

**Inservice Inspection Report  
Catawba Unit 2  
2001 Refueling Outage  
EOC 11 (Outage 4)**

**NRC Document Control**

# **FORM NIS-1 OWNER'S DATA REPORT FOR INSERVICE INSPECTIONS**

**As required by the Provisions of the ASME Code Rules**

1. Owner: Duke Energy Corporation, 526 S. Church St., Charlotte, NC 28201-1006  
(Name and Address of Owner)

2. Plant: Catawba Nuclear Station, 4800 Concord Road, York, SC 29745  
(Name and Address of Plant)

3. Plant Unit: 2      4. Owner Certificate of Authorization (if required)      N/A

5. Commercial Service Date: 8/19/86      6. National Board Number for Unit 173

7. Components Inspected:

Component or Appurtenance	Manufacturer Installer	Manufacturer Installer Serial No.	State or Province No.	National Board No.
_____	_____	_____	_____	_____
_____	Section 1.1 in the attached report lists the Manufacturer / Installer Serial			_____
_____	Number; State or Providence Number; and National Board Number for			_____
_____	the systems and the NSSS Components. Detailed listings of the			_____
_____	components inspected are contained in Sections 4 and 11.			_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Note: Supplemental sheets in form of lists, sketches, or drawings may be used provided (1) size is 8<sup>1</sup>/<sub>2</sub> in. x 11 in., (2) information in items 1 through 6 on this data report is included on each sheet, and (3) each sheet is numbered and the number of sheets is recorded at the top of this form.

# **FORM NIS-1 (Back)**

8. Examination Dates April 8, 2000 to October 22, 2001
9. Inspection Period Identification: Second Period
10. Inspection Interval Identification: Second Inservice Inspection Interval
11. Applicable Edition of Section XI 1989 Addenda None
12. Date/Revision of Inspection Plan: September 9, 1999 / Revision 2
13. Abstract of Examinations and Test. Include a list of examinations and tests and a statement concerning status of work required for the Inspection Plan. **See Sections 3.0, 4.0 and 11.0**
14. Abstract of Results of Examination and Tests. **See Sections 5.0 and 11.0**
15. Abstract of Corrective Measures. **See Section 8.0**

We certify that a) the statements made in this report are correct b) the examinations and tests meet the Inspection Plan as required by the ASME Code, Section XI, and c) corrective measures taken conform to the rules of the ASME Code, Section XI.

Certificate of Authorization No. (if applicable) N/A Expiration Date N/A

Date 1/17/02 Signed Duke Energy Corp. By R. Kevin Payne  
Owner

## **CERTIFICATE OF INSERVICE INSPECTION**

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State or Province of NC employed by \* The Hartford Steam Boiler Inspection and Insurance Company of Connecticut have inspected the components described in this Owners' Report during the period 4-8-2000 to 1-17-2002, and state that to the best of my knowledge and belief, the Owner has performed examinations and tests and taken corrective measures described in the Owners' Report in accordance with the Inspection Plan and as required by the ASME Code, Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the examinations, test, and corrective measures described in this Owners' Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Robert McMill Commissions NC 978  
Inspector's Signature National Board, State, Province, and Endorsements

Date 1-17-02 20 02

\* The Hartford Steam Boiler Inspection & Insurance Company of Connecticut (HSB CT)  
200 Ashford Center North  
Suite 300  
Atlanta, GA. 30338

# **INSERVICE INSPECTION REPORT**

## **CATAWBA UNIT 2 2001 REFUELING OUTAGE EOC11 (OUTAGE 4)**

Location: 4800 Concord Road, York, South Carolina 29745

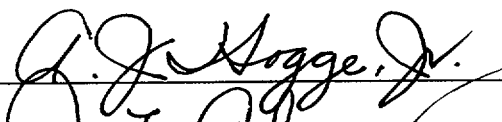
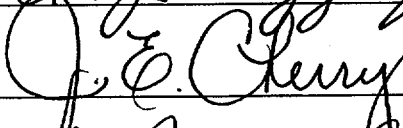
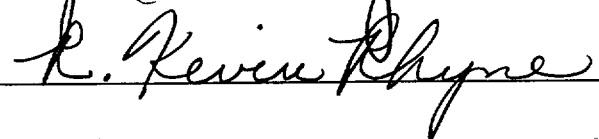
NRC Docket No. 50-414

