION</u>	
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<input checked="" type="checkbox"/> PARAGON ACQUISITION LOG		<input type="checkbox"/> PARAGON HARD COPY	
<input checked="" type="checkbox"/> SCAN PRINT OUT		<input type="checkbox"/> OTHER (Specify)	
<input checked="" type="checkbox"/> COVERAGE BREAKDOWN			
Comments:			
<u>Procedure limited for the detection of axial flaws per the PDI issued PDQS</u>			
<u>document. CW/CCW scans were performed and areas of limitation were fully</u>			
<u>examined by supplemental Eddy Current Techniques.</u>			
Utility Review	<u>[Signature]</u>	Date	<u>5/4/06</u>
ANII Review	<u>[Signature]</u>	Date	<u>5/5/06</u>
Analyst		<u>[Signature]</u>	Date: <u>5/21/06</u>

**R.V. COVERAGE ESTIMATE BREAKDOWNS**

PLANT NAME Indian Point

WELD NO. RCC-22-1

COMPONENT Outlet Pipe @ 158°

**WesDyne  
International**

**BEAM ANGLE BREAK DOWN**

BEAM DIRECTION	70 L						
	Code	MRP					
Perpendicular	98.00	98.00					
Parallel	79.00	77.00					
AVERAGE	88.50	87.50					

Comments: Procedure limited for the detection of axial flaws per the PDI issued PDQS document. CW/CCW scans were performed and areas of limitation were fully examined by supplemental Eddy Current Techniques.  
 Limitation due to tapered area of the overlay on the ID- See sketch in Tab B

COMBINED AVERAGE 88.00 Analyst [Signature] Date 5/4/06

**RV Nozzle Circ Weld RCC-22-1 (Datasheet)**

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

Attachment A  
 Docket No. 50-247  
 NL-08-053  
 Page 39 of 71

**WesDyne International**

**10 Year Reactor Pressure Vessel ISI  
Limited Examination Coverage Summary Table**

Weld/ Component ID	Scan Direction (Ax or Circ)	CODE COVERAGE			MRP COVERAGE			Reason for Limited Examination Coverage	Eddy Current (ET) Exam Coverage
		Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)	Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)		
RCC-22-1	Ax	206.81	3.5	98	N/A	N/A	N/A	Lift-Off due to overlay transition	N/A
RCC-22-1	Circ	206.81	43.65	79	N/A	N/A	N/A	Lift-Off due to overlay transition	100

Comments: The Ultrasonic Examination is limited due to lift off in the transition slope of the overlay on the ID surface.  
The perpendicular scans were limited in select areas around the circumference and not 360 degrees. The circ scans were limited 360 degree in the effected areas. Eddy Current examination was used to supplement the limited areas and obtained 100% coverage

Examiner: *[Signature]*

Date: *6/10/06*

*[Signature]*  
12/18/06

**RV Nozzle Circ Weld RCC-22-1 (Datasheet)**

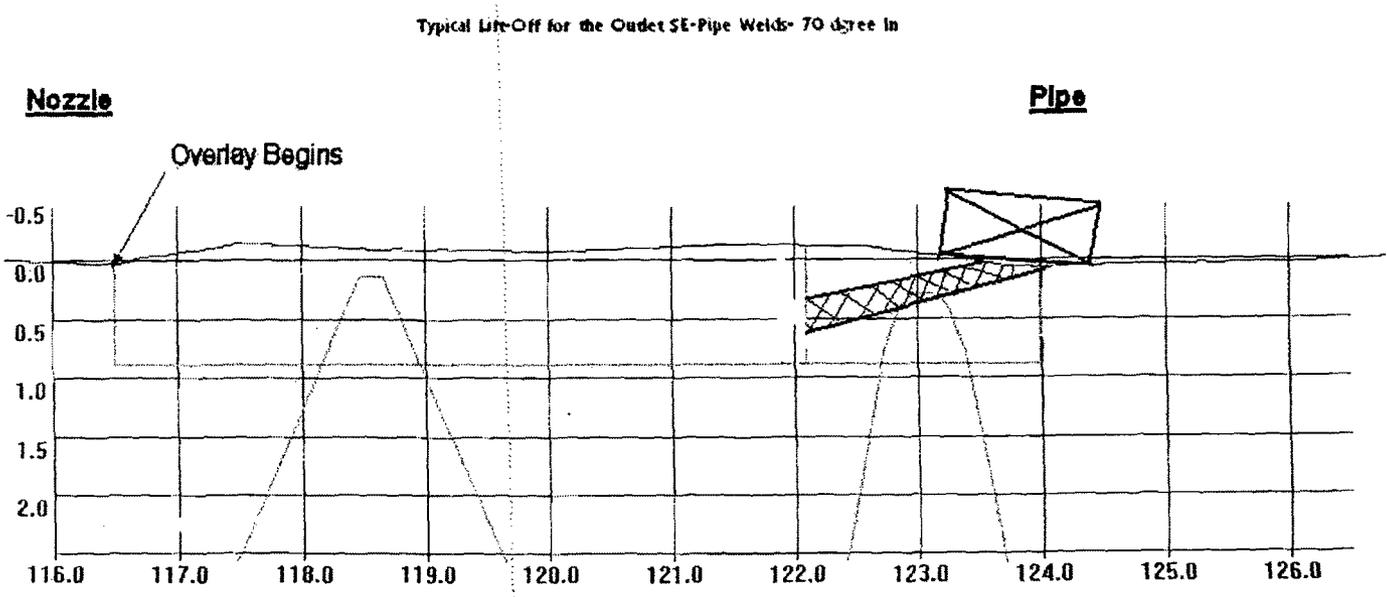
Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-22-1 (Datashet)



