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CALVERT CLIFFS NUCLEAR POWER PLANT

December 16, 2010

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Response to Request for Additional Information – American Society of
Mechanical Engineers Code Required Weld Inspections Relief Requests (TAC
Nos. ME4220 through ME4223)

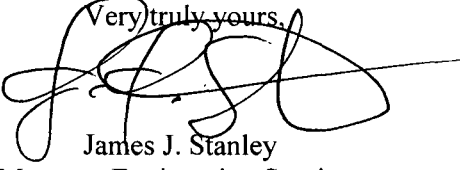
REFERENCES:

- (a) Letter from Mr. J. J. Stanley (CCNPP) to Document Control Desk (NRC) dated June 30, 2010, American Society of Mechanical Engineers Code Required Weld Inspections Relief Requests
- (b) Letter from Mr. D. V. Pickett (NRC) to Mr. G. H. Gellrich (CCNPP), dated October 13, 2010, Request for Additional Information Re: American Society of Mechanical Engineers Code Required Weld Inspections Relief Requests - Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 - (TAC Nos. ME4220 through ME4223)

In Reference (a), Calvert Cliffs Nuclear Power Plant, LLC submitted relief requests RR-ISI-24, 25, 26, and 27, for Calvert Cliffs Units 1 and 2, requesting relief from the performance of American Society of Mechanical Engineers Code required weld inspections that were scheduled to be performed during the recently completed Third Ten Year Inservice Inspection Program Plan period. In Reference (b), the Nuclear Regulatory Commission requested additional information be submitted to support their review of Reference (a). Attachment (1) provides the responses to the Nuclear Regulatory Commission's request for additional information contained in Reference (b).

AD47
NRR

Should you have questions regarding this matter, please contact Mr. Douglas E. Lauver at (410) 495-5219.

Very truly yours,

James J. Stanley
Manager-Engineering Services

JJS/KLG/bjd

Attachment: (1) Response to Request for Additional Information – Relief Requests ISI-24, 25, 26, and 27

Enclosures: 1 Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
2 Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
3 Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
4 Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components

cc: D. V. Pickett, NRC
W. M. Dean, NRC

Resident Inspector, NRC
S. Gray, DNR

ATTACHMENT (1)

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION –
RELIEF REQUESTS ISI-24, 25, 26, AND 27**

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – RELIEF REQUESTS ISI-24, 25, 26, AND 27

The numbers assigned for the request for additional information reflect the numbers used in Reference 1.

NRC RAI 2.1.1:

2.1 General – Additional Information Required on All Requests for Relief

The licensee has provided only general, and somewhat vague, information regarding impracticality of obtaining ASME Code-required volumetric examinations. Statements such as “physical barriers and scanning surface,” “component configurations,” or “curvature/taper,” are inadequate to describe the bases for not obtaining the ASME Code-required examination volumes. No sketches with dimensional information showing the causes of limited accessibility have been included.

2.1.1 Please provide detailed and specific information to support the bases for limited examination in all requests for relief, and therefore, demonstrate impracticality.

- (a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.*
- (b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.*
- (c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.*
- (d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.*

Calvert Cliffs Response RAI 2.1.1:

The requested, specific, information to support the bases for limited examination is provided for each of the individual relief requests in the following enclosures:

- Enclosure 1 – Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
- Enclosure 2 – Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
- Enclosure 3 – Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
- Enclosure 4 – Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components

Each of these enclosures provides responses to RAI 2.1.1(a-d) and provides detailed sketch(es) for each of the applicable welds that were listed in Table 1 of the original relief requests (Reference 2).

For some of the welds, the examination coverage percentage values calculated in the above enclosures are different than the coverage percentage values that were listed in Reference 2, Table 1. In those cases, the values in the above enclosures take precedence as they reflect additional reviews and revised calculations performed since the original submittal. Over the 10 year ISI interval several different ultrasonic examination procedures and vendors were utilized. This created some differences in how volumetric coverage was calculated. The revised volumetric coverages provided in this response reflect a standardized calculation approach applied to all welds and is aligned with current industry practice for performing these calculations.

NRC RAI 2.1.2:

It is unclear whether the licensee used the appropriate ASME Code requirements for the examinations. In Section 4 under the individual component descriptions of Attachments 1 through 4, the licensee stated that for all examination categories contained in the requests for relief, the NDE techniques and procedures incorporated (or were similar to) examination techniques qualified under Appendix VIII. In

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**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION –
RELIEF REQUESTS ISI-24, 25, 26, AND 27**

Section 6, Paragraph 3 of Attachments 1 through 4, the licensee claimed that ultrasonic procedures complied with the requirements of ASME Section V, Article 4 and the personnel were qualified in accordance with ASME Code Section XI, Appendix VII. Please identify the ASME Code requirements for procedure, equipment, and personnel qualifications used for examination of the subject welds.

2.1.2 Please state the actual ASME Code section that was followed for each Examination Category. If Appendix VIII- qualified techniques were applied to Examination Categories B-D, C-A, and C-B, please discuss whether this alternative was approved by NRC.

Calvert Cliffs Response RAI 2.1.2:

Calvert Cliffs Inservice Inspection (ISI) inspections were performed in accordance with the 1998 ASME Section XI (no addenda) as amended by 10 CFR 50.55a and Regulatory Guide 1.147. In 2003, Calvert Cliffs implemented a risk informed inspection program for Class 1 and 2 piping welds (examination categories B-F, B-J, C-F-1, and C-F-2). These risk informed category designations were reassigned to reflect those established by Code Case N-578-1. Appendix VIII qualified techniques were not applied to Categories B-D, C-A, or C-B.

Per Calvert Cliffs procedures and the 1998 Edition of ASME Section XI (no addenda) Code, the following applies:

Code Category	Description	Ultrasonic Procedure and Equipment Requirements per IWA-2232 (ASME Section XI, Appendix I)	Personnel Qualifications
B-D	Full Penetration Welded Nozzles in Vessels > 2"	ASME V, Article 4, as supplemented by Table I-2000-1	ASME XI IWA-2300
C-A	Pressure Retaining Welds in Pressure Vessels < or = 2"	ASME XI, Appendix III, as supplemented by Table I-2000-1	ASME XI IWA-2300
C-B	Pressure Retaining Nozzle Welds in Vessels < or = 2"	ASME XI, Appendix III, as supplemented by Table I-2000-1	ASME XI IWA-2300
R-A	Risk Informed Piping Welds	ASME XI Appendix VIII	ASME XI Appendix VII

NRC RAI 2.2.1:

2.2 Requests for Relief ISI-24, ISI-25, ISI-26, and ISI-27, Examination Category R-A, Items R1.11, R1.16, and R1.20, Risk Informed Piping Examinations (Units 1 and 2)

2.2.1 In addition to the specific information requested in Item 2.1.1 above, discuss whether alternate welds could have been examined to address the reduced volumetric coverage resulting from the limited examinations of the subject welds.

Calvert Cliffs Response RAI 2.2.1:

The Third 10-Year ISI Interval for which Calvert Cliffs is requesting relief is the first interval in which risk informed methodologies have been applied at Calvert Cliffs. The Calvert Cliffs risk-informed approach was developed in accordance with Reference 3. In the development of risk-informed selections done in accordance with the process outlined in Reference 3, it was foreseen that relief would be required for any risk informed ISI piping element selection for which greater than 90% examination coverage is not achieved (see Reference 3, Section 6.4). This is especially true in light of the fact that it was

ATTACHMENT (1)

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – RELIEF REQUESTS ISI-24, 25, 26, AND 27

recognized that welds would be selected which had never previously been ultrasonically examined under our station's ISI program. For welds that are subject to a degradation mechanism (Items R1.11 and R1.16) those welds were selected for examination on the basis of predicted degradation severity; often at locations inherently more difficult to obtain coverage on, e.g., a pipe-to-valve weld. The methodology used in Reference 3 states that less than 90 percent coverage at the location most susceptible to a potential degradation mechanism "will yield far more valuable information than 100 percent coverage of a less susceptible location". These insights were used by the "expert panel" convened by Calvert Cliffs to make the original element selections for the program, fully expecting that relief would be required for some welds, rather than picking less susceptible welds for which greater than 90 percent coverage could be obtained. It was also recognized, for Calvert Cliffs Units 1 and 2, that when alternative location welds for Items R1.11 and R1.16 were available with the same degradation mechanism they were typically of the identical configuration in a sister piping loop so no improvement in coverage would be achieved by selecting them.

For welds which are not subject to a degradation mechanism (Item R1.20); Reference 3 recommends selection of welds for examination "be focused at terminal ends and structural discontinuity locations of high stress and/or high fatigue usage". These were the guiding principles used by the "expert panel" convened by Calvert Cliffs to make the original element selections for the program, again fully expecting that relief would be required for some welds, rather than picking less stressed weld locations for which greater than 90 percent coverage could be obtained. This follows the fundamental tenet of the risk-informed approach that less than 90 percent coverage at the location more highly stressed, and therefore more likely to undergo inservice degradation, will yield more valuable information than 100 percent coverage of a weld at a less stressed location. In cases where a known physical obstruction, like a pipe hanger, was identified which prevented examination of a selected weld a more suitable, preferably equivalent, location was chosen. Conversely, geometrical configurations, (e.g., valve taper, angled penetration, tight radius elbow), and/or material type, (e.g., cast stainless steel safe ends), were not used as bases for selecting alternate locations even if limited coverage was expected. While the above types of weld configurations make-up the vast majority of welds for which relief is being requested, they represent only 13 percent of the total number of Item R1.20 welds selected for examination (i.e., for the remaining 87 percent of Item R1.20 welds the examination volume coverage exceeded 90 percent). For those welds with a cast stainless steel component; even though American Society of Mechanical Engineers (ASME) Code coverage was not credited for scanning performed from the cast stainless steel safe end side of the weld; if the geometry allowed it, volumetric coverage of that side was obtained using the ASME Appendix VIII procedure (PDI-UT-2) qualified for non-cast stainless steel product forms.

Even though it was impractical to meet the ASME Code-required 90 percent examination coverage for these welds, the nature of the limited coverage did not generally prevent the most critical area, the internal diameter surface at the weld root, from being insonified from at least one direction. Therefore, a service-induced defect, if present, would likely be detected even though the Code-required volumetric coverage was limited. In addition small gaps in the internal diameter coverage occurred at azimuthal locations where transducer access was restricted, e.g., at angled "stab-in" branch connections and at the intrados of tight radius elbows. As part of the defense in depth approach, all the welds in the risk informed program also received, under the System Pressure Testing Program (Category B-P), a VT-2 examination for evidence of leakage during each refueling outage. No leaking piping welds have been encountered under this testing program.

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REFERENCES

- 1 Letter from Mr. D. V. Pickett (NRC) to Mr. G. H. Gellrich (CCNPP), dated October 13, 2010, Request for Additional Information Re: American Society of Mechanical Engineers Code Required Weld Inspections Relief Requests - Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 - (TAC Nos. ME4220 through ME4223)
- 2 Letter from Mr. J. J. Stanley (CCNPP) to Document Control Desk (NRC), dated June 30, 2010, American Society of Mechanical Engineers Code Required Weld Inspections Relief Requests
- 3 Electric Power Research Institute, Revised Risk-Informed Inservice Inspection Evaluation Procedure, TR-112657, Rev. B-A, December 1999

ENCLOSURE 1

Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components

Responses to Request for Additional Information
Summary No.: 004050 Comp ID: 4-404 Page 1 of 11

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

PZR Surge Nozzle to Lower Head / Due to nozzle configuration, coverage of nozzle side base metal and weld was limited. The pressurizer nozzle-to-vessel head welds are accessible only from the head side based on the nozzle curvature. The scanning surface of the nozzle is essentially perpendicular to the head surface which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The nondestructive examination (NDE) techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

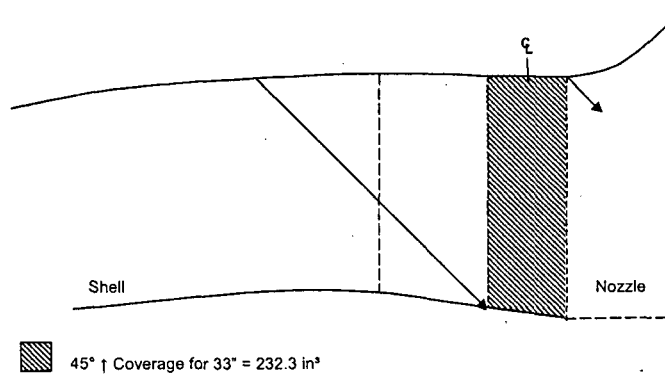
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CCNPP

Component ID:	4 - 404	NDE Report No.:	CC04-1U-014
LTP No.:	004050	Summary No.:	004050
Coverage Sketch No:	1	MO No.:	1200300701
Exam Area:	Weld Metal / 33"	Scale:	50%
Exam Angle:	45°		

Diameter: On Head
 Thickness: 4.40"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60					9	686.75		
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66			5	60°←	10	716.32	716.32	50.00%
4	60°↓	6	154.00	154.00	29.56%	6	60°→	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%						
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent: 744.64%			Total Beams: 7			Total Percent: 427.69%		
			Total Weld Metal Coverage: 82.74%						Total Base Metal Coverage: 61.10%		
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
			Weld Metal: 82.74%		520.96		1953.60		22.06%		
			Base Metal: 61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

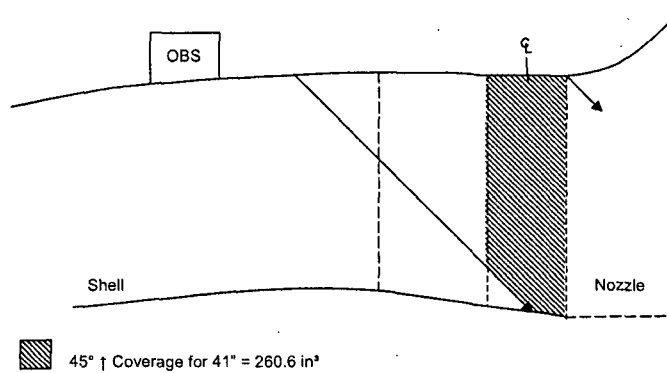
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CCNPP

Component ID: 4 - 404	NDE Report No.: CC04-1U-014
LTP No.: 004050	Summary No.: 004050
Coverage Sketch No: 2	MO No.: 1200300701
Exam Area: Weld Metal / 41"	Scale: 50%
Exam Angle: 45°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60				9	686.75	88.85%		
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66				10	716.32	716.32	50.00%	
4	60°↓	6	154.00	154.00	29.56%	5	60°←	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	6	60°→	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent: 744.64%			Total Beams: 7			Total Percent: 427.69%		
Total Weld Metal Coverage:			82.74%			Total Base Metal Coverage:			61.10%		
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
			Weld Metal: 82.74%		520.96		1953.60		22.06%		
			Base Metal: 61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

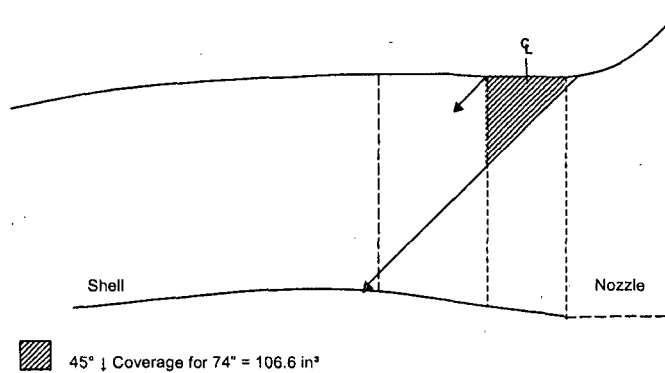
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CCNPP

Component ID: 4 - 404	NDE Report No.: CC04-1U-014
LTP No.: 004050	Summary No.: 004050
Coverage Sketch No: 3	MO No.: 1200300701
Exam Area: Weld Metal / 74"	Scale: 50%
Exam Angle: 45°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60					9	686.75		88.85%
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
		4	232.30			4	45°→	10	716.32	716.32	50.00%
3	60°↑	5	288.66	520.96	100.00%	5	60°←	10	716.32	716.32	50.00%
		6	154.00	154.00	29.56%	6	60°→	10	716.32	716.32	50.00%
4	60°↓	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%						
6	45°→	7	520.96	520.96	100.00%						
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent: 744.64%			Total Beams: 7			Total Percent: 427.69%		
Total Weld Metal Coverage:			82.74%			Total Base Metal Coverage:			61.10%		
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
			Weld Metal: 82.74%		520.96		1953.60		22.06%		
			Base Metal: 61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

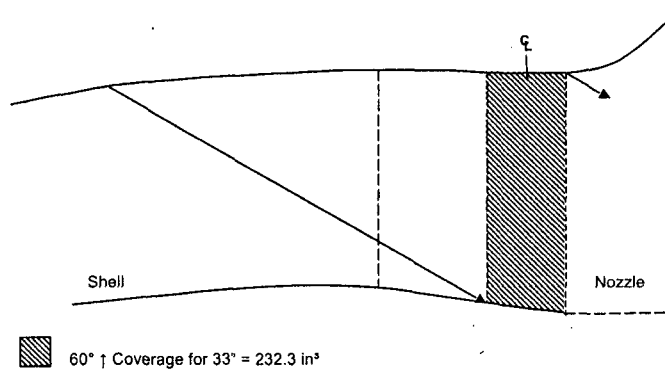
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CCNPP

Component ID: 4 - 404	NDE Report No.: CC04-1U-014
LTP No.: 004050	Summary No.: 004050
Coverage Sketch No: 4	MO No.: 1200300701
Exam Area: Weld Metal / 33"	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60					686.75	88.85%		
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66			10	716.32	716.32	50.00%		
4	60°↓	6	154.00	154.00	29.56%	5	60°←	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	6	60°→	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent:		744.64%	Total Beams: 7			Total Percent:		427.69%
			Total Weld Metal Coverage:		82.74%				Total Base Metal Coverage:		61.10%
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
			Weld Metal: 82.74%		520.96		1953.60		22.06%		
			Base Metal: 61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

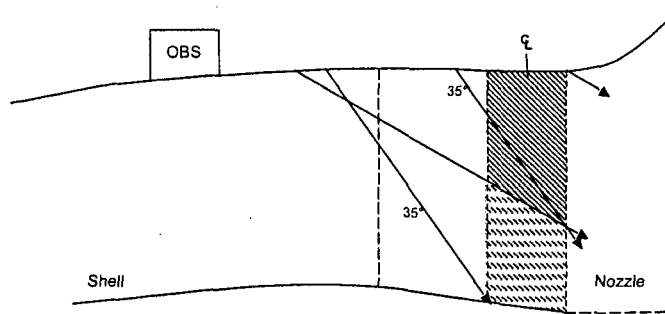
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CCNPP

Component ID: 4 - 404	NDE Report No.: CC04-1U-014
LTP No.: 004050	Summary No.: 004050
Coverage Sketch No: 5	MO No.: 1200300701
Exam Area: Weld Metal / 41"	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 60° ↑ Coverage for 41" = 172.2 in³
 Supplemental 35° ↑ Coverage for 41" = 116.46 in³

Total: (172.2 + 116.46) = 288.66 in³

Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60					686.75	88.85%		
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66			716.32	716.32	50.00%			
4	60°↓	6	154.00	154.00	29.56%	5	60°←	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	6	60°→	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent: 744.64%			Total Beams: 7			Total Percent: 427.69%		
			Total Weld Metal Coverage: 82.74%						Total Base Metal Coverage: 61.10%		
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
			Weld Metal: 82.74%		520.96		1953.60		22.06%		
			Base Metal: 61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

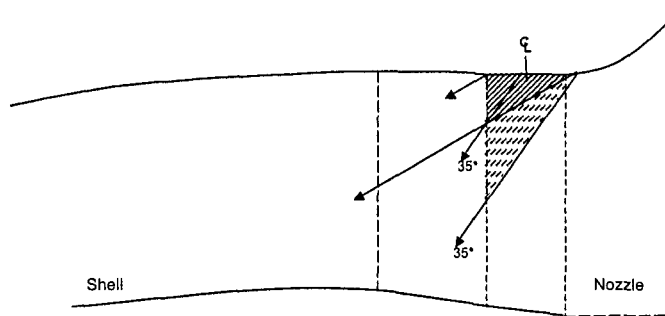
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CCNPP

Component ID: 4 - 404	NDE Report No.: CC04-1U-014
LTP No.: 004050	Summary No.: 004050
Coverage Sketch No: 6	MO No.: 1200300701
Exam Area: Weld Metal / 74"	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



60° ↓ Coverage for 74" = 65.1 in²
 Supplemental 35° ↓ Coverage for 74" = 88.9 in²

Total: (65.1 + 88.9) = 154 in²

Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60					686.75	88.85%		
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66			716.32	716.32	50.00%			
4	60°↓	6	154.00	154.00	29.56%	5	60°←	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	6	60°→	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent: 744.64%			Total Beams: 7			Total Percent: 427.69%		
			Total Weld Metal Coverage: 82.74%						Total Base Metal Coverage: 61.10%		
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
			Weld Metal: 82.74%		520.96		1953.60		22.06%		
			Base Metal: 61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

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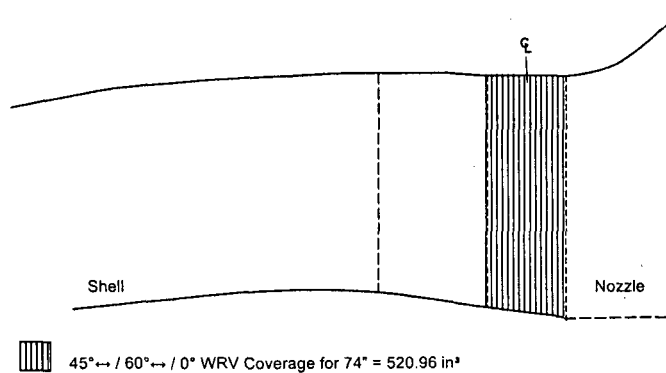
CCNPP

Component ID: 4 - 404
 LTP No.: 004050
 Coverage Sketch No: 7
 Exam Area: Weld Metal / 74"
 Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC04-1U-014
 Summary No.: 004050
 MO No.: 1200300701
 Scale: 50%

Diameter: On Head
 Thickness: 4.40"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60					9	686.75		
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66			5	60°←	10	716.32	716.32	50.00%
4	60°↓	6	154.00	154.00	29.56%	6	60°→	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%						
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent: 744.64%			Total Beams: 7			Total Percent: 427.69%		
			Total Weld Metal Coverage: 82.74%						Total Base Metal Coverage: 61.10%		
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
		Weld Metal:	82.74%		520.96		1953.60		22.06%		
		Base Metal:	61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

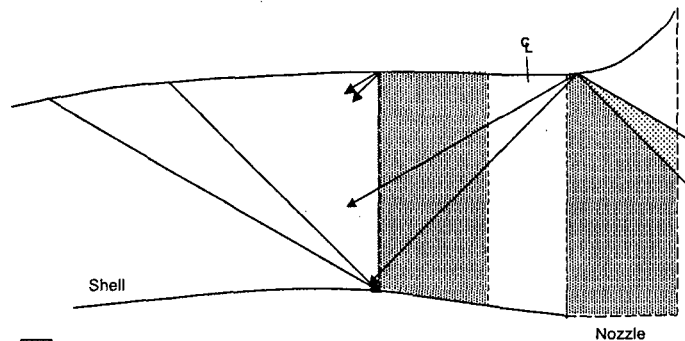
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CCNPP


Component ID: 4 - 404	NDE Report No.: CC04-1U-014
LTP No.: 004050	Summary No.: 004050
Coverage Sketch No: 8	MO No.: 1200300701
Exam Area: Base Metal / 33"	Scale: 50%
Exam Angle: 45° / 60°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 Coverage by at least 2 sound beams for 33" = 572.88 in³.

 Coverage by 1 sound beam only for 33" = 26.4 in³.

Total: 572.88 + (26.4 / 2) = 586.08 in³

Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60			9		686.75			
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66			5	60°←	10	716.32	716.32	50.00%
4	60°↓	6	154.00	154.00	29.56%	6	60°→	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%						
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent: 744.64%			Total Beams: 7			Total Percent: 427.69%		
			Total Weld Metal Coverage: 82.74%						Total Base Metal Coverage: 61.10%		
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
		Weld Metal:	82.74%		520.96		1953.60		22.06%		
		Base Metal:	61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

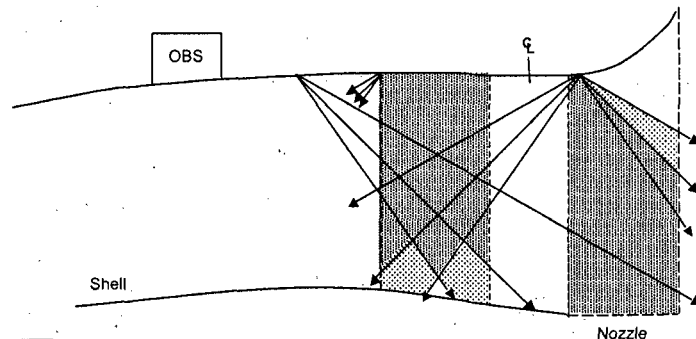
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CCNPP

Component ID: 4 - 404	NDE Report No.: CC04-1U-014
LTP No.: 004050	Summary No.: 004050
Coverage Sketch No.: 9	MO No.: 1200300701
Exam Area: Base Metal / 41"	Scale: 50%
Exam Angle: 45° / 60° / 35°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage by at least 2 sound beams for 41" = 635.09 in³.

Coverage by 1 sound beam only for 41" = 103.32 in³.

Total: 635.09 + (103.32 / 2) = 686.75 in³.

Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60					9	686.75		
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66			5	60°←	10	716.32	716.32	50.00%
4	60°↓	6	154.00	154.00	29.56%	6	60°→	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%						
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent:		744.64%	Total Beams: 7			Total Percent:		427.69%
			Total Weld Metal Coverage:		82.74%				Total Base Metal Coverage:		61.10%
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
			Weld Metal: 82.74%		520.96		1953.60		22.06%		
			Base Metal: 61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

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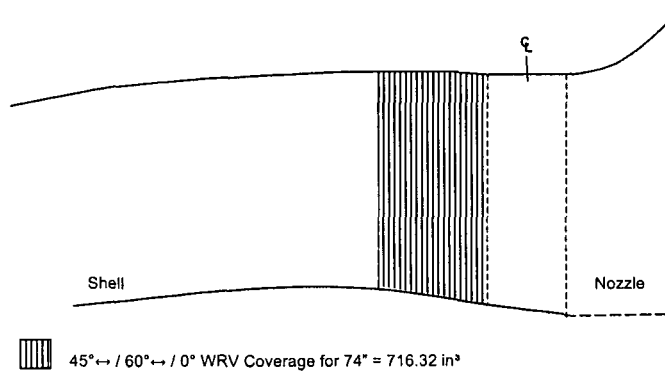
CCNPP

Component ID: 4 - 404
LTP No.: 004050
Coverage Sketch No: 10
Exam Area: Base Metal / 74"
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC04-1U-014
Summary No.: 004050
MO No.: 1200300701
Scale: 50%

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Weld Metal: Volume = 520.96 Cubic Inches						Base Metal: Volume = 1432.64 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 520.96	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1432.64
1	45°↑	1	232.30	492.90	94.61%	1 + 2	45°/60°↑↓	8	586.08	1272.83	88.85%
		2	260.60					686.75	88.85%		
2	45°↓	3	106.60	106.60	20.46%	3	45°←	10	716.32	716.32	50.00%
3	60°↑	4	232.30	520.96	100.00%	4	45°→	10	716.32	716.32	50.00%
		5	288.66			716.32	716.32	50.00%			
4	60°↓	6	154.00	154.00	29.56%	5	60°←	10	716.32	716.32	50.00%
5	45°←	7	520.96	520.96	100.00%	6	60°→	10	716.32	716.32	50.00%
6	45°→	7	520.96	520.96	100.00%	7	0° WRV	10	716.32	716.32	50.00%
7	60°←	7	520.96	520.96	100.00%						
8	60°→	7	520.96	520.96	100.00%						
9	0° WRV	7	520.96	520.96	100.00%						
Total Beams: 9			Total Percent: 744.64%			Total Beams: 7			Total Percent: 427.69%		
Total Weld Metal Coverage:			82.74%			Total Base Metal Coverage:			61.10%		
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
		Weld Metal:	82.74%		520.96		1953.60		22.06%		
		Base Metal:	61.10%		1432.64		1953.60		44.81%		
Total Exam Coverage =									66.87%		

Responses to Request for Additional Information
Summary No.: 004100 Comp ID: 4-405 Page 1 of 9

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

PZR Surge Nozzle to Upper Head / Due to nozzle configuration, coverage of nozzle side base metal and weld was limited. The pressurizer nozzle-to-vessel head welds are accessible only from the head side based on the nozzle curvature. The scanning surface of the nozzle is essentially perpendicular to the head surface which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The nondestructive examination (NDE) techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

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CCNPP

Component ID: 4 - 405

LTP No.: 004100

Coverage Sketch No: 1

Exam Area: Weld Metal 360°

Exam Angle: 45°

NDE Report No.: 2000BU028

Summary No.: 004100

MO No.: 1199904203

Scale: 50%

Diameter: On Head

Thickness: 4.40"

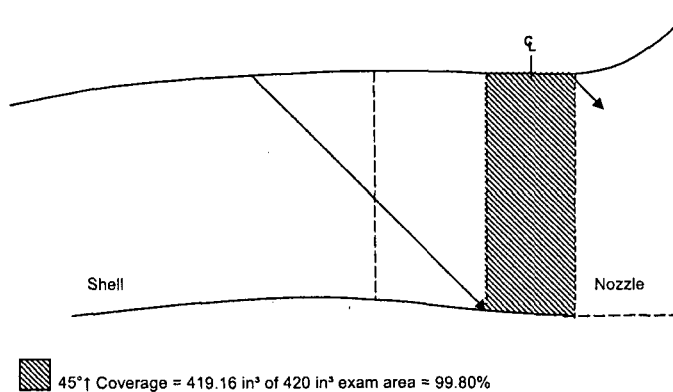
Material: CC/S

CC/S = Clad Carbon Steel

S/S = Stainless Steel

CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. in.)	Toward Nozzle:	↑	
Exam Area:	51.85		6.3		4.5		1470.00	Away from Nozzle:	↓	
Weld Metal:	51.85		1.8		4.5		420.00	Clockwise:	↻	
Base Metal:	51.85		4.5		4.5		1050.00	Counter Clockwise:	↺	

Weld Metal: Volume = 420.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. in.)	Beam Total	Percent of 420.00
1	45°↑	1	419.16	419.16	99.80%
2	45°↓	2	66.37	66.37	15.80%
3	60°↑	3	418.44	418.44	99.63%
4	60°↓	4	35.00	35.00	8.33%
5	45°↔	5	390.83	390.83	93.05%
6	45°↔	5	390.83	390.83	93.05%
7	60°↔	5	390.83	390.83	93.05%
8	60°↔	5	390.83	390.83	93.05%
9	0° WRV	6	420.00	420.00	100.00%
Total Beams: 9			Total Percent:		695.78%
Total Weld Metal Coverage:			77.31%		

Base Metal: Volume = 1050.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. in.)	Beam Total	Percent of 1050.00
1 + 2	45°/60°↑↓	7	907.09	907.09	86.39%
3	45°↔	8	525	525	50.00%
4	45°↔	8	525	525	50.00%
5	60°↔	8	525	525	50.00%
6	60°↔	8	525	525	50.00%
7	0° WRV	8	525	525	50.00%
Total Beams: 7			Total Percent:		422.78%
Total Base Metal Coverage:			60.40%		

Combined Coverage						
	Coverage Percent	x	Volume	+	Total Volume	= Result
Weld Metal:	77.31%		420.00		1470.00	22.09%
Base Metal:	60.40%		1050.00		1470.00	43.14%
Total Exam Coverage =						65.23%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

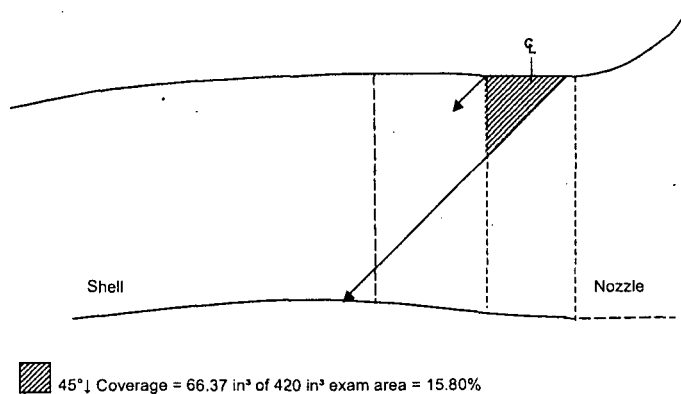
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2000BU028
LTP No.: 004100	Summary No.: 004100
Coverage Sketch No: 2	MO No.: 1199904203
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions					
	Length	x	Width	x	Thickness	=	Result (Cub. In.)					
Exam Area:	51.85		6.3		4.5		1470.00	Toward Nozzle:	↑			
Weld Metal:	51.85		1.8		4.5		420.00	Away from Nozzle:	↓			
Base Metal:	51.85		4.5		4.5		1050.00	Clockwise:	←			
								Counter Clockwise:	→			
Weld Metal: Volume = 420.00 Cubic Inches							Base Metal: Volume = 1050.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 420.00		Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1050.00
1	45°↑	1	419.16	419.16	99.80%		1 + 2	45°/60°↑↓	7	907.09	907.09	86.39%
2	45°↓	2	66.37	66.37	15.80%		3	45°←	8	525	525	50.00%
3	60°↑	3	418.44	418.44	99.63%		4	45°→	8	525	525	50.00%
4	60°↓	4	35.00	35.00	8.33%		5	60°←	8	525	525	50.00%
5	45°←	5	390.83	390.83	93.05%		6	60°→	8	525	525	50.00%
6	45°→	5	390.83	390.83	93.05%		7	0° WRV	8	525	525	50.00%
7	60°←	5	390.83	390.83	93.05%							
8	60°→	5	390.83	390.83	93.05%							
9	0° WRV	6	420.00	420.00	100.00%							
Total Beams: 9							Total Percent:		695.78%			
Total Weld Metal Coverage:							77.31%					
Total Beams: 7							Total Percent:		422.78%			
Total Base Metal Coverage:							60.40%					
Combined Coverage												
			Coverage Percent	x	Volume	+	Total Volume	=	Result			
	Weld Metal:		77.31%		420.00		1470.00		22.09%			
	Base Metal:		60.40%		1050.00		1470.00		43.14%			
Total Exam Coverage =										65.23%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

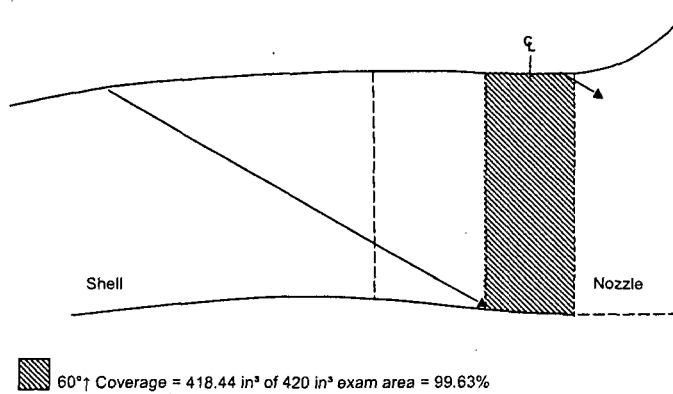
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2000BU028
LTP No.: 004100	Summary No.: 004100
Coverage Sketch No: 3	MO No.: 1199904203
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Cub. In.)		
Exam Area:	51.85		6.3		4.5		1470.00	Toward Nozzle: ↑	
Weld Metal:	51.85		1.8		4.5		420.00	Away from Nozzle: ↓	
Base Metal:	51.85		4.5		4.5		1050.00	Clockwise: ↻	
								Counter Clockwise: ↺	

Weld Metal: Volume = 420.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Percent of 420.00
1	45°↑	1	419.16	99.80%
2	45°↓	2	66.37	15.80%
3	60°↑	3	418.44	99.63%
4	60°↓	4	35.00	8.33%
5	45°↔	5	390.83	93.05%
6	45°↔	5	390.83	93.05%
7	60°↔	5	390.83	93.05%
8	60°↔	5	390.83	93.05%
9	0° WRV	6	420.00	100.00%
Total Beams: 9 Total Percent: 695.78%				
Total Weld Metal Coverage: 77.31%				

Base Metal: Volume = 1050.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1050.00
1 + 2	45°/60°↑↓	7	907.09	907.09	86.39%
3	45°↔	8	525	525	50.00%
4	45°↔	8	525	525	50.00%
5	60°↔	8	525	525	50.00%
6	60°↔	8	525	525	50.00%
7	0° WRV	8	525	525	50.00%
Total Beams: 7 Total Percent: 422.78%					
Total Base Metal Coverage: 60.40%					

Combined Coverage					
	Coverage Percent	x	Volume	=	Result
Weld Metal:	77.31%		420.00		22.09%
Base Metal:	60.40%		1050.00		43.14%
Total Exam Coverage = 65.23%					

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

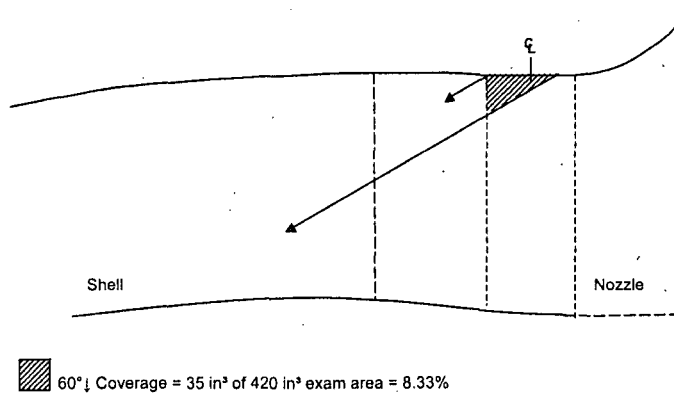
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2000BU028
LTP No.: 004100	Summary No.: 004100
Coverage Sketch No: 4	MO No.: 1199904203
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. in.)	Toward Nozzle: ↑		
Exam Area:	51.85		6.3		4.5		1470.00	Away from Nozzle: ↓		
Weld Metal:	51.85		1.8		4.5		420.00	Clockwise: ↻		
Base Metal:	51.85		4.5		4.5		1050.00	Counter Clockwise: ↺		

Weld Metal: Volume = 420.00 Cubic Inches					Base Metal: Volume = 1050.00 Cubic Inches						
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 420.00	Beam No.	Angle	Sketch	Coverage (Cub. in.)	Beam Total	Percent of 1050.00
1	45°↑	1	419.16	419.16	99.80%	1 + 2	45°/60°↑↓	7	907.09	907.09	86.39%
2	45°↓	2	66.37	66.37	15.80%	3	45°←	8	525	525	50.00%
3	60°↑	3	418.44	418.44	99.63%	4	45°→	8	525	525	50.00%
4	60°↓	4	35.00	35.00	8.33%	5	60°←	8	525	525	50.00%
5	45°←	5	390.83	390.83	93.05%	6	60°→	8	525	525	50.00%
6	45°→	5	390.83	390.83	93.05%	7	0° WRV	8	525	525	50.00%
7	60°←	5	390.83	390.83	93.05%						
8	60°→	5	390.83	390.83	93.05%						
9	0° WRV	6	420.00	420.00	100.00%						
Total Beams: 9					Total Percent: 695.78%	Total Beams: 7					Total Percent: 422.78%
Total Weld Metal Coverage: 77.31%						Total Base Metal Coverage: 60.40%					