National Board No. 173

Commercial Service Date: August 19, 1986

Owner: Duke Energy Corporation  
526 South Church St.  
Charlotte, N. C. 28201-1006

Revision 0

Prepared By:	<u></u>	Date	<u>1-17-2002</u>
Reviewed By:	<u></u>	Date	<u>1-17-2002</u>
Approved By:	<u></u>	Date	<u>1/17/02</u>

## ***DISTRIBUTION LIST***

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C/o R. N. McGill  
Catawba Nuclear Station

Laura Burba  
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## **1.0 General Information**

This report describes the Inservice Inspection of Duke Energy Corporation's Catawba Nuclear Station, Unit 2 during the 2001 Refueling Outage [also referred to as EOC11 (Outage 4)]. This is the second outage in the Second Inspection Period in the Second Ten Year Interval.

Included in this report are the final inservice inspection plan, the inspection results for each item, a summary for each category of examination and corrective action taken when unacceptable conditions were found. In addition, there is a section included for repairs and replacements required since 4/8/2000.

### **1.1 Identification Numbers**

Item	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
Reactor Vessel	Combustion Engineering	8871	N/A	21667
Pressurizer	Westinghouse	1931	N/A	W26949
Steam Generator 2A	Westinghouse	1923	N/A	4
Steam Generator 2B	Westinghouse	1922	N/A	3
Steam Generator 2C	Westinghouse	1921	N/A	2
Steam Generator 2D	Westinghouse	1924	N/A	5
Reactor Coolant Pump 2A	Ionics, Inc.	1S-86P765	N/A	342
Reactor Coolant Pump 2B	Ionics, Inc.	2S-86P765	N/A	343

**1.1 Identification Numbers****Continued**

Item	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
Reactor Coolant Pump 2C	Ionics, Inc.	3S-86P765	N/A	586
Reactor Coolant Pump 2D	Ionics, Inc.	4S-86P765	N/A	587
Reactor Coolant System	Duke Power Co.	C-2NC	N/A	171
Safety Injection System	Duke Power Co.	C-2NI	N/A	172
Residual Heat Removal System	Duke Power Co.	C-2ND	N/A	154
Chemical and Volume Control System	Duke Power Co.	C-2NV	N/A	170
Auxiliary Feedwater System	Duke Power Co.	C-2CA	N/A	159
Feedwater System	Duke Power Co.	C-2CF	N/A	158
Refueling Water System	Duke Power Co.	C-2FW	N/A	141
Main Steam Supply to Auxiliary Equipment	Duke Power Co.	C-2SA	N/A	134
Main Steam System	Duke Power Co.	C-2SM	N/A	162
Main Steam Vent to Atmosphere System	Duke Power Co.	C-2SV	N/A	156
Containment Spray System	Duke Power Co.	C-2NS	N/A	150
Steam Generator Blowdown System	Duke Power Co.	C-2BB	N/A	155
Steam Generator Wet Layup Recirculation System	Duke Power Co.	C-2BW	N/A	152



## 1.1 Identification Numbers

Continued

Item	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
Spent Fuel Cooling System	Duke Power Co.	C-2KF	N/A	151
Boron Recycle System	Duke Power Co.	C-2NB	N/A	153
Nuclear Sampling System	Duke Power Co.	C-2NM	N/A	169
Containment Penetration Valve Injection Water System	Duke Power Co.	C-2NW	N/A	165
Liquid Radwaste System	Duke Power Co.	C-2WL	N/A	168
Excess Letdown Heat Exchanger	Atlas Industrial Manufacturing Company	3205	N/A	2583
Seal Water Heat Exchanger	Atlas Industrial Manufacturing Company	3621	N/A	2977
Vertical Letdown Heat Exchanger	Joseph Oat Corporation	2268-2B	N/A	944
Regenerative Heat Exchanger	Joseph Oat Corporation	2255-1C3	N/A	877
Residual Heat Removal Heat Exchanger	Joseph Oat Corporation	2A 2267-3C	N/A	848
		2B 2267-3D	N/A	849
Containment Spray Heat Exchanger	Yuba Heat Transfer Corporation	2A 74-N-009-2A	N/A	3330
		2B 74-N-009-2B	N/A	3331
Seal Water Injection Filter	Pall Trinity Micro Corporation	2A 35367	N/A	19025
		2B 35366	N/A	19024
Volume Control Tank	Lamco Industries Inc.	2286.30	N/A	77171