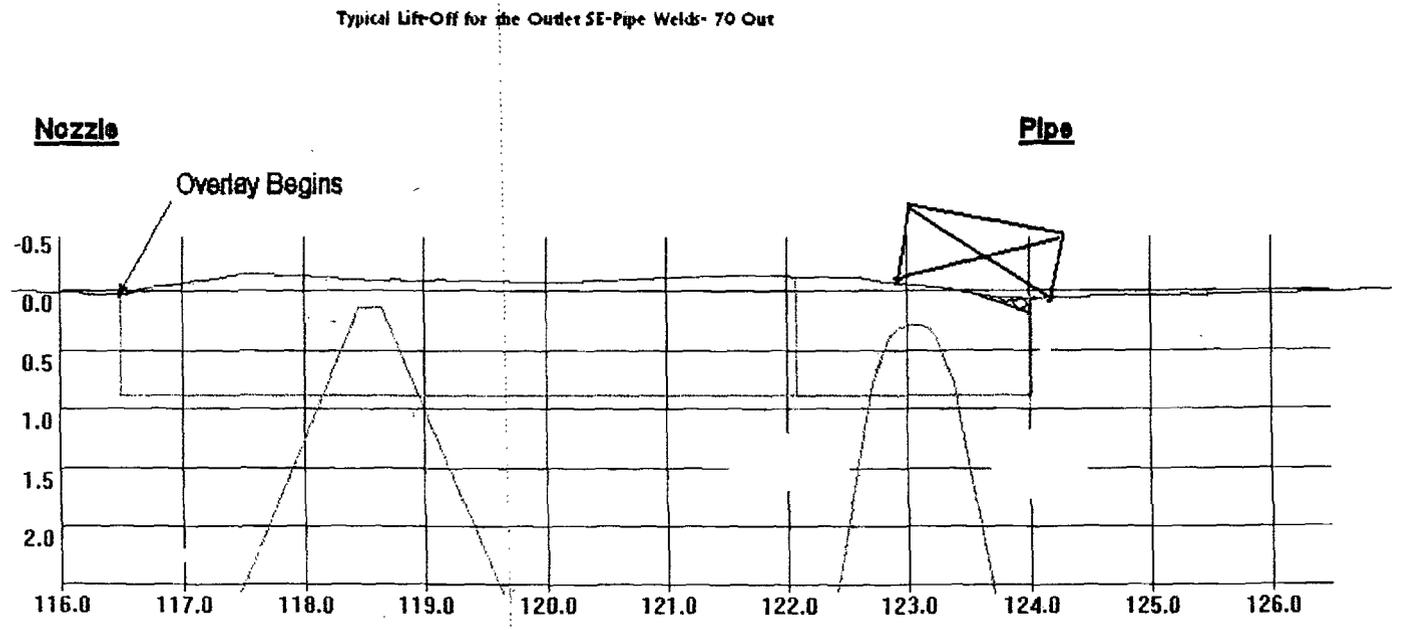
*1 Quid 2 6/23/06  
D. V. V.*

27

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-22-1 (Datasheet)



1 dup 2 6/23/02

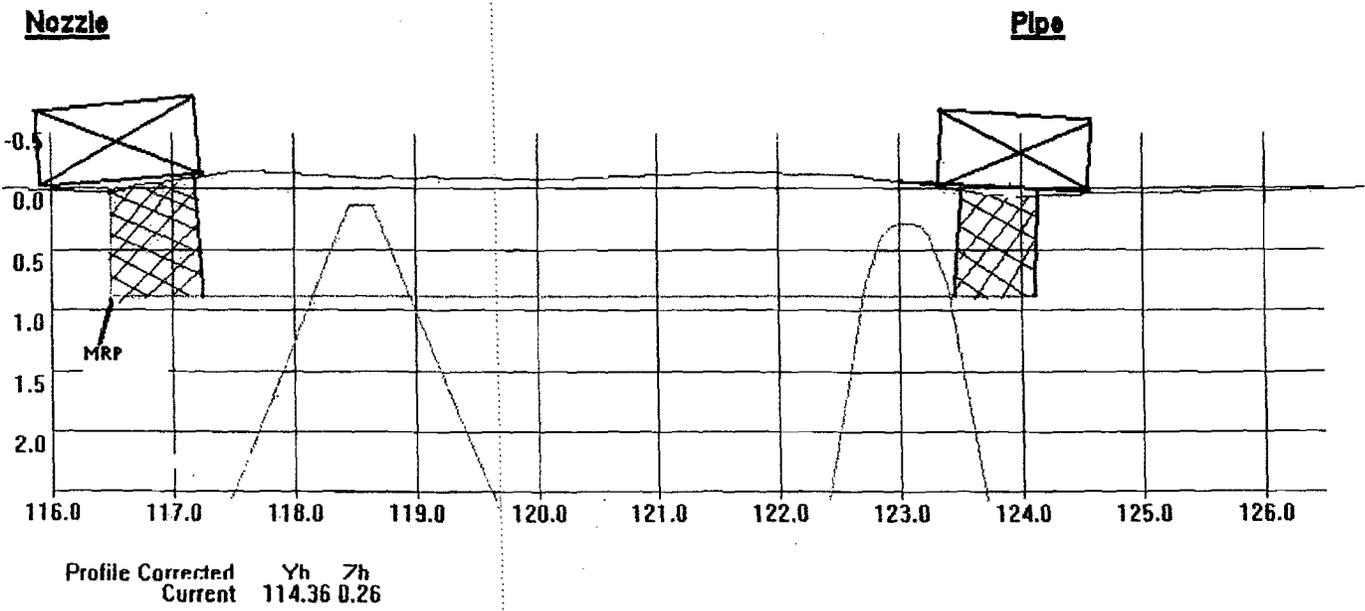
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10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-22-1 (Datashet)

Typical Life-Off for the Outlet Nozzle to Safe End Circ Scans



*David L. C/23/06*

*ML*

WesDyne International

10 Year Reactor Pressure Vessel ISI  
Limited Examination Coverage Summary Table

Weld/Component ID	Scan Direction (Ax or Circ)	CODE COVERAGE			MRP COVERAGE			Reason for Limited Examination Coverage	Eddy Current (ET) Exam Coverage
		Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)	Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)		
RCC-22-1	Ax	206.81	3.5	98	N/A	N/A	N/A	Lift-Off due to overlay transition	N/A
RCC-22-1	Circ	206.81	43.65	79	N/A	N/A	N/A	Lift-Off due to overlay transition	100

Comments: The Ultrasonic Examination is limited due to lift off in the transition slope of the overlay on the ID surface. The perpendicular scans were limited in select areas around the circumference and not 360 degrees. The circ scans were limited 360 degree in the effected areas. Eddy Current examination was used to supplement the limited areas and obtained 100% coverage

Examiner: *[Signature]*

Date: *[Signature]*

RV Nozzle Circ Weld RCC-22-1 (Datasheet)