Combined Coverage								
		Coverage Percent	x	Volume	=	Total Volume	=	Result
	Weld Metal:	77.31%		420.00		1470.00		22.09%
	Base Metal:	60.40%		1050.00		1470.00		43.14%
Total Exam Coverage =						65.23%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

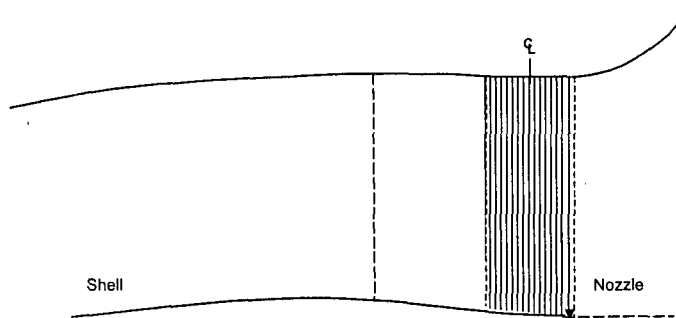
CCNPP


Component ID: 4 - 404 **NDE Report No.:** 2000BU028
LTP No.: 004100 **Summary No.:** 004100
Coverage Sketch No: 5 **MO No.:** 1199904203
Exam Area: Weld Metal 360° **Scale:** 50%
Exam Angle: 45° / 60°

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

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(Sketch Resized for Relief Request)



 45°↔ / 60°↔ Coverage = 390.83 in³ of 420 in³ exam area = 93.05%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle: ↑		
Exam Area:	51.85		6.3		4.5		1470.00	Away from Nozzle: ↓		
Weld Metal:	51.85		1.8		4.5		420.00	Clockwise: ←		
Base Metal:	51.85		4.5		4.5		1050.00	Counter Clockwise: →		

Weld Metal: Volume = 420.00 Cubic Inches						Base Metal: Volume = 1050.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of
1	45°↑	1	419.16	419.16	99.80%	1 + 2	45°/60°↑↓	7	907.09	907.09	86.39%
2	45°↓	2	66.37	66.37	15.80%						86.39%
3	60°↑	3	418.44	418.44	99.63%	3	45°←	8	525	525	50.00%
4	60°↓	4	35.00	35.00	8.33%	4	45°→	8	525	525	50.00%
5	45°↔	5	390.83	390.83	93.05%	5	60°←	8	525	525	50.00%
6	45°↔	5	390.83	390.83	93.05%	6	60°→	8	525	525	50.00%
7	60°↔	5	390.83	390.83	93.05%	7	0° WRV	8	525	525	50.00%
8	60°↔	5	390.83	390.83	93.05%						
9	0° WRV	6	420.00	420.00	100.00%						
Total Beams: 9			Total Percent: 695.78%			Total Beams: 7			Total Percent: 422.78%		
Total Weld Metal Coverage:			77.31%			Total Base Metal Coverage:			60.40%		

Combined Coverage						
	Coverage Percent	x	Volume	+	Total Volume	= Result
Weld Metal:	77.31%		420.00		1470.00	22.09%
Base Metal:	60.40%		1050.00		1470.00	43.14%
Total Exam Coverage =						65.23%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

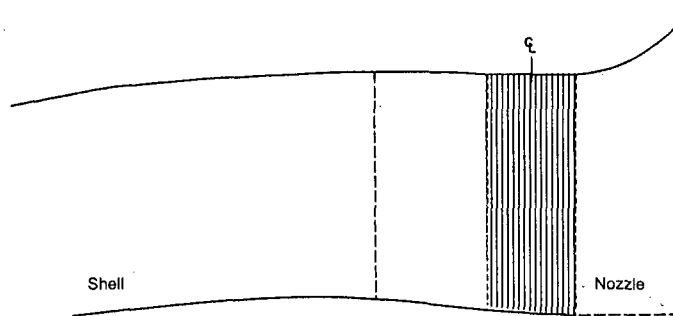
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2000BU028
LTP No.: 004100	Summary No.: 004100
Coverage Sketch No: 6	MO No.: 1199904203
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 0° WRV	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 0° WRV Coverage = 420 in² of 420 in² exam area = 100%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle: ↑		
Exam Area:	51.85		6.3		4.5		1470.00	Away from Nozzle: ↓		
Weld Metal:	51.85		1.8		4.5		420.00	Clockwise: ↻		
Base Metal:	51.85		4.5		4.5		1050.00	Counter Clockwise: ↺		

Weld Metal: Volume = 420.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 420.00
1	45°↑	1	419.16	419.16	99.80%
2	45°↓	2	66.37	66.37	15.80%
3	60°↑	3	418.44	418.44	99.63%
4	60°↓	4	35.00	35.00	8.33%
5	45°←	5	390.83	390.83	93.05%
6	45°→	5	390.83	390.83	93.05%
7	60°←	5	390.83	390.83	93.05%
8	60°→	5	390.83	390.83	93.05%
9	0° WRV	6	420.00	420.00	100.00%
Total Beams: 9			Total Percent:		695.78%
Total Weld Metal Coverage:			77.31%		

Base Metal: Volume = 1050.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1050.00
1 + 2	45°/60°↑↓	7	907.09	907.09	86.39%
3	45°←	8	525	525	50.00%
4	45°→	8	525	525	50.00%
5	60°←	8	525	525	50.00%
6	60°→	8	525	525	50.00%
7	0° WRV	8	525	525	50.00%
Total Beams: 7			Total Percent:		422.78%
Total Base Metal Coverage:			60.40%		

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	77.31%		420.00		1470.00
	Base Metal:	60.40%		1050.00		1470.00
Total Exam Coverage =						65.23%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

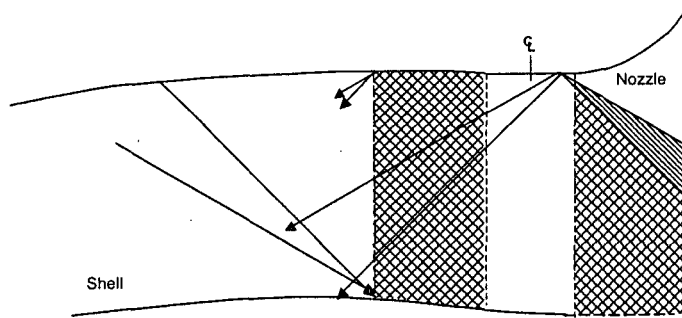
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CCNPP


Component ID: 4 - 405	NDE Report No.: 2000BU028
LTP No.: 004100	Summary No.: 004100
Coverage Sketch No: 7	MO No.: 1199904203
Exam Area: Base Metal 360°	Scale: 50%
Exam Angle: 45° / 60°	

Diameter: On Head
Thickness: 4.40"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 Coverage by at least 2 sound beams = 875.01 in³ of 1050 in³ exam area = 83.33%.

 Coverage by 1 sound beam only = 64.16 in³ of 1050 in³ exam area = 6.11%.

Total: 875.01 + (64.16 / 2) = 907.09 in³ of 1050 in³ exam area = 86.39%.

Coverage Dimensions						Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle:	
Exam Area:	51.85		6.3		4.5		1470.00	Away from Nozzle:	
Weld Metal:	51.85		1.8		4.5		420.00	Clockwise:	←
Base Metal:	51.85		4.5		4.5		1050.00	Counter Clockwise:	→

Weld Metal: Volume = 420.00 Cubic Inches					Base Metal: Volume = 1050.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of	Beam No.	Angle	Sketch	Coverage (Cub. In.)
1	45°↑	1	419.16	419.16	99.80%	1 + 2	45°/60°↑↓	7	907.09
2	45°↓	2	66.37	66.37	15.80%				
3	60°↑	3	418.44	418.44	99.63%	3	45°→	8	525
4	60°↓	4	35.00	35.00	8.33%	4	45°←	8	525
5	45°→	5	390.83	390.83	93.05%	5	60°→	8	525
6	45°←	5	390.83	390.83	93.05%	6	60°←	8	525
7	60°→	5	390.83	390.83	93.05%	7	0° WRV	8	525
8	60°←	5	390.83	390.83	93.05%				
9	0° WRV	6	420.00	420.00	100.00%				
Total Beams: 9					Total Percent: 695.78%	Total Beams: 7			
Total Weld Metal Coverage:					77.31%	Total Base Metal Coverage:			

Combined Coverage					
	Coverage Percent	x	Volume	=	Result
Weld Metal:	77.31%		420.00		1470.00
Base Metal:	60.40%		1050.00		1470.00
Total Exam Coverage =					65.23%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

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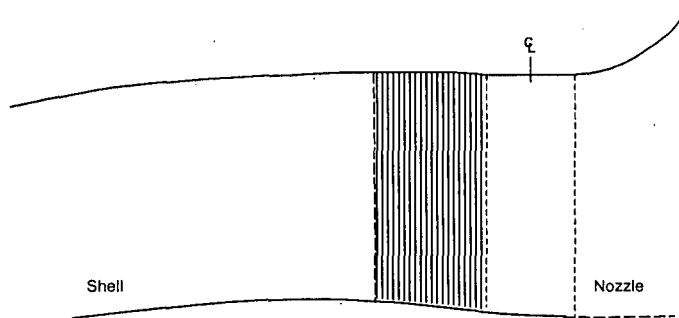
CCNPP


Component ID: 4 - 405
LTP No.: 004100
Coverage Sketch No: 8
Exam Area: Base Metal 360°
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: 2000BU028
Summary No.: 004100
MO No.: 1199904203
Scale: 50%

Diameter: On Head
Thickness: 4.40"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° WRV Coverage = 525 in² of 1050 in² exam area = 50%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Cub. In.)		
Exam Area:	51.85		6.3		4.5		1470.00	Toward Nozzle: ↑	
Weld Metal:	51.85		1.8		4.5		420.00	Away from Nozzle: ↓	
Base Metal:	51.85		4.5		4.5		1050.00	Clockwise: ←	
								Counter Clockwise: →	

Weld Metal: Volume = 420.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Percent of 420.00
1	45°↑	1	419.16	99.80%
2	45°↑	2	66.37	15.80%
3	60°↑	3	418.44	99.63%
4	60°↑	4	35.00	8.33%
5	45°↔	5	390.83	93.05%
6	45°↔	5	390.83	93.05%
7	60°↔	5	390.83	93.05%
8	60°↔	5	390.83	93.05%
9	0° WRV	6	420.00	100.00%
Total Beams: 9			Total Percent: 695.78%	
Total Weld Metal Coverage:			77.31%	

Base Metal: Volume = 1050.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. in.)	Beam Total	Percent of 1050.00
1 + 2	45°/60°↑↓	7	907.09	907.09	86.39%
3	45°↔	8	525	525	50.00%
4	45°↔	8	525	525	50.00%
5	60°↔	8	525	525	50.00%
6	60°↔	8	525	525	50.00%
7	0° WRV	8	525	525	50.00%
Total Beams: 7			Total Percent: 422.78%		
Total Base Metal Coverage:			60.40%		

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume
Weld Metal:	77.31%		420.00		1470.00
Base Metal:	60.40%		1050.00		1470.00
Total Exam Coverage =					65.23%

Responses to Request for Additional Information
Summary No.: 004150 Comp ID: 16-405A Page 1 of 9

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Safety & Relief "A" Nozzle to PZR Upper Head / Due to nozzle configuration coverage of nozzle side base metal and weld was limited. The nozzle enters the vessel at an angle thereby also limiting coverage attainable from the vessel side of the weld. The pressurizer nozzle-to-vessel head welds are accessible only from the head side based on the nozzle curvature. The scanning surface of the nozzle is essentially perpendicular to the head surface which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The nondestructive examination (NDE) techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

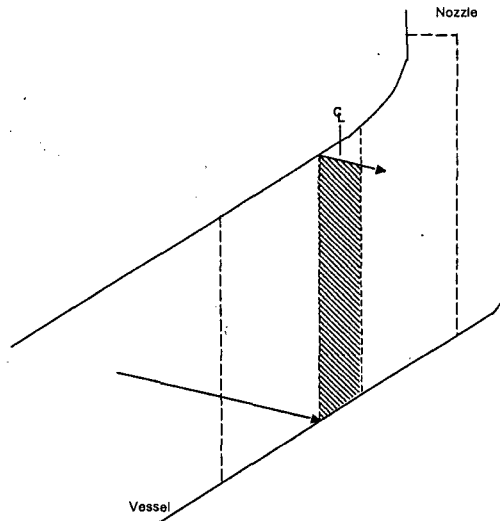
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CCNPP

Component ID: 16-405A	NDE Report No.: CC06-1U-065
LTP No.: 004150	Summary No.: 004150
Coverage Sketch No: 1	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 96"
 Thickness: 5.00"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 4.25 in² of 4.59 in² area = 92.59%

Coverage Dimensions						Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)		
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle: ↑	
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle: ↓	
Base Metal:	23		4.6		See Sketch		22.26	Clockwise: ←	
								Counter Clockwise: →	
Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches			
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of Total	Beam No.	Angle	Sketch	Coverage (Squ. In.)
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48
2	45°↓	2	0.00	0.00	0.00%				
3	60°↑	3	4.34	4.34	94.55%	3	45°←	7	10.53
4	60°↓	4	0.00	0.00	0.00%	4	45°→	7	10.53
5	45°←	5	1.38	1.38	30.07%	5	60°←	7	10.53
6	45°→	5	1.38	1.38	30.07%	6	60°→	7	10.53
7	60°←	5	1.38	1.38	30.07%	7	0° WRV	7	10.53
8	60°→	5	1.38	1.38	30.07%				
9	0° WRV	5	1.38	1.38	30.07%				
Total Beams: 9						Total Beams: 7			
Total Percent: 337.47%						Total Percent: 402.56%			
Total Weld Metal Coverage: 37.50%						Total Base Metal Coverage: 57.51%			
Combined Coverage									
			Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:			37.50%		4.59		26.85		6.41%
Base Metal:			57.51%		22.26		26.85		47.68%
						Total Exam Coverage = 54.09%			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

CCNPP

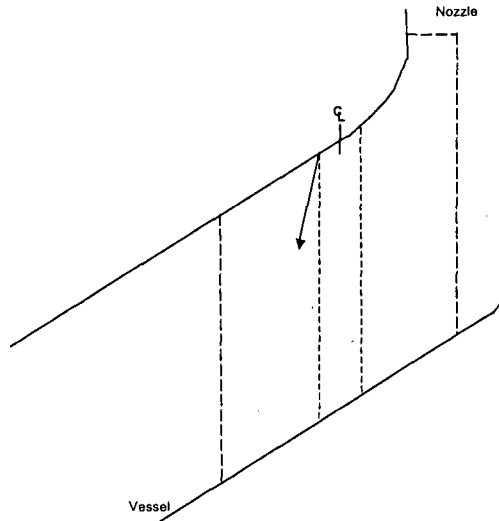
Component ID: 16-405A
LTP No.: 004150
Coverage Sketch No.: 2
Exam Area: Weld Metal 360°
Exam Angle: 45°

NDE Report No.: CC06-1U-065
Summary No.: 004150
MO No.: 1200500749
Scale: 50%

Diameter: 96"
Thickness: 5.00"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

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(Sketch Resized for Relief Request)



45° Coverage = 0 in² of 4.59 in² area = 0%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑ Away from Nozzle: ↓ Clockwise: → Counter Clockwise: ←		
Exam Area:	23		5.6		See Sketch		26.85			
Weld Metal:	23		1		See Sketch		4.59			
Base Metal:	23		4.6		See Sketch		22.26			

Weld Metal: Volume = 4.59 Square Inches					Base Metal: Volume = 22.26 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↓	2	0.00	0.00	0.00%	3	45°→	7	10.53	10.53	47.30%
3	60°↑	3	4.34	4.34	94.55%	4	45°←	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°→	7	10.53	10.53	47.30%
5	45°→	5	1.38	1.38	30.07%	6	60°←	7	10.53	10.53	47.30%
6	45°←	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°→	5	1.38	1.38	30.07%						
8	60°←	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						

Total Beams: 9			Total Percent: 337.47%			Total Beams: 7			Total Percent: 402.56%		
Total Weld Metal Coverage:			37.50%			Total Base Metal Coverage:			57.51%		

Combined Coverage						
	Coverage Percent	x	Volume	+	Total Volume	= Result
Weld Metal:	37.50%		4.59		26.85	6.41%
Base Metal:	57.51%		22.26		26.85	47.68%
Total Exam Coverage =						54.09%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

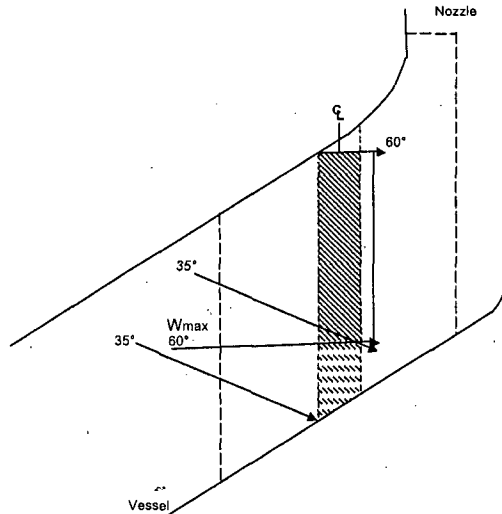
CCNPP

Component ID: 16-405A	NDE Report No.: CC06-1U-065
LTP No.: 004150	Summary No.: 004150
Coverage Sketch No: 3	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 96"
 Thickness: 5.00"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

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(Sketch Resized for Relief Request)



Note: At 180° the 60°↑ exam was limited by the head to shell transition.
 A supplemental 35°↑ was used to obtain additional coverage

60°↑ Coverage @ 180°, Wmax limited by head to shell transition. = 3.23 in²
 35°↑ Coverage @ 180° = 1.11 in²

Total Coverage 3.23 + 1.11 = 4.34 in². 4.34 in² of 4.59 in² area = 94.55%

Coverage Dimensions							Beam Directions						
	Length	x	Width	x	Thickness	=	Result (Squ. In.)						
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle:	↑				
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle:	←				
Base Metal:	23		4.6		See Sketch		22.26	Clockwise:	↻				
								Counter Clockwise:	↺				
Weld Metal: Volume = 4.59 Square Inches							Base Metal: Volume = 22.26 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59		Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26	
1	45°↑	1	4.25	4.25	92.59%		1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%	
2	45°↓	2	0.00	0.00	0.00%		3	45°→	7	10.53	10.53	47.30%	
3	60°↑	3	4.34	4.34	94.55%		4	45°←	7	10.53	10.53	47.30%	
4	60°↓	4	0.00	0.00	0.00%		5	60°→	7	10.53	10.53	47.30%	
5	45°←	5	1.38	1.38	30.07%		6	60°←	7	10.53	10.53	47.30%	
6	45°→	5	1.38	1.38	30.07%		7	0° WRV	7	10.53	10.53	47.30%	
7	60°←	5	1.38	1.38	30.07%								
8	60°→	5	1.38	1.38	30.07%								
9	0° WRV	5	1.38	1.38	30.07%								
Total Beams: 9					Total Percent: 337.47%		Total Beams: 7					Total Percent: 402.56%	
Total Weld Metal Coverage:					37.50%		Total Base Metal Coverage:					57.51%	
Combined Coverage													
			Coverage Percent	x	Volume	+	Total Volume	=	Result				
			Weld Metal: 37.50%		4.59		26.85		6.41%				
			Base Metal: 57.51%		22.26		26.85		47.68%				
Total Exam Coverage =									54.09%				

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

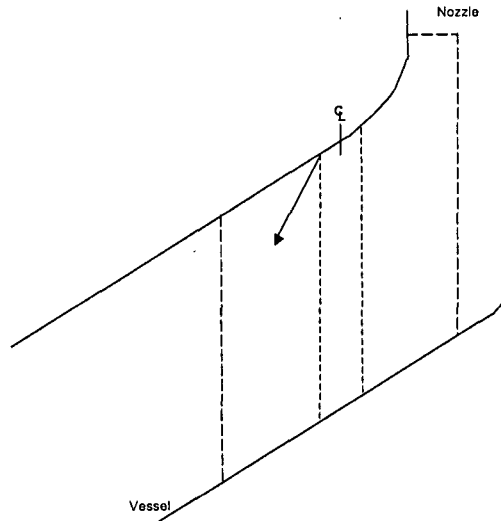
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CCNPP

Component ID: 16-405A	NDE Report No.: CC06-1U-065
LTP No.: 004150	Summary No.: 004150
Coverage Sketch No: 4	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 96"
Thickness: 5.00"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



60° Coverage = 0 in² of 4.59 in² area = 0%

Coverage Dimensions							Beam Directions						
	Length	x	Width	x	Thickness	=	Result (Squ. In.)						
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle: ↑					
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle: ↓					
Base Metal:	23		4.6		See Sketch		22.26	Clockwise: ↻					
								Counter Clockwise: ↺					
Weld Metal: Volume = 4.59 Square Inches							Base Metal: Volume = 22.26 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59		Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26	
1	45°↑	1	4.25	4.25	92.59%		1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%	
2	45°↓	2	0.00	0.00	0.00%		3	45°↔	7	10.53	10.53	47.30%	
3	60°↑	3	4.34	4.34	94.55%		4	45°↔	7	10.53	10.53	47.30%	
4	60°↓	4	0.00	0.00	0.00%		5	60°↔	7	10.53	10.53	47.30%	
5	45°↔	5	1.38	1.38	30.07%		6	60°↔	7	10.53	10.53	47.30%	
6	45°↔	5	1.38	1.38	30.07%		7	0° WRV	7	10.53	10.53	47.30%	
7	60°↔	5	1.38	1.38	30.07%								
8	60°↔	5	1.38	1.38	30.07%								
9	0° WRV	5	1.38	1.38	30.07%								
Total Beams: 9			Total Percent:		337.47%		Total Beams: 7			Total Percent:		402.56%	
Total Weld Metal Coverage:					37.50%		Total Base Metal Coverage:					57.51%	
Combined Coverage													
			Coverage Percent	x	Volume	+	Total Volume	=	Result				
			Weld Metal: 37.50%		4.59		26.85		6.41%				
			Base Metal: 57.51%		22.26		26.85		47.68%				
Total Exam Coverage =									54.09%				

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

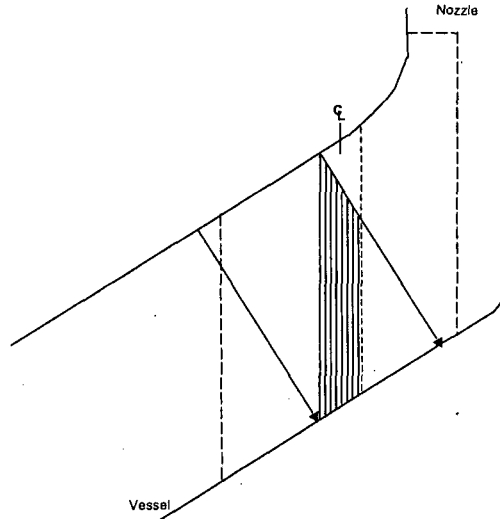
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CCNPP

Component ID: 16-405A	NDE Report No.: CC06-1U-065
LTP No.: 004150	Summary No.: 004150
Coverage Sketch No: 5	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45° / 60° / 0°	

Diameter: 96"
 Thickness: 5.00"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° Coverage = 3.83 in² of 4.59 in² exam area = 83.33%

NOTE: This sketch shows coverage @ 180° which was the most favorable location for these exams. Moving from 180° to 0° the coverage was gradually reduced to the point where 0% coverage was obtained at 0°.

Actual coverage for these exams = 1.38 in² = 30.07%

Coverage Dimensions						Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. in.)	Toward Nozzle: ↑	
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓	
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ↻	
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: ↺	

Weld Metal: Volume = 4.59 Square Inches					Base Metal: Volume = 22.26 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↑	2	0.00	0.00	0.00%	3	45°↔	7	10.53	10.53	47.30%
3	60°↑	3	4.34	4.34	94.55%	4	45°↔	7	10.53	10.53	47.30%
4	60°↑	4	0.00	0.00	0.00%	5	60°↔	7	10.53	10.53	47.30%
5	45°↔	5	1.38	1.38	30.07%	6	60°↔	7	10.53	10.53	47.30%
6	45°↔	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°↔	5	1.38	1.38	30.07%						
8	60°↔	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9					Total Percent: 337.47%	Total Beams: 7					Total Percent: 402.56%
Total Weld Metal Coverage:					37.50%	Total Base Metal Coverage:					57.51%

Combined Coverage						
	Coverage Percent	x	Volume	+	Total Volume	= Result
Weld Metal:	37.50%		4.59		26.85	6.41%
Base Metal:	57.51%		22.26		26.85	47.68%
Total Exam Coverage =						54.09%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

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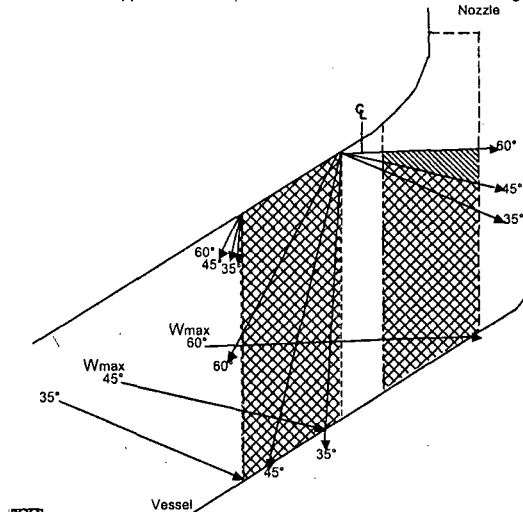
CCNPP

Component ID: 16-405A	NDE Report No.: CC06-1U-065
LTP No.: 004150	Summary No.: 004150
Coverage Sketch No: 6	MO No.: 1200500749
Exam Area: Base Metal 360°	Scale: 50%
Exam Angle: 45° / 60°	

Diameter: 96"
 Thickness: 5.00"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)

Note: At 180° the 45° & 60° exams were limited by the head to shell transition. A supplemental 35° was used to obtain additional coverage.



Coverage by at least 2 sound beams = 17.94 in².

Coverage by 1 sound beam only = 1.07 in².

Total: 17.94 + (1.07 / 2) = 18.48 in²
 18.48 of 22.26 = 83.02%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	↑	
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle:	↓	
Weld Metal:	23		1		See Sketch		4.59	Clockwise:	←	
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise:	→	

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↑	2	0.00	0.00	0.00%						83.02%
3	60°↑	3	4.34	4.34	94.55%	3	45°→	7	10.53	10.53	47.30%
4	60°↑	4	0.00	0.00	0.00%	4	45°→	7	10.53	10.53	47.30%
5	45°→	5	1.38	1.38	30.07%	5	60°→	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
7	60°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
8	60°→	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9						Total Beams: 7					
Total Percent: 337.47%						Total Percent: 402.56%					
Total Weld Metal Coverage: 37.50%						Total Base Metal Coverage: 57.51%					

Combined Coverage									
		Coverage Percent	x	Volume	+	Total Volume	=	Result	
	Weld Metal:	37.50%		4.59		26.85		6.41%	
	Base Metal:	57.51%		22.26		26.85		47.68%	
Total Exam Coverage =								54.09%	

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

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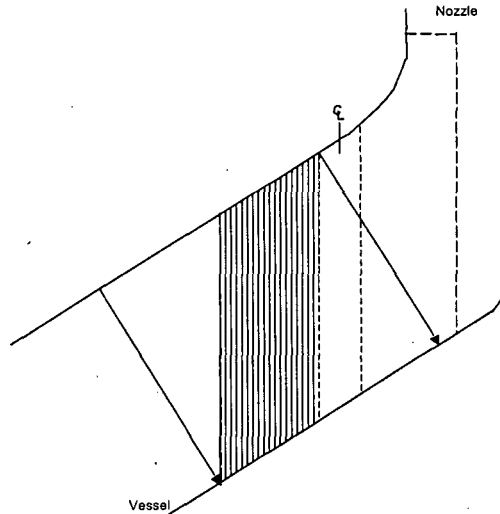
CCNPP


Component ID: 16-405A
LTP No.: 004150
Coverage Sketch No: 7
Exam Area: Base Metal 360°
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC06-1U-065
Summary No.: 004150
MO No.: 1200500749
Scale: 50%

Diameter: 96"
Thickness: 5.00"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° WRV Coverage = 10.53 in² of 22.26 in² exam area = 47.30%

NOTE: This sketch shows coverage @ 180° which was the most favorable location for these exams. Moving from 180° to 0° the coverage of the nozzle side base metal was gradually reduced to the point where 0% coverage was obtained at 0°. No coverage credit was taken for the nozzle side base material.

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. in.)	Toward Nozzle: ↑	
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓	
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ↻	
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: ↺	

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↓	2	0.00	0.00	0.00%						83.02%
3	60°↑	3	4.34	4.34	94.55%	3	45°↔	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	4	45°↔	7	10.53	10.53	47.30%
5	45°↔	5	1.38	1.38	30.07%	5	60°↔	7	10.53	10.53	47.30%
6	45°↔	5	1.38	1.38	30.07%	6	60°↔	7	10.53	10.53	47.30%
7	60°↔	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
8	60°↔	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9					Total Percent:	337.47%		Total Beams: 7		Total Percent:	402.56%
Total Weld Metal Coverage:					37.50%		Total Base Metal Coverage: 57.51%				

Combined Coverage					
	Coverage Percent	x	Volume	=	Result
Weld Metal:	37.50%		4.59		26.85
Base Metal:	57.51%		22.26		26.85
Total Exam Coverage =					54.09%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

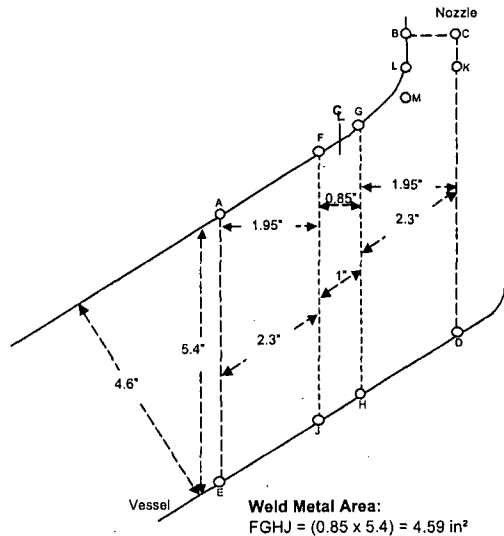
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CCNPP

Component ID: 16-405A	NDE Report No.: CC06-1U-065
LTP No.: 004150	Summary No.: 004150
Coverage Sketch No: Exam Area	MO No.: 1200500749
Exam Area: AFGLBCKDHJE	Scale: 50%
Exam Angle: NA	

Diameter: 96"
Thickness: 5.00"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Base Metal Area:

- Vessel Side = AFJE = $(1.95 \times 5.4) = 10.53 \text{ in}^2$
- Nozzle Side = GKDH + GLM + LKM + LBCK
- = $(1.95 \times 5.4) + (1 \times 0.6)/2 + (1 \times 0.6)/2 + (1 \times 0.6) = 11.73 \text{ in}^2$
- Total Base Metal Area = $10.53 + 11.73 = 22.26 \text{ in}^2$

Total Exam Area: $4.59 + 22.26 = 26.85 \text{ in}^2$

Coverage Dimensions						Beam Directions		
	Length	x	Width	x	Thickness	Result (Squ. In.)	Toward Nozzle:	
Exam Area:	23		5.6			26.85	Away from Nozzle:	
Weld Metal:	23		1		See Sketch	4.59	Clockwise:	
Base Metal:	23		4.6		See Sketch	22.26	Counter Clockwise:	

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↓	2	0.00	0.00	0.00%	3	45°→	7	10.53	10.53	47.30%
3	60°↑	3	4.34	4.34	94.55%	4	45°→	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°→	7	10.53	10.53	47.30%
5	45°→	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°→	5	1.38	1.38	30.07%						
8	60°→	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9						Total Beams: 7					
Total Percent: 337.47%						Total Percent: 402.56%					
Total Weld Metal Coverage: 37.50%						Total Base Metal Coverage: 57.51%					

Combined Coverage						
	Coverage Percent	x	Volume	+	Total Volume	Result
Weld Metal:	37.50%		4.59		26.85	6.41%
Base Metal:	57.51%		22.26		26.85	47.68%
Total Exam Coverage = 54.09%						

Responses to Request for Additional Information
Summary No.: 004200 Comp ID: 16-405B Page 1 of 9

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Safety & Relief "B" Nozzle to PZR Upper Head / Due to nozzle configuration coverage of nozzle side base metal and weld was limited. The nozzle enters the vessel at an angle thereby also limiting coverage attainable from the vessel side of the weld. The pressurizer nozzle-to-vessel head welds are accessible only from the head side based on the nozzle curvature. The scanning surface of the nozzle is essentially perpendicular to the head surface which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The nondestructive examination (NDE) techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

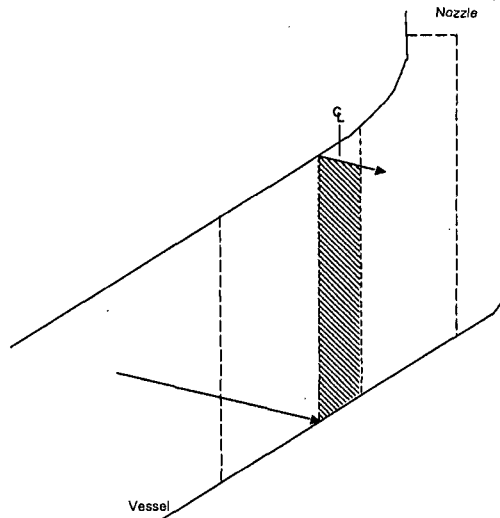
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CCNPP

Component ID: 16-405B	NDE Report No.: CC06-1U-066
LTP No.: 004200	Summary No.: 004200
Coverage Sketch No: 1	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 96"
 Thickness: 5.00"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 4.25 in² of 4.59 in² area = 92.59%

Coverage Dimensions							Beam Directions					
	Length	x	Width	x	Thickness	=	Result (Sqr. In.)					
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle:	↑			
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle:	↓			
Base Metal:	23		4.6		See Sketch		22.26	Clockwise:	↻			
								Counter Clockwise:	↺			
Weld Metal: Volume = 4.59 Square Inches							Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59		Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%		1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↓	2	0.00	0.00	0.00%		3	45°←	7	10.53	10.53	47.30%
3	60°↑	3	4.34	4.34	94.55%		4	45°→	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%		5	60°←	7	10.53	10.53	47.30%
5	45°←	5	1.38	1.38	30.07%		6	60°→	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%		7	0° WRV	7	10.53	10.53	47.30%
7	60°←	5	1.38	1.38	30.07%							
8	60°→	5	1.38	1.38	30.07%							
9	0° WRV	5	1.38	1.38	30.07%							
Total Beams: 9			Total Percent: 337.47%			Total Beams: 7			Total Percent: 402.56%			
Total Weld Metal Coverage:			37.50%			Total Base Metal Coverage:			57.51%			
Combined Coverage												
			Coverage Percent	x	Volume	+	Total Volume	=		Result		
			Weld Metal:	37.50%	4.59		26.85			6.41%		
			Base Metal:	57.51%	22.26		26.85			47.68%		
Total Exam Coverage =										54.09%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

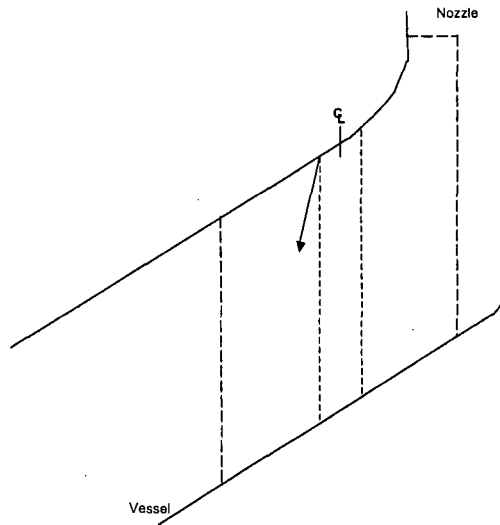
Page 3 of 9

CCNPP

Component ID: 16-405B	NDE Report No.: CC06-1U-066
LTP No.: 004200	Summary No.: 004200
Coverage Sketch No: 2	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 96"
Thickness: 5.00"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45° Coverage = 0 in² of 4.59 in² area = 0%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	↓	
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle:	↑	
Weld Metal:	23		1		See Sketch		4.59	Clockwise:	↻	
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise:	↻	

Weld Metal: Volume = 4.59 Square Inches					Base Metal: Volume = 22.26 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↓	2	0.00	0.00	0.00%	3	45°←	7	10.53	10.53	47.30%
3	60°↑	3	4.34	4.34	94.55%	4	45°→	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°←	7	10.53	10.53	47.30%
5	45°←	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°←	5	1.38	1.38	30.07%						
8	60°→	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9					Total Percent: 337.47%	Total Beams: 7					Total Percent: 402.56%
Total Weld Metal Coverage:					37.50%	Total Base Metal Coverage:					57.51%

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume = Result
Weld Metal:	37.50%		4.59		26.85 6.41%
Base Metal:	57.51%		22.26		26.85 47.68%
Total Exam Coverage =					54.09%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

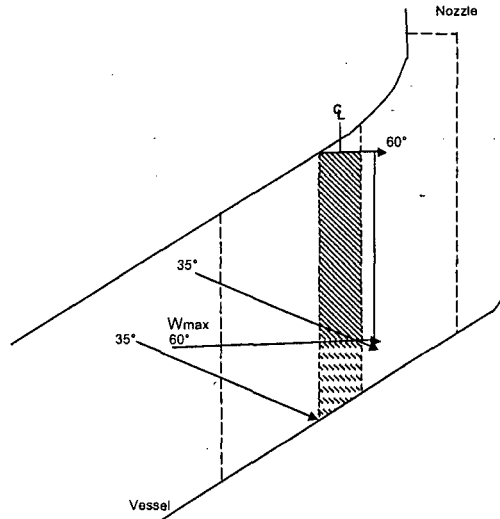
Page 4 of 9

CCNPP

Component ID: 16-405B	NDE Report No.: CC06-1U-066
LTP No.: 004200	Summary No.: 004200
Coverage Sketch No: 3	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 96"
 Thickness: 5.00"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Note: At 180° the 60° exam was limited by the head to shell transition.
 A supplemental 35° was used to obtain additional coverage

60° Coverage @ 180°, Wmax limited by head to shell transition. = 3.23 in²
 35° Coverage @ 180° = 1.11 in²

Total Coverage 3.23 + 1.11 = 4.34 in². 4.34 in² of 4.59 in² area = 94.55%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)			
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle:	↑	
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle:	↓	
Base Metal:	23		4.6		See Sketch		22.26	Clockwise:	←	
								Counter Clockwise:	→	

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↓	2	0.00	0.00	0.00%	3	45°→	7	10.53	10.53	47.30%
3	60°↑	3	4.34	4.34	94.55%	4	45°←	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°→	7	10.53	10.53	47.30%
5	45°←	5	1.38	1.38	30.07%	6	60°←	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°←	5	1.38	1.38	30.07%						
8	60°→	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9			Total Percent: 337.47%			Total Beams: 7			Total Percent: 402.56%		
Total Weld Metal Coverage:			37.50%			Total Base Metal Coverage:			57.51%		

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	37.50%		4.59		26.85
	Base Metal:	57.51%		22.26		26.85
Total Exam Coverage =						54.09%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

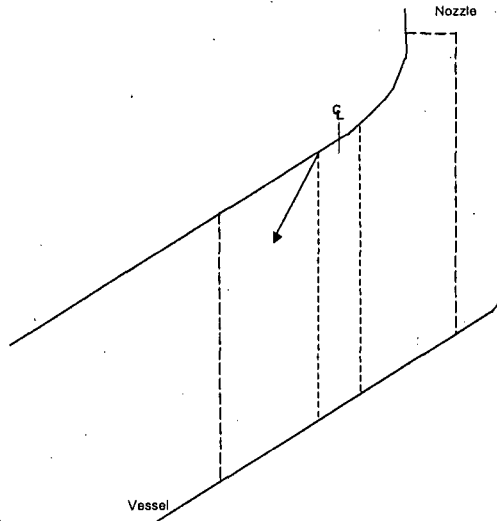
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CCNPP

Component ID: 16-405B	NDE Report No.: CC06-1U-066
LTP No.: 004200	Summary No.: 004200
Coverage Sketch No.: 4	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 96"
 Thickness: 5.00"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



60° Coverage = 0 in² of 4.59 in² area = 0%

Coverage Dimensions							Beam Directions					
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑	Away from Nozzle: ↓			
Exam Area:	23		5.6		See Sketch		26.85					
Weld Metal:	23		1		See Sketch		4.59					
Base Metal:	23		4.6		See Sketch		22.26					
Weld Metal: Volume = 4.59 Square Inches							Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59		Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%		1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↓	2	0.00	0.00	0.00%		3	45°→	7	10.53	10.53	47.30%
3	60°↑	3	4.34	4.34	94.55%		4	45°→	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%		5	60°→	7	10.53	10.53	47.30%
5	45°→	5	1.38	1.38	30.07%		6	60°→	7	10.53	10.53	47.30%
6	45°←	5	1.38	1.38	30.07%		7	0° WRV	7	10.53	10.53	47.30%
7	60°→	5	1.38	1.38	30.07%							
8	60°←	5	1.38	1.38	30.07%							
9	0° WRV	5	1.38	1.38	30.07%							
Total Beams: 9						Total Percent:	337.47%	Total Beams: 7		Total Percent:	402.56%	
Total Weld Metal Coverage:						37.50%	Total Base Metal Coverage:		57.51%			
Combined Coverage												
			Coverage Percent	x	Volume	+	Total Volume	=	Result			
	Weld Metal:		37.50%		4.59		26.85		6.41%			
	Base Metal:		57.51%		22.26		26.85		47.68%			
Total Exam Coverage =										54.09%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

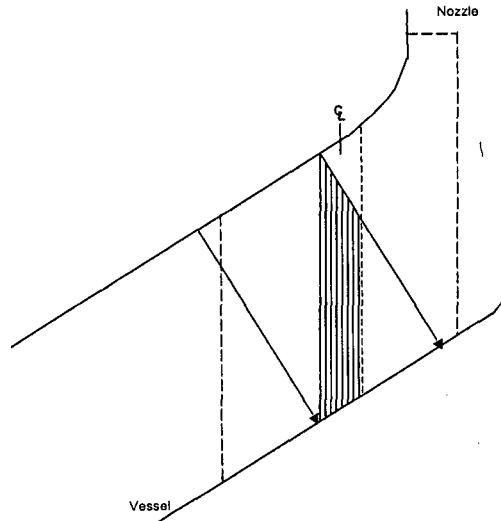
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CCNPP

Component ID: 16-405B	NDE Report No.: CC06-1U-066
LTP No.: 004200	Summary No.: 004200
Coverage Sketch No: 5	MO No.: 1200500749
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45° / 60° / 0°	

Diameter: 96"
Thickness: 5.00"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° Coverage = 3.83 in² of 4.59 in² exam area = 83.33%

NOTE: This sketch shows coverage @ 180° which was the most favorable location for these exams. Moving from 180° to 0° the coverage was gradually reduced to the point where 0% coverage was obtained at 0°.