**1.1 Identification Numbers****Continued**

Item	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
Residual Heat Removal Pump	Ingersoll-Rand	2A 077647	N/A	237
		2B 077648	N/A	238
Containment Spray Pump	Bingham-Willamette	2A 230342	N/A	215
		2B 230343	N/A	216
Safety Injection Pump	Pacific Pumps	2A 49361	N/A	240
		2B 49362	N/A	241
Centrifugal Charging Pump	Pacific Pumps	2A 49780	N/A	262
		2B 49779	N/A	259

**1.2 Authorized Nuclear Inservice Inspector(s)**

Name: R. N. McGill

Employer: The Hartford Steam Boiler Inspection & Insurance Company  
of Connecticut (HSB CT)

Business Address: The Hartford Steam Boiler Inspection & Insurance Company  
of Connecticut (HSB CT)  
200 Ashford Center North  
Suite 300  
Atlanta, GA 30338

## 2.0 Summary of Inservice Inspections

The information shown below provides an abstract of ASME Section XI Class 1, Class 2, and Augmented / Elective Items scheduled and examined during EOC11 (Outage 4) at Catawba Nuclear Station, Unit 2.

### 2.1 Class 1 Inspection

#### Examination Category B-A Pressure Retaining Welds in Reactor Vessel

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
B01.010	<b>Shell Welds</b>	
B01.011	Circumferential	0
B01.012	Longitudinal	0
B01.020	<b>Head Welds</b>	
B01.021	Circumferential	0
B01.022	Meridional	0
B01.030	Shell to Flange Welds	0
B01.040	Head to Flange Welds	0
B01.050	<b>Repair Welds</b>	
B01.051	Beltline Region	NA
<b>TOTALS</b>		0

**Examination Category B-B****Pressure Retaining Welds in Vessels Other than Reactor Vessels**

<b>Item Number</b>	<b>Description</b>	<b>Total Examined During Outage</b>
	<b>Pressurizer</b>	
B02.010	<b>Shell to Head Welds</b>	
B02.011	Circumferential	1
B02.012	Longitudinal	1
B02.020	<b>Head Welds</b>	
B02.021	Circumferential	NA
B02.022	Meridional	NA
	<b>Steam Generators (Primary Side)</b>	
B02.030	<b>Head Welds</b>	
B02.031	Circumferential	NA
B02.032	Meridional	NA
B02.040	Tubesheet to Head Weld	0
	<b>Heat Exchangers (Primary Side) -- Head</b>	
B02.050	<b>Head Welds</b>	
B02.051	Circumferential	NA
B02.052	Meridional	NA
	<b>Heat Exchangers (Primary Side) -- Shell</b>	
B02.060	Tubesheet to Head Welds	NA
B02.070	Longitudinal Welds	NA
B02.080	Tubesheet to Shell Welds	NA
<b>TOTALS</b>		2

**Examination Category B-D      Full Penetration Welds of Nozzles in Vessels  
Inspection Program B**

<b>Item Number</b>	<b>Description</b>	<b>Total Examined During Outage</b>
	<b>Reactor Vessel</b>	
B03.090	Nozzle-to-Vessel Welds	0
B03.100	Nozzle Inside Radius Section	0
	<b>Pressurizer</b>	
B03.110	Nozzle-to-Vessel Welds	1
B03.120	Nozzle Inside Radius Section	1
	<b>Steam Generators (Primary Side)</b>	
B03.130	Nozzle-to-Vessel Welds	NA
B03.140	Nozzle Inside Radius Section	0
	<b>Heat Exchangers (Primary Side)</b>	
B03.150	Nozzle-to-Vessel Welds	NA
B03.160	Nozzle Inside Radius Section	NA
<b>TOTALS</b>		2