Attachment 4

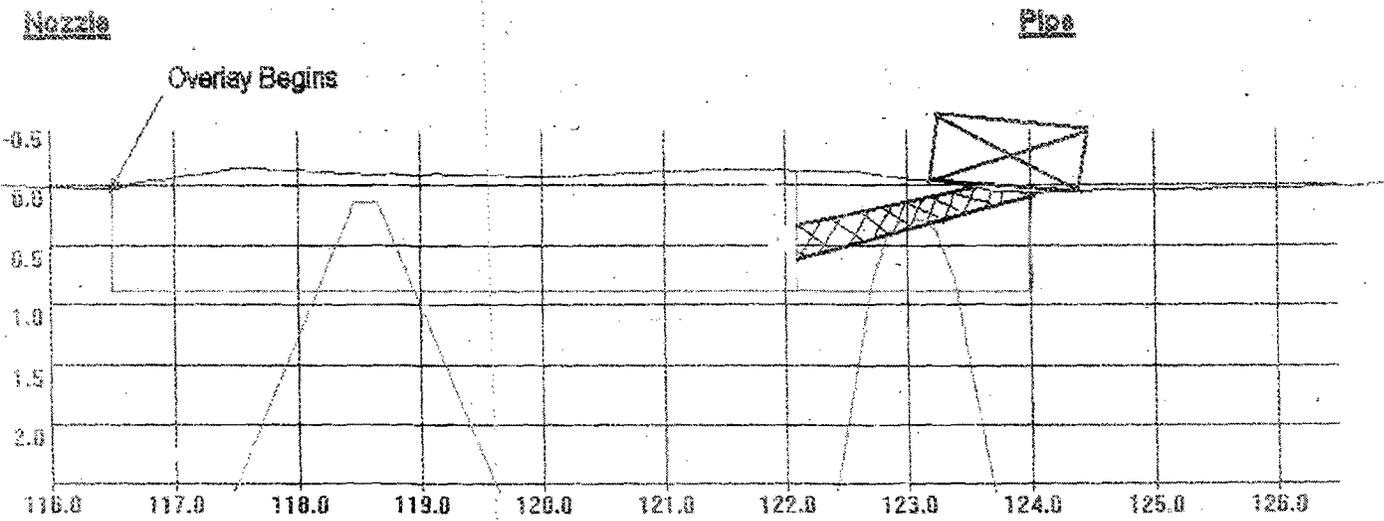
10 CFR 50.55a Relief Request RR-CRV-75

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

**RV Nozzle Circ Weld RCC-22-1 (Datasheet)**

Typical Life-Off for the Outlet SE-Pipe Welds- 70 degree in



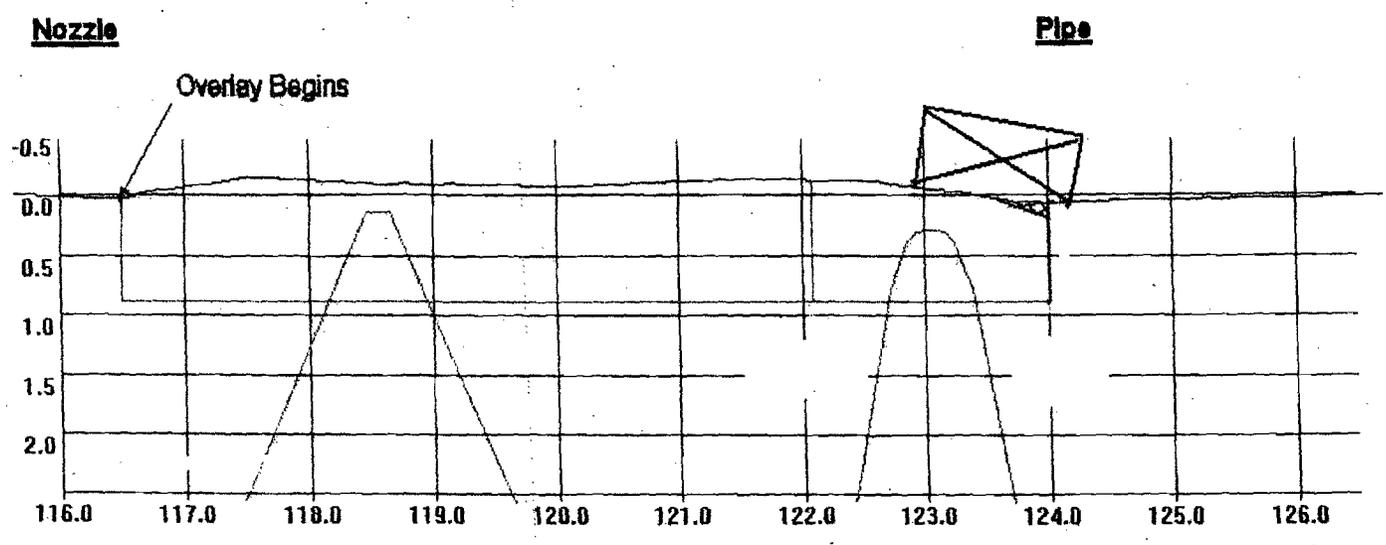
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10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-22-1 (Datashet)

Typical Lift-Off for the Outlet SE-Pipe Welds- 70 Out



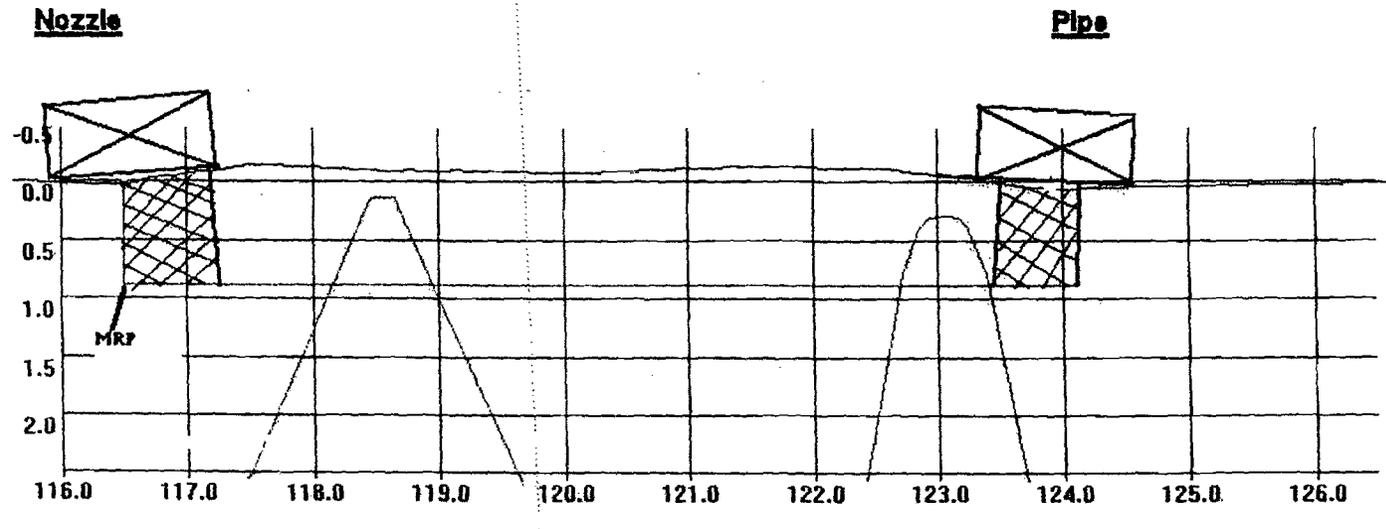
*1 day 2 6/27/00*

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-22-1 (Datashet)