Actual coverage for these exams = 1.38 in² = 30.07%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)			
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle:	↑	
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle:	↓	
Base Metal:	23		4.6		See Sketch		22.26	Clockwise:	←	
								Counter Clockwise:	→	

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↑	2	0.00	0.00	0.00%						83.02%
3	60°↑	3	4.34	4.34	94.55%	3	45°→	7	10.53	10.53	47.30%
4	60°↑	4	0.00	0.00	0.00%	4	45°→	7	10.53	10.53	47.30%
5	45°→	5	1.38	1.38	30.07%	5	60°→	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
7	60°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
8	60°→	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9						Total Beams: 7					
Total Percent: 337.47%						Total Percent: 402.56%					
Total Weld Metal Coverage: 37.50%						Total Base Metal Coverage: 57.51%					

Combined Coverage									
			Coverage Percent	x	Volume	+	Total Volume	=	Result
			Weld Metal:	37.50%	4.59		26.85		6.41%
			Base Metal:	57.51%	22.26		26.85		47.68%
Total Exam Coverage =									54.09%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

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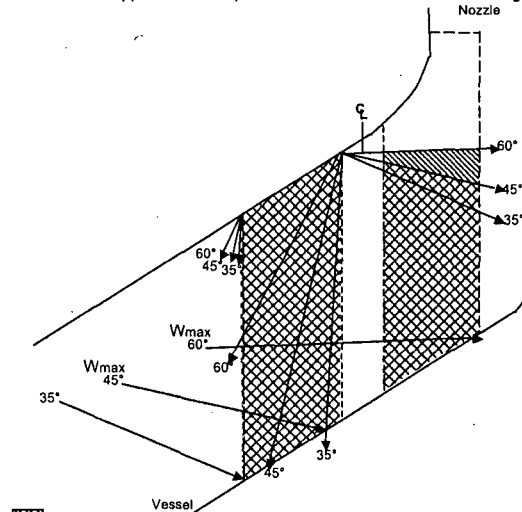
CCNPP

Component ID: 16-405B	NDE Report No.: CC06-1U-066
LTP No.: 004200	Summary No.: 004200
Coverage Sketch No.: 6	MO No.: 1200500749
Exam Area: Base Metal 360°	Scale: 50%
Exam Angle: 45° / 60°	

Diameter: 96"
 Thickness: 5.00"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)

Note: At 180° the 45° & 60° exams were limited by the head to shell transition. A supplemental 35° was used to obtain additional coverage.



Coverage by at least 2 sound beams = 17.94 in².

Coverage by 1 sound beam only = 1.07 in².

Total: 17.94 + (1.07 / 2) = 18.48 in²
 18.48 of 22.26 = 83.02%

Coverage Dimensions						Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle:	
Weld Metal:	23		1		See Sketch		4.59	Clockwise:	
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise:	

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°	1	4.25	4.25	92.59%	1 + 2	45°/60°	6	18.48	18.48	83.02%
2	45°	2	0.00	0.00	0.00%	3	45°	7	10.53	10.53	47.30%
3	60°	3	4.34	4.34	94.55%	4	45°	7	10.53	10.53	47.30%
4	60°	4	0.00	0.00	0.00%	5	60°	7	10.53	10.53	47.30%
5	45°	5	1.38	1.38	30.07%	6	60°	7	10.53	10.53	47.30%
6	45°	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°	5	1.38	1.38	30.07%						
8	60°	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9			Total Percent: 337.47%			Total Beams: 7			Total Percent: 402.56%		
Total Weld Metal Coverage:			37.50%			Total Base Metal Coverage:			57.51%		

Combined Coverage					
	Coverage Percent	x	Volume	=	Result
Weld Metal:	37.50%		4.59		26.85
Base Metal:	57.51%		22.26		26.85
Total Exam Coverage =					54.09%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.110

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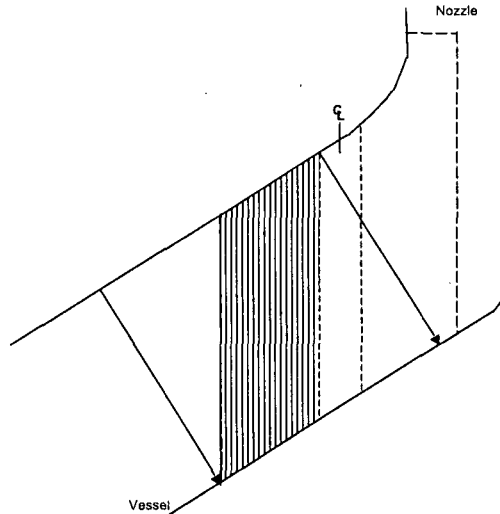
CCNPP


Component ID: 16-405B
LTP No.: 004200
Coverage Sketch No: 7
Exam Area: Base Metal 360°
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC06-1U-066
Summary No.: 004200
MO No.: 1200500749
Scale: 50%

Diameter: 96"
Thickness: 5.00"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° WRV Coverage = 10.53 in° of 22.26 in° exam area = 47.30%

NOTE: This sketch shows coverage @ 180° which was the most favorable location for these exams. Moving from 180° to 0° the coverage of the nozzle side base metal was gradually reduced to the point where 0% coverage was obtained at 0°.
 No coverage credit was taken for the nozzle side base material.

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑		
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓		
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ↻		
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: ↺		

Weld Metal: Volume = 4.59 Square Inches					Base Metal: Volume = 22.26 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%
2	45°↓	2	0.00	0.00	0.00%	3	45°↔	7	10.53	10.53	47.30%
3	60°↑	3	4.34	4.34	94.55%	4	45°↔	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°↔	7	10.53	10.53	47.30%
5	45°↔	5	1.38	1.38	30.07%	6	60°↔	7	10.53	10.53	47.30%
6	45°↔	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°↔	5	1.38	1.38	30.07%						
8	60°↔	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9					Total Percent: 337.47%	Total Beams: 7					Total Percent: 402.56%
Total Weld Metal Coverage:					37.50%	Total Base Metal Coverage:					57.51%

Combined Coverage						
	Coverage Percent	x	Volume	+	Total Volume	= Result
Weld Metal:	37.50%		4.59		26.85	6.41%
Base Metal:	57.51%		22.26		26.85	47.68%
Total Exam Coverage =						54.09%

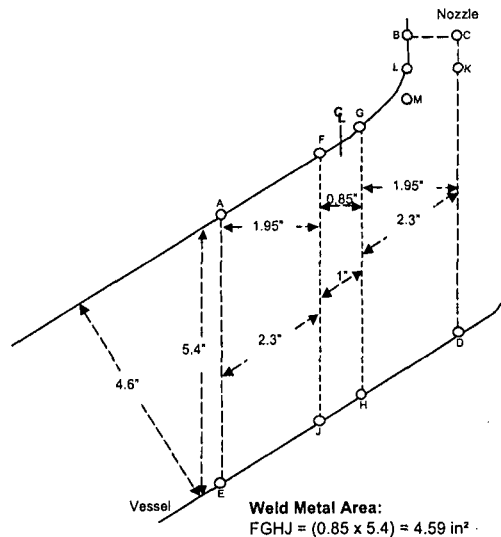
CCNPP

Component ID: 16-405B
LTP No.: 004200
Coverage Sketch No: Exam Area
Exam Area: AFGLBCKDHJE
Exam Angle: NA

NDE Report No.: CC06-1U-066
Summary No.: 004200
MO No.: 1200500749
Scale: 50%

Diameter: 96"
Thickness: 5.00"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Base Metal Area:

- Vessel Side = $AFJE = (1.95 \times 5.4) = 10.53 \text{ in}^2$
- Nozzle Side = $GKDH + GLM + LKM + LBCK$
- $= (1.95 \times 5.4) + (1 \times 0.6)/2 + (1 \times 0.6)/2 + (1 \times 0.6) = 11.73 \text{ in}^2$
- Total Base Metal Area = $10.53 + 11.73 = 22.26 \text{ in}^2$

Total Exam Area: $4.59 + 22.26 = 26.85 \text{ in}^2$

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	↑
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle:	↓
Weld Metal:	23		1		See Sketch		4.59	Clockwise:	←
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise:	→

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches							
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 22.26		
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.48	18.48	83.02%		
2	45°↓	2	0.00	0.00	0.00%	3	45°→	7	10.53	10.53	47.30%		
3	60°↑	3	4.34	4.34	94.55%	4	45°→	7	10.53	10.53	47.30%		
4	60°↓	4	0.00	0.00	0.00%	5	60°→	7	10.53	10.53	47.30%		
5	45°→	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%		
6	45°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%		
7	60°→	5	1.38	1.38	30.07%								
8	60°→	5	1.38	1.38	30.07%								
9	0° WRV	5	1.38	1.38	30.07%								
Total Beams: 9					Total Percent:	337.47%	Total Beams: 7					Total Percent:	402.56%
Total Weld Metal Coverage:					37.50%	Total Base Metal Coverage:					57.51%		

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	37.50%		4.59		26.85		6.41%
Base Metal:	57.51%		22.26		26.85		47.68%
Total Exam Coverage =							54.09%

Responses to Request for Additional Information
Summary No.: 100805 Comp ID: SG-11-W5 Page 1 of 8

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

SG Inlet Nozzle to Primary Head Nozzle / Machined transition on nozzle extension limited base metal coverage. The steam generator nozzle-to-vessel head welds are accessible only from the head side based on the designed nozzle configuration. The proximity of the nozzle radius prevented full examination coverage from the nozzle side. Scanning was performed from the nozzle; however, the ultrasonic waves did not cover the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The NDE techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

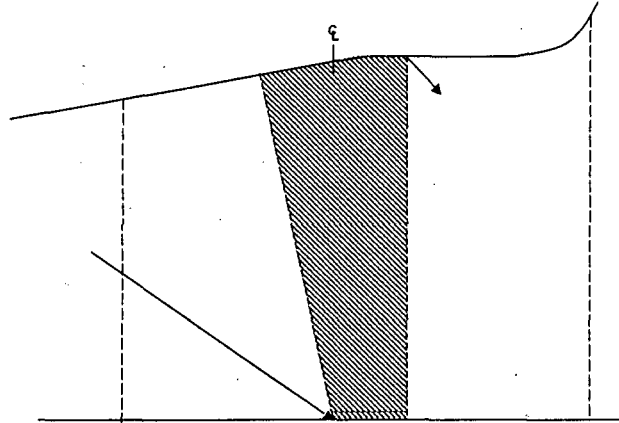
CCNPP


Component ID: SG-11-W5 NDE Report No.: CC06-1U-041
LTP No.: 100805 Summary No.: 100805
Coverage Sketch No: 1 MO No.: 1200500777
Exam Area: Weld Metal 360° Scale: 50%
Exam Angle: 45°

Diameter: 42"
Thickness: 7.30"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

Page 2 of 8

(Sketch Resized for Relief Request)



 45° ↑ Coverage = 14 in² of 14 in² exam area = 100%.

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↓	
Exam Area:	na		9.5		See Sketch		69.00	Away from Nozzle: ↓	
Weld Metal:	na		1.9		7.4		14.00	Clockwise: ←	
Base Metal:	na		7.4		See Sketch		55.00	Counter Clockwise: →	

Weld Metal: Volume = 14.00 Square Inches						Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of
1	45°↑	1	14.00	14.00	100.00%	1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
2	45°↓	2	7.96	7.96	56.86%	3	45°→	7	41	41	97.42%
3	60°↑	3	14.00	14.00	100.00%	4	45°→	7	41	41	74.55%
4	60°↓	4	10.36	10.36	74.00%	5	60°→	7	41	41	74.55%
5	45°→	5	14.00	14.00	100.00%	6	60°→	7	41	41	74.55%
6	45°←	5	14.00	14.00	100.00%	7	0° WRV	7	41	41	74.55%
7	60°←	5	14.00	14.00	100.00%						
8	60°←	5	14.00	14.00	100.00%						
9	0° WRV	5	14.00	14.00	100.00%						
Total Beams: 9						Total Percent: 830.86%					
Total Weld Metal Coverage:						92.32%					

Combined Coverage								
		Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:		92.32%		14.00		69.00		18.73%
Base Metal:		81.08%		55.00		69.00		64.63%
Total Exam Coverage =								83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

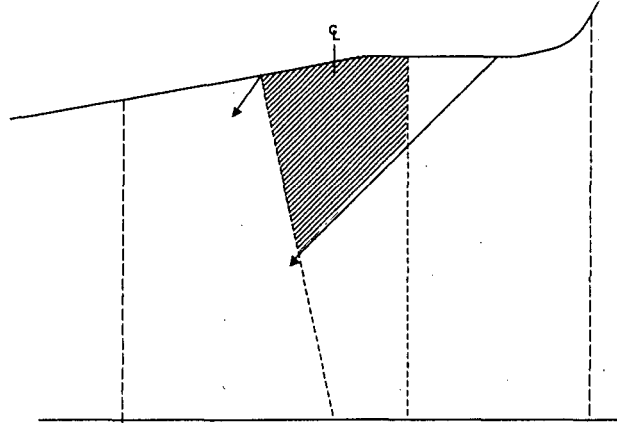
Page 3 of 8


CCNPP

Component ID: SG-11-W5	NDE Report No.: CC06-1U-041
LTP No.: 100805	Summary No.: 100805
Coverage Sketch No: 2	MO No.: 1200500777
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 42"
 Thickness: 7.30"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 7.96 in² of 14 in² exam area = 56.86%.

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑	
Exam Area:	na		9.5		See Sketch		69.00	Away from Nozzle: ↓	
Weld Metal:	na		1.9		7.4		14.00	Clockwise: ↻	
Base Metal:	na		7.4		See Sketch		55.00	Counter Clockwise: ↺	

Weld Metal: Volume = 14.00 Square Inches					Base Metal: Volume = 55.00 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of
1	45°↑	1	14.00	14.00	100.00%	1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
2	45°↓	2	7.96	7.96	56.86%	3	45°←	7	41	41	74.55%
3	60°↑	3	14.00	14.00	100.00%	4	45°→	7	41	41	74.55%
4	60°↓	4	10.36	10.36	74.00%	5	60°←	7	41	41	74.55%
5	45°←	5	14.00	14.00	100.00%	6	60°→	7	41	41	74.55%
6	45°→	5	14.00	14.00	100.00%	7	0° WRV	7	41	41	74.55%
7	60°←	5	14.00	14.00	100.00%						
8	60°→	5	14.00	14.00	100.00%						
9	0° WRV	5	14.00	14.00	100.00%						
Total Beams: 9					Total Percent: 830.86%	Total Beams: 7					Total Percent: 567.56%
Total Weld Metal Coverage:					92.32%	Total Base Metal Coverage:					81.08%

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	92.32%		14.00		69.00		18.73%
Base Metal:	81.08%		55.00		69.00		64.63%
Total Exam Coverage = 83.36%							

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

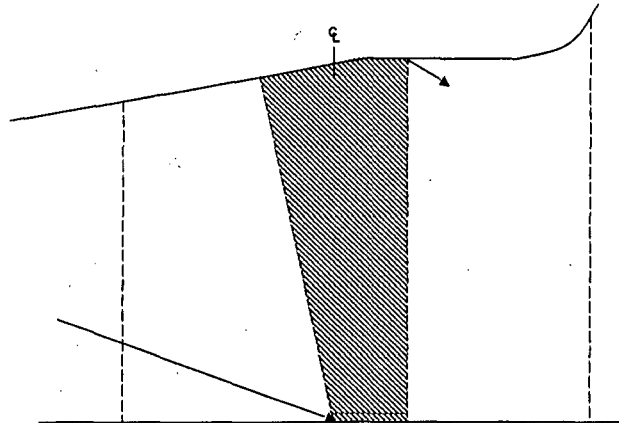
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CCNPP

Component ID:	SG-11-W5	NDE Report No.:	CC06-1U-041
LTP No.:	100805	Summary No.:	100805
Coverage Sketch No.:	3	MO No.:	1200500777
Exam Area:	Weld Metal 360°	Scale:	50%
Exam Angle:	60°		

Diameter: 42"
Thickness: 7.30"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



60° Coverage = 14 in² of 14 in² exam area = 100%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)		
Exam Area:	na		9.5		See Sketch		69.00	Toward Nozzle: ↑	
Weld Metal:	na		1.9		7.4		14.00	Away from Nozzle: ↓	
Base Metal:	na		7.4		See Sketch		55.00	Clockwise: ←	
								Counter Clockwise: →	

Weld Metal: Volume = 14.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 14.00
1	45°↑	1	14.00	14.00	100.00%
2	45°↓	2	7.96	7.96	56.86%
3	60°↑	3	14.00	14.00	100.00%
4	60°↓	4	10.36	10.36	74.00%
5	45°→	5	14.00	14.00	100.00%
6	45°←	5	14.00	14.00	100.00%
7	60°→	5	14.00	14.00	100.00%
8	60°←	5	14.00	14.00	100.00%
9	0° WRV	5	14.00	14.00	100.00%
Total Beams: 9			Total Percent: 830.86%		
Total Weld Metal Coverage:			92.32%		

Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 55.00
1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
3	45°→	7	41	41	74.55%
4	45°←	7	41	41	74.55%
5	60°→	7	41	41	74.55%
6	60°←	7	41	41	74.55%
7	0° WRV	7	41	41	74.55%
Total Beams: 7			Total Percent: 567.56%		
Total Base Metal Coverage:			81.08%		

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	92.32%		14.00		69.00
	Base Metal:	81.08%		55.00		69.00
Total Exam Coverage =						83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

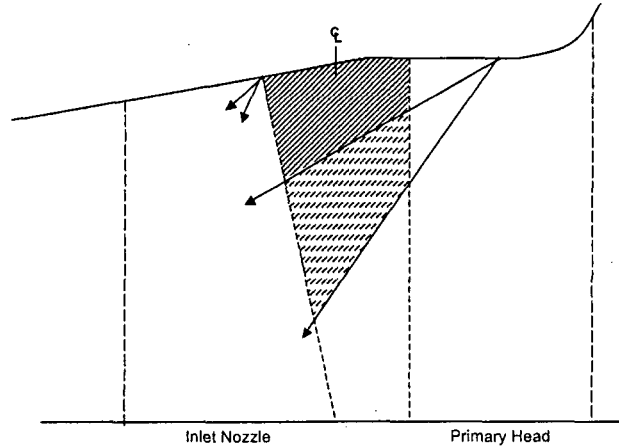
Page 5 of 8



CCNPP

Component ID: SG-11-W5	NDE Report No.: CC06-1U-041
LTP No.: 100805	Summary No.: 100805
Coverage Sketch No: 4	MO No.: 1200500777
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 42"
Thickness: 7.30"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 60° Coverage = 4.65 in²
 Supplemental 35° Coverage = 5.72 in²

Total: (4.65 + 5.72) = 10.36 in² of 14 in² exam area = 74%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)		
Exam Area:	na		9.5		See Sketch		69.00	Toward Nozzle: ↑	
Weld Metal:	na		1.9		7.4		14.00	Away from Nozzle: ↓	
Base Metal:	na		7.4		See Sketch		55.00	Clockwise: ↻	
								Counter Clockwise: ↺	

Weld Metal: Volume = 14.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 14.00
1	45°↑	1	14.00	14.00	100.00%
2	45°↓	2	7.96	7.96	56.86%
3	60°↑	3	14.00	14.00	100.00%
4	60°↓	4	10.36	10.36	74.00%
5	45°↔	5	14.00	14.00	100.00%
6	45°↔	5	14.00	14.00	100.00%
7	60°↔	5	14.00	14.00	100.00%
8	60°↔	5	14.00	14.00	100.00%
9	0° WRV	5	14.00	14.00	100.00%
Total Beams: 9			Total Percent:		830.86%
Total Weld Metal Coverage:			92.32%		

Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 55.00
1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
3	45°↔	7	41	41	74.55%
4	45°↔	7	41	41	74.55%
5	60°↔	7	41	41	74.55%
6	60°↔	7	41	41	74.55%
7	0° WRV	7	41	41	74.55%
Total Beams: 7			Total Percent:		567.56%
Total Base Metal Coverage:			81.08%		

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	92.32%		14.00		69.00
	Base Metal:	81.08%		55.00		69.00
Total Exam Coverage =						83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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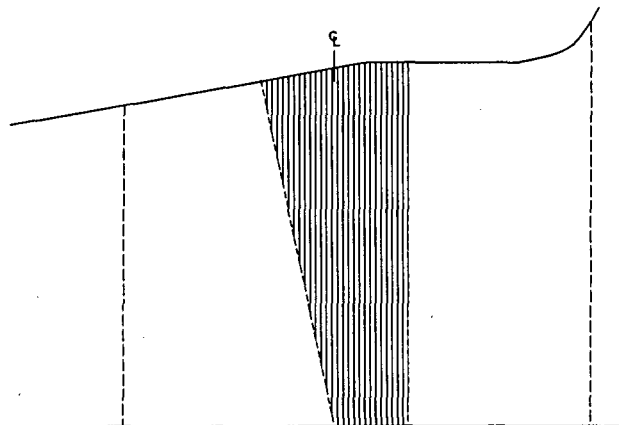
CCNPP


Component ID: SG-11-W5
LTP No.: 100805
Coverage Sketch No: 5
Exam Area: Weld Metal 360°
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC06-1U-041
Summary No.: 100805
MO No.: 1200500777
Scale: 50%

Diameter: 42"
Thickness: 7.30"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° / 60° / 0° WRV Coverage = 14 in² of 14 in² exam area = 100%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	↓	
Exam Area:	na		9.5		See Sketch		69.00	Away from Nozzle:	↓	
Weld Metal:	na		1.9		7.4		14.00	Clockwise:	←	
Base Metal:	na		7.4		See Sketch		55.00	Counter Clockwise:	→	

Weld Metal: Volume = 14.00 Square Inches				
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Percent of 14.00
1	45°↑	1	14.00	100.00%
2	45°↓	2	7.96	56.86%
3	60°↑	3	14.00	100.00%
4	60°↓	4	10.36	74.00%
5	45°→	5	14.00	100.00%
6	45°←	5	14.00	100.00%
7	60°→	5	14.00	100.00%
8	60°←	5	14.00	100.00%
9	0° WRV	5	14.00	100.00%
Total Beams: 9		Total Percent:		830.86%
Total Weld Metal Coverage:				92.32%

Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 55.00
1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
3	45°→	7	41	41	74.55%
4	45°←	7	41	41	74.55%
5	60°→	7	41	41	74.55%
6	60°←	7	41	41	74.55%
7	0° WRV	7	41	41	74.55%
Total Beams: 7		Total Percent:		567.56%	
Total Base Metal Coverage:				81.08%	

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume = Result
Weld Metal:	92.32%		14.00		18.73%
Base Metal:	81.08%		55.00		64.63%
Total Exam Coverage =					83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

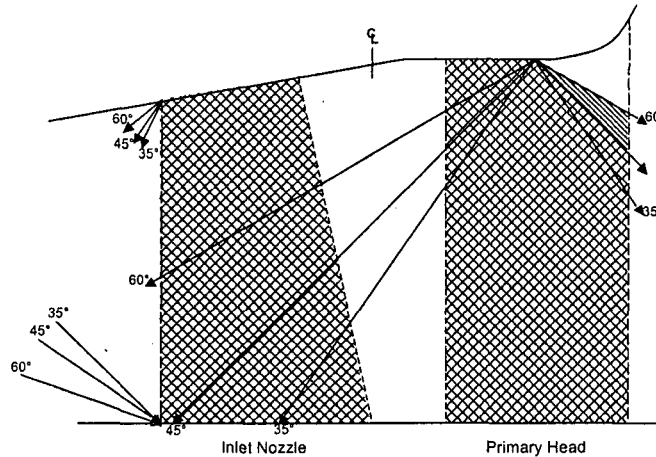
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CCNPP

Component ID: SG-11-W5	NDE Report No.: CC06-1U-041
LTP No.: 100805	Summary No.: 100805
Coverage Sketch No.: 6	MO No.: 1200500777
Exam Area: Base Metal 360°	Scale: 50%
Exam Angle: 45° / 60° /	

Diameter: 42"
Thickness: 7.30"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage by at least 2 sound beams = 53.20 in².

Coverage by 1 sound beam only = 0.76 in².

Total: 53.20 + (0.76 / 2) = 53.58 in² of 55 in² exam area = 97.42%.

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑		
Exam Area:	na		9.5		See Sketch		69.00	Away from Nozzle: ↓		
Weld Metal:	na		1.9		7.4		14.00	Clockwise: ↻		
Base Metal:	na		7.4		See Sketch		55.00	Counter Clockwise: ↺		

Weld Metal: Volume = 14.00 Square Inches						Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 14.00	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 55.00
1	45°↑	1	14.00	14.00	100.00%	1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
2	45°↓	2	7.96	7.96	56.86%	3	45°←	7	41	41	74.55%
3	60°↑	3	14.00	14.00	100.00%	4	45°→	7	41	41	74.55%
4	60°↓	4	10.36	10.36	74.00%	5	60°←	7	41	41	74.55%
5	45°←	5	14.00	14.00	100.00%	6	60°→	7	41	41	74.55%
6	45°→	5	14.00	14.00	100.00%	7	0° WRV	7	41	41	74.55%
7	60°←	5	14.00	14.00	100.00%						
8	60°→	5	14.00	14.00	100.00%						
9	0° WRV	5	14.00	14.00	100.00%						
Total Beams: 9			Total Percent: 830.86%			Total Beams: 7			Total Percent: 567.56%		
			Total Weld Metal Coverage: 92.32%						Total Base Metal Coverage: 81.08%		

Combined Coverage						
	Coverage Percent	x	Volume	=	Total Volume	Result
Weld Metal:	92.32%		14.00		69.00	18.73%
Base Metal:	81.08%		55.00		69.00	64.63%
			Total Exam Coverage =		83.36%	

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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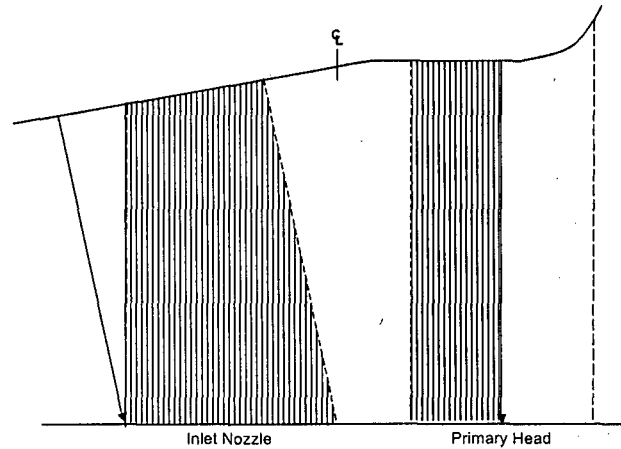
CCNPP


Component ID: SG-11-W5
LTP No.: 100805
Coverage Sketch No: 7
Exam Area: Base Metal 360°
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC06-1U-041
Summary No.: 100805
MO No.: 1200500777
Scale: 50%

Diameter: 42"
Thickness: 7.30"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° WRV Coverage = 41 in² of 55 in² exam area = 74.55%

Coverage Dimensions							Beam Directions			
Exam Area:	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:		
Weld Metal:	na		9.5		See Sketch		69.00	Away from Nozzle:		
Base Metal:	na		1.9		7.4		14.00	Clockwise:	←	
			7.4		See Sketch		55.00	Counter Clockwise:	→	

Weld Metal: Volume = 14.00 Square Inches					Base Metal: Volume = 55.00 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of
1	45°↑	1	14.00	14.00	100.00%	1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
2	45°↓	2	7.96	7.96	56.86%	3	45°→	7	41	41	74.55%
3	60°↑	3	14.00	14.00	100.00%	4	45°←	7	41	41	74.55%
4	60°↓	4	10.36	10.36	74.00%	5	60°→	7	41	41	74.55%
5	45°↔	5	14.00	14.00	100.00%	6	60°←	7	41	41	74.55%
6	45°↔	5	14.00	14.00	100.00%	7	0° WRV	7	41	41	74.55%
7	60°↔	5	14.00	14.00	100.00%						
8	60°↔	5	14.00	14.00	100.00%						
9	0° WRV	5	14.00	14.00	100.00%						
Total Beams: 9					Total Percent: 830.86%	Total Beams: 7					Total Percent: 567.56%
Total Weld Metal Coverage:					92.32%	Total Base Metal Coverage:					81.08%

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	92.32%		14.00		69.00
	Base Metal:	81.08%		55.00		69.00
Total Exam Coverage =						83.36%

Responses to Request for Additional Information
Summary No.: 100955 Comp ID: SG-11-W6 Page 1 of 7

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

SG Outlet Nozzle to Primary Head Nozzle / Machined transition on nozzle extension limited base metal coverage. The steam generator nozzle-to-vessel head welds are accessible only from the head side based on the designed nozzle configuration. The proximity of the nozzle radius prevented full examination coverage from the nozzle side. Scanning was performed from the nozzle; however, the ultrasonic waves did not cover the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The NDE techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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CCNPP

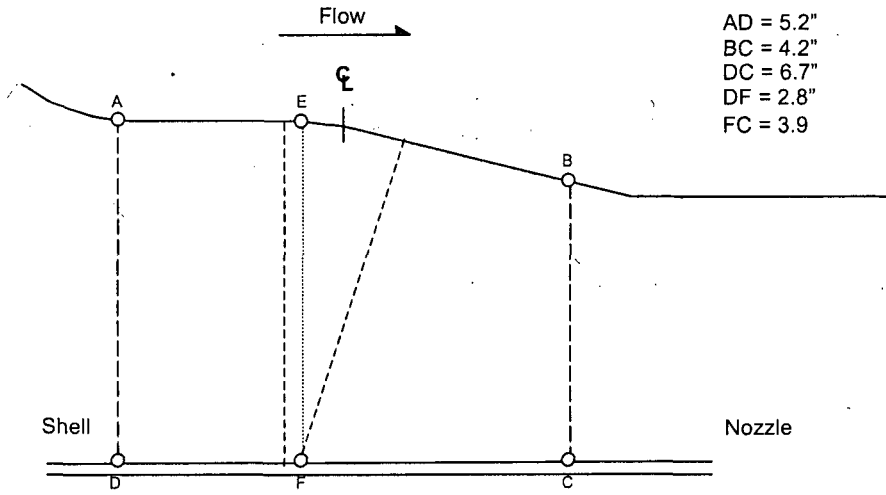
Component ID: SG - 11 - Weld 6
LTP No.: 100955

NDE Report No.: CC10-1U-064
M.O. No.:
Scale: 50%

Sketch: Exam Area

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Area

- ABCD
- AEFD + EBCF
- $(2.8 \times 5.2) + 3.9((5.2 + 4.2)/2) = 32.89 \text{ in}^2$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

Page 3 of 7

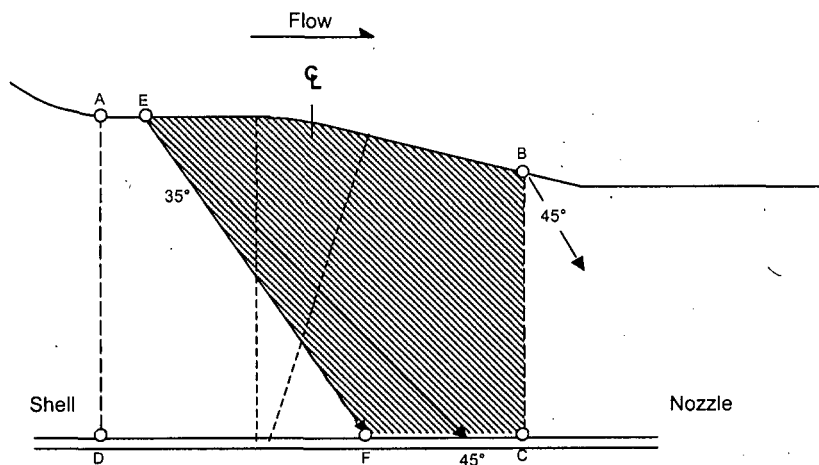
CCNPP

Component ID: SG - 11 - Weld 6
LTP No.: 100955
Coverage Sketch No: 1
Exam: 35° / 45° (With Flow)

NDE Report No.: CC10-1U-064
M.O. No.:
Scale: 50%

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



NOTE: The 45° exam was supplemented with a 35° exam due to the 14° OD taper.

Exam Area

- ABCD = 32.89 in²

With Flow

- Examined ABCD - AEFD
- $32.89 - (5.2(0.7 + 4.3)/2) = 19.94 \text{ in}^2$
- $19.94 / 32.89 = 60.47\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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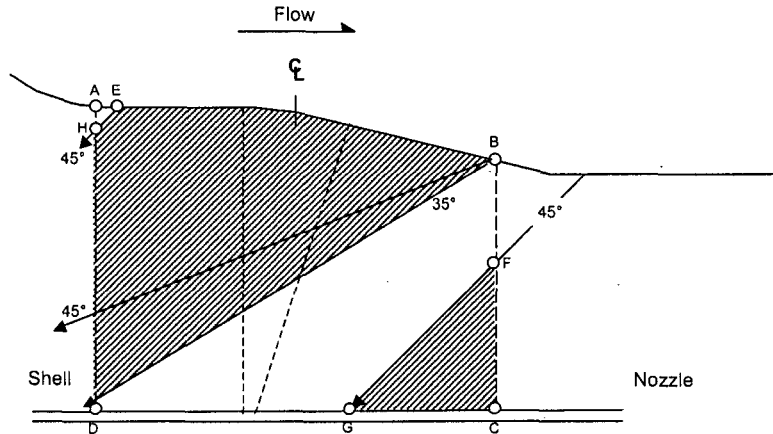
CCNPP

Component ID: SG - 11 - Weld 6
LTP No.: 100955
Coverage Sketch No: 2
Exam: 35° / 45° (Against Flow)

NDE Report No.: CC10-1U-064
M.O. No.:
Scale: 50%

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



NOTE: The 45° exam was supplemented with a 35° exam due to the 14° OD taper.