**Examination Category B-E      Pressure Retaining Partial Penetration  
Welds in Vessels**

REFERENCE SECTION 11.0 OF THIS REPORT

**Examination Category B-F    Pressure Retaining Dissimilar Metal Welds**

<b>Item Number</b>	<b>Description</b>	<b>Total Examined During Outage</b>
	<b>Reactor Vessel</b>	
B05.010	Nominal Pipe Size 4" or Larger Nozzle-to-Safe End Butt Welds	0
B05.020	Nominal Pipe Size Less Than 4" Nozzle-to-Safe End Butt Welds	NA
B05.030	Nozzle-to-Safe End Socket Welds	NA
	<b>Pressurizer</b>	
B05.040	Nominal Pipe Size 4" or Larger Nozzle-to-Safe End Butt Welds	1
B05.050	Nominal Pipe Size Less Than 4" Nozzle-to-Safe End Butt Welds	NA
B05.060	Nozzle-to-Safe End Socket Welds	NA
	<b>Steam Generator</b>	
B05.070	Nominal Pipe Size 4" or Larger Nozzle-to-Safe End Butt Welds	0
B05.080	Nominal Pipe Size Less Than 4" Nozzle-to-Safe End Butt Welds	NA
B05.090	Nozzle-to-Safe End Socket Welds	NA
	<b>Heat Exchangers</b>	
B05.100	Nominal Pipe Size 4" or Larger Nozzle-to-Safe End Butt Welds	NA
B05.110	Nominal Pipe Size Less Than 4" Nozzle-to-Safe End Butt Welds	NA
B05.120	Nozzle-to-Safe End Socket Welds	NA

**Examination Category B-F (Continued)**

<i><b>Item Number</b></i>	<i><b>Description</b></i>	<i><b>Total Examined During Outage</b></i>
	<i><b>Piping</b></i>	
B05.130	Nominal Pipe Size 4" or Larger Dissimilar Metal Butt Welds	0
B05.140	Nominal Pipe Size Less Than 4" Dissimilar Metal Butt Welds	NA
B05.150	Dissimilar Metal Socket Welds	NA
<i><b>TOTALS</b></i>		1

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Reactor Vessel</b>	
B06.010	Closure Head Nuts	18
B06.020	Closure Studs (in place)	0
B06.030	Closure Studs (when removed)	18
B06.040	Threads in Flange	18
B06.050	Closure Washers, Bushings	18
	<b>Pressurizer</b>	
B06.060	Bolts and Studs	NA
B06.070	Flange Surface (when connection disassembled)	NA
B06.080	Nuts, Bushings and Washers	NA
	<b>Steam Generators</b>	
B06.090	Bolts and Studs	NA
B06.100	Flange Surface (when connection disassembled)	NA
B06.110	Nuts, Bushings and Washers	NA
	<b>Heat Exchangers</b>	
B06.120	Bolts and Studs	NA
B06.130	Flange Surface (when connection disassembled)	NA
B06.140	Nuts, Bushings and Washers	NA
	<b>Piping</b>	
B06.150	Bolts and Studs	NA
B06.160	Flange Surface (when connection disassembled)	NA
B06.170	Nuts, Bushings and Washers	NA



<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b><i>Pumps</i></b>	
B06.180	Bolts and Studs	0
B06.190	Flange Surface (when connection disassembled)	0
B06.200	Nuts , Bushings and Washers	NA
	<b><i>Valves</i></b>	
B06.210	Bolts and Studs	NA
B06.220	Flange Surface (when connection disassembled)	NA
B06.230	Nuts, Bushings and Washers	NA
<b><i>TOTALS</i></b>		72