Typical Life-Off for the Outlet Nozzle to Safe End Circ Scans



Profile Corrected Yh 7h  
Current 114.36 0.26

*Dany L. 6/23/06*







ET Analysis Log: SE-158-1

Utility: Entergy		Plant: Indian Point		Unit: 2	Outage: 2R17	
Procedure No: WDI-STD-146			Procedure Rev. No.: 6			
Weld No. RCC-22-1		Weld Type: SAFE END				
Applicable Sensitivity Calibration Data Sheet No: ET-1				Acquisition Log No: SE-158		
ET Examiner Signature: <i>[Signature]</i>			Level II	Date: 5-2-06		
Data File Name	ET Probe No.	ET Probe Scan Direction (Axial/Circ.)	NI	RI	RI Resolution / Comments / Limitations	Examiner ID / Date
WN158-SE-PAR-ON	1	CIRC	X			FS / 6-2-06
WN158-SE-PAR-ON	2	CIRC	X			FS / 5-2-06
WN-158-SE-PRP-ON	1	AXIAL	X			FS / 5-2-06
WN-158-SE-PRP-ON	2	AXIAL	X			FS / 5-2-06

Entergy Level III *[Signature]*

Date 5/4/06

ANII *[Signature]*  
*[Signature]*

Date 5/8/06

Form 12-5

RV Nozzle Circ Weld RCC-22-1 (Datashet)

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

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Attachment 4

**RV Nozzle Circ Weld RCC-23-1 (Datasheet)**

REACTOR VESSEL WELD RESULTS SUMMARY			
PLANT NAME	<u>Indian Point</u>	Unit	<u>2</u>
WELD NO	<u>RCC-23-1</u>	COMPONENT	<u>Outlet Pipe @ 338°</u>
LIMITATIONS:	NO <input type="checkbox"/>	YES <input checked="" type="checkbox"/>	<u>See Coverage Breakdown Sheet</u>
RESULTS	NO. OF INDICATIONS	<u>N/A</u>	
NI <u>X</u>	STATUS	<u>N/A</u>	
RI _____			
<u>EXAM DOCUMENTATION</u>		<u>INDICATION DOCUMENTATION</u>	
<input checked="" type="checkbox"/> PARAGON ANALYSIS LOG		<input type="checkbox"/> ASSESSMENT SHEET	
<input checked="" type="checkbox"/> PARAGON ACQUISITION LOG		<input type="checkbox"/> PARAGON HARD COPY	
<input checked="" type="checkbox"/> SCAN PRINT OUT		<input type="checkbox"/> OTHER (Specify)	
<input checked="" type="checkbox"/> COVERAGE BREAKDOWN			
Comments:			
<u>Procedure limited for the detection of axial flaws per the PDI issued PDQS</u>			
<u>document. CW/CCW scans were performed and areas of limitation were fully</u>			
<u>examined by supplemental Eddy Current Techniques.</u>			
Utility Review <u>[Signature]</u> Date <u>5-4-06</u>		Analyst <u>[Signature]</u> Date <u>5/4/06</u>	
ANII Review <u>[Signature]</u> Date <u>5/8/06</u>			

**R.V. COVERAGE ESTIMATE BREAKDOWNS**

PLANT NAME Indian Point

WELD NO. RCC-23-1

COMPONENT Outlet Pipe @ 338°

**WesDyne**

**International**

**BEAM ANGLE BREAK DOWN**

BEAM DIRECTION	70 L						
	Code	MRP					
Perpendicular	99.00	99.00					
Parallel	79.00	77.00					
<b>AVERAGE</b>	<b>89.00</b>	<b>88.00</b>					

Comments: Procedure limited for the detection of axial flaws per the PDI issued PDQS document. CW/CCW scans were performed and areas of limitation were fully examined by supplemental Eddy Current Techniques.

Limitation due to tapered area of the overlay on the ID- See sketch in Tab B

COMBINED AVERAGE 88.50 Analyst [Signature] Date 5/4/06

**RV Nozzle Circ Weld RCC-23-1 (Datashet)**

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

# WesDyne International

## 10 Year Reactor Pressure Vessel ISI Limited Examination Coverage Summary Table

Weld/ Component ID	Scan Direction (Ax or Circ)	CODE COVERAGE			MRP COVERAGE			Reason for Limited Examination Coverage	Eddy Current (ET) Exam Coverage
		Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)	Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)		
RCC-23-1	Ax	206.81	2.1	99	N/A	N/A	N/A	Lift-Off due to overlay transition	N/A
RCC-23-1	Circ	206.81	43.65	79	N/A	N/A	N/A	Lift-Off due to overlay transition	100

Comments: The Ultrasonic Examination is limited due to lift off in the transition slope of the overlay on the ID surface. The perpendicular scans were limited in select areas around the circumference and not 360 degrees. The circ scans were limited 360 degree in the effected areas. Eddy Current examination was used to supplement the limited areas and obtained 100% coverage

Examiner: *[Signature]*

Date: *[Signature]*

RV Nozzle Circ Weld RCC-23-1 (Datashet)