Exam Area

- $ABCD = 32.89 \text{ in}^2$

Against Flow

- Examined $ABD - AEH + FCG$
- $(6.7 \times 5.2)/2 - (0.4 \times 0.4)/2 + (2.5 \times 2.5)/2 = 20.47 \text{ in}^2$
- $20.47 / 32.89 = 62.22\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

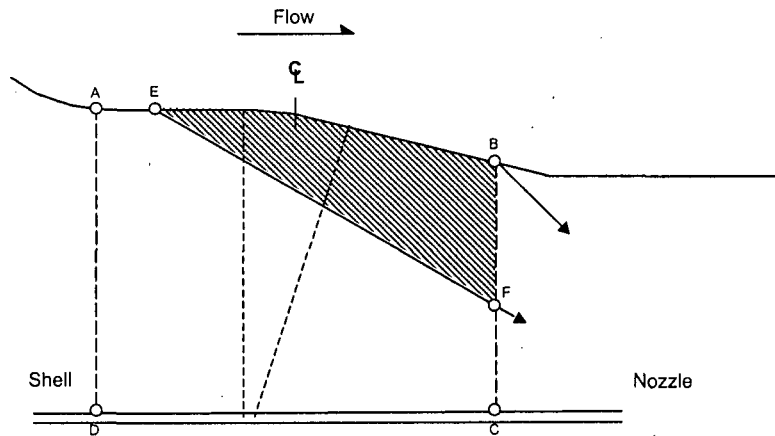
CCNPP

Component ID: SG - 11 - Weld 6
LTP No.: 100955
Coverage Sketch No: 3
Exam: 60° (With Flow)

NDE Report No.: CC10-1U-064
M.O. No.:
Scale: 50%

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Area

- $ABCD = 32.89 \text{ in}^2$

With Flow

- Examined EBF
- $(5.8 \times 2.5)/2 = 7.25 \text{ in}^2$
- $7.25 / 32.89 = \underline{22.04\%}$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
		TOTAL	668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

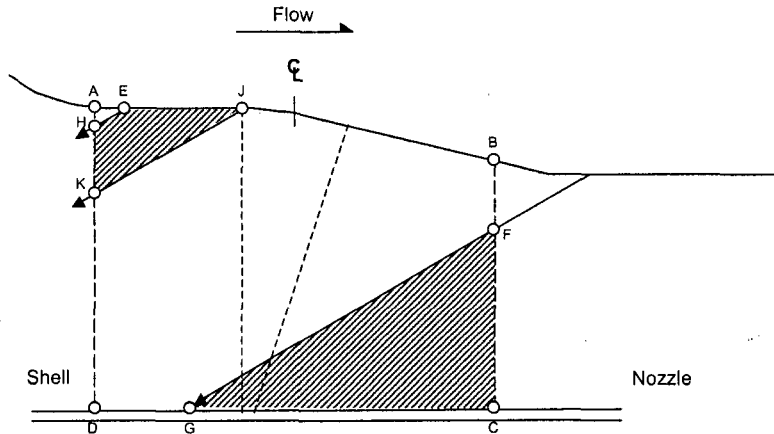
Page 6 of 7

CCNPP

Component ID: SG - 11 - Weld 6 **NDE Report No.:** CC10-1U-064
LTP No.: 00955 **M.O. No.:**
Coverage Sketch No: 4 **Scale:** 50%
Exam: 60° (Against Flow)

Diameter: 30"
Thickness: 5"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Area

- $ABCD = 32.89 \text{ in}^2$

Against Flow

- $AJK - AEH + FCG$
- $(2.5 \times 1.5)/2 - (0.5 \times 0.3)/2 + (3 \times 5)/2 = 9.30 \text{ in}^2$
- $9.30 / 32.89 = 28.28\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

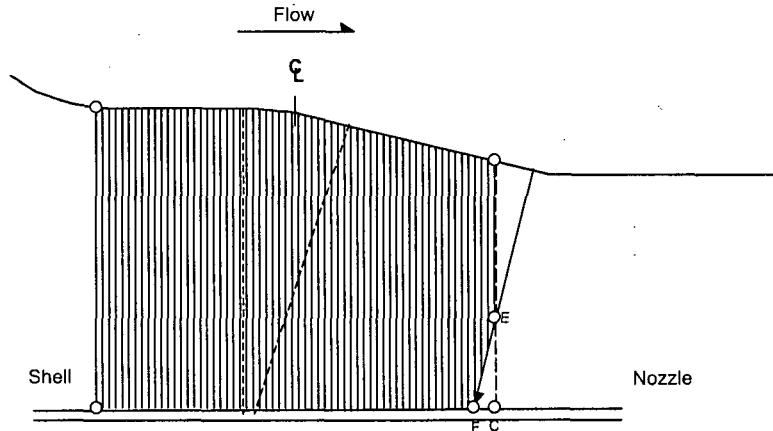
CCNPP

Component ID: SG - 11 - Weld 6 **NDE Report No.:** CC10-1U-064
LTP No.: 100955 **M.O. No.:**
Coverage Sketch No: 5 **Scale:** 50%
Exam: 45° & 60° & 0° WRV

Diameter: 30"
Thickness: 5"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

Page 7 of 7

(Sketch Resized for Relief Request)



Exam Area

- ABCD = 32.89 in²

With Flow

- Examined ABCD - ECF
- $32.89 - (1.6 \times 0.4)/2 = 32.57 \text{ in}^2$
- $32.57 / 32.89 = 99.03\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Responses to Request for Additional Information
Summary No.: 103205 Comp ID: SG-11-W7 Page 1 of 7

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

SG Outlet Nozzle to Primary Head Nozzle / Machined transition on nozzle extension limited base metal coverage. The steam generator nozzle-to-vessel head welds are accessible only from the head side based on the designed nozzle configuration. The proximity of the nozzle radius prevented full examination coverage from the nozzle side. Scanning was performed from the nozzle; however, the ultrasonic waves did not cover the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The NDE techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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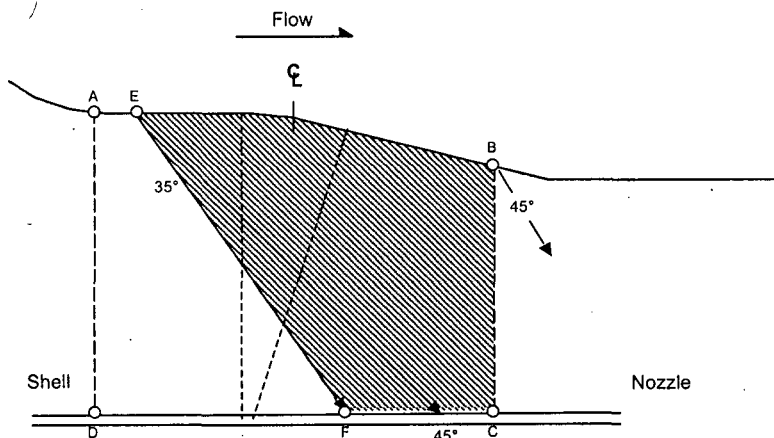
CCNPP

Component ID: SG - 11 - Weld 7
LTP No.: 103205
Coverage Sketch No: 1
Exam: 35° / 45° (With Flow)

NDE Report No.: CC-1U-065
M.O. No.: C120090648
Scale: 50%

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



NOTE: The 45° exam was supplemented with a 35° exam due to the 14° OD taper.

Exam Area

- $ABCD = 32.89 \text{ in}^2$

With Flow

- Examined $ABCD - AEFD$
- $32.89 - (5.2(0.7 + 4.3)/2) = 19.94 \text{ in}^2$
- $19.94 / 32.89 = 60.47\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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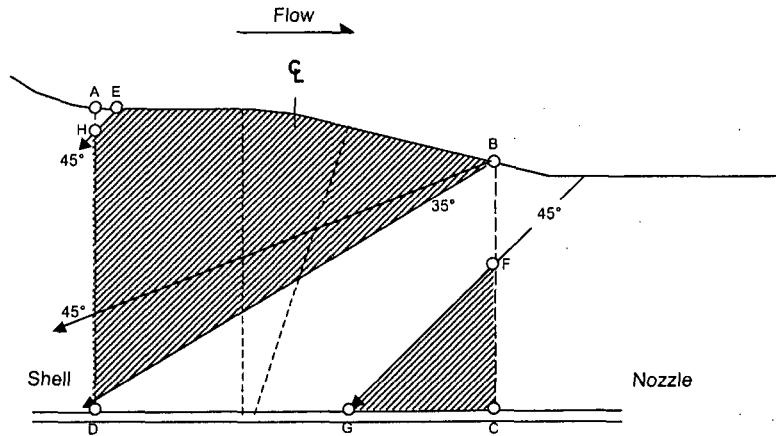
CCNPP

Component ID: SG - 11 - Weld 7
LTP No.: 103205
Coverage Sketch No: 2
Exam: 35° / 45° (Against Flow)

NDE Report No.: CC-1U-065
M.O. No.: C120090648
Scale: 50%

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



NOTE: The 45° exam was supplemented with a 35° exam due to the 14° OD taper.

Exam Area

- ABCD = 32.89 in²

Against Flow

- Examined ABD - AEH + FCG
- $(6.7 \times 5.2)/2 - (0.4 \times 0.4)/2 + (2.5 \times 2.5)/2 = 20.47$ in²
- $20.47 / 32.89 = 62.22\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

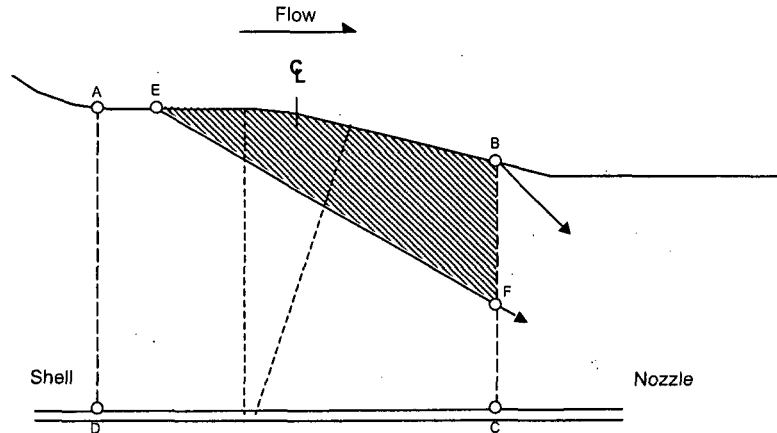
Page 4 of 7

CCNPP

Component ID: SG - 11 - Weld 7 **NDE Report No.:** CC-1U-065
LTP No.: 103205 **M.O. No.:** C120090648
Coverage Sketch No: 3 **Scale:** 50%
Exam: 60° (With Flow)

Diameter: 30"
Thickness: 5"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Area

- ABCD = 32.89 in²

With Flow

- Examined EBF
- $(5.8 \times 2.5)/2 = 7.25 \text{ in}^2$
- $7.25 / 32.89 = 22.04\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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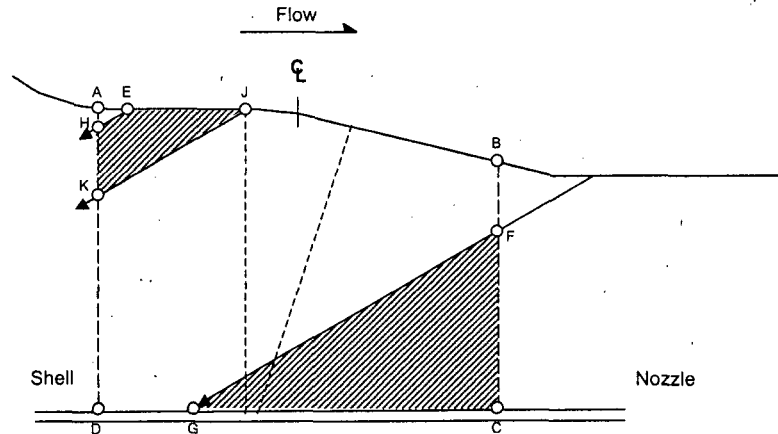
CCNPP

Component ID: SG - 11 - Weld 7
LTP No.: 103205
Coverage Sketch No: 4
Exam: 60° (Against Flow)

NDE Report No.: CC-1U-065
M.O. No.: C120090648
Scale: 50%

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Area

- $ABCD = 32.89 \text{ in}^2$

Against Flow

- $AJK - AEH + FCG$
- $(2.5 \times 1.5)/2 - (0.5 \times 0.3)/2 + (3 \times 5)/2 = 9.30 \text{ in}^2$
- $9.30 / 32.89 = 28.28\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

CCNPP

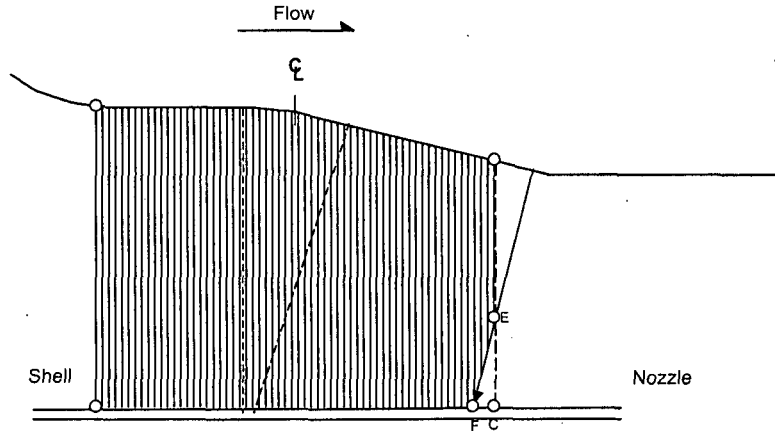
Component ID: SG - 11 - Weld 7
LTP No.: 103205
Coverage Sketch No: 5
Exam: 45° & 60° & 0° WRV

NDE Report No.: CC-1U-065
M.O. No.: C120090648
Scale: 50%

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

Page 6 of 7

(Sketch Resized for Relief Request)



Exam Area

- $ABCD = 32.89 \text{ in}^2$

With Flow

- Examined $ABCD - ECF$
- $32.89 - (1.6 \times 0.4)/2 = 32.57 \text{ in}^2$
- $32.57 / 32.89 = 99.03\%$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

CCNPP

Component ID: SG - 11 - Weld 7
LTP No.: 103205

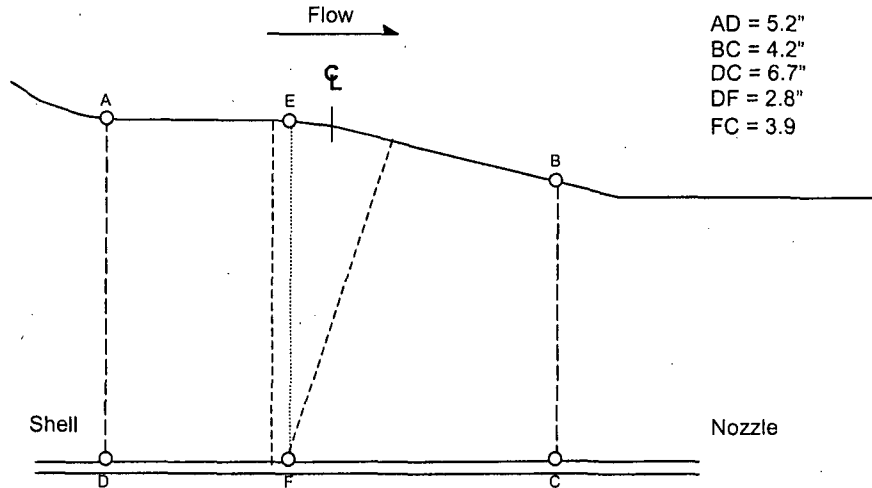
NDE Report No.: CC-1U-065
M.O. No.: C120090648
Scale: 50%

Sketch: Exam Area

Diameter: 30"
Thickness: 5"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

Page 7 of 7

(Sketch Resized for Relief Request)



Exam Area

- ABCD
- AEFD + EBCF
- $(2.8 \times 5.2) + 3.9((5.2 + 4.2)/2) = 32.89 \text{ in}^2$

Coverage Sketch	Angle	Sound Direction	Coverage
1	45°	With Flow	60.47%
2	45°	Against Flow	62.22%
3	60°	With Flow	22.04%
4	60°	Against Flow	28.28%
5	45°	CW	99.03%
5	45°	CCW	99.03%
5	60°	CW	99.03%
5	60°	CCW	99.03%
5	0°	WRV	99.03%
TOTAL			668.16
668.16 / 9 Sound Beams = 74.24			
Achieved 74.24% Coverage			

Responses to Request for Additional Information
Summary No.: 106055 Comp ID: SG-12-W5 Page 1 of 8

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

SG Inlet Nozzle to Primary Head Nozzle / Machined transition on nozzle extension limited base metal coverage. The steam generator nozzle-to-vessel head welds are accessible only from the head side based on the designed nozzle configuration. The proximity of the nozzle radius prevented full examination coverage from the nozzle side. Scanning was performed from the nozzle; however, the ultrasonic waves did not cover the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The NDE techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

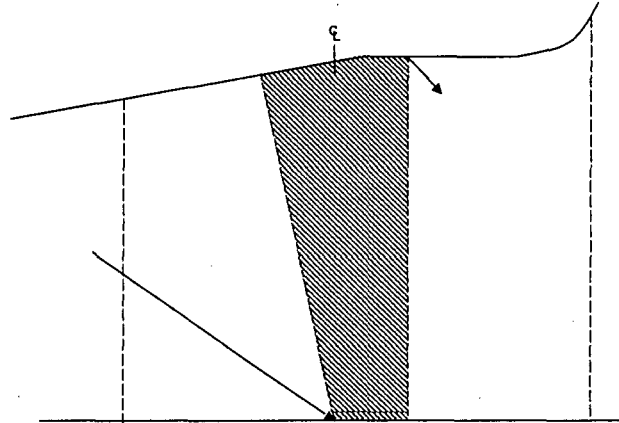
Page 2 of 8


CCNPP

Component ID: SG-12-W5 **NDE Report No.:** CC06-1U-046
LTP No.: 106055 **Summary No.:** 106055
Coverage Sketch No: 1 **MO No.:** 1200500776
Exam Area: Weld Metal 360° **Scale:** 50%
Exam Angle: 45°

Diameter: 42"
Thickness: 7.30"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 14 in² of 14 in² exam area = 100%

Coverage Dimensions							Beam Directions				
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	↑		
Exam Area:	na		9.5		See Sketch		69.00	Away from Nozzle:	↓		
Weld Metal:	na		1.9		7.4		14.00	Clockwise:	←		
Base Metal:	na		7.4		See Sketch		55.00	Counter Clockwise:	→		

Weld Metal: Volume = 14.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 14.00
1	45°↑	1	14.00	14.00	100.00%
2	45°↑	2	7.96	7.96	56.86%
3	60°↑	3	14.00	14.00	100.00%
4	60°↑	4	10.36	10.36	74.00%
5	45°→	5	14.00	14.00	100.00%
6	45°→	5	14.00	14.00	100.00%
7	60°→	5	14.00	14.00	100.00%
8	60°→	5	14.00	14.00	100.00%
9	0° WRV	5	14.00	14.00	100.00%
Total Beams: 9			Total Percent: 830.66%		
Total Weld Metal Coverage:			92.32%		

Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 55.00
1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
3	45°→	7	41	41	74.55%
4	45°→	7	41	41	74.55%
5	60°→	7	41	41	74.55%
6	60°→	7	41	41	74.55%
7	0° WRV	7	41	41	74.55%
Total Beams: 7			Total Percent: 567.56%		
Total Base Metal Coverage:			81.08%		

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	92.32%		14.00		69.00		18.73%
Base Metal:	81.08%		55.00		69.00		64.63%
Total Exam Coverage =							83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

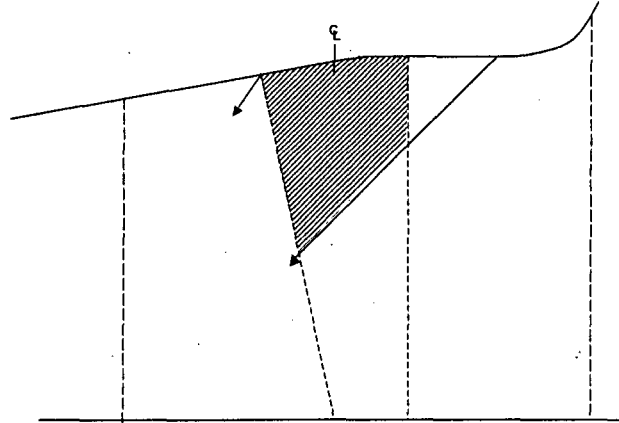
Page 3 of 8


CCNPP

Component ID: SG-12-W5	NDE Report No.: CC06-1U-046
LTP No.: 106055	Summary No.: 106055
Coverage Sketch No: 2	MO No.: 1200500776
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 42"
 Thickness: 7.30"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 7.96 in² of 14 in² exam area = 56.86%.

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)			
Exam Area:	na		9.5		See Sketch		69.00	Toward Nozzle:	↑	
Weld Metal:	na		1.9		7.4		14.00	Away from Nozzle:	↓	
Base Metal:	na		7.4		See Sketch		55.00	Clockwise:	←	
								Counter Clockwise:	→	

Weld Metal: Volume = 14.00 Square Inches						Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 14.00	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 55.00
1	45°↑	1	14.00	14.00	100.00%	1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
2	45°↑	2	7.96	7.96	56.86%	3	45°→	7	41	41	97.42%
3	60°↑	3	14.00	14.00	100.00%	4	45°→	7	41	41	74.55%
4	60°↑	4	10.36	10.36	74.00%	5	60°→	7	41	41	74.55%
5	45°→	5	14.00	14.00	100.00%	6	60°→	7	41	41	74.55%
6	45°→	5	14.00	14.00	100.00%	7	0° WRV	7	41	41	74.55%
7	60°→	5	14.00	14.00	100.00%						
8	60°→	5	14.00	14.00	100.00%						
9	0° WRV	5	14.00	14.00	100.00%						
Total Beams: 9			Total Percent: 830.86%			Total Beams: 7			Total Percent: 567.56%		
Total Weld Metal Coverage:			92.32%			Total Base Metal Coverage:			81.08%		

Combined Coverage						
		Coverage Percent	x	Volume	+	Result
	Weld Metal:	92.32%		14.00		18.73%
	Base Metal:	81.08%		55.00		64.63%
Total Exam Coverage =						83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

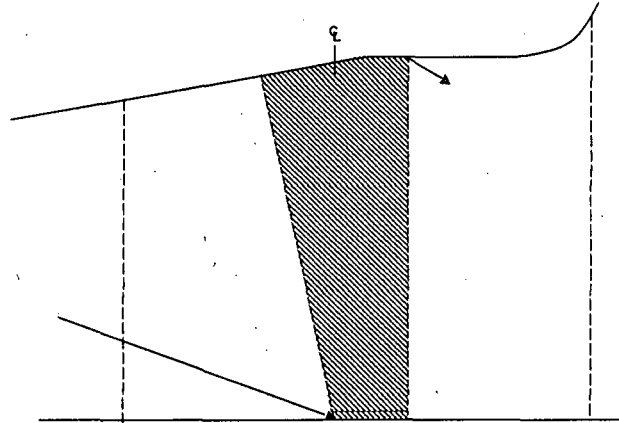
Page 4 of 8


CCNPP

Component ID: SG-12-W5	NDE Report No.: CC06-1U-046
LTP No.: 106055	Summary No.: 106055
Coverage Sketch No.: 3	MO No.: 1200500776
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 42"
 Thickness: 7.30"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 60° Coverage = 14 in² of 14 in² exam area = 100%.

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	
Exam Area:	na		9.5		See Sketch		69.00	Away from Nozzle:	
Weld Metal:	na		1.9		7.4		14.00	Clockwise:	←
Base Metal:	na		7.4		See Sketch		55.00	Counter Clockwise:	→

Weld Metal: Volume = 14.00 Square Inches						Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 14.00	Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 55.00
1	45°↑	1	14.00	14.00	100.00%	1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
2	45°↓	2	7.96	7.96	56.86%	3	45°→	7	41	41	74.55%
3	60°↑	3	14.00	14.00	100.00%	4	45°←	7	41	41	74.55%
4	60°↓	4	10.36	10.36	74.00%	5	60°→	7	41	41	74.55%
5	45°→	5	14.00	14.00	100.00%	6	60°←	7	41	41	74.55%
6	45°←	5	14.00	14.00	100.00%	7	0° WRV	7	41	41	74.55%
7	60°→	5	14.00	14.00	100.00%						
8	60°←	5	14.00	14.00	100.00%						
9	0° WRV	5	14.00	14.00	100.00%						
Total Beams: 9						Total Beams: 7					
Total Weld Metal Coverage: 92.32%						Total Base Metal Coverage: 81.08%					

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	92.32%		14.00		69.00
	Base Metal:	81.08%		55.00		69.00
Total Exam Coverage =						83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

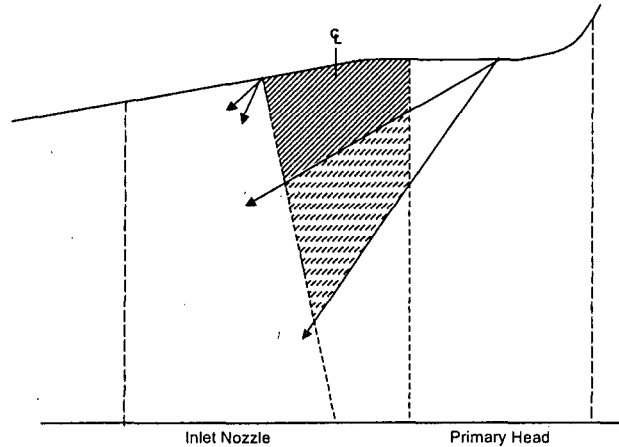
Page 5 of 8

CCNPP


Component ID: SG-12-W5	NDE Report No.: CC06-1U-046
LTP No.: 106055	Summary No.: 106055
Coverage Sketch No: 4	MO No.: 1200500776
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 42"
Thickness: 7.30"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 60° Coverage = 4.65 in².

 Supplemental 35° Coverage = 5.72 in²

Total: (4.65 + 5.72) = 10.36 in² of 14 in² exam area = 74%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)		
Exam Area:	na		9.5		See Sketch		69.00	Toward Nozzle: ↑	
Weld Metal:	na		1.9		7.4		14.00	Away from Nozzle: ↓	
Base Metal:	na		7.4		See Sketch		55.00	Clockwise: ↻	
								Counter Clockwise: ↺	

Weld Metal: Volume = 14.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 14.00
1	45°↑	1	14.00	14.00	100.00%
2	45°↓	2	7.96	7.96	56.86%
3	60°↑	3	14.00	14.00	100.00%
4	60°↓	4	10.36	10.36	74.00%
5	45°↔	5	14.00	14.00	100.00%
6	45°↔	5	14.00	14.00	100.00%
7	60°↔	5	14.00	14.00	100.00%
8	60°↔	5	14.00	14.00	100.00%
9	0° WRV	5	14.00	14.00	100.00%
Total Beams: 9			Total Percent:		830.86%
Total Weld Metal Coverage:			92.32%		

Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 55.00
1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
3	45°↔	7	41	41	97.42%
4	45°↔	7	41	41	74.55%
5	60°↔	7	41	41	74.55%
6	60°↔	7	41	41	74.55%
7	0° WRV	7	41	41	74.55%
Total Beams: 7			Total Percent:		567.56%
Total Base Metal Coverage:			81.08%		

Combined Coverage									
			Coverage Percent	x	Volume	+	Total Volume	=	Result
			Weld Metal:		92.32%		14.00		18.73%
			Base Metal:		81.08%		55.00		64.63%
Total Exam Coverage =									83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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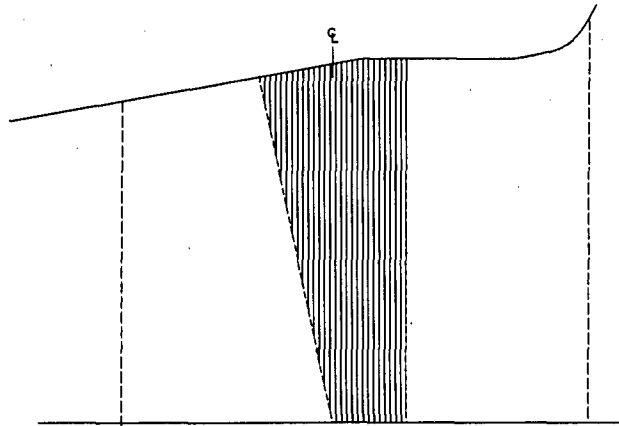
CCNPP


Component ID: SG-12-W5
LTP No.: 106055
Coverage Sketch No: 5
Exam Area: Weld Metal 360°
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC06-1U-046
Summary No.: 106055
MO No.: 1200500776
Scale: 50%

Diameter: 42"
Thickness: 7.30"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° → / 60° → / 0° WRV Coverage = 14 in² of 14 in² exam area = 100%.

Coverage Dimensions							Beam Directions				
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑			
Exam Area:	na		9.5		See Sketch		69.00	Away from Nozzle: ↓			
Weld Metal:	na		1.9		7.4		14.00	Clockwise: ↻			
Base Metal:	na		7.4		See Sketch		55.00	Counter Clockwise: ↻			
Weld Metal: Volume = 14.00 Square Inches							Base Metal: Volume = 55.00 Square Inches				
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of		Beam No.	Angle	Sketch	Coverage (Squ. In.)	
1	45°↑	1	14.00	14.00	100.00%		1 + 2	45°/60°↑↓	6	53.58	
2	45°↑	2	7.96	7.96	56.86%		3	45°→	7	41	
3	60°↑	3	14.00	14.00	100.00%		4	45°→	7	41	
4	60°↑	4	10.36	10.36	74.00%		5	60°→	7	41	
5	45°→	5	14.00	14.00	100.00%		6	60°→	7	41	
6	45°→	5	14.00	14.00	100.00%		7	0° WRV	7	41	
7	60°→	5	14.00	14.00	100.00%						
8	60°→	5	14.00	14.00	100.00%						
9	0° WRV	5	14.00	14.00	100.00%						
Total Beams: 9			Total Percent:		830.86%		Total Beams: 7			Total Percent:	
										567.56%	
			Total Weld Metal Coverage:		92.32%					Total Base Metal Coverage:	
										81.08%	
Combined Coverage											
			Coverage Percent	x	Volume	+	Total Volume	=	Result		
			Weld Metal:	92.32%	14.00		69.00		18.73%		
			Base Metal:	81.08%	55.00		69.00		64.63%		
Total Exam Coverage =									83.36%		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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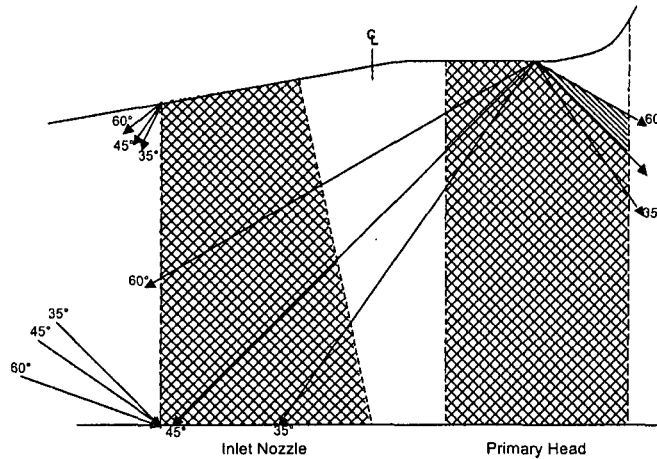
CCNPP


Component ID: SG-12-W5
LTP No.: 106055
Coverage Sketch No: 6
Exam Area: Base Metal 360°
Exam Angle: 45° / 60° /


NDE Report No.: CC06-1U-046
Summary No.: 106055
MO No.: 1200500776
Scale: 50%

Diameter: 42"
Thickness: 7.30"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 Coverage by at least 2 sound beams = 53.20 in².

 Coverage by 1 sound beam only = 0.76 in².

Total: 53.20 + (0.76 / 2) = 53.58 in² of 55 in² exam area = 97.42%.

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)		
Exam Area:	na		9.5		See Sketch		69.00	Toward Nozzle: ↑	
Weld Metal:	na		1.9		7.4		14.00	Away from Nozzle: ↓	
Base Metal:	na		7.4		See Sketch		55.00	Clockwise: ←	
								Counter Clockwise: →	

Weld Metal: Volume = 14.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 14.00
1	45°↑	1	14.00	14.00	100.00%
2	45°↓	2	7.96	7.96	56.86%
3	60°↑	3	14.00	14.00	100.00%
4	60°↓	4	10.36	10.36	74.00%
5	45°→	5	14.00	14.00	100.00%
6	45°←	5	14.00	14.00	100.00%
7	60°→	5	14.00	14.00	100.00%
8	60°←	5	14.00	14.00	100.00%
9	0° WRV	5	14.00	14.00	100.00%
Total Beams: 9					
Total Percent:			830.86%		
Total Weld Metal Coverage:			92.32%		

Base Metal: Volume = 55.00 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 55.00
1 + 2	45°/60°↑↓	6	53.58	53.58	97.42%
3	45°→	7	41	41	74.55%
4	45°→	7	41	41	74.55%
5	60°→	7	41	41	74.55%
6	60°→	7	41	41	74.55%
7	0° WRV	7	41	41	74.55%
Total Beams: 7					
Total Percent:			567.56%		
Total Base Metal Coverage:			81.08%		

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	92.32%		14.00		69.00
	Base Metal:	81.08%		55.00		69.00
Total Exam Coverage =						83.36%

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category B-D - Code Item B3.130

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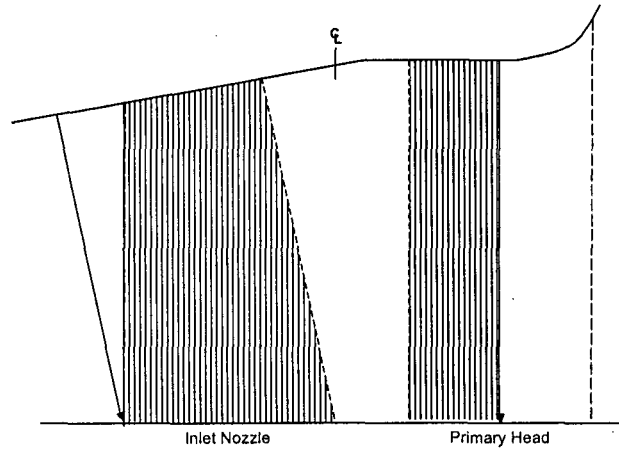
CCNPP


Component ID: SG-12-W5
LTP No.: 106055
Coverage Sketch No: 7
Exam Area: Base Metal 360°
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC06-1U-046
Summary No.: 106055
MO No.: 1200500776
Scale: 50%

Diameter: 42"
Thickness: 7.30"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° WRV Coverage = 41 in² of 55 in² exam area = 74.55%.

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	
Exam Area:	na		9.5		See Sketch		69.00	Away from Nozzle:	
Weld Metal:	na		1.9		7.4		14.00	Clockwise:	
Base Metal:	na		7.4		See Sketch		55.00	Counter Clockwise:	

Weld Metal: Volume = 14.00 Square Inches				
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Percent of Total
1	45°↑	1	14.00	100.00%
2	45°↓	2	7.96	56.86%
3	60°↑	3	14.00	100.00%
4	60°↓	4	10.36	74.00%
5	45°↔	5	14.00	100.00%
6	45°↔	5	14.00	100.00%
7	60°↔	5	14.00	100.00%
8	60°↔	5	14.00	100.00%
9	0° WRV	5	14.00	100.00%
Total Beams: 9 Total Percent: 830.86%				
Total Weld Metal Coverage: 92.32%				

Base Metal: Volume = 55.00 Square Inches				
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Percent of Total
1 + 2	45°/60°↑↓	6	53.58	97.42%
3	45°→	7	41	74.55%
4	45°←	7	41	74.55%
5	60°→	7	41	74.55%
6	60°←	7	41	74.55%
7	0° WRV	7	41	74.55%
Total Beams: 7 Total Percent: 567.56%				
Total Base Metal Coverage: 81.08%				

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	92.32%		14.00		69.00
	Base Metal:	81.08%		55.00		69.00
Total Exam Coverage =						83.36%

Responses to Request for Additional Information
Summary No.: 114900 Comp ID: 12-SI-1010-7 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each Relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Valve / Taper on Valve prevented any axial or circumferential scanning from Valve side of the weld. See attached sketches derived from examination data on file at CCNPP

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category R-A - Code Item R1.16

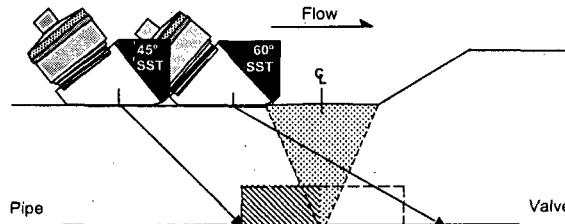
Page 2 of 2

CCNPP

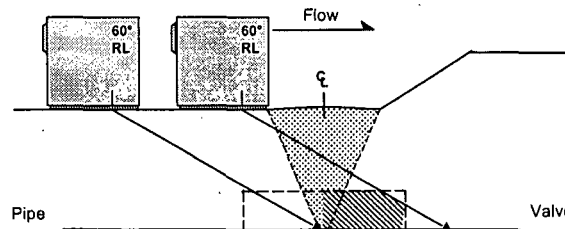
Component ID:	12-SI-1010-7	NDE Report No.:	CC06-1U-080
LTP No.:	114900	Summary No.:	114900
Coverage Sketch No:	1 of 1	MO No.:	1200500777
Exam Area:	Inner	Scale:	100%
Exam Angle:	45° / 60°		

Diameter: 12"
Thickness: 1.20"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.



Far side of weld examined to the extent possible with RL probe. No coverage credit taken.