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Reactor Vessel</b>	
B07.010	Bolts, Studs and Nuts	NA
	<b>Pressurizer</b>	
B07.020	Bolts, Studs and Nuts	0
	<b>Steam Generators</b>	
B07.030	Bolts, Studs and Nuts	0
	<b>Heat Exchangers</b>	
B07.040	Bolts, Studs and Nuts	NA
	<b>Piping</b>	
B07.050	Bolts, Studs and Nuts	0
	<b>Pumps</b>	
B07.060	Bolts, Studs and Nuts	0
	<b>Valves</b>	
B07.070	Bolts, Studs and Nuts	2
	<b>CRD Housing</b>	
B07.080	Bolts, Studs and Nuts in CRD Housing (when disassembled)	0
<b>TOTALS</b>		2

**Examination Category B-H****Integral Attachments for Vessels**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Reactor Vessel</b>	
B08.010	Integrally Welded Attachments	0
	<b>Pressurizer</b>	
B08.020	Integrally Welded Attachments	1
	<b>Steam Generators</b>	
B08.030	Integrally Welded Attachments	NA
	<b>Heat Exchangers</b>	
B08.040	Integrally Welded Attachments	NA
<b>TOTALS</b>		1

**Examination Category B-J****Pressure Retaining Welds in Piping**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
B09.010	<b>Nominal Pipe Size 4" or Larger</b>	
B09.011	Circumferential Welds	9
B09.012	Longitudinal Welds <sup>1</sup>	0
B09.020	<b>Nominal Pipe Size Less than 4"</b>	
B09.021	Circumferential Welds	1
B09.022	Longitudinal Welds <sup>1</sup>	NA

<sup>1</sup> Reference Code Case N-524 "Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping Section XI, Division 1."

**Examination Category B-J****(Continued)**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
B09.030	<b>Branch Pipe Connection Welds</b>	
B09.031	Nominal Pipe Size 4" or Larger	1
B09.032	Less than Nominal Pipe Size 4"	3
B09.040	Socket Welds	12
<b>TOTALS</b>		26

**Examination Category B-K-1****Integral Attachments for Piping,  
Pumps and Valves**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Piping</b>	
B10.010	Integrally Welded Attachments	NA
	<b>Pumps</b>	
B10.020	Integrally Welded Attachments	NA
	<b>Valves</b>	
B10.030	Integrally Welded Attachments	NA
<b>TOTALS</b>		NA

Examination Category    B-L-1, B-M-1    Pressure Retaining Welds in  
Pump Casings and Valve Bodies

B-L-2, B-M-2    Pump Casings and Valve Bodies

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b><i>Pumps</i></b>	
B12.010	Pump Casing Welds (B-L-1)	NA
B12.020	Pump Casing (B-L-2) (when disassembled for Maintenance Repair or Volumetric Examination)	0
	<b><i>Valves</i></b>	
B12.030	Valves, Nominal Pipe Size Less than 4" Valve Body Welds (B-M-1)	NA
B12.040	Valves, Nominal Pipe Size 4" or Larger Valve Body Welds (B-M-1)	0
B12.050	Valve Body, Exceeding 4" Nominal Pipe Size (B-M-2)	10
<b><i>TOTALS</i></b>		10

**Examination Category****B-N-1 Interior of Reactor Vessel****B-N-2 Integrally Welded Core Support  
Structures and Interior Attachments to  
Reactor Vessels****B-N-3 Removable Core Support Structures**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Reactor Vessel</b>	
B13.010	Vessel Interior (B-N-1)	0
	<b>Reactor Vessel (PWR)</b>	
B13.050	Interior Attachments Within the Beltline Region (B-N-2)	NA
B13.060	Interior Attachments Beyond Beltline Region (B-N-2)	0
B13.070	Core Support Structure (B-N-3)	0
<b>TOTALS</b>		0

**Examination Category B-O****Pressure Retaining Welds in Control Rod  
Housings**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Reactor Vessel</b>	
B14.010	Welds in CRD Housing	0
<b>TOTALS</b>		0

**Examination Category B-P****All Pressure Retaining Components**

REFERENCE SECTION 11.0 OF THIS REPORT

**Examination Category B-Q****Steam Generator Tubing**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
B16.010	Steam Generator Tubing in Straight Tube Design	NA
B16.020	Steam Generator Tubing in U-Tube Design <sup>2</sup>	NA
<b>TOTALS</b>		NA

**Examination Category F-A****Class 1 Component Supports****(Code Case N-491)**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
F01.010	Class 1 Piping Supports (One-Directional)	5
F01.011	Class 1 Piping Supports (Multi-Directional)	4
F01.012	Class 1 Piping Supports (Thermal Movement)	9
F01.040	Class 1 Supports other than Piping	2
F01.050	Class 1 Snubbers <sup>3</sup>	NA
<b>TOTALS</b>		20

<sup>2</sup> Steam Generator Tubing is examined and documented by the Steam Generator Maintenance Group of the Nuclear Services Division as required by the Station Technical Specifications and is not included in this report.