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

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Docket No. 50-247  
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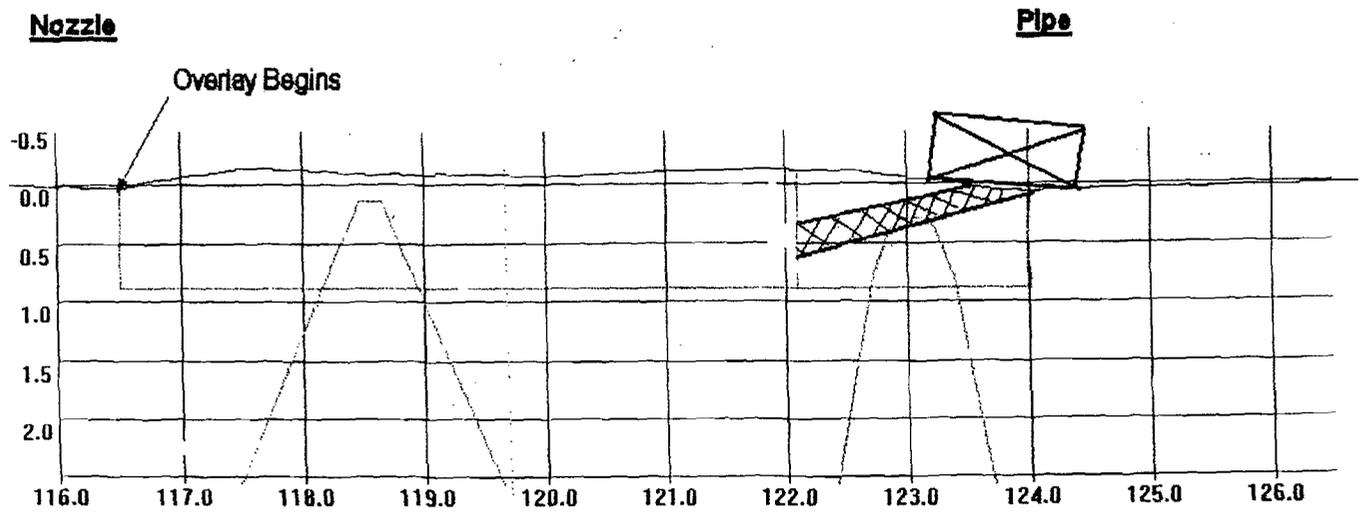
*[Handwritten initials]*

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-23-1 (Datashet)

Typical Lift-Off for the Outlet SE-Pipe Welds- 70 degree in



*1 Quad 2 6/23/06  
DRK... 1.0... 1.0... 1.0... 1.0...*

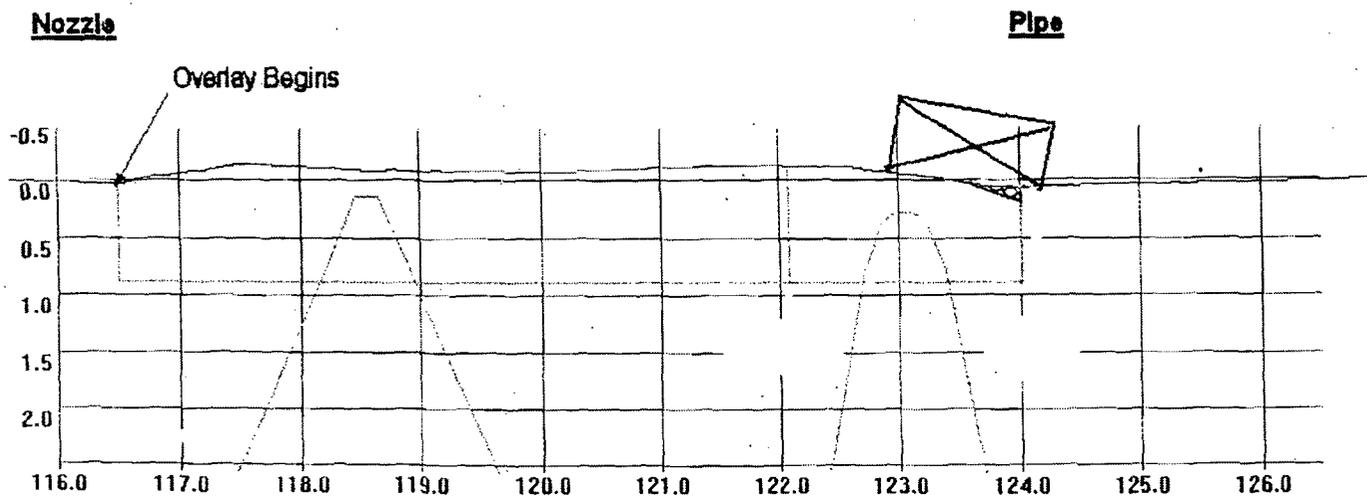
10/6

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-23-1 (Datasheet)

Typical Lift-Off for the Outer SE-Pipe Welds- 70 Out



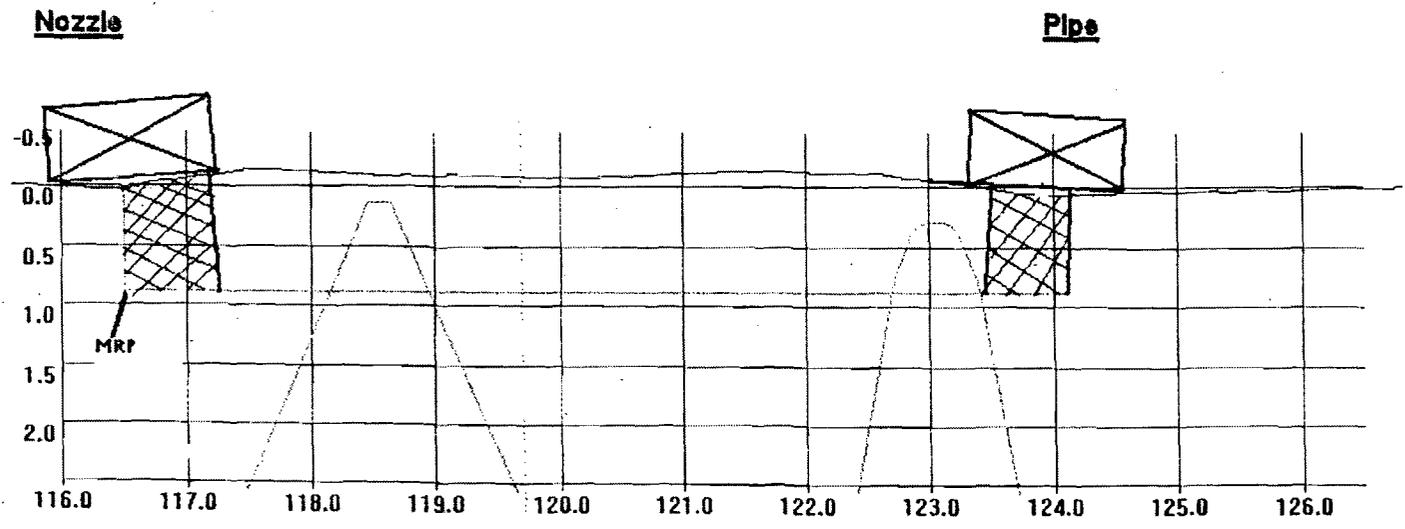
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10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-23-1 (Datasheet)