Responses to Request for Additional Information
Summary No.: 102650 Comp ID: 10/12-SI-1009 Page 1 of 4

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Angled branch connection 12" Pipe to 30" Pipe / Weld location prevented any scanning from 12" pipe side. The ultrasonic examination of the above pipe weld was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper). For this weld obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the weld received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category R-A - Code Item R1.20

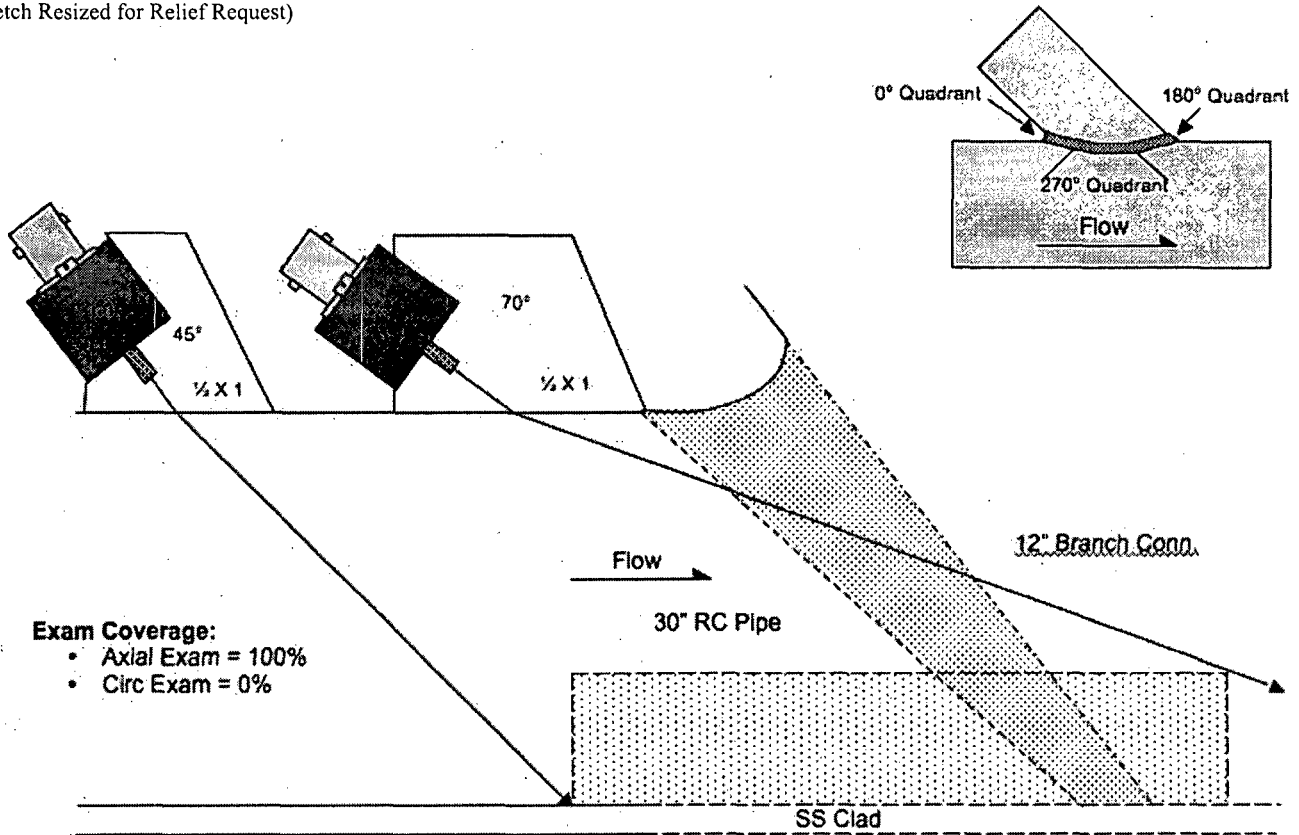
Page 2 of 4

CCNPP

Component ID: 10/12-SI-1009	NDE Report No.: CC08-1U-020
LTP No.: 102650	Summary No.: 102650
Coverage Sketch No.: 1	MO No.: 1200702221
Exam Area: 0° Quadrant	Scale: 100%

Diameter: 12"
Thickness: 3.00
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Calculation		
Quadrant	Axial	Circ
0°	100%	0%
90°	100%	50%
180°	100%	50%
270°	100%	50%
Total:	400%	150%
Total / 4:	100%	37.5%
Total Coverage: $(100 + 37.5)/2 = 68.75\%$		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 2 Class 2 Components
Code Category R-A - Code Item R1.20

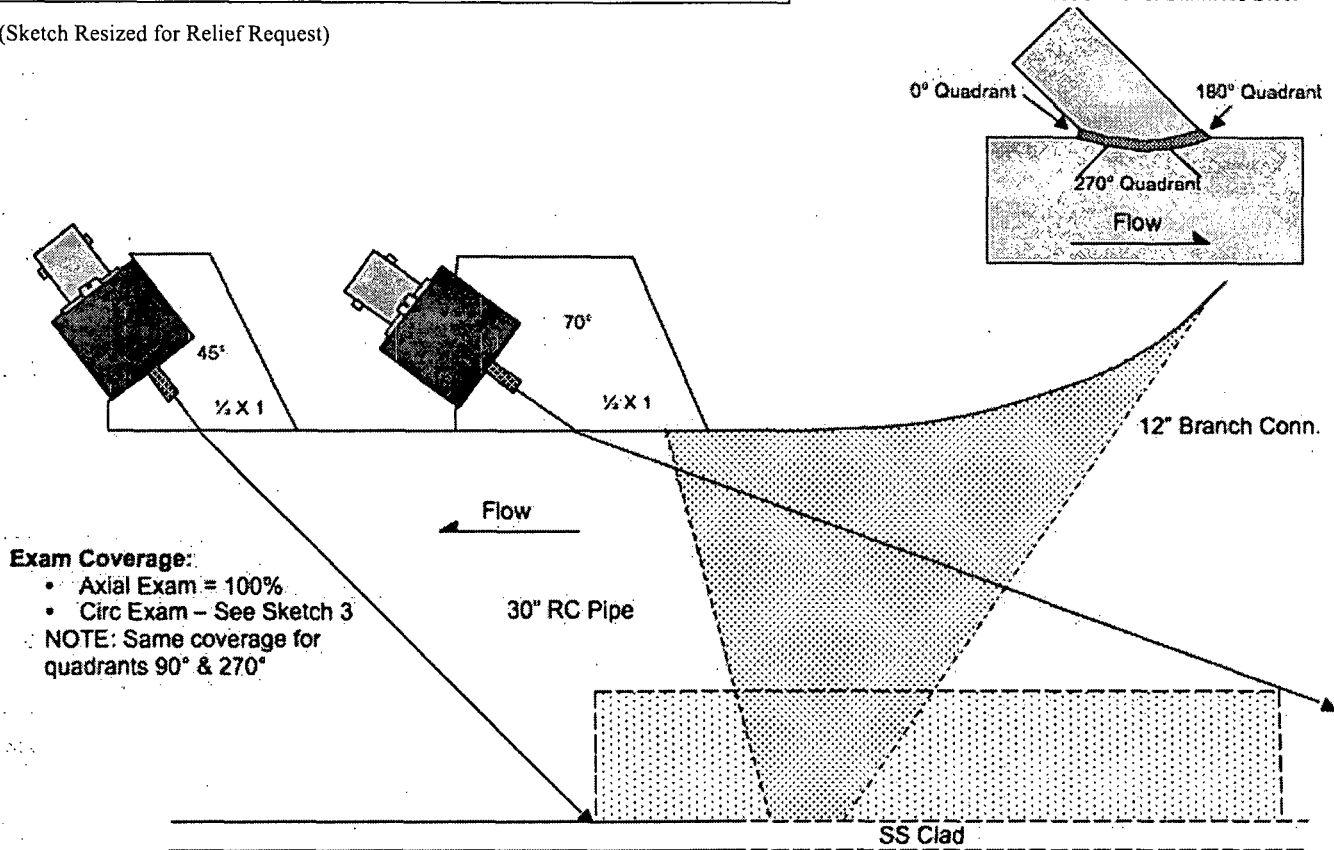
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CCNPP

Component ID: 10/12-SI-1009	NDE Report No.: CC08-1U-020
LTP No.: 102650	Summary No.: 102650
Coverage Sketch No: 2	MO No.: 1200702221
Exam Area: 180° Quadrant	Scale: 100%
Exam Angle: 45° / 70°	

Diameter: 12"
Thickness: 3.00
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage:

- Axial Exam = 100%
 - Circ Exam - See Sketch 3
- NOTE: Same coverage for quadrants 90° & 270°

Coverage Calculation		
Quadrant	Axial	Circ
0°	100%	0%
90°	100%	50%
180°	100%	50%
270°	100%	50%
Total:	400%	150%
Total / 4:	100%	37.5%
Total Coverage: $(100 + 37.5)/2 = 68.75\%$		

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 2 Class 2 Components
Code Category R-A - Code Item R1.20

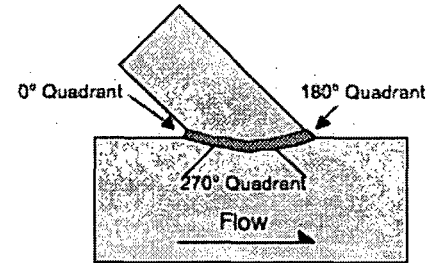
Page 4 of 4

CCNPP

Component ID: 10/12-SI-1009	NDE Report No.: CC08-1U-020
LTP No.: 102650	Summary No.: 102650
Coverage Sketch No: 3	MO No.: 1200702221
Exam Area: 180° Quadrant	Scale: 100%
Exam Angle: 45° / 70°	

Diameter: 12"
Thickness: 3.00
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

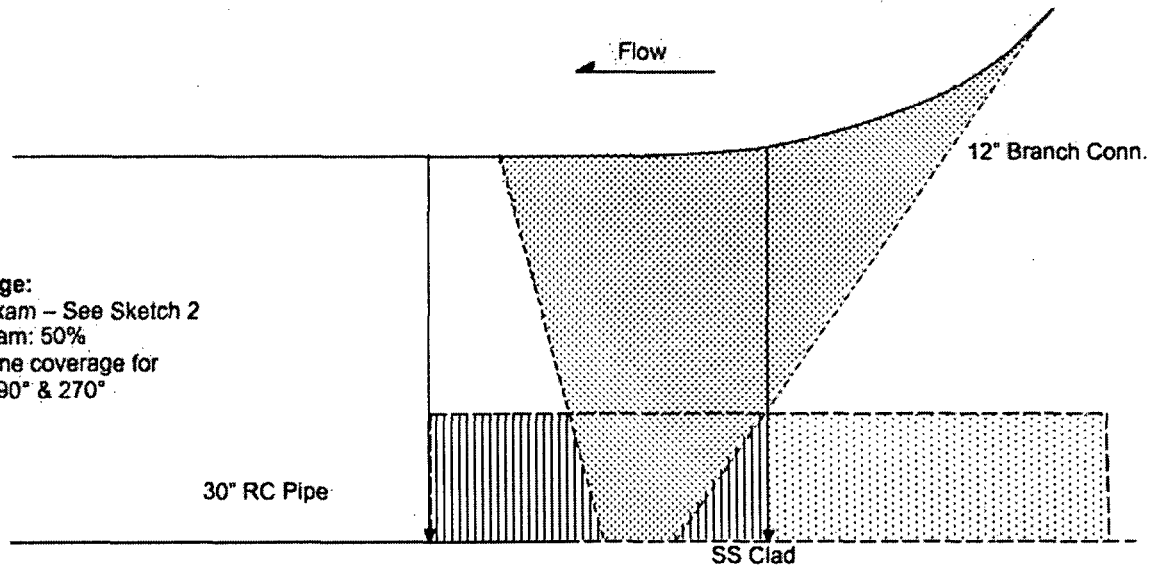
(Sketch Resized for Relief Request)



Exam Coverage:

- Axial Exam – See Sketch 2
- Circ Exam: 50%

NOTE: Same coverage for quadrants 90° & 270°



Coverage Calculation

Quadrant	Axial	Circ
0°	100%	0%
90°	100%	50%
180°	100%	50%
270°	100%	50%
Total:	400%	150%
Total / 4:	100%	37.5%
Total Coverage: (100 + 37.5)/2 = 68.75%		

Responses to Request for Additional Information
Summary No.: 115950 Comp ID: 12-SI-1011-12 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Safe End / No Code coverage was credited for scanning performed from Cast Stainless Steel Safe End side of weld. The ultrasonic examination of the above pipe weld was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper). For this weld obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the weld received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 1 - Relief Request ISI-24 for CCNPP Unit 1 Class 1 Components
Code Category R-A - Code Item R1.20

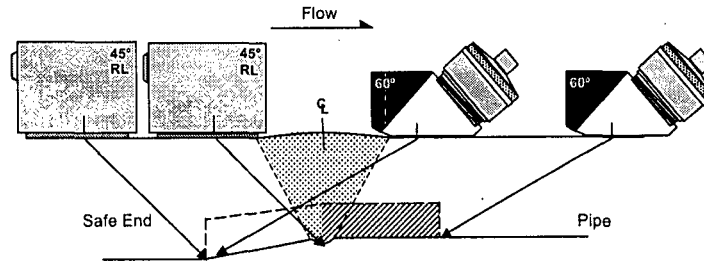
Page 2 of 2

CCNPP

Component ID: 12-SI-1011-12 NDE Report No.: CC08-1U-034
LTP No.: 115950 Summary No.: 115950
Coverage Sketch No: 1 of 1 MO No.: 1200702210
Exam Area: Inner Scale: 100%
Exam Angle: 60°

Diameter: 12"
Thickness: 1.125"
Material: CASS TO S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.

No coverage credit taken for 45° RL exam from Safe End side.

Responses to Request for Additional Information
Summary No.: 123700 Comp ID: 4-SR-1006-4 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Tee / Scanning from Tee side of weld limited due to proximity of transition on Tee to the weld. The ultrasonic examination of the above pipe weld was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper). For this weld obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the weld received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

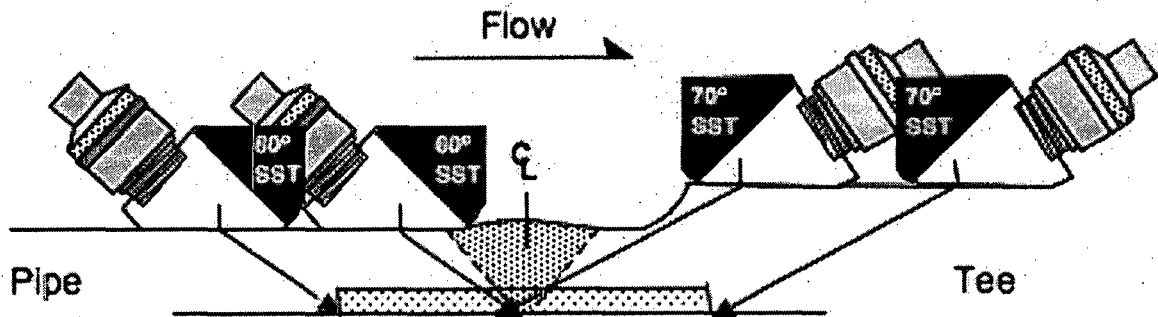
See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

CCNPP

Component ID:	4-SR-1006-4	NDE Report No.:	CC06-1U-043
LTP No.:	123700	Summary No.:	123700
Coverage Sketch No:	1 of 1	MO No.:	1200500749
Exam Area:	Inner	Scale:	100%
Exam Angle:	45° / 60° /		

Diameter: 4.0"
Thickness: 0.44"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Angles Measured In Component:

- Nominal 60° = 54°
- Nominal 70° = 62°

Scan Limitation:

- Axial exam from Tee side obstructed for 4" of 14.25" by Tee configuration.
- Circ exam from Tee side obstructed for 360° by Tee configuration.

Coverage Calc:

- Axial scan pipe side = 14.25" of 14.25" = 100%.
- Axial scan tee side = 10.25" of 14.25" = 72%.
- Circ scan pipe side = 14.25" of 14.25" = 100%.
- Circ scan tee side = 0" of 14.25" = 0%.
- Total: (100 + 72 + 100 + 0) / 4 = 68%.

ENCLOSURE 2

Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components

Responses to Request for Additional Information
Summary No.: 252000 Comp ID: SCHE-11-1 Page 1 of 4

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Channel Barrel-to-Flange / Close proximity of Flange transition to the weld limits attaining full coverage from the flange side of weld. The ultrasonic interrogation of the channel shell to flange weld could only be partially obtained from flange side due to the component configuration and close proximity of the weld to the flange transition. The nondestructive examination (NDE) techniques and procedures used incorporated similar examination techniques qualified under Appendix III of the ASME Section XI Code, as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-A - Code Item C1.10

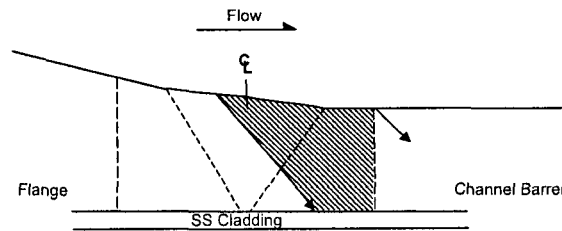
Page 2 of 4


CCNPP

Component ID:	SCHE-11-1	NDE Report No.:	2000BU011
LTP No.:	252000	Summary No.:	252000
Coverage Sketch No.:	1	MO No.:	1199904472
Exam Area:	360° (147.5")	Scale:	100%
Exam Angle / Direction:	45° Ax Upst		

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Axial Coverage from Upstream side = 43%

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-A - Code Item C1.10

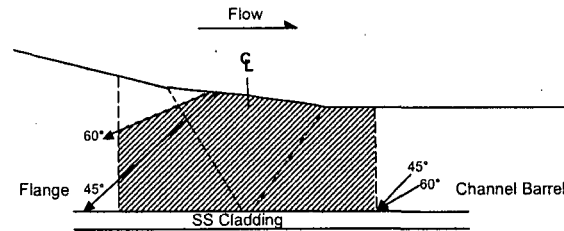
Page 3 of 4


CCNPP

Component ID:	SCH-11-1	NDE Report No.:	2000BU011
LTP No.:	252000	Summary No.:	252000
Coverage Sketch No.:	2	MO No.:	1199904472
Exam Area:	360° (147.5")	Scale:	100%
Exam Angle / Direction:	45° / 60° Ax Dnst		

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° / 60° Axial Coverage from Downstream side = 94%

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-A - Code Item C1.10

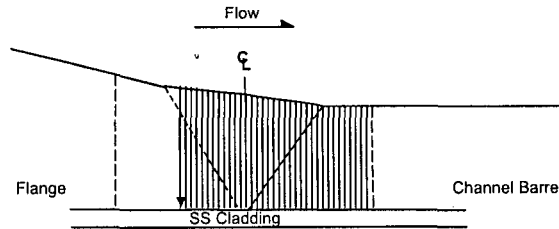
Page 4 of 4


CCNPP

Component ID: SCHE-11-1 NDE Report No.: 2000BU011
LTP No.: 252000 Summary No.: 252000
Coverage Sketch No: 3 MO No.: 1199904472
Exam Area: 360° (147.5") Scale: 100%
Exam Angle / Direction: 45° CW / CCW

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° CW / CCW Coverage = 75%

Coverage Calc	
Exam	Coverage
Ax Upst	43%
Ax Dnst	94%
CW	75%
CCW	75%
Total:	287%
Total / 4:	<u>71.8%</u>

Responses to Request for Additional Information
Summary No.: 252350 Comp ID: SCHE-12-2 Page 1 of 3

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Channel Barrel-to-Flange / Close proximity of Flange transition to the weld limits attaining full coverage from the flange side of weld. The ultrasonic interrogation of the channel shell to flange weld could only be partially obtained from flange side due to the component configuration and close proximity of the weld to the flange transition. The nondestructive examination (NDE) techniques and procedures used incorporated similar examination techniques qualified under Appendix III of the ASME Section XI Code, as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) andinsonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-A - Code Item C1.10

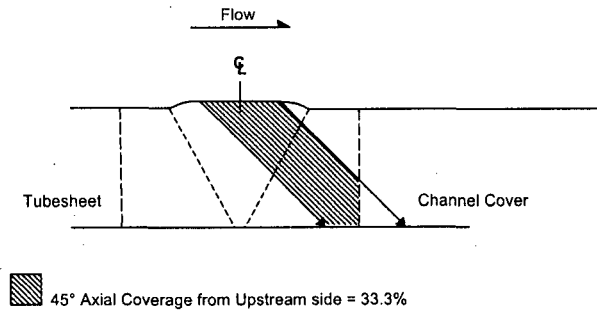
Page 2 of 3

CCNPP

Component ID:	SCHE-12-2	NDE Report No.:	CC08-1U-005
LTP No.:	252350	Summary No.:	252350
Coverage Sketch No.:	1	MO No.:	1200702218
Exam Area:	360° (141.37")	Scale:	100%
Exam Angle / Direction:	45° Ax Upst		

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-A - Code Item C1.10

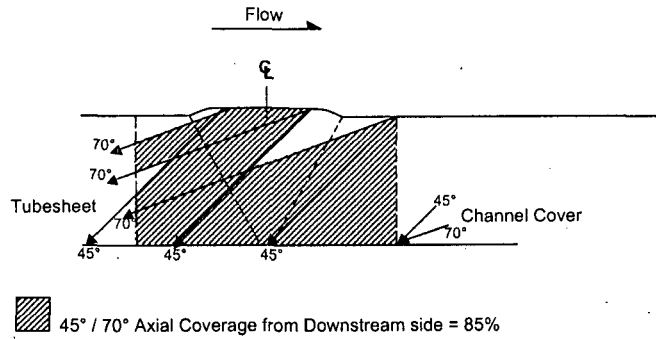
Page 3 of 3

CCNPP

Component ID: SCHE-12-2	NDE Report No.: CC08-1U-005
LTP No.: 252350	Summary No.: 252350
Coverage Sketch No: 2	MO No.: 1200702218
Exam Area: 360° (141.37")	Scale: 100%
Exam Angle / Direction: 45° / 70° Ax Dnst	

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Calc	
Exam	Coverage
Ax Upst	33.3%
Ax Dnst	85%
CW	100%
CCW	100%
Total:	318.3%
Total / 4:	<u>79.6%</u>

Responses to Request for Additional Information
Summary No.: 252100 Comp ID: SCHE-11-N1 Page 1 of 3

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Inlet Nozzle to Shell / Due to nozzle configuration coverage of the nozzle side base metal and weld was limited. The nozzle-to-shell weld is primarily accessible from the shell side based on the component configuration. The nozzle scanning surface is essentially perpendicular to the shell which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The NDE techniques and procedures used incorporated similar examination techniques qualified under Appendix III of the ASME Section XI Code, as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-B - Code Item C2.21

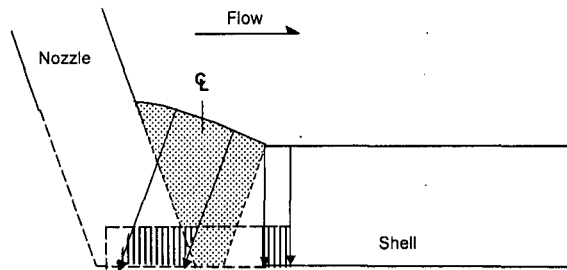
Page 2 of 3

CCNPP


Component ID: SCHE-11-N1	NDE Report No.: 2000BU010
LTP No.: 252100	Summary No.: 252100
Coverage Sketch No: 2	MO No.: 1199904472
Exam Area: 360°	Scale: 100%
Exam Angle / Direction: 45° CW / CCW	

Diameter: 10"
 Thickness: 1.125"
 Material: S/S to CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Area: $(1.75 \times 0.4) = 0.70 \text{ in}^2$
 Examined: $(0.63 \times 0.4) + (0.25 \times 0.4) = 0.35 \text{ in}^2 = 50\%$

 45° / 60° CW / CCW Coverage = 50%

Coverage Calc	
Exam	Coverage
Ax Upst	0%
Ax Dnst	80%
CW	50%
CCW	50%
Total:	180%
Total / 4:	45%

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-B - Code Item C2.21

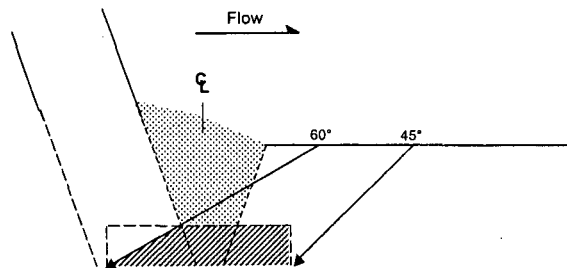
Page 3 of 3

CCNPP


Component ID:	SCHE-11-N1	NDE Report No.:	2000BU010
LTP No.:	252100	Summary No.:	252100
Coverage Sketch No.:	1	MO No.:	1199904472
Exam Area:	360°	Scale:	100%
Exam Angle / Direction:	45° / 60° Ax Dnst		

Diameter: 10"
Thickness: 1.125"
Material: S/S to CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Area: $(1.75 \times 0.4) = 0.70 \text{ in}^2$
Examined: $0.70 - (0.7 \times 0.4)/2 = 0.56 \text{ in}^2 = 80\%$

 45° / 60° Axial Coverage from Downstream side = 80%

45° / 70° Axial Coverage from Upstream side = 0%

Responses to Request for Additional Information
Summary No.: 252450 Comp ID: SCHE-12-N2 Page 1 of 3

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Outlet Nozzle to Shell / Due to nozzle configuration coverage of the nozzle side base metal and weld was limited. The nozzle-to-shell weld is primarily accessible from the shell side based on the component configuration. The nozzle scanning surface is essentially perpendicular to the shell which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The NDE techniques and procedures used incorporated similar examination techniques qualified under Appendix III of the ASME Section XI Code, as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-B - Code Item C2.21

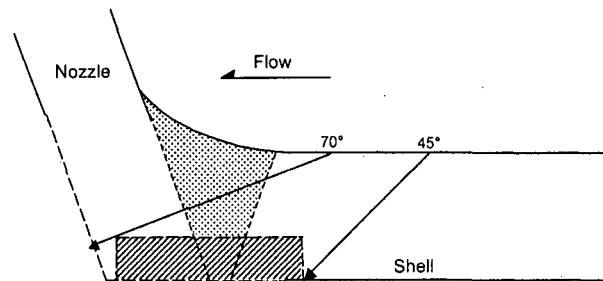
Page 2 of 3

CCNPP

Component ID:	SCHE-12-N2	NDE Report No.:	CC08-1U-003
LTP No.:	252450	Summary No.:	252450
Coverage Sketch No.:	1	MO No.:	1200702218
Exam Area:	360° (40")	Scale:	100%
Exam Angle / Direction:	45° / 70° Ax Upst		

Diameter: 10"
Thickness: 1.125"
Material: S/S to CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45° / 70° Axial Coverage from Upstream side = 100%

45° / 70° Axial Coverage from Downstream side = 0%

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category C-B - Code Item C2.21

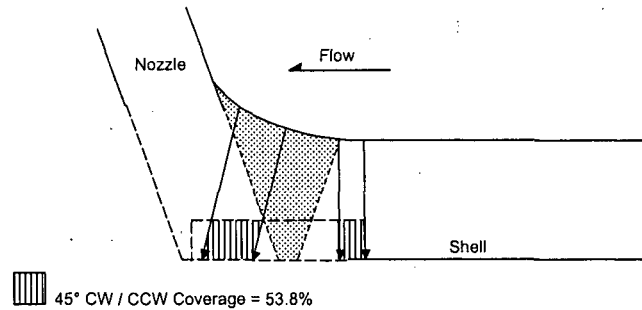
Page 3 of 3

CCNPP

Component ID: SCHE-12-N2 **NDE Report No.:** CC08-1U-003
LTP No.: 252450 **Summary No.:** 252450
Coverage Sketch No: 2 **MO No.:** 1200702218
Exam Area: 360° (40") **Scale:** 100%
Exam Angle / Direction: 45° CW / CCW

Diameter: 10"
Thickness: 1.125"
Material: S/S to CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Calc	
Exam	Coverage
Ax Upst	100%
Ax Dnst	0%
CW	53.8%
CCW	53.8%
Total:	207.6%
Total / 4:	51.9%

Responses to Request for Additional Information
Summary No.: 417150 Comp ID: 12-SC-1215-18 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Tee / Coverage limited by intrados of adjacent Tee-connection. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.11

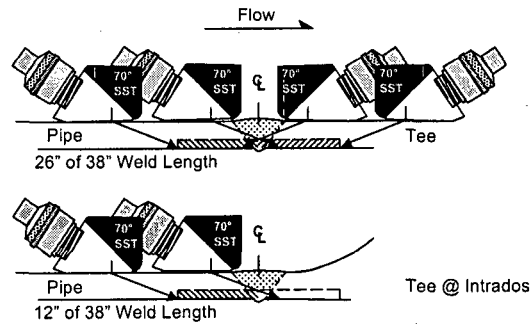
Page 2 of 2

CCNPP

Component ID: 12-SC-1215-18	NDE Report No.: CC08-1U-007
LTP No.: 417150	Summary No.: 417150
Coverage Sketch No: NA	MO No.: 1200702220
Exam Area: Lower	Scale: 100%
Exam Angle: 70°	

Diameter: 12"
Thickness: 0.33"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Calc	
Exam	Coverage
Ax Upst	100%
Ax Dnst	68%
Circ Upst	100%
Circ Dnst	68%
Total:	336%
Total / 4:	84%

Responses to Request for Additional Information
Summary No.: 307150 Comp ID: 14-SI-1201-1 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Valve to Elbow / Due to taper on valve body no coverage was attainable from valve side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

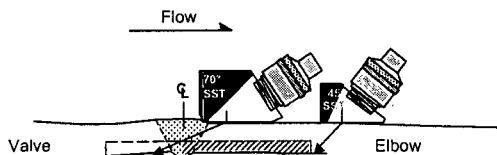
Page 2 of 2

CCNPP

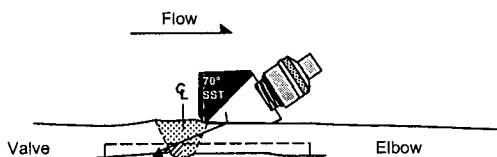
Component ID:	14-SI-1201-1	NDE Report No.:	CC06-1U-009
LTP No.:	307150	Summary No.:	307150
Coverage Sketch No:	NA	MO No.:	1200500727
Exam Area:	Lower	Scale:	100%
Exam Angle:	45° / 70°		

Diameter: 14"
Thickness: 0.25"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.



Best effort exam on far side of weld – no coverage credit taken.

Responses to Request for Additional Information
Summary No.: 310050 Comp ID: 12-SI-1214-3 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Tee / No Code coverage was credited for scanning performed from Cast Stainless Steel Side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1:20

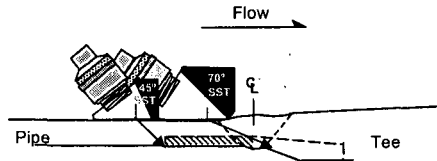
Page 2 of 2

CCNPP

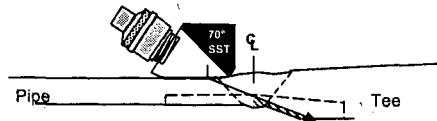
Component ID:	12"-SI-1214-3	NDE Report No.:	CC06-1U-005
LTP No.:	310050	Summary No.:	310050
Coverage Sketch No:	NA	MO No.:	1200500736
Exam Area:	Lower	Scale:	100%
Exam Angle:	45° / 70°		

Diameter: 12"
Thickness: 0.28"
Material: S/S to CASS
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.



Best effort exam on far side of weld – no coverage credit taken.

Responses to Request for Additional Information
Summary No.: 310200 Comp ID: 12-SI-1214-5 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Tee / No Code coverage was credited for scanning performed from Cast Stainless Steel Side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

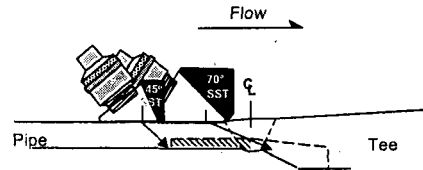
Page 2 of 2

CCNPP

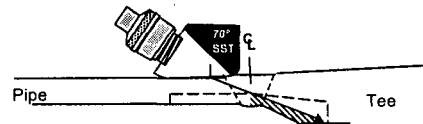
Component ID:	12"-SI-1214-5	NDE Report No.:	CC06-1U-006
LTP No.:	310200	Summary No.:	310200
Coverage Sketch No:	NA	MO No.:	1200500736
Exam Area:	Lower	Scale:	100%
Exam Angle:	45° / 70°		

Diameter: 12"
Thickness: 0.28"
Material: S/S to CASS
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.



Best effort exam on far side of weld - no coverage credit taken.

Responses to Request for Additional Information
Summary No.: 310650 Comp ID: 12-SI-1214-12 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Elbow to Valve / Due to taper on valve body no coverage was attainable from valve side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

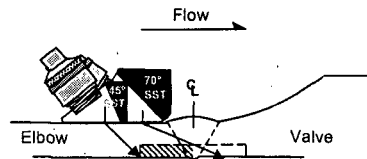
Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

Page 2 of 2

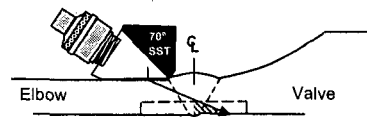
CCNPP

Component ID: 12-SI-1214-12	NDE Report No.: 20021BU002
LTP No.: 310650	Summary No.: 310650
Coverage Sketch No: NA	MO No.: 1200100734
Exam Area: Lower	Scale: 100%
Exam Angle: 45° / 70°	

Diameter: 12"
Thickness: 0.25"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel



Exam Coverage = 50% as per single sided access rules.



Best effort exam on far side of weld – no coverage credit taken.

Responses to Request for Additional Information
Summary No.: 312250 Comp ID: 12-SI-1216-1 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Tee to Pipe / Coverage limited by close proximity of intrados of Tee. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

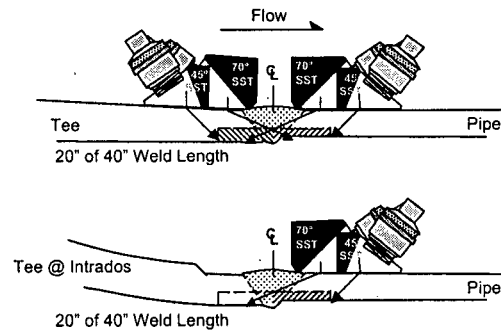
Page 2 of 2

CCNPP

Component ID: 12"-SI-1216-1 **NDE Report No.:** 2004BU003
LTP No.: 312250 **Summary No.:** 312250
Coverage Sketch No: NA **MO No.:** 1200300696
Exam Area: Lower **Scale:** 100%
Exam Angle: 45° / 70°

Diameter: 12"
Thickness: 0.25"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Calc	
Exam	Coverage
Ax Upst	50%
Ax Dnst	100%
Circ Upst	50%
Circ Dnst	100%
Total:	300%
Total / 4:	75%

Responses to Request for Additional Information
Summary No.: 336200 Comp ID: 4-SI-1206-7 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Valve to Pipe / Due to taper on valve body no coverage was attainable from valve side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

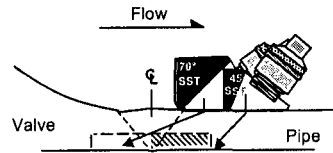
Page 2 of 2

CCNPP

Component ID: 4-SI-1206-7	NDE Report No.: 96-UT-1-14
LTP No.: 336200	Summary No.: 336200
Coverage Sketch No: NA	MO No.: 1199502020
Exam Area: Lower	Scale: 100%
Exam Angle: 45° / 70°	

Diameter: 4"
Thickness: 0.38"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.

Responses to Request for Additional Information
Summary No.: 338850 Comp ID: 4-SI-1209-1 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Branch to Elbow / Due to taper on Branch Connection (nozzle) no coverage was attainable from Branch side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

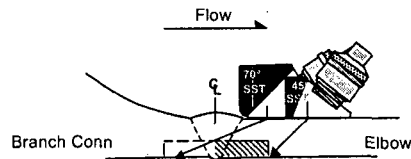
Page 2 of 2

CCNPP

Component ID:	4-SI-1209-1	NDE Report No.:	2004BU005
LTP No.:	338850	Summary No.:	338850
Coverage Sketch No:	NA	MO No.:	1200300689
Exam Area:	Lower	Scale:	100%
Exam Angle:	45° / 70°		

Diameter: 4"
Thickness: 0.38"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.

Responses to Request for Additional Information
Summary No.: 416050 Comp ID: 12-SC-1213-1 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Valve to Tee / Due to taper on valve body no coverage was attainable from valve side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

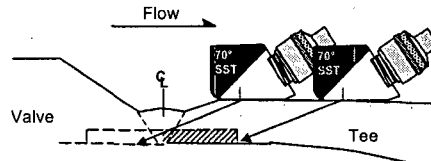
Page 2 of 2

CCNPP

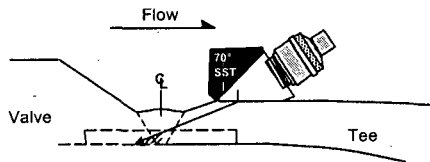
Component ID: 12-SC-1213-1	NDE Report No.: CC08-1U-004
LTP No.: 416050	Summary No.: 416050
Coverage Sketch No: NA	MO No.: 1200702211
Exam Area: Lower	Scale: 100%
Exam Angle: 70°	

Diameter: 10"
Thickness: 0.33"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.



Best effort exam on far side of weld – no coverage credit taken.