<sup>3</sup> See Request for Relief 96-01 in Section 9 of this report.

## 2.2 Class 2 Inspections

### Examination Category C-A

### Pressure Retaining Welds in Pressure Vessels

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
C01.010	Shell Circumferential Welds	2
C01.020	Head Circumferential Welds	2
C01.030	Tubesheet to Shell Weld	0
<b>TOTALS</b>		4

### Examination Category C-B

### Pressure Retaining Nozzle Welds in Vessels

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
C02.010	<b>Nozzles in Vessels <math>\leq 1/2</math>" Nominal Thickness</b>	
C02.011	Nozzle to Shell (or Head) Weld	2
C02.020	<b>Nozzles Without Reinforcing Plate in Vessels <math>&gt;1/2</math>" Nominal Thickness</b>	
C02.021	Nozzle to Shell (or Head) Weld	3
C02.022	Nozzle Inside Radius Section	0



**Examination Category C-B (Continued)**

C02.030	<b>Nozzles With Reinforcing Plate in Vessels &gt;1/2" Nominal Thickness</b>	
C02.031	Reinforcing Plate Welds to Nozzle and Vessel	NA
C02.032	Nozzle to Shell (or Head) Welds when Inside of Vessel is Accessible	NA
C02.033	Nozzle to Shell (or Head) Welds when Inside of Vessel is Inaccessible	NA
<b>TOTALS</b>		5

**Examination Category C-C Integral Attachments for Vessels, Piping, Pumps, and Valves**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Pressure Vessels</b>	
C03.010	Integral Welded Attachments	1
	<b>Piping</b>	
C03.020	Integrally Welded Attachments	3
	<b>Pumps</b>	
C03.030	Integrally Welded Attachments	0
	<b>Valves</b>	
C03.040	Integrally Welded Attachments	NA
<b>TOTALS</b>		4

**Examination Category C-D Pressure Retaining Bolting Greater Than 2" in Diameter**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Pressure Vessels</b>	
C04.010	Bolts and Studs	NA
	<b>Piping</b>	
C04.020	Bolts and Studs	NA
	<b>Pumps</b>	
C04.030	Bolts and Studs	NA
	<b>Valves</b>	
C04.040	Bolts and Studs	NA
<b>TOTALS</b>		NA

**Examination Category C-F-1 Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
C05.010	<b>Piping Welds <math>\geq 3/8</math>" Nominal Wall Thickness for Piping &gt; Nominal Pipe Size 4"</b>	
C05.011	Circumferential Weld	15
C05.012	Longitudinal Weld <sup>4</sup>	0

<sup>4</sup> Reference Code Case N-524 "Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping Section XI, Division 1."

**Examination Category C-F-1 (Continued)**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
C05.020	<b>Piping Welds &gt; 1/5" Nominal Wall Thickness for Piping <math>\geq</math> Nominal Pipe Size 2" and <math>\leq</math> Nominal Pipe Size 4"</b>	
C05.021	Circumferential Weld	5
C05.022	Longitudinal Weld <sup>5</sup>	0
C05.030	Socket Welds	4
C05.040	<b>Pipe Branch Connections of Branch Piping <math>\geq</math> Nominal Pipe Size 2"</b>	
C05.041	Circumferential Weld	0
C05.042	Longitudinal Weld <sup>5</sup>	0
<b>TOTALS</b>		24

**Examination Category C-F-2 Pressure Retaining Welds in Carbon or Low Alloy Steel Piping**

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
C05.050	<b>Piping Welds <math>\geq</math> 3/8" Nominal Wall Thickness for Piping &gt; Nominal Pipe Size 4"</b>	
C05.051	Circumferential Weld	9
C05.052	Longitudinal Weld <sup>5</sup>	0

<sup>5</sup> Reference Code Case N-524 "Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping Section XI, Division 1."