Typical Life-Off for the Outlet Nozzle to Safe End Circ Scans



Profile Corrected Yh Zh  
Current 114.36 0.26

*Ray D. 6/23/06*

11k







ET Analysis Log: SE-338-1

Utility: Entergy	Plant: Indian Point	Unit: 2	Outage: 2R17
Procedure No: WDI-STD-146		Procedure Rev. No.: 5	
Weld No. RCC-23-1		Weld Type: SAFE END	
Applicable Sensitivity Calibration Data Sheet No: ET-1		Acquisition Log No: SE-338	
ET Examiner Signature: <i>[Signature]</i> Level II		Date: 5-2-06	

Data File Name	ET Probe No.	ET Probe Scan Direction [Axial/Circ.]	NI	RI	RI Resolution / Comments / Limitations	Examiner ID / Date
WN338-SE-PAR-ON	1	CIRC	X			FS / 5-2-06
WN338-SE-PAR-ON	2	CIRC	X			FS / 5-2-06
WN-338-SE-PRP-ON	1	AXIAL	X			FS / 5-2-06
WN-338-SE-PRP-ON	2	AXIAL	X			FS / 5-2-06

Entergy Level III *[Signature]*

Date 5/4/06

ANII *[Signature]*

Date 5/5/06

Attachment 4

RV Nozzle Circ Weld RCC-23-1 (Datashet)

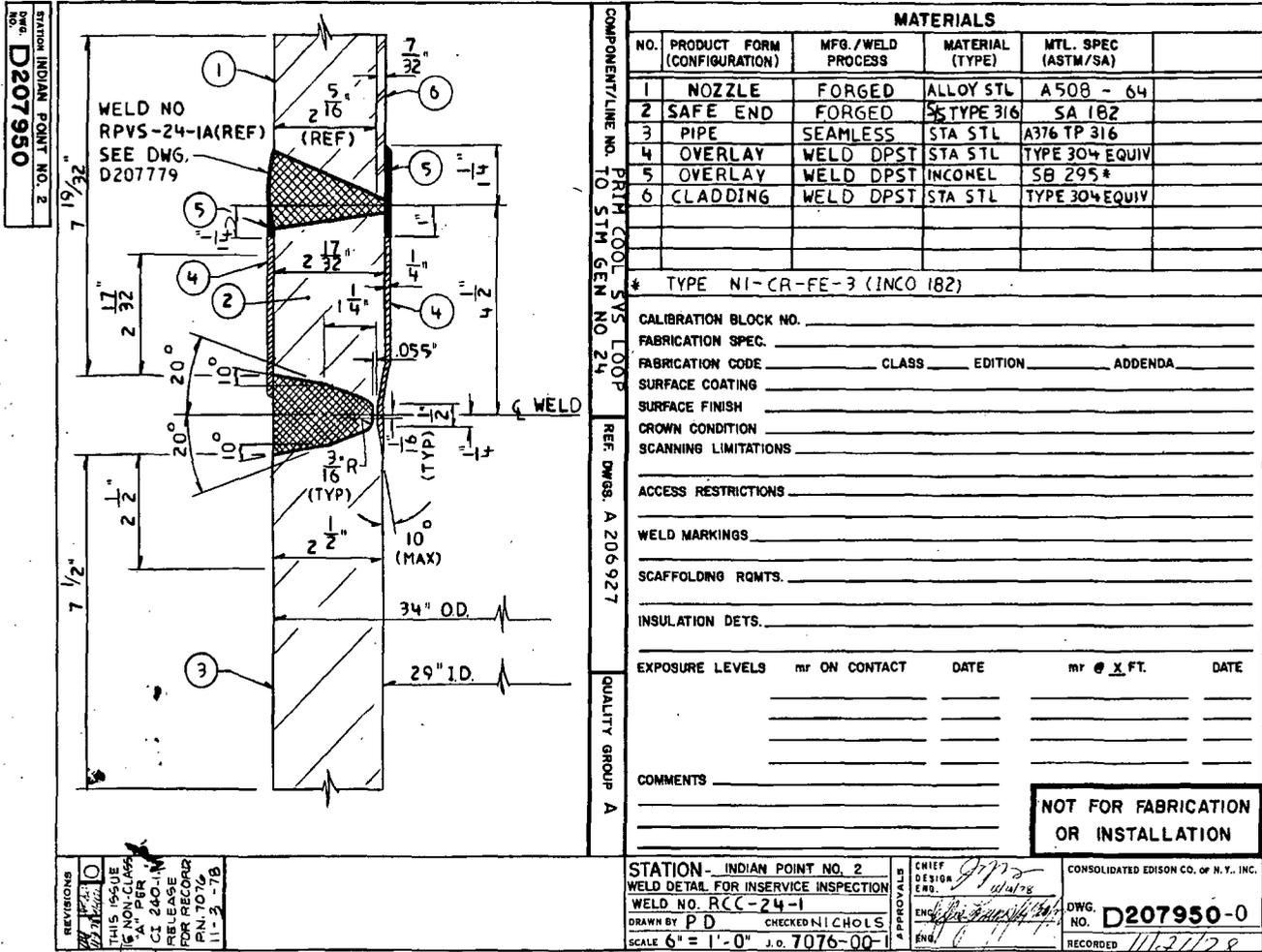
10 CFR 50.55a Relief Request RR-CRV-75

2/23/2004 11:54:27 AM 207950-0-2.dwg

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

**RV Nozzle Circ Weld RCC-24-1 (D207950)**



REVISIONS  
 10  
 THIS IS A  
 NON-CLASS  
 "A" PER  
 CI 240.1 IN  
 RELEASE  
 FOR RECORD  
 P.N. 7076  
 11-3-78

928 D17 11/21/78 R

MATERIALS				
NO.	PRODUCT FORM (CONFIGURATION)	MFG. /WELD PROCESS	MATERIAL (TYPE)	MTL. SPEC (ASTM/SA)
1	NOZZLE	FORGED	ALLOY STL	A508 - 64
2	SAFE END	FORGED	TYPE 316	SA 182
3	PIPE	SEAMLESS	STA STL	A376 TP 316
4	OVERLAY	WELD DPST	STA STL	TYPE 304 EQUIV
5	OVERLAY	WELD DPST	INCONEL	SB 295*
6	CLADDING	WELD DPST	STA STL	TYPE 304 EQUIV

\* TYPE NI-CR-FE-3 (INCO 182)

COMPONENT/LINE NO. TO STM GEN NO. 24  
 PRIM COOL SYS LOOP  
 REF DWGS. A 206927

QUALITY GROUP A

STATION - INDIAN POINT NO. 2  
 WELD DETAIL FOR INSERVICE INSPECTION  
 WELD NO. RCC-24-1  
 DRAWN BY PD CHECKED NICHOLS  
 SCALE 6" = 1'-0" J.O. 7076-00-1

CHIEF DESIGNER  
 ENGR.  
 APPROVALS

CONSOLIDATED EDISON CO. OF N.Y., INC.  
 DWG. NO. D207950-0  
 RECORDED 11/21/78

COMMENTS

EXPOSURE LEVELS

nr	ON CONTACT	DATE	nr	@	FT.	DATE

ACCESS RESTRICTIONS

WELD MARKINGS

SCAFFOLDING RQMTS.