Responses to Request for Additional Information
Summary No.: 417200 Comp ID: 10-SC-1214-1 Page 1 of 5

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Tee to Pipe / Integral attachments on pipe side of weld in close proximity to weld obstructed transducer. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

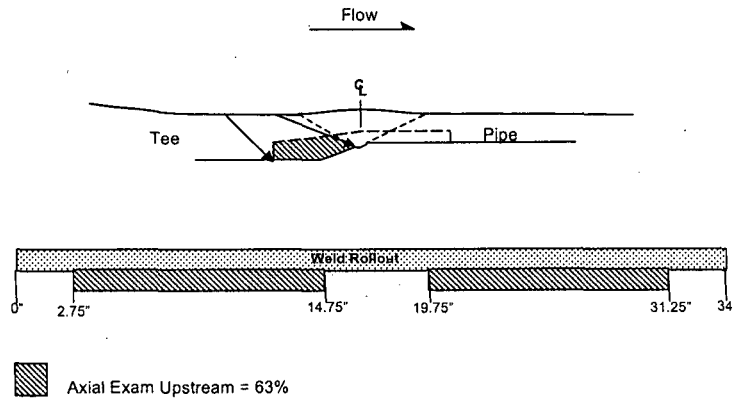
Page 2 of 5

CCNPP

Component ID: 10-SC-1214-1 NDE Report No.: 2004BU012
LTP No.: 417200 Summary No.: 417200
Coverage Sketch No: 1 MO No.: 1200300695
Exam Area: Ax Upst Scale: 100%
Exam Angle: 45° / 70°

Diameter: 10"
Thickness: 0.25"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Calculation:

- Upstream exam box = $(0.85 \times 0.20) = 0.170 \text{ in}^2$
- Examined $0.155 \text{ in}^2 = 91\%$
- 91% (23.5" of 34" weld length) = 63%

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

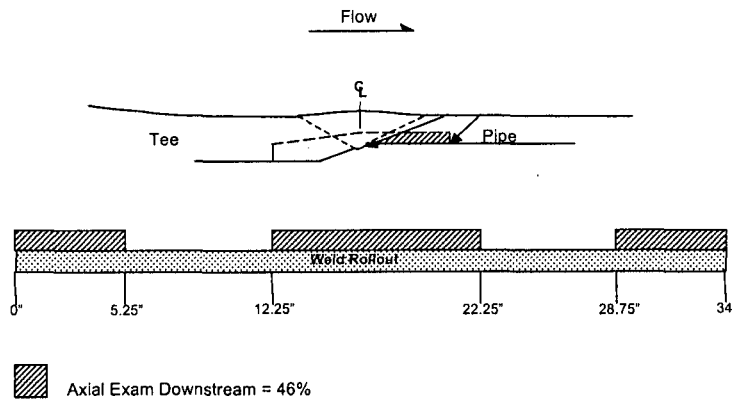
Page 3 of 5

CCNPP

Component ID: 10-SC-1214-1 **NDE Report No.:** 2004BU012
LTP No.: 417200 **Summary No.:** 417200
Coverage Sketch No: 2 **MO No.:** 1200300695
Exam Area: Ax Dnst **Scale:** 100%
Exam Angle: 45° / 70°

Diameter: 10"
Thickness: 0.25"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Calculation:

- Upstream exam box = $(0.85 \times 0.09) = 0.077 \text{ in}^2$
- Examined $0.059 \text{ in}^2 = 77\%$
- $77\% (20.5" \text{ of } 34" \text{ weld length}) = 46\%$

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

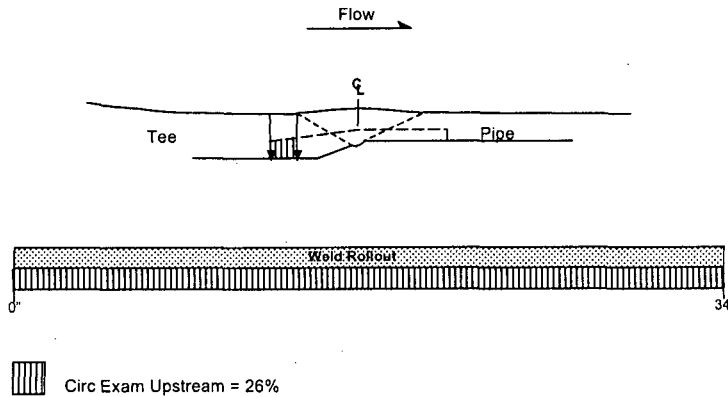
Page 4 of 5

CCNPP

Component ID:	10-SC-1214-1	NDE Report No.:	2004BU012
LTP No.:	417200	Summary No.:	417200
Coverage Sketch No:	3	MO No.:	1200300695
Exam Area:	Circ Upst	Scale:	100%
Exam Angle:	45°		

Diameter: 10"
Thickness: 0.25"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Calculation:

- Upstream exam box = $(0.85 \times 0.20) = 0.170 \text{ in}^2$
- Examined $0.063 \text{ in}^2 = 37\%$
- $37\% (23.5" \text{ of } 34" \text{ weld length}) = \underline{26\%}$

Enclosure 2 - Relief Request ISI-25 for CCNPP Unit 1 Class 2 Components
Code Category R-A - Code Item R1.20

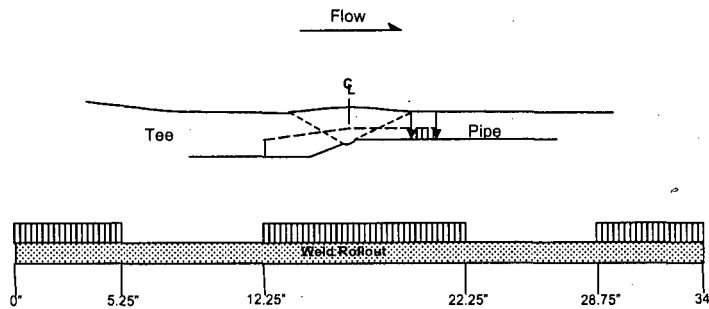
Page 5 of 5


CCNPP

Component ID: 10-SC-1214-1	NDE Report No.: 2004BU012
LTP No.: 417200	Summary No.: 417200
Coverage Sketch No: 4	MO No.: 1200300695
Exam Area: Circ Dnst	Scale: 100%
Exam Angle: 45°	

Diameter: 10"
Thickness: 0.25"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 Circ Exam Downstream = 18%

Calculation:

- Upstream exam box = $(0.85 \times 0.09) = 0.077 \text{ in}^2$
- Examined $0.023 \text{ in}^2 = 30\%$
- 30% (20.5" of 34" weld length) = 18%

Coverage Calc

Exam	Coverage
Ax Upst	63%
Ax Dnst	46%
Circ Upst	26%
Circ Dnst	18%

Total:	153%
Total / 4:	38%

ENCLOSURE 3

Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components

Responses to Request for Additional Information
Summary No.: 103080 Comp ID: 4-404 Page 1 of 8

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

PZR Surge Nozzle to Lower Head / Due to nozzle configuration coverage of nozzle side base metal and weld was limited. The pressure nozzle-to-vessel head welds are accessible only from the head side based on the nozzle curvature. The scanning surface of the nozzle is essentially perpendicular to the head surface which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The nondestructive examination (NDE) techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

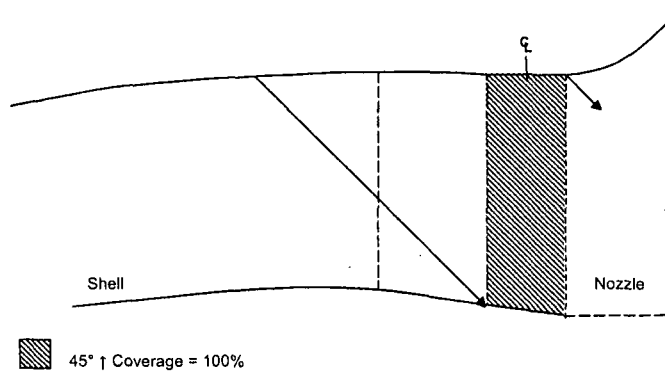
Page 2 of 8

CCNPP

Component ID: 4 - 404	NDE Report No.: 2001BU012
LTP No.: 103080	Summary No.: 103080
Coverage Sketch No: 1	MO No.: 2200002409
Exam Area: Weld Metal	Scale: 50%
Exam Angle: 45°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle: ↑		
Exam Area:	65.5		6.15		4.6		1853	Away from Nozzle: ↓		
Weld Metal:	65.5		1.55		4.6		467	Clockwise: ↻		
Base Metal:	65.5		4.6		4.6		1386	Counter Clockwise: ↺		

Weld Metal: Volume = 467.00 Cubic Inches					Base Metal: Volume = 1386.00 Cubic Inches						
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 467.00	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1386.00
1	45°↑	1			100.00%	1	45°↑	6			71.00%
2	45°↑	2			23.00%	2	60°↑	7			80.00%
3	60°↑	3			100.00%	3	45°↔	8			50.00%
4	60°↑	4			13.00%	4	45°↔	8			50.00%
5	45°↔	5			100.00%	5	60°↔	8			50.00%
6	45°↔	5			100.00%	6	60°↔	8			50.00%
7	60°↔	5			100.00%	7	0° WRV	8			50.00%
8	60°↔	5			100.00%						
9	0° WRV	5			100.00%						
Total Beams: 9			Total Percent:		736.00%	Total Beams: 7			Total Percent:		401.00%
Total Weld Metal Coverage:					81.78%	Total Base Metal Coverage:					57.29%

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	81.78%		467.00		1853.00
	Base Metal:	57.29%		1386.00		1853.00
Total Exam Coverage =						63.46%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

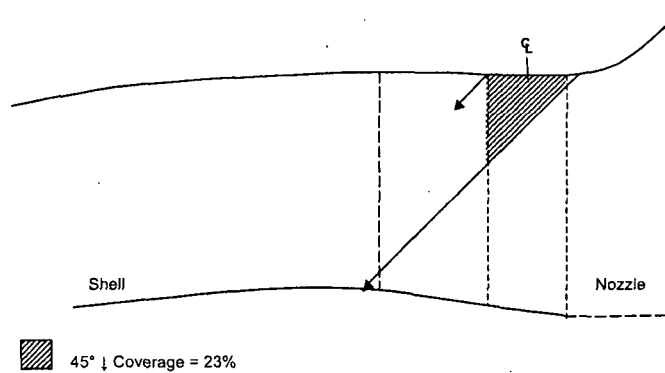
Page 3 of 8

CCNPP

Component ID: 4 - 404	NDE Report No.: 2001BU012
LTP No.: 103080	Summary No.: 103080
Coverage Sketch No: 2	MO No.: 2200002409
Exam Area: Weld Metal	Scale: 50%
Exam Angle: 45°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle: ↑	
Exam Area:	65.5		6.15		4.6		1853	Away from Nozzle: ↓	
Weld Metal:	65.5		1.55		4.6		467	Clockwise: ←	
Base Metal:	65.5		4.6		4.6		1386	Counter Clockwise: →	

Weld Metal: Volume = 467.00 Cubic Inches					Base Metal: Volume = 1386.00 Cubic Inches						
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 467.00	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1386.00
1	45°↑	1			100.00%	1	45°↑	6			71.00%
2	45°↓	2			23.00%	2	60°↑	7			80.00%
3	60°↑	3			100.00%	3	45°←	8			50.00%
4	60°↓	4			13.00%	4	45°→	8			50.00%
5	45°←	5			100.00%	5	60°←	8			50.00%
6	45°→	5			100.00%	6	60°→	8			50.00%
7	60°←	5			100.00%	7	0° WRV	8			50.00%
8	60°→	5			100.00%						
9	0° WRV	5			100.00%						
Total Beams: 9			Total Percent:		736.00%	Total Beams: 7			Total Percent:		401.00%
Total Weld Metal Coverage:					81.78%	Total Base Metal Coverage:					57.29%

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	81.78%		467.00		1853.00		20.61%
Base Metal:	57.29%		1386.00		1853.00		42.85%
Total Exam Coverage =					63.46%		

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

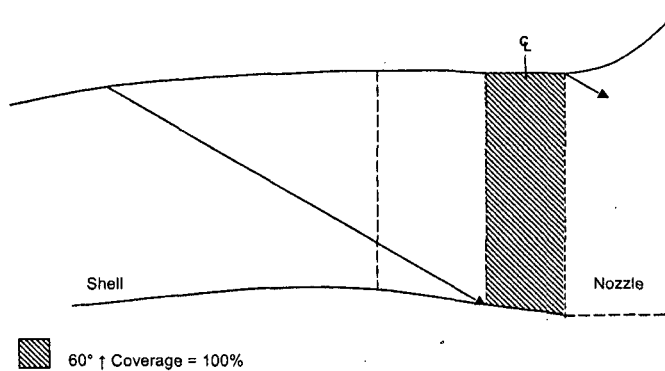
Page 4 of 8

CCNPP

Component ID: 4 - 404	NDE Report No.: 2001BU012
LTP No.: 103080	Summary No.: 103080
Coverage Sketch No: 3	MO No.: 2200002409
Exam Area: Weld Metal	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)			
Exam Area:	65.5		6.15		4.6		1853	Toward Nozzle:	↑	
Weld Metal:	65.5		1.55		4.6		467	Away from Nozzle:	↓	
Base Metal:	65.5		4.6		4.6		1386	Clockwise:	↻	
								Counter Clockwise:	↺	

Weld Metal: Volume = 467.00 Cubic Inches					Base Metal: Volume = 1386.00 Cubic Inches						
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 467.00	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1386.00
1	45°↑	1			100.00%	1	45°↑	6			71.00%
2	45°↑	2			23.00%	2	60°↑	7			80.00%
3	60°↑	3			100.00%	3	45°↔	8			50.00%
4	60°↑	4			13.00%	4	45°↔	8			50.00%
5	45°↔	5			100.00%	5	60°↔	8			50.00%
6	45°↔	5			100.00%	6	60°↔	8			50.00%
7	60°↔	5			100.00%	7	0° WRV	8			50.00%
8	60°↔	5			100.00%						
9	0° WRV	5			100.00%						
Total Beams: 9			Total Percent:		736.00%	Total Beams: 7			Total Percent:		401.00%
Total Weld Metal Coverage:					81.78%	Total Base Metal Coverage: 57.29%					

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	81.78%		467.00		1853.00
	Base Metal:	57.29%		1386.00		1853.00
Total Exam Coverage =						63.46%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

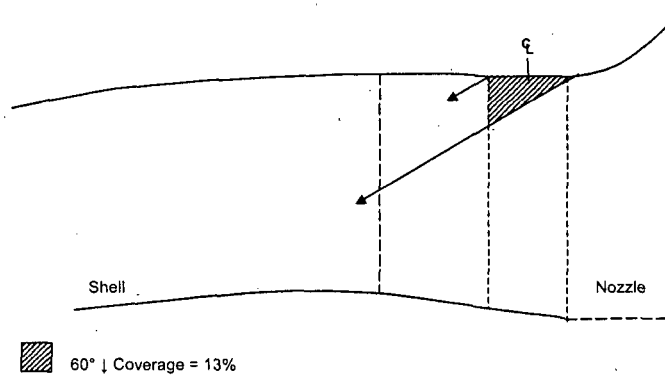
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CCNPP

Component ID: 4 - 404	NDE Report No.: 2001BU012
LTP No.: 103080	Summary No.: 103080
Coverage Sketch No: 4	MO No.: 2200002409
Exam Area: Weld Metal	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions						Result (Cub. In.)	Beam Directions		
	Length	x	Width	x	Thickness		Toward Nozzle:		
Exam Area:	65.5		6.15		4.6	1853	Away from Nozzle:		
Weld Metal:	65.5		1.55		4.6	467	Clockwise:		
Base Metal:	65.5		4.6		4.6	1386	Counter Clockwise:		
Weld Metal: Volume = 467.00 Cubic Inches						Base Metal: Volume = 1386.00 Cubic Inches			
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 467.00	Beam No.	Angle	Sketch	Coverage (Cub. In.)
1	45°↑	1			100.00%	1	45°↑	6	
2	45°↓	2			23.00%	2	60°↑	7	
3	60°↑	3			100.00%	3	45°←	8	
4	60°↓	4			13.00%	4	45°→	8	
5	45°←	5			100.00%	5	60°←	8	
6	45°→	5			100.00%	6	60°→	8	
7	60°←	5			100.00%	7	0° WRV	8	
8	60°→	5			100.00%				
9	0° WRV	5			100.00%				
Total Beams: 9						Total Beams: 7			
Total Percent: 736.00%						Total Percent: 401.00%			
Total Weld Metal Coverage: 81.78%						Total Base Metal Coverage: 57.29%			
Combined Coverage									
	Coverage Percent	x	Volume	+	Total Volume	Result			
Weld Metal:	81.78%		467.00		1853.00	20.61%			
Base Metal:	57.29%		1386.00		1853.00	42.85%			
						Total Exam Coverage = 63.46%			

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

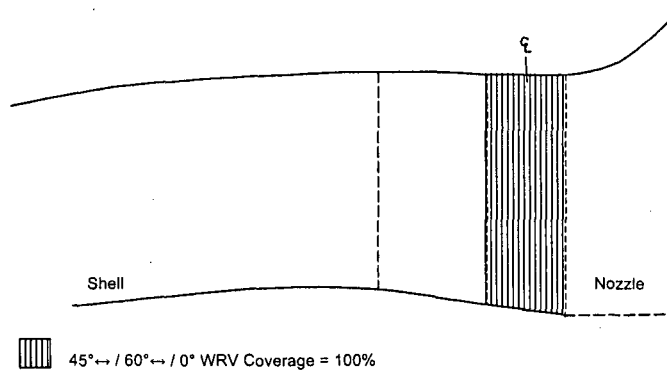
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CCNPP

Component ID: 4 - 404	NDE Report No.: 2001BU012
LTP No.: 103080	Summary No.: 103080
Coverage Sketch No.: 5	MO No.: 2200002409
Exam Area: Weld Metal	Scale: 50%
Exam Angle: 45° / 60° / 0° WRV	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle: ↑		
Exam Area:	65.5		6.15		4.6		1853	Away from Nozzle: ↓		
Weld Metal:	65.5		1.55		4.6		467	Clockwise: ↻		
Base Metal:	65.5		4.6		4.6		1386	Counter Clockwise: ↺		

Weld Metal: Volume = 467.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 467.00
1	45°↑	1			100.00%
2	45°↓	2			23.00%
3	60°↑	3			100.00%
4	60°↓	4			13.00%
5	45°↔	5			100.00%
6	45°↔	5			100.00%
7	60°↔	5			100.00%
8	60°↔	5			100.00%
9	0° WRV	5			100.00%
Total Beams: 9			Total Percent:		736.00%
Total Weld Metal Coverage:					81.78%

Base Metal: Volume = 1386.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1386.00
1	45°↑	6			71.00%
2	60°↑	7			80.00%
3	45°↔	8			50.00%
4	45°↔	8			50.00%
5	60°↔	8			50.00%
6	60°↔	8			50.00%
7	0° WRV	8			50.00%
Total Beams: 7			Total Percent:		401.00%
Total Base Metal Coverage:					57.29%

Combined Coverage						
	Coverage Percent	x	Volume	+	Total Volume	=
Weld Metal:	81.78%		467.00		1853.00	Result 20.61%
Base Metal:	57.29%		1386.00		1853.00	42.85%
Total Exam Coverage =						63.46%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

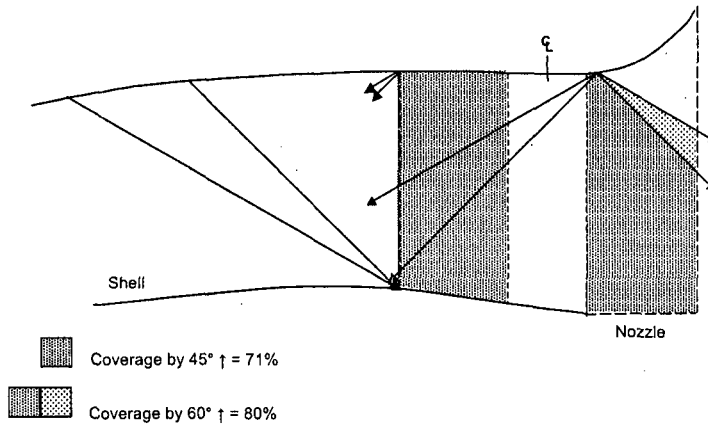
Page 7 of 8

CCNPP

Component ID: 4 - 404	NDE Report No.: 2001BU012
LTP No.: 103080	Summary No.: 103080
Coverage Sketch No: 6	MO No.: 2200002409
Exam Area: Base Metal	Scale: 50%
Exam Angle: 45° / 60°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle:	↑
Exam Area:	65.5		6.15		4.6		1853	Away from Nozzle:	↓
Weld Metal:	65.5		1.55		4.6		467	Clockwise:	↻
Base Metal:	65.5		4.6		4.6		1386	Counter Clockwise:	↻

Weld Metal: Volume = 467.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total 467.00
1	45°↑	1		100.00%
2	45°↓	2		23.00%
3	60°↑	3		100.00%
4	60°↓	4		13.00%
5	45°→	5		100.00%
6	45°←	5		100.00%
7	60°→	5		100.00%
8	60°←	5		100.00%
9	0° WRV	5		100.00%
Total Beams: 9				
Total Percent:			736.00%	
Total Weld Metal Coverage:			81.78%	

Base Metal: Volume = 1386.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total 1386.00
1	45°↑	6		71.00%
2	60°↑	7		80.00%
3	45°→	8		50.00%
4	45°←	8		50.00%
5	60°→	8		50.00%
6	60°←	8		50.00%
7	0° WRV	8		50.00%
Total Beams: 7				
Total Percent:			401.00%	
Total Base Metal Coverage:			57.29%	

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume
Weld Metal:	81.78%		467.00		1853.00
Base Metal:	57.29%		1386.00		1853.00
Total Exam Coverage =					63.46%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

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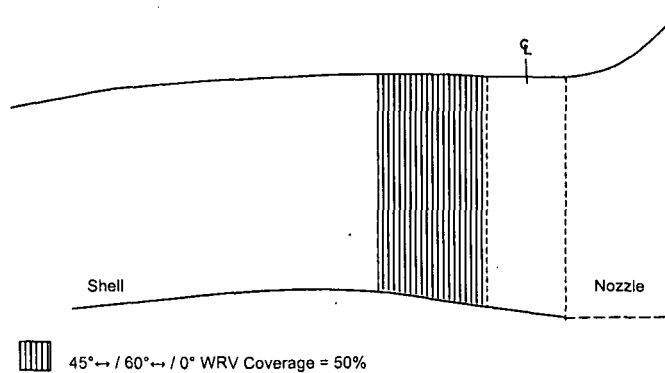
CCNPP

Component ID: 4 - 404
 LTP No.: 103080
 Coverage Sketch No: 7
 Exam Area: Base Metal
 Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: 2001BU012
 Summary No.: 103080
 MO No.: 2200002409
 Scale: 50%

Diameter: On Head
 Thickness: 4.4"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle: ↑	
Exam Area:	65.5		6.15		4.6		1853	Away from Nozzle: ↓	
Weld Metal:	65.5		1.55		4.6		467	Clockwise: ↻	
Base Metal:	65.5		4.6		4.6		1386	Counter Clockwise: ↺	

Weld Metal: Volume = 467.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total
1	45°↑	1		100.00%
2	45°↑	2		23.00%
3	60°↑	3		100.00%
4	60°↓	4		13.00%
5	45°↖	5		100.00%
6	45°↗	5		100.00%
7	60°↖	5		100.00%
8	60°↗	5		100.00%
9	0° WRV	5		100.00%
Total Beams: 9				
Total Percent: 736.00%				
Total Weld Metal Coverage: 81.78%				

Base Metal: Volume = 1386.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total
1	45°↑	6		71.00%
2	60°↑	7		80.00%
3	45°↖	8		50.00%
4	45°↗	8		50.00%
5	60°↖	8		50.00%
6	60°↗	8		50.00%
7	0° WRV	8		50.00%
Total Beams: 7				
Total Percent: 401.00%				
Total Base Metal Coverage: 57.29%				

Combined Coverage				
	Coverage Percent	x	Volume	=
Weld Metal:	81.78%		467.00	
Base Metal:	57.29%		1386.00	
Total Exam Coverage = 63.46%				

Responses to Request for Additional Information
Summary No.: 103090 Comp ID: 4-405 Page 1 of 8

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

PZR Spray Nozzle to Upper Head / Due to nozzle configuration coverage of nozzle side base metal and weld was limited. The pressure nozzle-to-vessel head welds are accessible only from the head side based on the nozzle curvature. The scanning surface of the nozzle is essentially perpendicular to the head surface which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The nondestructive examination (NDE) techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

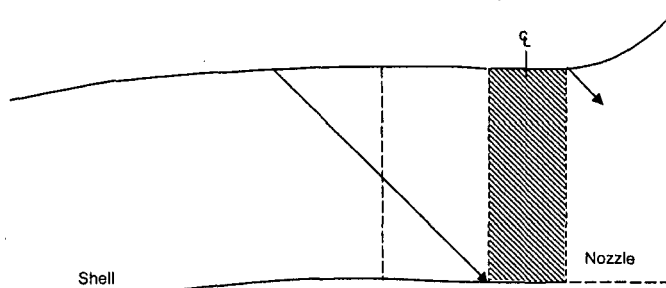
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2001BU020
LTP No.: 103090	Summary No.: 103090
Coverage Sketch No: 1	MO No.: 2200002409
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 380 in³ of 380 in³ exam area = 100%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle:	↑	
Exam Area:	57		5.85		4.3		1434.00	Away from Nozzle:	↓	
Weld Metal:	57		1.55		4.3		380.00	Clockwise:	↻	
Base Metal:	57		4.3		4.3		1054.00	Counter Clockwise:	↻	

Weld Metal: Volume = 380.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 380.00
1	45°↑	1	380.00	380.00	100.00%
2	45°↓	2	65.50	65.50	17.24%
3	60°↑	3	380.00	380.00	100.00%
4	60°↓	4	39.50	39.50	10.39%
5	45°→	5	380.00	380.00	100.00%
6	45°←	5	380.00	380.00	100.00%
7	60°→	5	380.00	380.00	100.00%
8	60°←	5	380.00	380.00	100.00%
9	0° WRV	5	380.00	380.00	100.00%
Total Beams: 9			Total Percent: 727.63%		
Total Weld Metal Coverage:			80.85%		

Base Metal: Volume = 1054.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1054.00
1 + 2	45°/60°↑↓	6	950.10	950.10	90.14%
3	45°→	7	625.01	625.01	59.30%
4	45°←	7	625.01	625.01	59.30%
5	60°→	7	625.01	625.01	59.30%
6	60°←	7	625.01	625.01	59.30%
7	0° WRV	7	625.01	625.01	59.30%
Total Beams: 7			Total Percent: 476.78%		
Total Base Metal Coverage:			68.11%		

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume
Weld Metal:	80.85%		380.00		1434.00
Base Metal:	68.11%		1054.00		1434.00
Total Exam Coverage =					71.49%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

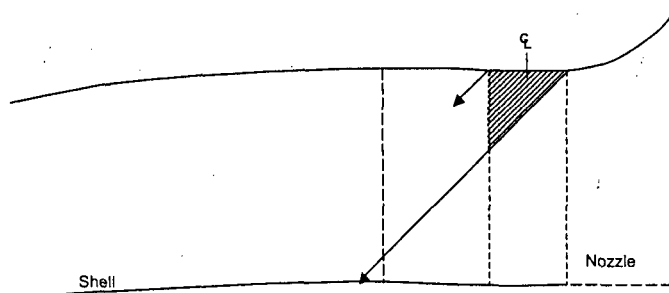
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2001BU020
LTP No.: 103090	Summary No.: 103090
Coverage Sketch No: 2	MO No.: 2200002409
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 65.5 in³ of 380 in³ exam area = 17.24%

Coverage Dimensions							Beam Directions			
Exam Area:	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle:	Away from Nozzle:	
Weld Metal:	57		1.55		4.3		380.00			
Base Metal:	57		4.3		4.3		1054.00			
Weld Metal: Volume = 380.00 Cubic Inches							Base Metal: Volume = 1054.00 Cubic Inches			
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 380.00		Beam No.	Angle	Sketch	Coverage (Cub. In.)
1	45°↑	1	380.00	380.00	100.00%		1 + 2	45°/60°↑↓	6	950.10
2	45°↓	2	65.50	65.50	17.24%		3	45°←	7	625.01
3	60°↑	3	380.00	380.00	100.00%		4	45°→	7	625.01
4	60°↓	4	39.50	39.50	10.39%		5	60°←	7	625.01
5	45°←	5	380.00	380.00	100.00%		6	60°→	7	625.01
6	45°→	5	380.00	380.00	100.00%		7	0° WRV	7	625.01
7	60°←	5	380.00	380.00	100.00%					
8	60°→	5	380.00	380.00	100.00%					
9	0° WRV	5	380.00	380.00	100.00%					
Total Beams: 9							Total Beams: 7			
Total Percent: 727.63%							Total Percent: 476.78%			
Total Weld Metal Coverage: 80.85%							Total Base Metal Coverage: 68.11%			
Combined Coverage										
			Coverage Percent	x	Volume	=	Total Volume	=	Result	
			Weld Metal: 80.85%		380.00		1434.00		21.42%	
			Base Metal: 68.11%		1054.00		1434.00		50.06%	
							Total Exam Coverage = 71.49%			

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

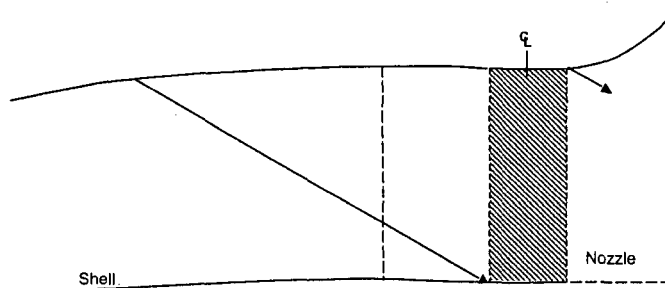
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2001BU020
LTP No.: 103090	Summary No.: 103090
Coverage Sketch No: 3	MO No.: 2200002409
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 60° Coverage = 380 in³ of 380 in³ exam area = 100%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Cub. in.)	Toward Nozzle: ↑	
Exam Area:	57		5.85		4.3		1434.00	Away from Nozzle: ↓	
Weld Metal:	57		1.55		4.3		380.00	Clockwise: ↻	
Base Metal:	57		4.3		4.3		1054.00	Counter Clockwise: ↺	

Weld Metal: Volume = 380.00 Cubic Inches						Base Metal: Volume = 1054.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 380.00	Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1054.00
1	45°↑	1	380.00	380.00	100.00%	1 + 2	45°/60°↑↓	6	950.10	950.10	90.14%
2	45°↓	2	65.50	65.50	17.24%	3	45°→	7	625.01	625.01	59.30%
3	60°↑	3	380.00	380.00	100.00%	4	45°←	7	625.01	625.01	59.30%
4	60°↓	4	39.50	39.50	10.39%	5	60°→	7	625.01	625.01	59.30%
5	45°←	5	380.00	380.00	100.00%	6	60°←	7	625.01	625.01	59.30%
6	45°→	5	380.00	380.00	100.00%	7	0° WRV	7	625.01	625.01	59.30%
7	60°→	5	380.00	380.00	100.00%						
8	60°←	5	380.00	380.00	100.00%						
9	0° WRV	5	380.00	380.00	100.00%						
Total Beams: 9			Total Percent:		727.63%	Total Beams: 7			Total Percent:		476.78%
Total Weld Metal Coverage:			80.85%			Total Base Metal Coverage:			68.11%		

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	80.85%		380.00		1434.00		21.42%
Base Metal:	68.11%		1054.00		1434.00		50.06%
Total Exam Coverage =					71.49%		

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

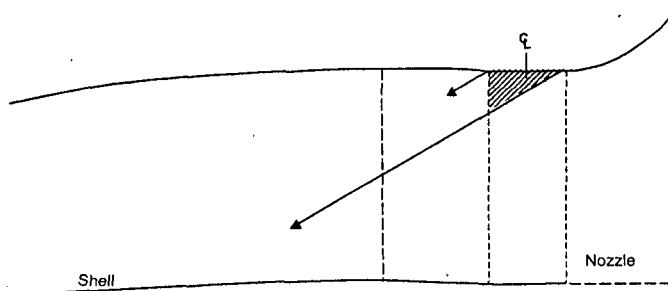
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2001BU020
LTP No.: 103090	Summary No.: 103090
Coverage Sketch No: 4	MO No.: 2200002409
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 60° Coverage = 39.5 in³ of 380 in³ exam area = 10.39%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)			
Exam Area:	57		5.85		4.3		1434.00	Toward Nozzle:	↑	
Weld Metal:	57		1.55		4.3		380.00	Away from Nozzle:	↓	
Base Metal:	57		4.3		4.3		1054.00	Clockwise:	↻	
								Counter Clockwise:	↺	

Weld Metal: Volume = 380.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 380.00
1	45°↑	1	380.00	380.00	100.00%
2	45°↑	2	65.50	65.50	17.24%
3	60°↑	3	380.00	380.00	100.00%
4	60°↑	4	39.50	39.50	10.39%
5	45°→	5	380.00	380.00	100.00%
6	45°→	5	380.00	380.00	100.00%
7	60°→	5	380.00	380.00	100.00%
8	60°→	5	380.00	380.00	100.00%
9	0° WRV	5	380.00	380.00	100.00%
Total Beams: 9			Total Percent: 727.63%		
Total Weld Metal Coverage:			80.85%		

Base Metal: Volume = 1054.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1054.00
1 + 2	45°/60°↑↓	6	950.10	950.10	90.14%
3	45°→	7	625.01	625.01	59.30%
4	45°→	7	625.01	625.01	59.30%
5	60°→	7	625.01	625.01	59.30%
6	60°→	7	625.01	625.01	59.30%
7	0° WRV	7	625.01	625.01	59.30%
Total Beams: 7			Total Percent: 476.78%		
Total Base Metal Coverage:			68.11%		

Combined Coverage					
		Coverage Percent	x	Volume	=
	Weld Metal:	80.85%		380.00	1434.00
	Base Metal:	68.11%		1054.00	1434.00
Total Exam Coverage =					71.49%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

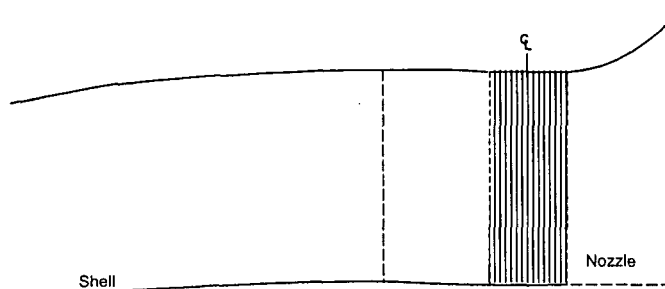
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2001BU020
LTP No.: 103090	Summary No.: 103090
Coverage Sketch No: 5	MO No.: 2200002409
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45° / 60° / 0° WRV	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° WRV Coverage = 380 in² of 380 in² exam area = 100%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)			
Exam Area:	57		5.85		4.3		1434.00	Toward Nozzle:	↑	
Weld Metal:	57		1.55		4.3		380.00	Away from Nozzle:	↓	
Base Metal:	57		4.3		4.3		1054.00	Clockwise:	↻	
								Counter Clockwise:	↺	

Weld Metal: Volume = 380.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Percent of 380.00
1	45°↑	1	380.00	100.00%
2	45°↑	2	65.50	17.24%
3	60°↑	3	380.00	100.00%
4	60°↑	4	39.50	10.39%
5	45°↔	5	380.00	100.00%
6	45°↔	5	380.00	100.00%
7	60°↔	5	380.00	100.00%
8	60°↔	5	380.00	100.00%
9	0° WRV	5	380.00	100.00%
Total Beams: 9 Total Percent: 727.63%				
Total Weld Metal Coverage:			80.85%	

Base Metal: Volume = 1054.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Percent of 1054.00
1 + 2	45°/60°↑	6	950.10	90.14%
3	45°↔	7	625.01	59.30%
4	45°↔	7	625.01	59.30%
5	60°↔	7	625.01	59.30%
6	60°↔	7	625.01	59.30%
7	0° WRV	7	625.01	59.30%
Total Beams: 7 Total Percent: 476.78%				
Total Base Metal Coverage:			68.11%	

Combined Coverage					
	Coverage Percent	x	Volume	=	Result
Weld Metal:	80.85%		380.00		1434.00
Base Metal:	68.11%		1054.00		1434.00
Total Exam Coverage =					71.49%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

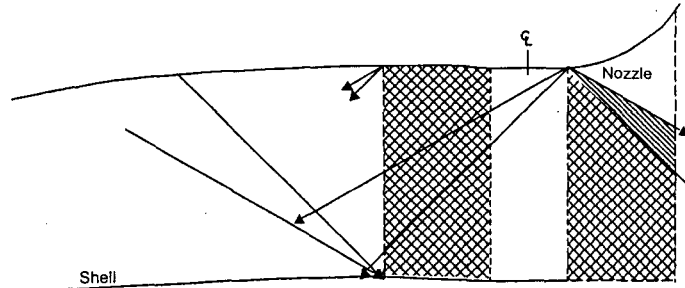
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2001BU020
LTP No.: 103090	Summary No.: 103090
Coverage Sketch No: 6	MO No.: 2200002409
Exam Area: Base Metal 360°	Scale: 50%
Exam Angle: 45° / 60°	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage by at least 2 sound beams = 922.26 in³ of 1054 in³ exam area = 87.50%.

Coverage by 1 sound beam only = 55.68 in³ of 1054 in³ exam area = 5.28%.

Total: 922.26 + (55.68 / 2) = 950.10 in³ of 1054 in³ exam area = 90.14%.

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle: ↑		
Exam Area:	57		5.85		4.3		1434.00	Away from Nozzle: ↓		
Weld Metal:	57		1.55		4.3		380.00	Clockwise: ↻		
Base Metal:	57		4.3		4.3		1054.00	Counter Clockwise: ↺		

Weld Metal: Volume = 380.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 380.00
1	45°↑	1	380.00	380.00	100.00%
2	45°↓	2	65.50	65.50	17.24%
3	60°↑	3	380.00	380.00	100.00%
4	60°↓	4	39.50	39.50	10.39%
5	45°↖	5	380.00	380.00	100.00%
6	45°↗	5	380.00	380.00	100.00%
7	60°↖	5	380.00	380.00	100.00%
8	60°↗	5	380.00	380.00	100.00%
9	0° WRV	5	380.00	380.00	100.00%
Total Beams: 9			Total Percent: 727.63%		
Total Weld Metal Coverage:			80.85%		

Base Metal: Volume = 1054.00 Cubic Inches					
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Beam Total	Percent of 1054.00
1 + 2	45°/60°↑↓	6	950.10	950.10	90.14%
3	45°↖	7	625.01	625.01	59.30%
4	45°↗	7	625.01	625.01	59.30%
5	60°↖	7	625.01	625.01	59.30%
6	60°↗	7	625.01	625.01	59.30%
7	0° WRV	7	625.01	625.01	59.30%
Total Beams: 7			Total Percent: 476.78%		
Total Base Metal Coverage:			68.11%		

Combined Coverage								
		Coverage Percent	x	Volume	+	Total Volume	=	Result
	Weld Metal:	80.85%		380.00		1434.00		21.42%
	Base Metal:	68.11%		1054.00		1434.00		50.06%
Total Exam Coverage =						71.49%		

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

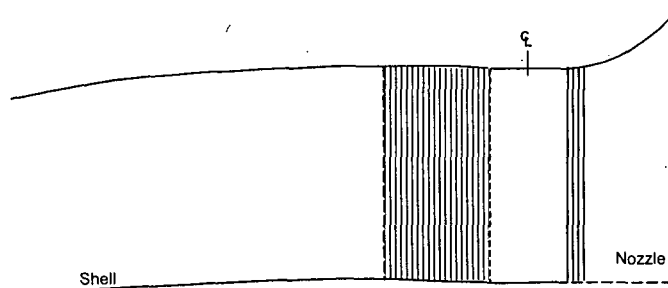
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CCNPP

Component ID: 4 - 405	NDE Report No.: 2001BU020
LTP No.: 103090	Summary No.: 103090
Coverage Sketch No: 7	MO No.: 2200002409
Exam Area: Base Metal 360°	Scale: 50%
Exam Angle: 45° / 60° / 0° WRV	

Diameter: On Head
Thickness: 4.4"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45°↔ / 60°↔ / 0° WRV Coverage = 625.01 in² of 1054 in² exam area = 59.30%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Cub. In.)	Toward Nozzle: ↑	
Exam Area:	57		5.85		4.3		1434.00	Away from Nozzle: ↓	
Weld Metal:	57		1.55		4.3		380.00	Clockwise: ←	
Base Metal:	57		4.3		4.3		1054.00	Counter Clockwise: →	

Weld Metal: Volume = 380.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Percent of Total
1	45°↑	1	380.00	100.00%
2	45°↓	2	65.50	17.24%
3	60°↑	3	380.00	100.00%
4	60°↓	4	39.50	10.39%
5	45°↔	5	380.00	100.00%
6	45°↔	5	380.00	100.00%
7	60°↔	5	380.00	100.00%
8	60°↔	5	380.00	100.00%
9	0° WRV	5	380.00	100.00%
Total Beams: 9		Total Percent:		727.63%
Total Weld Metal Coverage:				80.85%

Base Metal: Volume = 1054.00 Cubic Inches				
Beam No.	Angle	Sketch	Coverage (Cub. In.)	Percent of Total
1 + 2	45°/60°↑↓	6	950.10	90.14%
3	45°←	7	625.01	59.30%
4	45°→	7	625.01	59.30%
5	60°←	7	625.01	59.30%
6	60°→	7	625.01	59.30%
7	0° WRV	7	625.01	59.30%
Total Beams: 7		Total Percent:		476.78%
Total Base Metal Coverage:				68.11%

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume
Weld Metal:	80.85%		380.00		1434.00
Base Metal:	68.11%		1054.00		1434.00
Total Exam Coverage =					71.49%

Responses to Request for Additional Information
Summary No.: 103100 Comp ID: 16-405A Page 1 of 9

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Safety & Relief "A" Nozzle to Upper Head / Due to nozzle configuration coverage of nozzle side base metal and weld was limited. The nozzle enters the vessel at an angle thereby also limiting coverage attainable from the vessel side of the weld. The pressure nozzle-to-vessel head welds are accessible only from the head side based on the nozzle curvature. The scanning surface of the nozzle is essentially perpendicular to the head surface which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The nondestructive examination (NDE) techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

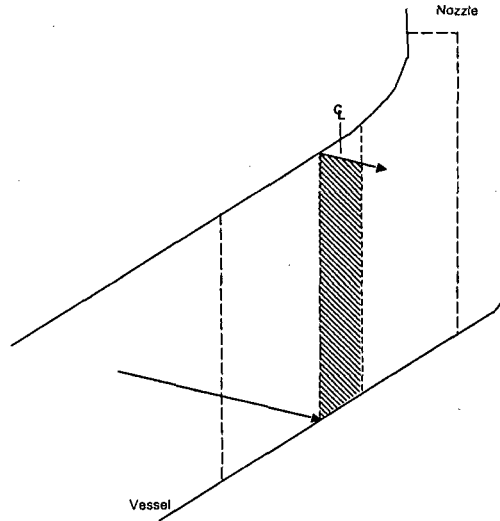
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CCNPP

Component ID: 16-405A	NDE Report No.: 2003BU041
LTP No.: 103100	Summary No.: 103100
Coverage Sketch No: 1	MO No.: 2200201399
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 96"
 Thickness: 5.0"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 4.25 in² of 4.59 in² area = 92.59%

Coverage Dimensions						Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle:	
Weld Metal:	23		1		See Sketch		4.59	Clockwise:	←
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise:	→
Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches			
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.08
2	45°↓	2	0.00	0.00	0.00%	3	45°←	7	10.53
3	60°↑	3	4.06	4.06	88.45%	4	45°→	7	10.53
4	60°↓	4	0.00	0.00	0.00%	5	60°←	7	10.53
5	45°←	5	1.38	1.38	30.07%	6	60°→	7	10.53
6	45°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53
7	60°←	5	1.38	1.38	30.07%				
8	60°→	5	1.38	1.38	30.07%				
9	0° WRV	5	1.38	1.38	30.07%				
Total Beams: 9						Total Beams: 7			
Total Percent: 331.37%						Total Percent: 398.97%			
Total Weld Metal Coverage: 36.82%						Total Base Metal Coverage: 57.00%			
Combined Coverage									
			Coverage Percent	x	Volume	+	Total Volume	=	Result
			Weld Metal: 36.82%		4.59		26.85		6.29%
			Base Metal: 57.00%		22.26		26.85		47.25%
						Total Exam Coverage = 53.55%			

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

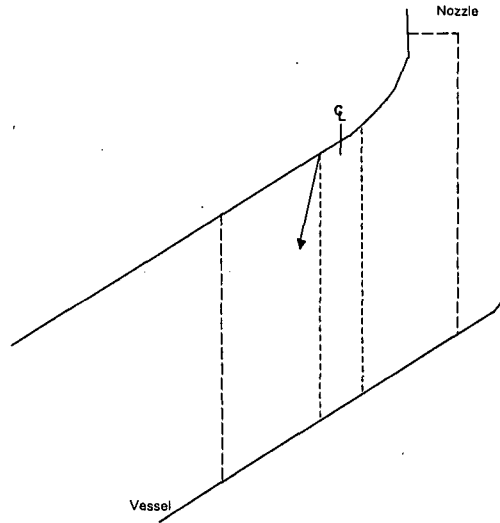
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CCNPP

Component ID: 16-405A	NDE Report No.: 2003BU041
LTP No.: 103100	Summary No.: 103100
Coverage Sketch No.: 2	MO No.: 2200201399
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 96"
 Thickness: 5.0"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45° Coverage = 0 in² of 4.59 in² area = 0%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑		
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓		
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ↻		
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: ↺		

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
2	45°↓	2	0.00	0.00	0.00%	3	45°→	7	10.53	10.53	47.30%
3	60°↑	3	4.06	4.06	88.45%	4	45°→	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°→	7	10.53	10.53	47.30%
5	45°→	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
6	45°←	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°→	5	1.38	1.38	30.07%						
8	60°←	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9						Total Beams: 7					
Total Percent: 331.37%						Total Percent: 398.97%					
Total Weld Metal Coverage: 36.82%						Total Base Metal Coverage: 57.00%					

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	36.82%		4.59		26.85
	Base Metal:	57.00%		22.26		26.85
Total Exam Coverage =						53.55%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

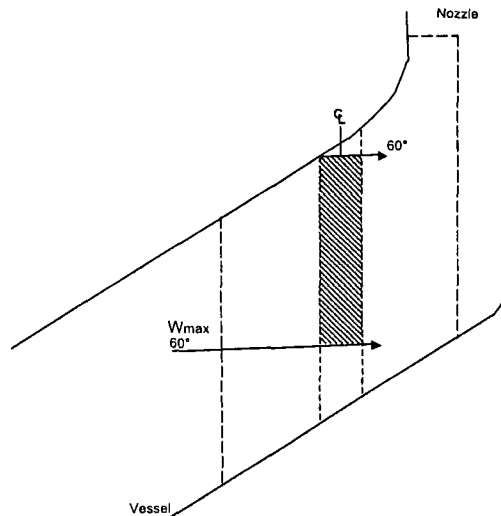
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CCNPP

Component ID: 16-405A	NDE Report No.: 2003BU041
LTP No.: 103100	Summary No.: 103100
Coverage Sketch No: 3	MO No.: 2200201399
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 96"
 Thickness: 5.0"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Note: At 180° the 60°† exam was limited by the head to shell transition.

60°† Coverage @ 180° quadrant, Wmax limited by head to shell transition. = 3.23 in²

Coverage in remaining 3 quadrants = 4.34 in²
 Average = (3.23 + 4.34 + 4.34 + 4.34) / 4 = 4.06 in²
 4.06 in² of 4.59 in² exam area = 88.45%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)			
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle:	↑	
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle:	↓	
Base Metal:	23		4.6		See Sketch		22.26	Clockwise:	↻	
								Counter Clockwise:	↺	

Weld Metal: Volume = 4.59 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59
1	45°↑	1	4.25	4.25	92.59%
2	45°↓	2	0.00	0.00	0.00%
3	60°↑	3	4.06	4.06	88.45%
4	60°↓	4	0.00	0.00	0.00%
5	45°↖	5	1.38	1.38	30.07%
6	45°↗	5	1.38	1.38	30.07%
7	60°↖	5	1.38	1.38	30.07%
8	60°↗	5	1.38	1.38	30.07%
9	0° WRV	5	1.38	1.38	30.07%
Total Beams: 9			Total Percent: 331.37%		
Total Weld Metal Coverage:			36.82%		

Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
3	45°↖	7	10.53	10.53	47.30%
4	45°↗	7	10.53	10.53	47.30%
5	60°↖	7	10.53	10.53	47.30%
6	60°↗	7	10.53	10.53	47.30%
7	0° WRV	7	10.53	10.53	47.30%
Total Beams: 7			Total Percent: 398.97%		
Total Base Metal Coverage:			57.00%		

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	36.82%		4.59		26.85		6.29%
Base Metal:	57.00%		22.26		26.85		47.25%
Total Exam Coverage =						53.55%	

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

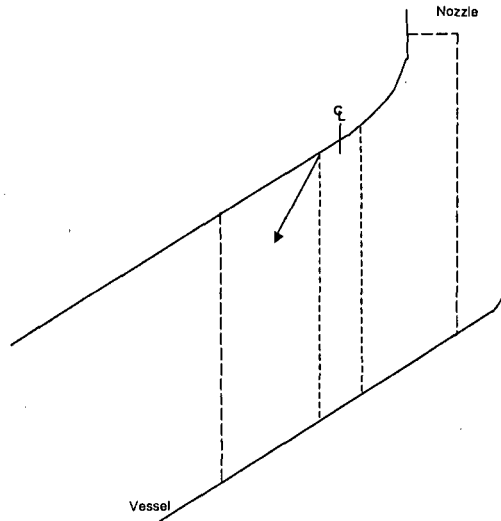
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CCNPP

Component ID: 16-405A	NDE Report No.: 2003BU041
LTP No.: 103100	Summary No.: 103100
Coverage Sketch No: 4	MO No.: 2200201399
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 96"
Thickness: 5.0"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 60° Coverage = 0 in² of 4.59 in² area = 0%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑		
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓		
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ↻		
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: ↺		

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
2	45°↓	2	0.00	0.00	0.00%	3	45°←	7	10.53	10.53	47.30%
3	60°↑	3	4.06	4.06	88.45%	4	45°→	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°←	7	10.53	10.53	47.30%
5	45°←	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°←	5	1.38	1.38	30.07%						
8	60°→	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9			Total Percent: 331.37%			Total Beams: 7			Total Percent: 398.97%		
Total Weld Metal Coverage:			36.82%			Total Base Metal Coverage:			57.00%		

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	36.82%		4.59		26.85		6.29%
Base Metal:	57.00%		22.26		26.85		47.25%
Total Exam Coverage = 53.55%							

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

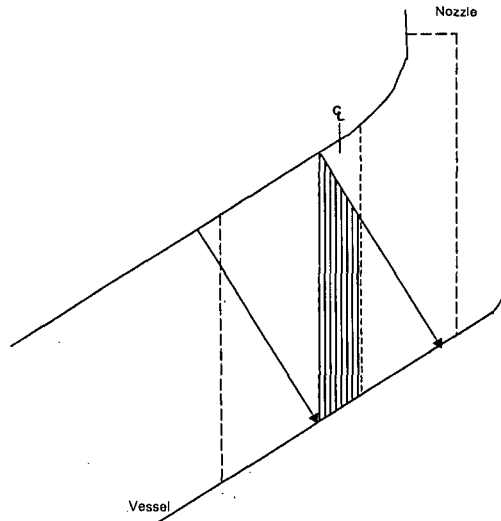
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CCNPP

Component ID: 16-405A	NDE Report No.: 2003BU041
LTP No.: 103100	Summary No.: 103100
Coverage Sketch No: 5	MO No.: 2200201399
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45° / 60° / 0°	

Diameter: 96"
Thickness: 5.0"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° ↔ / 60° ↔ / 0° Coverage = 3.83 in² of 4.59 in² exam area = 83.33%

NOTE: This sketch shows coverage @ 180° which was the most favorable location for these exams. Moving from 180° to 0° the coverage was gradually reduced to the point where 0% coverage was obtained at 0°.

Actual coverage for these exams = 1.38 in² = 30.07%

Coverage Dimensions						Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓
Weld Metal:	23		4.6		See Sketch		4.59	Clockwise: ←
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: →

Weld Metal: Volume = 4.59 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59
1	45° ↑	1	4.25	4.25	92.59%
2	45° ↓	2	0.00	0.00	0.00%
3	60° ↑	3	4.06	4.06	88.45%
4	60° ↓	4	0.00	0.00	0.00%
5	45° →	5	1.38	1.38	30.07%
6	45° ←	5	1.38	1.38	30.07%
7	60° →	5	1.38	1.38	30.07%
8	60° ←	5	1.38	1.38	30.07%
9	0° WRV	5	1.38	1.38	30.07%
Total Beams: 9			Total Percent:		331.37%
Total Weld Metal Coverage:			36.82%		

Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1 + 2	45°/60° ↑ ↓	6	18.08	18.08	81.22%
3	45° →	7	10.53	10.53	47.30%
4	45° ←	7	10.53	10.53	47.30%
5	60° →	7	10.53	10.53	47.30%
6	60° ←	7	10.53	10.53	47.30%
7	0° WRV	7	10.53	10.53	47.30%
Total Beams: 7			Total Percent:		398.97%
Total Base Metal Coverage:			57.00%		

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume = Result
Weld Metal:	36.82%		4.59		26.85 6.29%
Base Metal:	57.00%		22.26		26.85 47.25%
Total Exam Coverage =					53.55%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

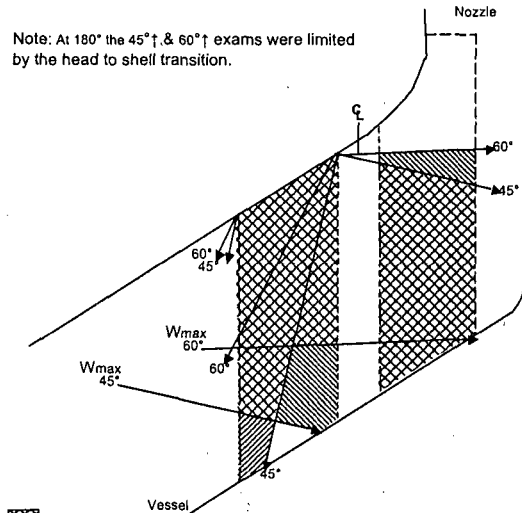
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CCNPP

Component ID: 16-405A	NDE Report No.: 2003BU041
LTP No.: 103100	Summary No.: 103100
Coverage Sketch No: 6	MO No.: 2200201399
Exam Area: Base Metal 360°	Scale: 50%
Exam Angle: 45° / 60°	

Diameter: 96"
 Thickness: 5.0"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage @ 180° quadrant by at least 2 sound beams = 15.07 in².

Coverage by 1 sound beam only = 3.62 in².
 Total: 15.07 + (3.62 / 2) = 16.88 in².

Coverage in remaining 3 quadrants = 18.48 in²
 Average = (16.88 + 18.48 + 18.48 + 18.48) / 4 = 18.08 in²
 18.08 in² of 22.26 in² exam area = 81.22%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑		
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓		
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ↻		
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: ↻		

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
2	45°↓	2	0.00	0.00	0.00%	3	45°←	7	10.53	10.53	47.30%
3	60°↑	3	4.06	4.06	88.45%	4	45°→	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°←	7	10.53	10.53	47.30%
5	45°←	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°←	5	1.38	1.38	30.07%						
8	60°→	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9						Total Beams: 7					
Total Percent: 331.37%						Total Percent: 398.97%					
Total Weld Metal Coverage: 36.82%						Total Base Metal Coverage: 57.00%					

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	36.82%		4.59		26.85
	Base Metal:	57.00%		22.26		26.85
Total Exam Coverage =						53.55%

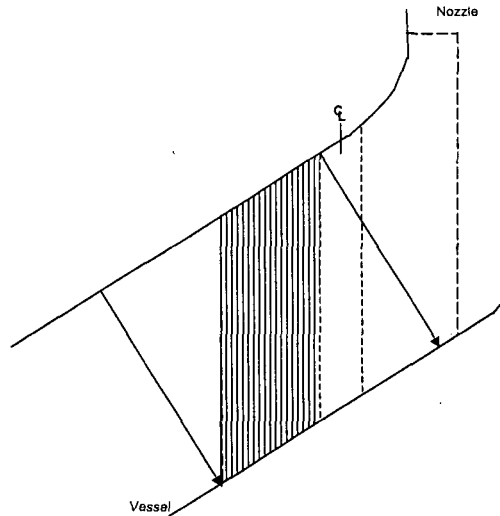
Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

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CCNPP		NDE Report No.: 2003BU041
Component ID: 16-405A	LTP No.: 103100	Summary No.: 103100
Coverage Sketch No.: 7	MO No.: 2200201399	Scale: 50%
Exam Area: Base Metal 360°		
Exam Angle: 45° / 60° / 0° WRV		

Diameter: 96"
 Thickness: 5.0"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45°↔ / 60°↔ / 0° WRV Coverage = 10.53 in² of 22.26 in² exam area = 47.30%

NOTE: This sketch shows coverage @ 180° which was the most favorable location for these exams. Moving from 180° to 0° the coverage of the nozzle side base metal was gradually reduced to the point where 0% coverage was obtained at 0°. No coverage credit was taken for the nozzle side base material.

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)			
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle:	↑	
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle:	↓	
Base Metal:	23		4.6		See Sketch		22.26	Clockwise:	←	
								Counter Clockwise:	→	

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
2	45°↓	2	0.00	0.00	0.00%						81.22%
3	60°↑	3	4.06	4.06	88.45%	3	45°←	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	4	45°→	7	10.53	10.53	47.30%
5	45°←	5	1.38	1.38	30.07%	5	60°←	7	10.53	10.53	47.30%
6	45°→	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
7	60°←	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
8	60°→	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9			Total Percent: 331.37%			Total Beams: 7			Total Percent: 398.97%		
Total Weld Metal Coverage:			36.82%			Total Base Metal Coverage:			57.00%		

Combined Coverage						
	Coverage Percent	x	Volume	+	Total Volume	=
Weld Metal:	36.82%		4.59		26.85	Result 6.29%
Base Metal:	57.00%		22.26		26.85	47.25%
Total Exam Coverage =						53.55%

Code Category B-D - Code Item B3.110

CCNPP

NDE Report No.: 2003BU041
Summary No.: 103100
MO No.: 2200201399
Scale: 50%

Diameter: 96"
Thickness: 5.0"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

Diagram illustrating the weld metal area calculation for a vessel nozzle. The diagram shows a cross-section of a vessel nozzle with points A, B, C, D, E, F, G, H, J, K, L, M. Dimensions are given in inches:

- 4.6" (Distance from vessel wall to point A)
- 5.4" (Distance from vessel wall to point E)
- 1.95" (Distance from point A to point F)
- 0.85" (Distance from point F to point G)
- 1.95" (Distance from point G to point H)
- 2.3" (Distance from point H to point D)
- 1" (Distance from point D to point J)
- 2.3" (Distance from point J to point E)

The weld metal area is indicated by the shaded region between the vessel wall and the nozzle profile.

Weld Metal Area:
 $FGHJ = (0.85 \times 5.4) = 4.59 \text{ in}^2$

Base Metal Area:

- Vessel Side = $AFJE = (1.95 \times 5.4) = 10.53 \text{ in}^2$
- Nozzle Side = $GKDH + GLM + LKM + LBCK$
- $= (1.95 \times 5.4) + (1 \times 0.6)/2 + (1 \times 0.6)/2 + (1 \times 0.6) = 11.73 \text{ in}^2$
- Total Base Metal Area = $10.53 + 11.73 = 22.26 \text{ in}^2$

Total Exam Area: $4.59 + 22.26 = 26.85 \text{ in}^2$

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)		
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle: ↓	
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle: ↑	
Base Metal:	23		4.6		See Sketch		22.26	Clockwise: ←	
								Counter Clockwise: →	

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↓↑	6	18.08	18.08	81.22%
2	45°↓	2	0.00	0.00	0.00%	3	45°→	7	10.53	10.53	47.30%
3	60°↑	3	4.06	4.06	88.45%	4	45°→	7	10.53	10.53	47.30%
4	60°↓	4	0.00	0.00	0.00%	5	60°→	7	10.53	10.53	47.30%
5	45°→	5	1.38	1.38	30.07%	6	60°→	7	10.53	10.53	47.30%
6	45°←	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°→	5	1.38	1.38	30.07%						
8	60°←	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9						Total Percent: 331.37%					
Total Weld Metal Coverage: 36.82%						Total Base Metal Coverage: 57.00%					

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	36.82%		4.59		26.85		6.29%
Base Metal:	57.00%		22.26		26.85		47.25%
Total Exam Coverage = 53.55%							

Responses to Request for Additional Information
Summary No.: 103110 Comp ID: 16-405B Page 1 of 9

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Safety & Relief "B" Nozzle to Upper Head / Due to nozzle configuration coverage of nozzle side base metal and weld was limited. The nozzle enters the vessel at an angle thereby also limiting coverage attainable from the vessel side of the weld. The pressure nozzle-to-vessel head welds are accessible only from the head side based on the nozzle curvature. The scanning surface of the nozzle is essentially perpendicular to the head surface which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The nondestructive examination (NDE) techniques and procedures used incorporated examination techniques qualified under Article 4 of Section V of the ASME Code as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

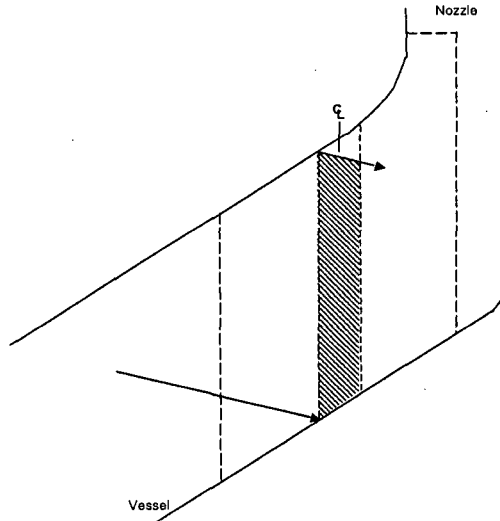
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CCNPP

Component ID: 16-405B	NDE Report No.: CC07-IU-031
LTP No.: 103110	Summary No.: 103110
Coverage Sketch No: 1	MO No.: 2200600733
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 96"
 Thickness: 5.0"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 4.25 in² of 4.59 in² area = 92.59%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. in.)		
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle: ↑	
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle: ↓	
Base Metal:	23		4.6		See Sketch		22.26	Clockwise: ↻ Counter Clockwise: ↺	

Weld Metal: Volume = 4.59 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59
1	45°↑	1	4.25	4.25	92.59%
2	45°↑	2	0.00	0.00	0.00%
3	60°↑	3	4.06	4.06	88.45%
4	60°↑	4	0.00	0.00	0.00%
5	45°→	5	1.38	1.38	30.07%
6	45°→	5	1.38	1.38	30.07%
7	60°→	5	1.38	1.38	30.07%
8	60°→	5	1.38	1.38	30.07%
9	0° WRV	5	1.38	1.38	30.07%
Total Beams: 9			Total Percent: 331.37%		
Total Weld Metal Coverage:			36.82%		

Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
3	45°→	7	10.53	10.53	47.30%
4	45°→	7	10.53	10.53	47.30%
5	60°→	7	10.53	10.53	47.30%
6	60°→	7	10.53	10.53	47.30%
7	0° WRV	7	10.53	10.53	47.30%
Total Beams: 7			Total Percent: 398.97%		
Total Base Metal Coverage:			57.00%		

Combined Coverage					
	Coverage Percent	x	Volume	=	Result
Weld Metal:	36.82%		4.59		6.29%
Base Metal:	57.00%		22.26		47.25%
Total Exam Coverage =					53.55%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

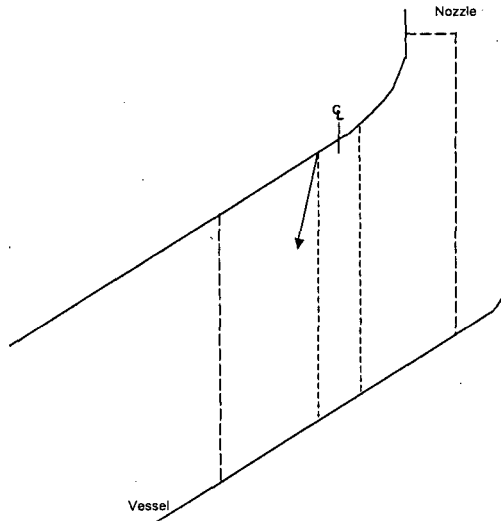
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CCNPP

Component ID: 16-405B	NDE Report No.: CC07-IU-031
LTP No.: 103110	Summary No.: 103110
Coverage Sketch No: 2	MO No.: 2200600733
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45°	

Diameter: 96"
Thickness: 5.0"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Coverage = 0 in² of 4.59 in² area = 0%

Coverage Dimensions						Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑ Away from Nozzle: ↓ Clockwise: ← Counter Clockwise: →
Exam Area:	23		5.6		See Sketch		26.85	
Weld Metal:	23		1		See Sketch		4.59	
Base Metal:	23		4.6		See Sketch		22.26	

Weld Metal: Volume = 4.59 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59
1	45°↑	1	4.25	4.25	92.59%
2	45°↓	2	0.00	0.00	0.00%
3	60°↑	3	4.06	4.06	88.45%
4	60°↓	4	0.00	0.00	0.00%
5	45°→	5	1.38	1.38	30.07%
6	45°←	5	1.38	1.38	30.07%
7	60°→	5	1.38	1.38	30.07%
8	60°←	5	1.38	1.38	30.07%
9	0° WRV	5	1.38	1.38	30.07%
Total Beams: 9			Total Percent:		331.37%
Total Weld Metal Coverage:			36.82%		

Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
3	45°→	7	10.53	10.53	47.30%
4	45°←	7	10.53	10.53	47.30%
5	60°→	7	10.53	10.53	47.30%
6	60°←	7	10.53	10.53	47.30%
7	0° WRV	7	10.53	10.53	47.30%
Total Beams: 7			Total Percent:		398.97%
Total Base Metal Coverage:			57.00%		

Combined Coverage							
	Coverage Percent	x	Volume	+	Total Volume	=	Result
Weld Metal:	36.82%		4.59		26.85		6.29%
Base Metal:	57.00%		22.26		26.85		47.25%
Total Exam Coverage =						53.55%	

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

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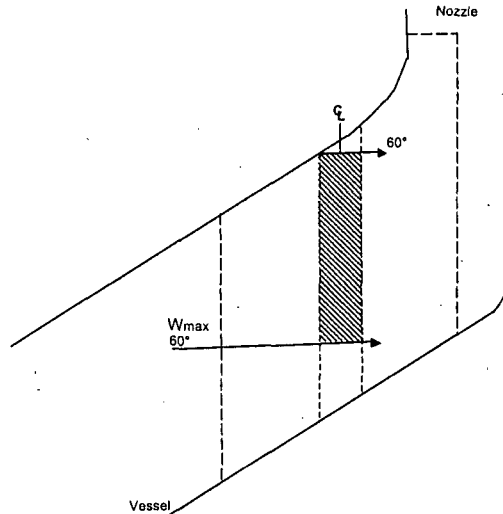
CCNPP

Component ID: 16-405B
LTP No.: 103110
Coverage Sketch No: 3
Exam Area: Weld Metal 360°
Exam Angle: 60°

NDE Report No.: CC07-IU-031
Summary No.: 103110
MO No.: 2200600733
Scale: 50%

Diameter: 96"
Thickness: 5.0"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Note: At 180° the 60° exam was limited by the head to shell transition.

60° Coverage @ 180° quadrant, Wmax limited by head to shell transition. = 3.23 in²

Coverage in remaining 3 quadrants = 4.34 in²
Average = (3.23 + 4.34 + 4.34 + 4.34) / 4 = 4.06 in²
4.06 in² of 4.59 in² exam area = 88.45%

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. in.)	Toward Nozzle: ↑		
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓		
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ↻		
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: ↺		

Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 22.26
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
2	45°↑	2	0.00	0.00	0.00%						81.22%
3	60°↑	3	4.06	4.06	88.45%	3	45°↔	7	10.53	10.53	47.30%
4	60°↑	4	0.00	0.00	0.00%	4	45°↔	7	10.53	10.53	47.30%
5	45°↔	5	1.38	1.38	30.07%	5	60°↔	7	10.53	10.53	47.30%
6	45°↔	5	1.38	1.38	30.07%	6	60°↔	7	10.53	10.53	47.30%
7	60°↔	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
8	60°↔	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9			Total Percent: 331.37%			Total Beams: 7			Total Percent: 398.97%		
Total Weld Metal Coverage:			36.82%			Total Base Metal Coverage:			57.00%		

Combined Coverage					
	Coverage Percent	x	Volume	=	Result
Weld Metal:	36.82%		4.59		26.85
Base Metal:	57.00%		22.26		26.85
Total Exam Coverage =					53.55%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

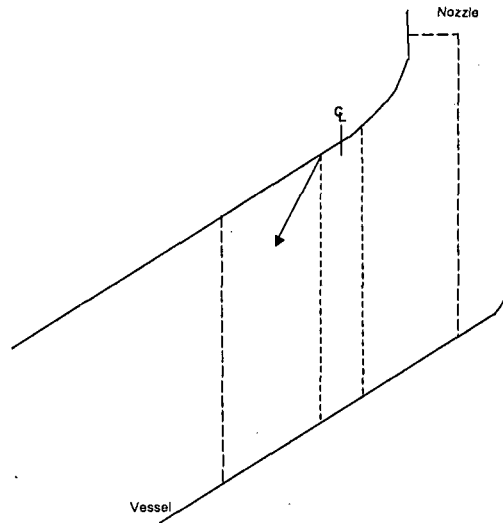
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CCNPP

Component ID: 16-405B	NDE Report No.: CC07-IU-031
LTP No.: 103110	Summary No.: 103110
Coverage Sketch No: 4	MO No.: 2200600733
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 60°	

Diameter: 96"
Thickness: 5.0"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



60° Coverage = 0 in² of 4.59 in² area = 0%

Coverage Dimensions						Beam Directions		
Exam Area:	Length	x	Width	x	Thickness	=	Result (Squ. in.)	
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle: ↑
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle: ↓
Base Metal:	23		4.6		See Sketch		22.26	Clockwise: →
								Counter Clockwise: ←
Weld Metal: Volume = 4.59 Square Inches						Base Metal: Volume = 22.26 Square Inches		
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch
1	45°↑	1	4.25	4.25	92.59%	1 + 2	45°/60°↑↓	6
2	45°↓	2	0.00	0.00	0.00%	3	45°→	7
3	60°↑	3	4.06	4.06	88.45%	4	45°←	7
4	60°↓	4	0.00	0.00	0.00%	5	60°→	7
5	45°→	5	1.38	1.38	30.07%	6	60°←	7
6	45°←	5	1.38	1.38	30.07%	7	0° WRV	7
7	60°→	5	1.38	1.38	30.07%			
8	60°←	5	1.38	1.38	30.07%			
9	0° WRV	5	1.38	1.38	30.07%			
Total Beams: 9						Total Beams: 7		
Total Percent: 331.37%						Total Percent: 398.97%		
Total Weld Metal Coverage: 36.82%						Total Base Metal Coverage: 57.00%		
Combined Coverage								
	Coverage Percent	x	Volume	+	Total Volume	=	Result	
Weld Metal:	36.82%		4.59		26.85		6.29%	
Base Metal:	57.00%		22.26		26.85		47.25%	
Total Exam Coverage =						53.55%		

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

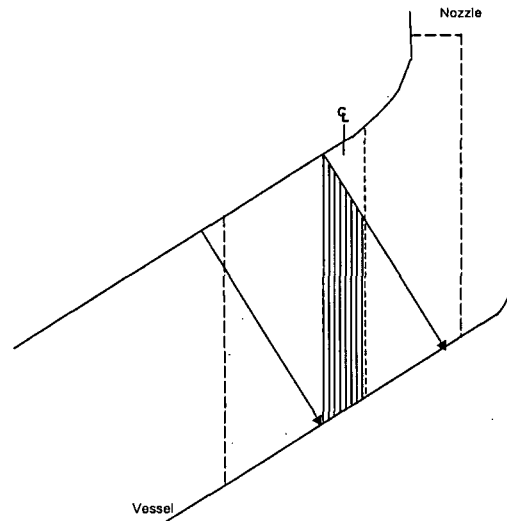
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CCNPP

Component ID: 16-405B	NDE Report No.: CC07-IU-031
LTP No.: 103110	Summary No.: 103110
Coverage Sketch No: 5	MO No.: 2200600733
Exam Area: Weld Metal 360°	Scale: 50%
Exam Angle: 45° / 60° / 0°	

Diameter: 96"
Thickness: 5.0"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45°↔ / 60°↔ / 0° Coverage = 3.83 in² of 4.59 in² exam area = 83.33%

NOTE: This sketch shows coverage @ 180° which was the most favorable location for these exams. Moving from 180° to 0° the coverage was gradually reduced to the point where 0% coverage was obtained at 0°.

Actual coverage for these exams = 1.38 in² = 30.07%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑	
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓	
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ←	
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: →	

Weld Metal: Volume = 4.59 Square Inches					Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of	Coverage (Squ. in.)	Beam Total	Percent of		
1	45°↗	1	4.25	4.25	92.59%				81.22%	
2	45°↘	2	0.00	0.00	0.00%				81.22%	
3	60°↗	3	4.06	4.06	88.45%	1 + 2	45°/60°↗↘	6	18.08	
4	60°↘	4	0.00	0.00	0.00%	3	45°↖	7	10.53	
5	45°↖	5	1.38	1.38	30.07%	4	45°↘	7	10.53	
6	45°↗	5	1.38	1.38	30.07%	5	60°↖	7	10.53	
7	60°↖	5	1.38	1.38	30.07%	6	60°↘	7	10.53	
8	60°↘	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	
9	0° WRV	5	1.38	1.38	30.07%					
Total Beams: 9					Total Percent:	331.37%	Total Beams: 7			Total Percent: 398.97%
Total Weld Metal Coverage:					36.82%	Total Base Metal Coverage: 57.00%				

Combined Coverage						
		Coverage Percent	x	Volume	+	Total Volume
	Weld Metal:	36.82%		4.59		26.85
	Base Metal:	57.00%		22.26		26.85
Total Exam Coverage =						53.55%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

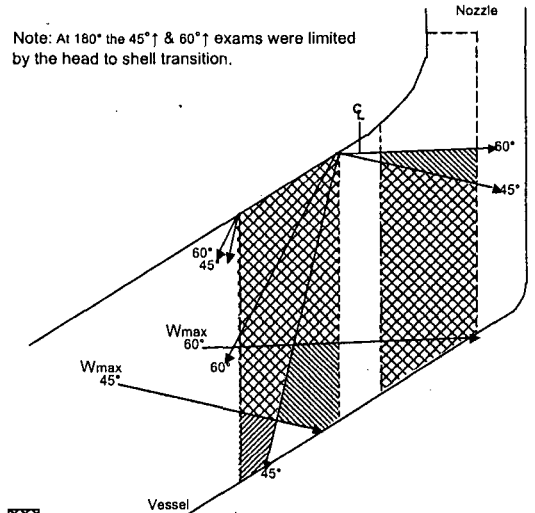
CCNPP

Component ID: 16-405B **NDE Report No.:** CC07-IU-031
LTP No.: 103110 **Summary No.:** 103110
Coverage Sketch No: 6 **MO No.:** 2200600733
Exam Area: Base Metal 360° **Scale:** 50%
Exam Angle: 45° / 60°

Diameter: 96"
Thickness: 5.0"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

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(Sketch Resized for Relief Request)



Coverage @ 180° quadrant by at least 2 sound beams = 15.07 in².
 Coverage by 1 sound beam only = 3.62 in².
 Total: 15.07 + (3.62 / 2) = 16.88 in².
 Coverage in remaining 3 quadrants = 18.48 in²
 Average = (16.88 + 18.48 + 18.48 + 18.48) / 4 = 18.08 in²
 18.08 in² of 22.26 in² exam area = 81.22%

Coverage Dimensions							Beam Directions		
	Length	x	Width	x	Thickness	=	Result (Squ. In.)		
Exam Area:	23		5.6		See Sketch		26.85	Toward Nozzle: ↑	
Weld Metal:	23		1		See Sketch		4.59	Away from Nozzle: ↓	
Base Metal:	23		4.6		See Sketch		22.26	Clockwise: ←	
								Counter Clockwise: →	

Weld Metal: Volume = 4.59 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59
1	45°↑	1	4.25	4.25	92.59%
2	45°↓	2	0.00	0.00	0.00%
3	60°↑	3	4.06	4.06	88.45%
4	60°↓	4	0.00	0.00	0.00%
5	45°↖	5	1.38	1.38	30.07%
6	45°↗	5	1.38	1.38	30.07%
7	60°↖	5	1.38	1.38	30.07%
8	60°↗	5	1.38	1.38	30.07%
9	0° WRV	5	1.38	1.38	30.07%
Total Beams: 9			Total Percent: 331.37%		
Total Weld Metal Coverage:			36.82%		

Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
3	45°→	7	10.53	10.53	47.30%
4	45°←	7	10.53	10.53	47.30%
5	60°→	7	10.53	10.53	47.30%
6	60°←	7	10.53	10.53	47.30%
7	0° WRV	7	10.53	10.53	47.30%
Total Beams: 7			Total Percent: 398.97%		
Total Base Metal Coverage:			57.00%		

Combined Coverage					
		Coverage Percent	x	Volume	=
Weld Metal:		36.82%		4.59	
Base Metal:		57.00%		22.26	
Total Exam Coverage =					53.55%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

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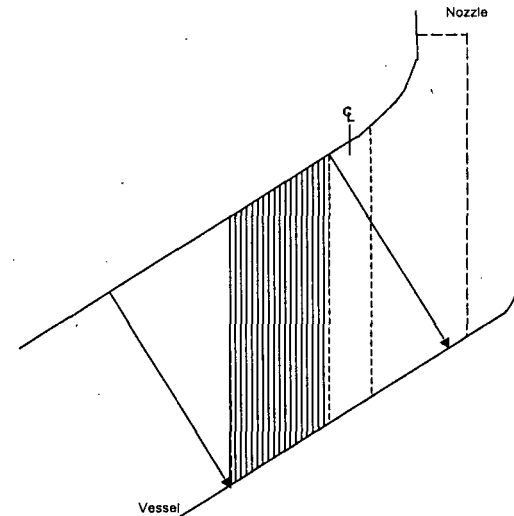
CCNPP

Component ID: 16-405B
LTP No.: 103110
Coverage Sketch No: 7
Exam Area: Base Metal 360°
Exam Angle: 45° / 60° / 0° WRV

NDE Report No.: CC07-IU-031
Summary No.: 103110
MO No.: 2200600733
Scale: 50%

Diameter: 96"
Thickness: 5.0"
Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45° ↔ / 60° ↔ / 0° WRV Coverage = 10.53 in² of 22.26 in² exam area = 47.30%

NOTE: This sketch shows coverage @ 180° which was the most favorable location for these exams. Moving from 180° to 0° the coverage of the nozzle side base metal was gradually reduced to the point where 0% coverage was obtained at 0°. No coverage credit was taken for the nozzle side base material.