INSULATION DETS.

CALIBRATION BLOCK NO.

FABRICATION SPEC.

FABRICATION CODE CLASS EDITION ADDENDA

SURFACE COATING

SURFACE FINISH

CROWN CONDITION

SCANNING LIMITATIONS

NOT FOR FABRICATION OR INSTALLATION

10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

**RV Nozzle Circ Weld RCC-24-1 (Datasheet)**

REACTOR VESSEL WELD RESULTS SUMMARY			
PLANT NAME	<u>Indian Point</u>	Unit	<u>2</u>
WELD NO.	<u>RCC-24-1</u>	COMPONENT	<u>Outlet Pipe weld @ 22°</u>
LIMITATIONS:	NO <input type="checkbox"/>	YES <input checked="" type="checkbox"/>	<u>See Coverage Breakdown Sheet</u>
RESULTS		NO. OF INDICATIONS	<u>N/A</u>
NI	<u>X</u>	STATUS	<u>N/A</u>
RI	<u>      </u>		
<u>EXAM DOCUMENTATION</u>		<u>INDICATION DOCUMENTATION</u>	
<input checked="" type="checkbox"/> PARAGON ANALYSIS LOG		<input type="checkbox"/> ASSESSMENT SHEET	
<input checked="" type="checkbox"/> PARAGON ACQUISITION LOG		<input type="checkbox"/> PARAGON HARD COPY	
<input checked="" type="checkbox"/> SCAN PRINT OUT		<input type="checkbox"/> OTHER (Specify)	
<input checked="" type="checkbox"/> COVERAGE BREAKDOWN			
Comments:			
<u>Procedure limited for the detection of axial flaws per the PDI issued PDQS</u>			
<u>document. CW/CCW scans were performed and areas of limitation were fully</u>			
<u>examined by supplemental Eddy Current Techniques.</u>			
Utility Review <u>DB King</u> Date <u>5-4-06</u>		Analyst <u>J. King</u> Date <u>5/4/06</u>	
ANII Review <u>[Signature]</u> Date <u>5/4/06</u>			

# WesDyne International

## 10 Year Reactor Pressure Vessel ISI Limited Examination Coverage Summary Table

Weld/Component ID	Scan Direction (Ax or Circ)	CODE COVERAGE			MRP COVERAGE			Reason for Limited Examination Coverage	Eddy Current (ET) Exam Coverage
		Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)	Total Examination Area (in <sup>2</sup> )	Limited Examination Area (in <sup>2</sup> )	Total Examination Coverage Area (%)		
RCC-24-1	Ax	206.81	2.3	99	N/A	N/A	N/A	Lift-Off due to overlay transition	N/A
RCC-24-1	Circ	206.81	43.65	79	N/A	N/A	N/A	Lift-Off due to overlay transition	100

Comments: The Ultrasonic Examination is limited due to lift off in the transition slope of the overlay on the ID surface. The perpendicular scans were limited in select areas around the circumference and not 360 degrees. The circ scans were limited 360 degree in the effected areas. Eddy Current examination was used to supplement the limited areas and obtained 100% coverage

Examiner: [Signature]

Date: 6/27/06

[Signature]  
D.B. King

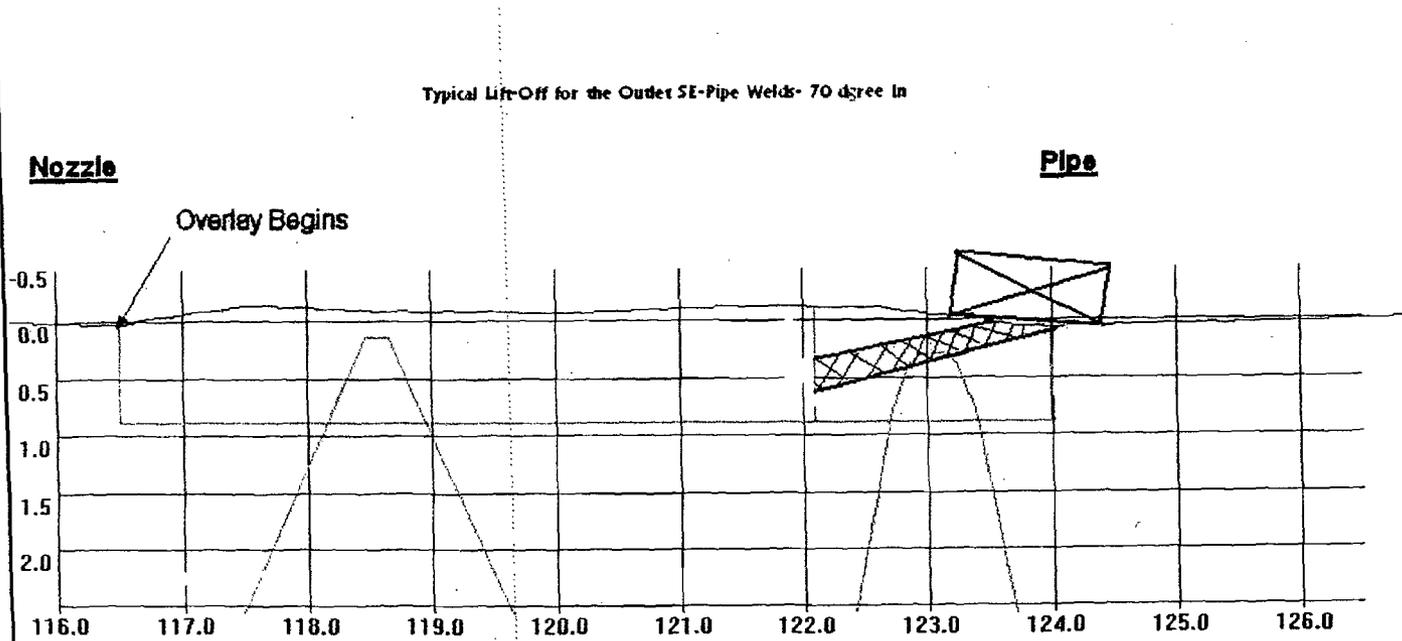
[Signature]  
1/8/06

**RV Nozzle Circ Weld RCC-24-1 (Datasheet)**

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

RV Nozzle Circ Weld RCC-24-1 (Datashet)