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle: ↑		
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle: ↓		
Weld Metal:	23		1		See Sketch		4.59	Clockwise: ←		
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise: →		

Weld Metal: Volume = 4.59 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 4.59
1	45°↑	1	4.25	4.25	92.59%
2	45°↓	2	0.00	0.00	0.00%
3	60°↑	3	4.06	4.06	88.45%
4	60°↓	4	0.00	0.00	0.00%
5	45°←	5	1.38	1.38	30.07%
6	45°→	5	1.38	1.38	30.07%
7	60°←	5	1.38	1.38	30.07%
8	60°→	5	1.38	1.38	30.07%
9	0° WRV	5	1.38	1.38	30.07%
Total Beams: 9			Total Percent: 331.37%		
Total Weld Metal Coverage:			36.82%		

Base Metal: Volume = 22.26 Square Inches					
Beam No.	Angle	Sketch	Coverage (Squ. in.)	Beam Total	Percent of 22.26
1 + 2	45°/60°↑↓	6	18.08	18.08	81.22%
3	45°←	7	10.53	10.53	47.30%
4	45°→	7	10.53	10.53	47.30%
5	60°←	7	10.53	10.53	47.30%
6	60°→	7	10.53	10.53	47.30%
7	0° WRV	7	10.53	10.53	47.30%
Total Beams: 7			Total Percent: 398.97%		
Total Base Metal Coverage:			57.00%		

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume
Weld Metal:	36.82%		4.59		26.85
Base Metal:	57.00%		22.26		26.85
Total Exam Coverage =					53.55%

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category B-D - Code Item B3.110

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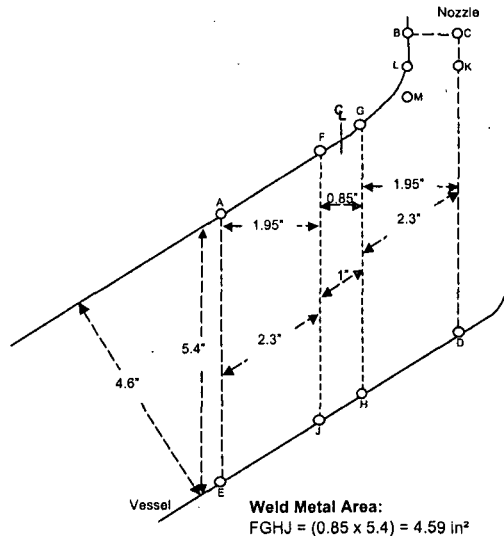
CCNPP

Component ID: 16-405B
 LTP No.: 103110
 Coverage Sketch No: Exam Area
 Exam Area: AFGLBCKDHJE
 Exam Angle: NA

NDE Report No.: CC07-IU-031
 Summary No.: 103110
 MO No.: 2200600733
 Scale: 50%

Diameter: 96"
 Thickness: 5.0"
 Material: CC/S
 CC/S = Clad Carbon Steel
 S/S = Stainless Steel
 CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Base Metal Area:

- Vessel Side = AFJE = $(1.95 \times 5.4) = 10.53 \text{ in}^2$
- Nozzle Side = GKDH + GLM + LKM + LBCK
- = $(1.95 \times 5.4) + (1 \times 0.6)/2 + (1 \times 0.6)/2 + (1 \times 0.6) = 11.73 \text{ in}^2$
- Total Base Metal Area = $10.53 + 11.73 = 22.26 \text{ in}^2$

Total Exam Area: $4.59 + 22.26 = 26.85 \text{ in}^2$

Coverage Dimensions							Beam Directions			
	Length	x	Width	x	Thickness	=	Result (Squ. In.)	Toward Nozzle:	↓	
Exam Area:	23		5.6		See Sketch		26.85	Away from Nozzle:	↑	
Weld Metal:	23		1		See Sketch		4.59	Clockwise:	↻	
Base Metal:	23		4.6		See Sketch		22.26	Counter Clockwise:	↻	

Weld Metal: Volume = 4.59 Square Inches					Base Metal: Volume = 22.26 Square Inches						
Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 4.59	Beam No.	Angle	Sketch	Coverage (Squ. In.)	Beam Total	Percent of 22.26
1	45°↗	1	4.25	4.25	92.59%	1 + 2	45°/60°↗↘	6	18.08	18.08	81.22%
2	45°↘	2	0.00	0.00	0.00%	3	45°↖	7	10.53	10.53	47.30%
3	60°↖	3	4.06	4.06	88.45%	4	45°↗	7	10.53	10.53	47.30%
4	60°↘	4	0.00	0.00	0.00%	5	60°↖	7	10.53	10.53	47.30%
5	45°↗	5	1.38	1.38	30.07%	6	60°↘	7	10.53	10.53	47.30%
6	45°↖	5	1.38	1.38	30.07%	7	0° WRV	7	10.53	10.53	47.30%
7	60°↗	5	1.38	1.38	30.07%						
8	60°↘	5	1.38	1.38	30.07%						
9	0° WRV	5	1.38	1.38	30.07%						
Total Beams: 9					Total Percent: 331.37%	Total Beams: 7					Total Percent: 398.97%
Total Weld Metal Coverage:					36.82%	Total Base Metal Coverage:					57.00%

Combined Coverage					
	Coverage Percent	x	Volume	+	Total Volume
Weld Metal:	36.82%		4.59		26.85
Base Metal:	57.00%		22.26		26.85
Total Exam Coverage =					53.55%

Responses to Request for Additional Information
Summary No.: 109360 Comp ID: 30-RC-21A-10/2-CV-2005 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Branch Connection / Coverage of weld from Branch (nozzle) Penetration side of weld limited due to configuration. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.11

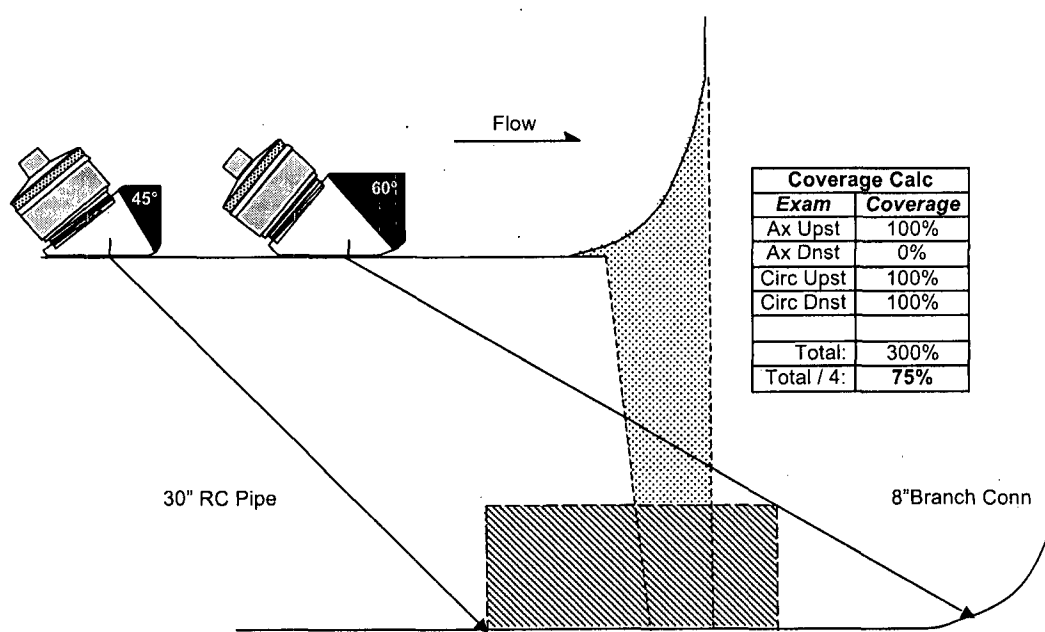
Page 2 of 2

CCNPP

Component ID: 30-RC-21A-10/2-CV-2005	NDE Report No.: CC07-IU-030
LTP No.: 109360	Summary No.: 109360
Coverage Sketch No: NA	MO No.: 2200600729
Exam Area: Lower T / ½" From Toe	Scale: 100%
Exam Angle: 45° / 60°	

Diameter: 8"
Thickness: 3.0"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Calc	
Exam	Coverage
Ax Upst	100%
Ax Dnst	0%
Circ Upst	100%
Circ Dnst	100%
Total:	300%
Total / 4:	75%

Responses to Request for Additional Information
Summary No.: 136020 Comp ID: 4-PS-2003-2 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Tee to Pipe / Adjacent weld in close proximity on pipe side limited coverage to Tee side which was also limited by obstruction by a penetration in close proximity to the weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

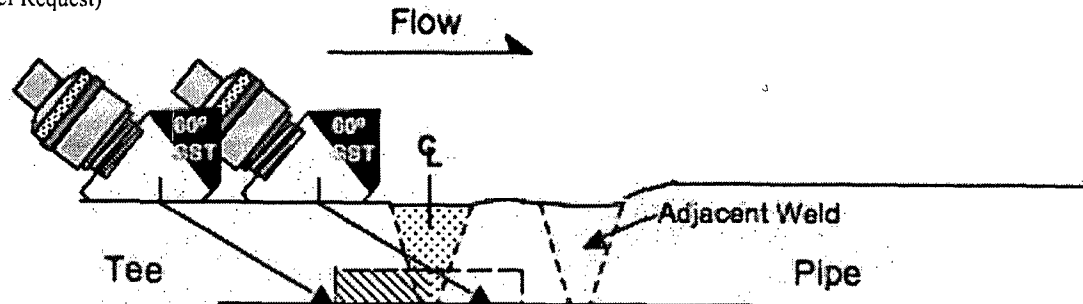
CCNPP

Component ID: 4-PS-2003-2 NDE Report No.: CC70-IU-045
LTP No.: 136020 Summary No.: 136020
Coverage Sketch No: NA MO No.: 2200600733
Exam Area: Lower Scale: 100%
Exam Angle: 60° / 70°

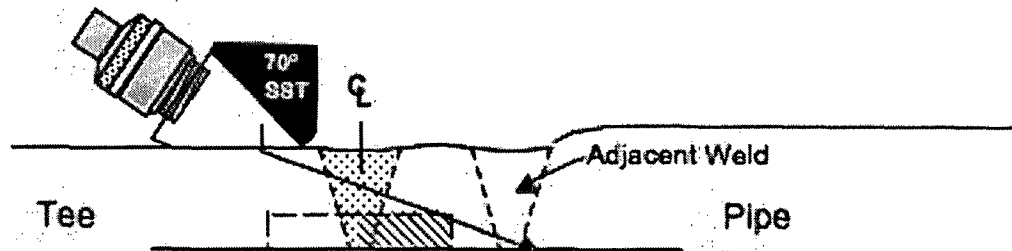
Diameter: 4"
Thickness: 0.44"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

Page 2 of 2

(Sketch Resized for Relief Request)



- Exam Coverage = 50% per single sided access rules.
- This sketch represents 7.5" of 15" Weld Length. Remainder of weld obstructed by branch of Tee.
- Upstream Coverage = 50% Ax / 50% Circ.



Far side of weld examined per single sided access rules. No coverage credit taken.

Coverage Calc	
Exam	Coverage
Ax Upst	50%
Ax Dnst	0%
Circ Upst	50%
Circ Dnst	100%
Total:	200%
Total / 4:	50%

Responses to Request for Additional Information
Summary No.: 136040 Comp ID: 4-PS-2003-4 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Tee to Pipe / Due to geometry no coverage was attainable on Tee side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.11

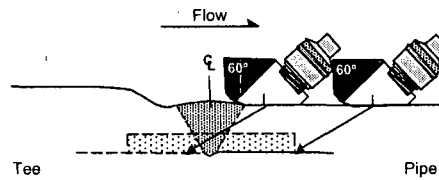
Page 2 of 2

CCNPP

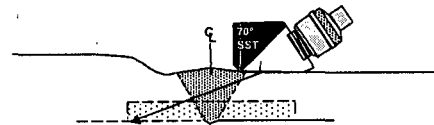
Component ID: 4-PS-2003-4 NDE Report No.: CC07-IU-050
LTP No.: 136040 Summary No.: 136040
Coverage Sketch No: NA MO No.: 2200600733
Exam Area: Lower T Scale: 100%
Exam Angle: 60° / 70°

Diameter: 4"
Thickness: 0.44"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% per single sided access rules.



Far side of weld examined per single sided access rules. No coverage credit taken.

Responses to Request for Additional Information
Summary No.: 138470 Comp ID: 3-PS-2002-27 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Valve to Pipe / Due to taper on valve body no coverage was attainable from valve side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.11

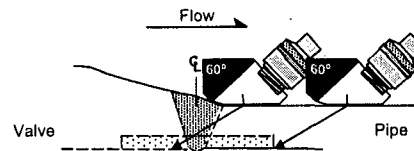
Page 2 of 2

CCNPP

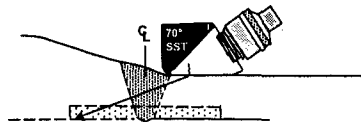
Component ID: 3-PS-2002-27 **NDE Report No.:** CC07-IU-051
LTP No.: 138470 **Summary No.:** 138470
Coverage Sketch No: NA **MO No.:** 2200600733
Exam Area: Lower T **Scale:** 100%
Exam Angle: 60° / 70°

Diameter: 3"
Thickness: 0.41"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% per single sided access rules.



Far side of weld examined per single sided access rules. No coverage credit taken.

Responses to Request for Additional Information
Summary No.: 143030 Comp ID: 2.5-SR-2003-4 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Elbow to Pipe / Adjacent weld in close proximity to examined weld limited coverage which was also limited at Intrados of Elbow being in close proximity to the weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.11

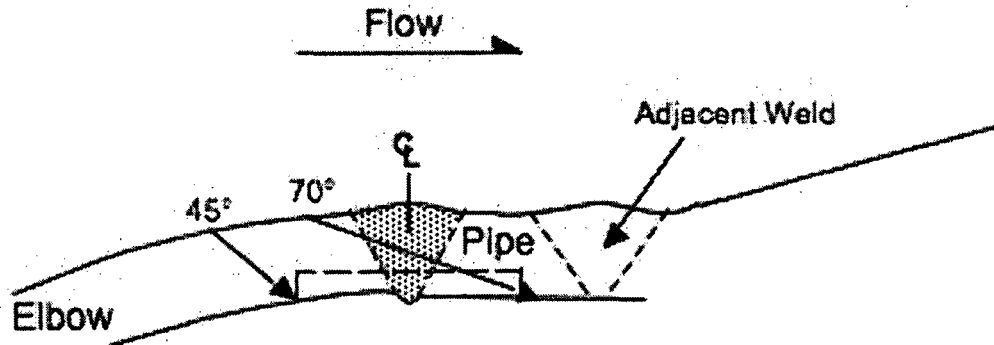
Page 2 of 2

CCNPP

Component ID: 2.5-SR-2003-4	NDE Report No.: 2003BU032
LTP No.: 143030	Summary No.: 143030
Coverage Sketch No: NA	MO No.: 2200201399
Exam Area: Lower T	Scale: 100%
Exam Angle: 45° / 70°	

Diameter: 2.5"
Thickness: 0.38"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



- Exam Coverage = 50% per single sided access rules.
- Axial exam obstructed by intrados from 3.5" to 6".
- Examined 6.625" of 9.125" = 72.6%

Coverage Calc	
Exam	Coverage
Ax Upst	72.6%
Ax Dnst	0%
Circ Upst	100%
Circ Dnst	0%
Total:	
Total / 4:	43%

Responses to Request for Additional Information
Summary No.: 116180 Comp ID: 12-SI-2010-12 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Elbow to Safe End / No Code coverage was credited for scanning performed from Cast Stainless Steel Safe End side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.20

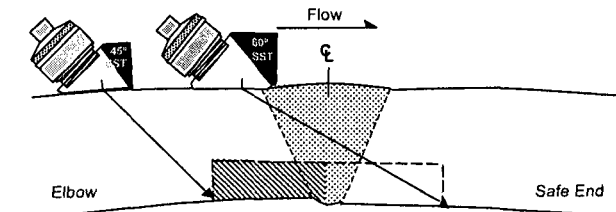
Page 2 of 2

CCNPP

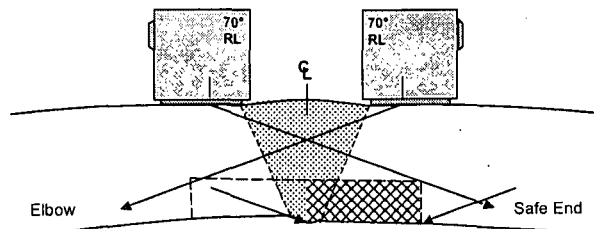
Component ID:	12-SI-2010-12	NDE Report No.:	CC09-IU-020
LTP No.:	116180	Summary No.:	116180
Coverage Sketch No:	NA	MO No.:	2200800092
Exam Area:	Lower T	Scale:	100%
Exam Angle:	45° / 60° / 70°		

Diameter: 12"
Thickness: 1.13"
Material: S/S to CASS
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% per single sided access rules.



Far side of weld examined per single sided access rules. No coverage credit taken.

Responses to Request for Additional Information
Summary No.: 117110 Comp ID: 12-SI-2011-12 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Elbow to Safe End / No Code coverage was credited for scanning performed from Cast Stainless Steel Safe End side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.20

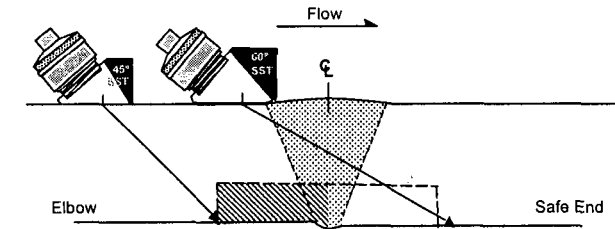
Page 2 of 2

CCNPP

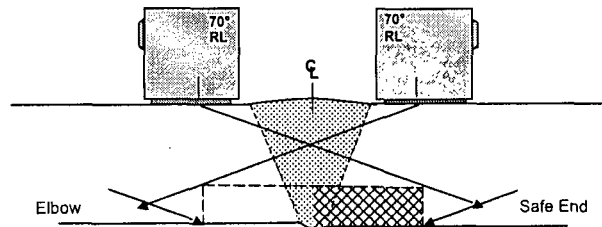
Component ID: 12-SI-2011-12 NDE Report No.: CC09-IU-018
LTP No.: 117110 Summary No.: 117110
Coverage Sketch No: NA MO No.: 2200800093
Exam Area: Lower T Scale: 100%
Exam Angle: 45° / 60° / 70°

Diameter: 12"
Thickness: 1.13"
Material: S/S to CASS
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% per single sided access rules.



Far side of weld examined per single sided access rules. No coverage credit taken.

Responses to Request for Additional Information
Summary No.: 118110 Comp ID: 12-SI-2012-12 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Safe End / No Code coverage was credited for scanning performed from Cast Stainless Steel Safe End side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.20

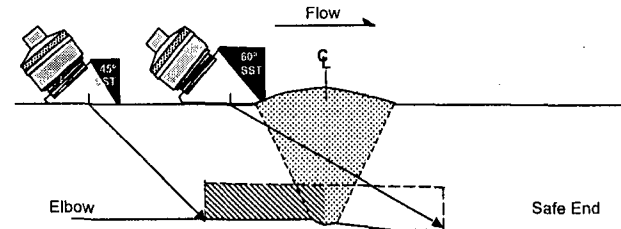
CCNPP

Component ID: 12-SI-2012-12 NDE Report No.: CC09-IU-019
LTP No.: 118110 Summary No.: 118110
Coverage Sketch No: NA MO No.: 2200800093
Exam Area: Lower T Scale: 100%
Exam Angle: 45° / 60° / 70°

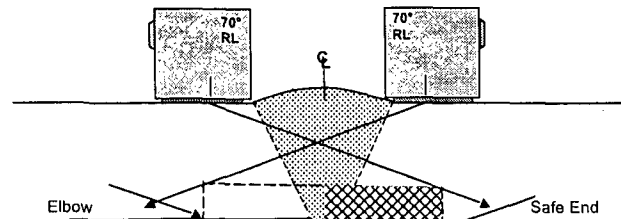
Page 2 of 2

Diameter: 12"
Thickness: 1.16"
Material: S/S to CASS
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% per single sided access rules.



Far side of weld examined per single sided access rules. No coverage credit taken.

Responses to Request for Additional Information
Summary No.: 139000 Comp ID: 4-SR-2001-1 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Tee to Pipe / No examination could be performed from Tee side of weld due to Weld crown configuration. This also limited coverage from the pipe side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.20

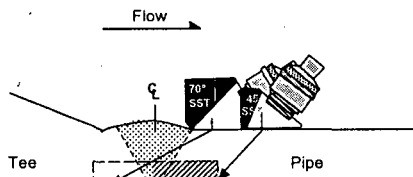
Page 2 of 2

CCNPP

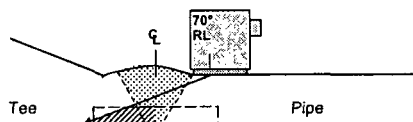
Component ID: 4-SR-2001-1 **NDE Report No.:** 2003BU023
LTP No.: 139000 **Summary No.:** 139000
Coverage Sketch No: NA **MO No.:** 2200201399
Exam Area: Lower T **Scale:** 100%
Exam Angle: 45° / 70°

Diameter: 4"
Thickness: 0.50"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% per single sided access rules.



Far side of weld examined per single sided access rules. No coverage credit taken.

Responses to Request for Additional Information
Summary No.: 141010 Comp ID: 4-SR-2005-2 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Safe-end to Elbow / Due to geometry no coverage was attainable on Safe End side of weld due to taper and lift-off at weld toe also limited coverage from elbow side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 3 - Relief Request ISI-26 for CCNPP Unit 2 Class 1 Components
Code Category R-A - Code Item R1.20

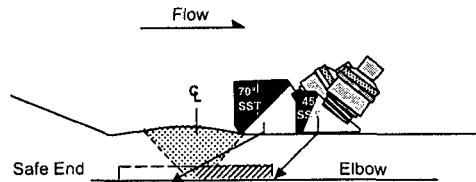
Page 2 of 2

CCNPP

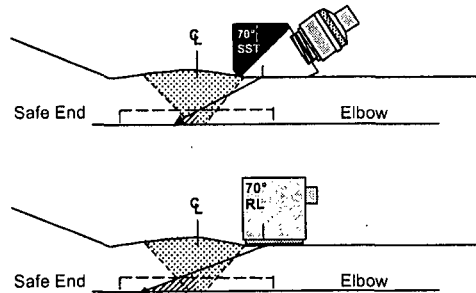
Component ID:	4-SR-2005-2	NDE Report No.:	2003BU038
LTP No.:	141010	Summary No.:	141010
Coverage Sketch No:	NA	MO No.:	2200201399
Exam Area:	Lower T	Scale:	100%
Exam Angle:	45° / 70°		

Diameter: 4"
Thickness: 0.41"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% per single sided access rules.



Far side of weld examined per single sided access rules. No coverage credit taken.

ENCLOSURE 4

Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components

Responses to Request for Additional Information
Summary No.: 201650 Comp ID: SCHE-22-1 Page 1 of 4

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Channel Barrel-to-Flange / Close proximity of Flange transition to the weld limits attaining full coverage from the flange side of weld. The ultrasonic interrogation of the channel shell to flange weld could only be partially obtained from flange side due to the component configuration and close proximity of the weld to the flange transition. The nondestructive examination (NDE) techniques and procedures used incorporated similar examination techniques qualified under Appendix III of the ASME Section XI Code, as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category C-A - Code Item C1.10

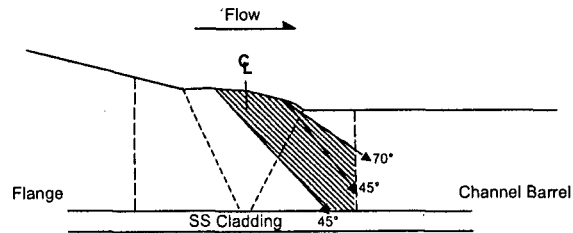
Page 2 of 4


CCNPP

Component ID: SCHE-22-1	NDE Report No.: 2003BU006
LTP No.: 201650	Summary No.: 201650
Coverage Sketch No.: 1	MO No.: 2200201386
Exam Area: Ax Upst. (360°)	Scale: 100%
Exam Angle: 45° / 70°	

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° / 70° Axial Coverage from Upstream side = 0.76 in² of 2.44 in² exam area = 31.2%

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category C-A - Code Item C1.10

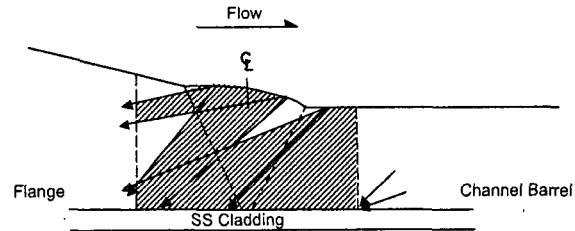
Page 3 of 4


CCNPP

Component ID: SCHE-22-1	NDE Report No.: 2003BU006
LTP No.: 201650	Summary No.: 201650
Coverage Sketch No.: 2	MO No.: 2200201386
Exam Area: Ax Dnst. (360°)	Scale: 100%
Exam Angle: 45° / 70°	

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° / 70° Axial Coverage from Upstream side = 2.16 in² of 2.44 in² exam area = 88.5%

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category C-A - Code Item C1.10

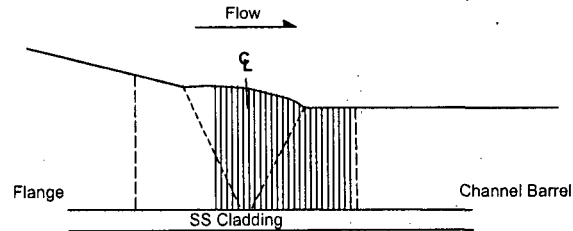
Page 4 of 4


CCNPP

Component ID:	SCHE-22-1	NDE Report No.:	2003BU006
LTP No.:	201650	Summary No.:	201650
Coverage Sketch No:	3	MO No.:	2200201386
Exam Area:	Circ (360°)	Scale:	100%
Exam Angle:	45°		

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° Circ Coverage CW / CCW = 1.5 in² of 2.44 in² exam area = 61.5%

Axial Coverage

- Ax Upst = 31.2%
- Ax Dnst = 88.5%
- $(31.2 + 88.5) / 2 = 59.85\%$

Circ Coverage

- 61.5%

Total Coverage

- $(59.85 + 61.5) / 2 = 61\%$

Responses to Request for Additional Information
Summary No.: 201700 Comp ID: SCHE-22-2 Page 1 of 3

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Channel Barrel-to-Flange / Close proximity of Flange transition to the weld limits attaining full coverage from the flange side of weld. The ultrasonic interrogation of the channel shell to flange weld could only be partially obtained from flange side due to the component configuration and close proximity of the weld to the flange transition. The nondestructive examination (NDE) techniques and procedures used incorporated similar examination techniques qualified under Appendix III of the ASME Section XI Code, as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category C-A - Code Item C1.10

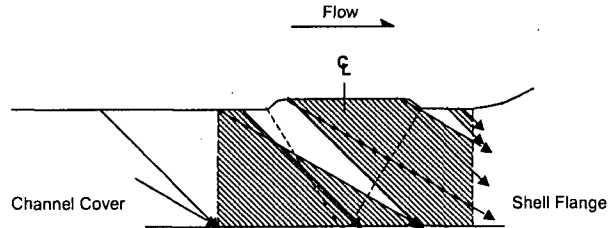
Page 2 of 3

CCNPP

Component ID: SCHE-22-2	NDE Report No.: CC05-IU-003
LTP No.: 201700	Summary No.: 201700
Coverage Sketch No: 1	MO No.: 2200400808
Exam Area: 360°	Scale: 100%
Exam Angle: 45° / 60° Ax Upst	

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45° / 60° Axial Coverage from Upstream side = 2.56 in² of 3.0 in² exam area = 85.3%

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category C-A - Code Item C1.10

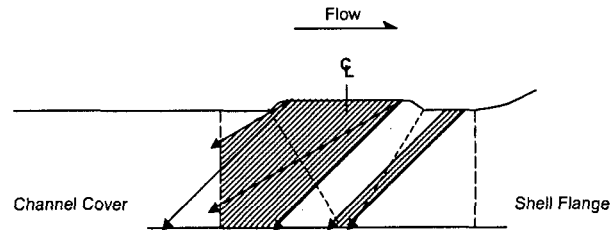
Page 3 of 3


CCNPP

Component ID: SCHE-22-2	NDE Report No.: CC05-IU-003
LTP No.: 201700	Summary No.: 201700
Coverage Sketch No: 2	MO No.: 2200400808
Exam Area: Ax Dnst. (360°)	Scale: 100%
Exam Angle: 45° / 60°	

Diameter: 45"
Thickness: 1.25"
Material: CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



 45° / 60° Axial Coverage from Upstream side = 1.35 in² of 3.0 in² exam area = 45%

Responses to Request for Additional Information
Summary No.: 201400 Comp ID: SCHE-21-N1 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Inlet Nozzle to Shell / Due to nozzle configuration coverage of the nozzle side base metal and weld was limited. The nozzle-to-shell weld is primarily accessible from the shell side based on the component configuration. The nozzle scanning surface is essentially perpendicular to the shell which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The NDE techniques and procedures used incorporated similar examination techniques qualified under Appendix III of the ASME Section XI Code, as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category C-A - Code Item C2.21

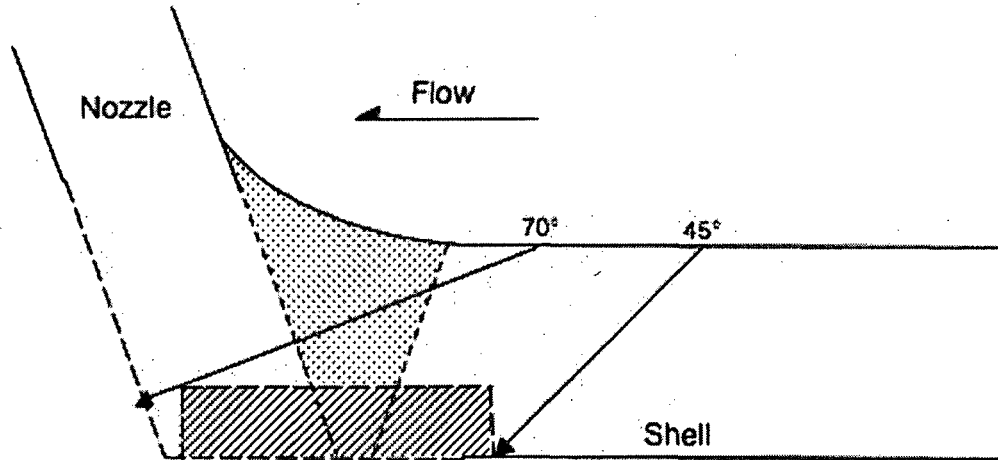
Page 2 of 2

CCNPP

Component ID: SCHE-21-N1 NDE Report No.: 2001BU006
LTP No.: 201400 Summary No.: 201400
Coverage Sketch No: 1 MO No.: 2200002397
Exam Area: 360° Scale: 100%
Exam Angle / Direction: 45° / 70° Ax Upst

Diameter: 10"
Thickness: 1.125"
Material: S/S to CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45° / 70° Axial Coverage from Upstream side = 100%

45° / 70° Axial Coverage from Downstream side = 0%

Coverage Calc	
Exam	Coverage
Ax Upst	100%
Ax Dnst	0%
CW	50%
CCW	50%
Total:	200%
Total / 4:	50%

Responses to Request for Additional Information
Summary No.: 201500 Comp ID: SCHE-21-N2 Page 1 of 3

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Outlet Nozzle to Shell / Due to nozzle configuration coverage of the nozzle side base metal and weld was limited. The nozzle-to-shell weld is primarily accessible from the shell side based on the component configuration. The nozzle scanning surface is essentially perpendicular to the shell which prohibits the ultrasonic wave entering the Code required examination volume at an angle that will interrogate the weld volume for in-service flaws. The NDE techniques and procedures used incorporated similar examination techniques qualified under Appendix III of the ASME Section XI Code, as supplemented by Table I-2000-1. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category C-A - Code Item C2.21

Page 2 of 3

CCNPP

Component ID: SCHE-21-N2

NDE Report No.: CC09-1U-005

LTP No.: 201500

Summary No.: 201500

Coverage Sketch No.: 1

MO No.: 2200800083

Exam Area: 360° (40")

Scale: 100%

Exam Angle / Direction: 45° / 70° Ax Upst

Diameter: 10"

Thickness: 1.125"

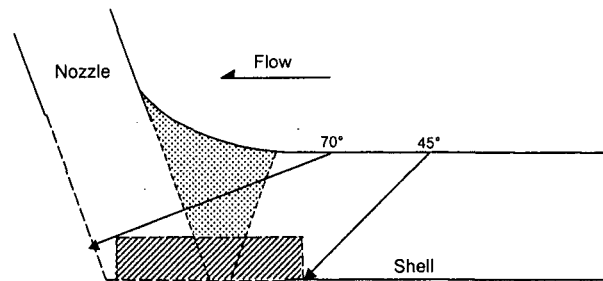
Material: S/S to CC/S

CC/S = Clad Carbon Steel

S/S = Stainless Steel

CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



45° / 70° Axial Coverage from Upstream side = 100%

45° / 70° Axial Coverage from Downstream side = 0%

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category C-A - Code Item C2.21

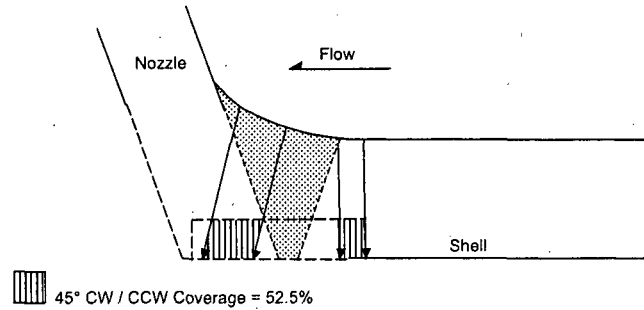
Page 3 of 3

CCNPP

Component ID: SCHE-21-N2 NDE Report No.: CC09-1U-005
LTP No.: 201500 Summary No.: 201500
Coverage Sketch No: 2 MO No.: 2200800083
Exam Area: 360° Scale: 100%
Exam Angle / Direction: 45° CW / CCW

Diameter: 10"
Thickness: .1.125"
Material: S/S to CC/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Coverage Calc	
Exam	Coverage
Ax Upst	100%
Ax Dnst	0%
CW	52.5%
CCW	52.5%
Total:	205%
Total / 4:	51.3%

Responses to Request for Additional Information
Summary No.: 215100 Comp ID: 10-SI-2002-3 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Pipe to Valve / Due to taper on valve body no coverage was attainable from valve side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category R-A - Code Item R1.20

Page 2 of 2

CCNPP

Component ID: 10-SI-2002-3 **NDE Report No.:** CC04-IU-044

LTP No.: 215100 **Summary No.:** 215100

Coverage Sketch No.: NA **MO No.:** 2200400809

Exam Area: Lower T **Scale:** 100%

Exam Angle: 45° / 70°

Diameter: 10"

Thickness: .025"

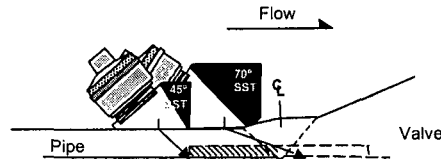
Material: S/S

CC/S = Clad Carbon Steel

S/S = Stainless Steel

CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.

Exam obstructed for 4" due to Branch Connection in close proximity to weld.

Adjusted Coverage = 50% (29.5" of 33.5" weld length) = 44%.

Responses to Request for Additional Information
Summary No.: 215550 Comp ID: 10-SI-2003-2 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Flange to Expander/ Close proximity of Flange transition to the weld limits attaining coverage from the flange side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category R-A - Code Item R1.20

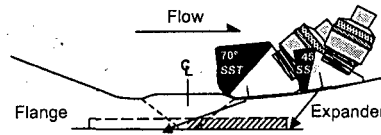
Page 2 of 2

CCNPP

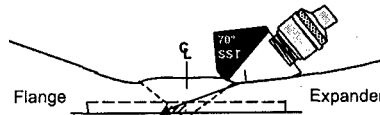
Component ID: 10-SI-2003-2 **NDE Report No.:** CC05-IU-001
LTP No.: 215550 **Summary No.:** 215550
Coverage Sketch No: NA **MO No.:** 2200400808
Exam Area: Lower T **Scale:** 100%
Exam Angle: 45° / 70°

Diameter: 10"
Thickness: 0.38"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 50% as per single sided access rules.



Far side of weld examined as per single sided access rules - No coverage credit taken.

Responses to Request for Additional Information
Summary No.: 225750 Comp ID: 6-SI-2004A-19 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Elbow to Reducer / Access to bottom of weld obstructed by immovable structural member (I-beam). The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category R-A - Code Item R1.20

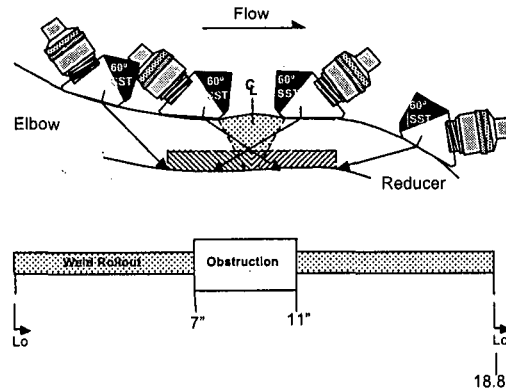
Page 2 of 2

CCNPP

Component ID: 6-SI-2004A-19 NDE Report No.: CC07-IU-004
LTP No.: 225750 Summary No.: 225750
Coverage Sketch No: NA MO No.: 2200600723
Exam Area: Lower T Scale: 100%
Exam Angle: 60°

Diameter: 6"
Thickness: 0.43"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

(Sketch Resized for Relief Request)



Exam Coverage = 100% for 14.8" of 18.8" weld length = 78.7%

Responses to Request for Additional Information
Summary No.: 230650 Comp ID: 6-SI-2017-11 Page 1 of 2

The NRC requested Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) to provide detailed and specific information to support the bases for limited examination in all requests for relief submitted on June 30, 2010, and therefore, demonstrate impracticality. The questions for each relief request are as follows:

- 2.1.1 a) Include detailed descriptions (written and/or sketches, as necessary) of the interferences affecting NDE techniques.

Response:

Elbow to Pipe / Integral welded attachment (saddle) adjacent to weld prevented access to the lower 180 degrees of weld on pipe side of weld. The ultrasonic examination of the above pipe welds was limited in coverage due to component configuration (weld location relative to scanning surface, curvature/taper) and/or immovable penetrations and/or attachments. For these welds obtaining full coverage from both sides of the weld was not attainable since one side of the weld was not optimally oriented for scanning of the weld and adjacent base metal based on the surface angle of the component; therefore, the welds received a single-sided examination or partial two-sided examination resulting in less than 90% coverage of the required examination volume. The percentage of coverage reported represents the aggregate coverage from all examination angles and scans performed on the weld and adjacent base material. The NDE techniques and procedures used incorporated examination techniques qualified under Appendix VIII of the ASME Section XI Code. See attached sketches derived from examination data on file at CCNPP.

- 2.1.1 b) As applicable, describe NDE equipment (ultrasonic scanning apparatus), details of the listed obstructions (size, shape, proximity to the weld, etc.) to demonstrate accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

This was a manual UT examination. Limitations are as detailed on the attached sketches. No alternative examinations are planned for the welds during the current 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 geometric configurations. Other restrictions making radiography impractical are the physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

- 2.1.1 c) Fully clarify the wave mode(s) and insonification angles used for all ultrasonic examinations.

Response:

Wave modality used included longitudinal and shear. Insonification angles were as indicated on the scan tables on the attached sketches.

- 2.1.1 d) Provide cross-sectional coverage plots to describe ASME Code volumes and transducer angles used during the examination.

Response:

See attached sketches derived from examination data on file at CCNPP for cross sectional coverage plots and calculations.

Enclosure 4 - Relief Request ISI-27 for CCNPP Unit 2 Class 2 Components
Code Category R-A - Code Item R1.20

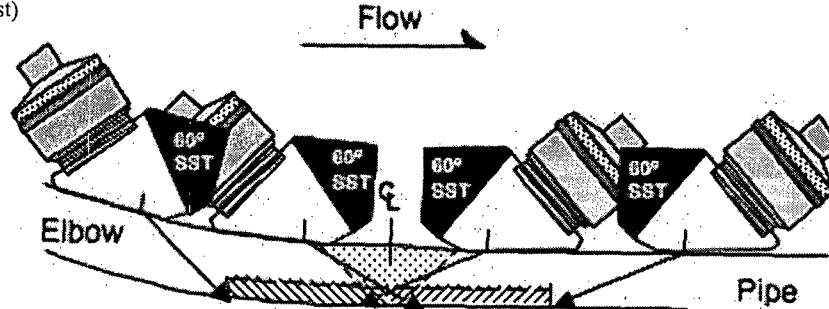
CCNPP

Component ID: 6-SI-2017-11 NDE Report No.: CC07-IU-001
LTP No.: 230650 Summary No.: 230650
Coverage Sketch No: NA MO No.: 2200600726
Exam Area: Lower T Scale: 100%
Exam Angle: 60° / 70°

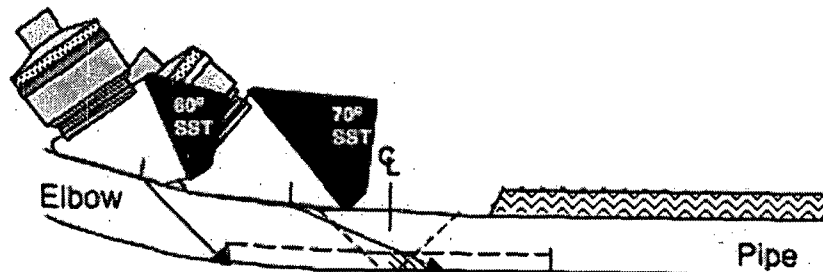
Diameter: 6"
Thickness: 0.30"
Material: S/S
CC/S = Clad Carbon Steel
S/S = Stainless Steel
CASS = Cast Stainless Steel

Page 2 of 2

(Sketch Resized for Relief Request)



Exam Coverage = 100% for 180° of weld length.



Exam Coverage = 50% for 180° of weld length, due to integral attachment on pipe side.
Far side of weld examined in this area as per single sided access rules – No coverage credit taken.

Coverage Calc	
Exam	Coverage
Ax Upst	100%
Ax Dnst	50%
Circ CW	75%
Circ CCW	75%
Total:	300%
Total / 4:	75%