1 Quad 2 6/23/06  
DBKing / DSK Entergy UT Level III 7-26-06

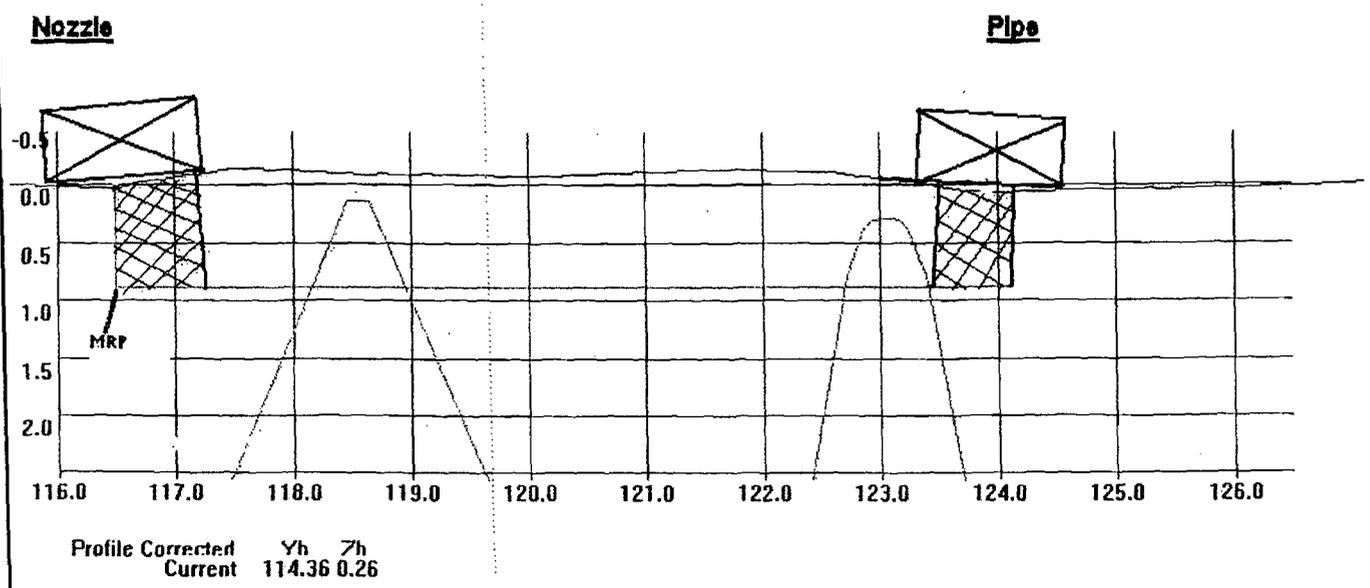


10 CFR 50.55a Relief Request RR-CRV-75

Attachment 4

RV Nozzle Circ Weld RCC-24-1 (Datashet)

Typical Life-Off for the Outlet Nozzle to Safe End Circ Scans



*Dave L 6/23/06*

*11/2/06*

**R.V. COVERAGE ESTIMATE BREAKDOWNS**

PLANT NAME Indian Point

**WesDyne**

WELD NO. RCC-24-1

**International**

COMPONENT Outlet Pipe weld @ 22°

**BEAM ANGLE BREAK DOWN**

BEAM DIRECTION	70 L							
	Code	MRP						
Perpendicular	99.00	99.00						
Parallel	79.00	77.00						
AVERAGE	89.00	88.00						

Comments: Procedure limited for the detection of axial flaws per the PDI issued PDQS document. CW/CCW scans were performed and areas of limitation were fully examined by supplemental Eddy Current Techniques.  
Limitation due to tapered area of the overlay on the ID- See sketch in Tab B  
 COMBINED AVERAGE 88.50 Analyst [Signature] Date 5/4/02

**RV Nozzle Circ Weld RCC-24-1 (Datashet)**

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

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ET Analysis Log: SE-22-1

Utility: Entergy		Plant: Indian Point		Unit: 2	Outage: 2R17	
Procedure No: WDI-STD-146			Procedure Rev. No.: 5			
Weld No. RCC-24-1			Weld Type: SAFE END			
Applicable Sensitivity Calibration Data Sheet No: ET-1				Acquisition Log No: SE-22		
ET Examiner Signature: <i>JDF</i>		Level II		Date: 5-3-06		
Data File Name	ET Probe No.	ET Probe Scan Direction (Axial/Circ.)	NI	RI	RI Resolution / Comments / Limitations	Examiner ID / Date
WN22-SE-PAR-ON	1	CIRC	X			JDF / 5-3-06
WN22-SE-PAR-ON	2	CIRC	X			JDF / 5-3-06
WN-22-SE-PRP-ON	1	AXIAL	X			JDF / 5-3-06
WN-22-SE-PRP-ON	2	AXIAL	X			JDF / 5-3-06

Entergy Level III *[Signature]* Date 5/3/06 ANII *[Signature]* Date 5/8/06

RV Nozzle Circ Weld RCC-24-1 (Datasheet)

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75

**R.V. COVERAGE ESTIMATE BREAKDOWNS**

PLANT NAME Indian Point

**WesDyne**

WELD NO. RCC-24-1

**International**

COMPONENT Outlet Pipe weld @ 22°

**BEAM ANGLE BREAK DOWN**

BEAM DIRECTION	70 L						
	Code	MRP					
Perpendicular	99.00	99.00					
Parallel	79.00	77.00					
AVERAGE	89.00	88.00					

Comments: Procedure limited for the detection of axial flaws per the PDI issued PDQS document. CW/CCW scans were performed and areas of limitation were fully examined by supplemental Eddy Current Techniques.

Limitation due to tapered area of the overlay on the ID- See sketch in Tab B

COMBINED AVERAGE 88.50 Analyst [Signature] Date 5/2/06

**RV Nozzle Circ Weld RCC-24-1 (Datashheet)**

Attachment 4

10 CFR 50.55a Relief Request RR-CRV-75