### Examination Category C-F-2 (Continued)

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
C05.060	<b>Piping Welds &gt; 1/5" Nominal Wall Thickness for Piping ≥ Nominal Pipe Size 2" and ≤ Nominal Pipe Size 4"</b>	
C05.061	Circumferential Weld	NA
C05.062	Longitudinal Weld <sup>6</sup>	NA
C05.070	Socket Welds	NA
C05.080	<b>Pipe Branch Connections of Branch Piping ≥ Nominal Pipe Size 2"</b>	
C05.081	Circumferential Weld	0
C05.082	Longitudinal Weld <sup>6</sup>	NA
<b>TOTALS</b>		9

### Examination Category C-G Pressure Retaining Welds in Pumps and Valves

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
	<b>Pumps</b>	
C06.010	Pump Casing Welds	NA
	<b>Valves</b>	
C06.020	Valve Body Welds	5
<b>TOTALS</b>		5

<sup>6</sup> Reference Code Case N-524 "Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping Section XI, Division 1."

**Examination Category C-H All Pressure Retaining Components**

**REFERENCE SECTION 11.0 OF THIS REPORT**

**Examination Category F-A Class 2 Component Supports  
(Code Case N-491)**

<b><i>Item Number</i></b>	<b><i>Description</i></b>	<b><i>Total Examined During Outage</i></b>
F01.020	Class 2 Piping Supports (One Directional)	7
F01.021	Class 2 Piping Supports (Multi-Directional)	10
F01.022	Class 2 Piping Supports (Thermal Movement)	9
F01.040	Class 2 Supports other than Piping	1
F01.050	Class 2 Snubbers <sup>7</sup>	NA
<b><i>TOTALS</i></b>		<b><i>27</i></b>

<sup>7</sup> Reference Request for Relief Serial No. 96-01.

### 2.3 Augmented / Elective Inspection

<i>Item Number</i>	<i>Description</i>	<i>Total Examined During Outage</i>
G01.001	Reactor Coolant Pump Flywheels	1
G02.001	Postulated Pipe Failures Main Steam System	0
G03.001	Thermal Stress Piping (NRC Bulletin 88-08)	0
G04.001	Unguarded Containment Sump Suction Line Piping Weld per 12/1/89 UFSAR Table 1.8-1 (Page 49)	0
H02.001	Class 2 Welded attachment Pipe to Anchor Pad Weld	1
<b>TOTALS</b>		2

A detailed description of each examination listed in Section 2.1 through 2.3 are located in Section 4.0 of this report. Results of each examination are located in Section 5.0 of this report.

### **3.0 Second Ten Year Interval Inspection Status**

The completion status of inspections required by the 1989 ASME Section XI Code, no Addenda, is summarized in this section. The requirements are listed by the ASME Section XI Examination Category as defined in Table IWB-2500-1 for Class 1 Inspections and Table IWC-2500-1 for Class 2 Inspections. Augmented / Elective inspections are also included.

#### **Class 1 Inspections**

<b>Examination Category</b>	<b>Description</b>	<b>Inspections Required</b>	<b>Inspections Completed</b>	<b>Percentage Completed</b>	<b>Deferral Allowed<sup>8</sup></b>
B-A	Pressure Retaining Welds in Reactor Vessel	24	6.5	27.08%	Yes
B-B	Pressure Retaining Welds in Vessels Other than Reactor Vessel	5	3	60%	No
B-D	Full Penetration Welds of Nozzles in Vessels Inspection Program B	36	14	38.89%	Partial
B-F	Pressure Retaining Dissimilar Metal Welds	46	17.666	38.40%	No
B-G-1	Pressure Retaining Bolting Greater than 2 Inch Diameter	224	146	65.18%	No
B-G-2	Pressure Retaining Bolting 2 Inches and Less in Diameter	28	16	57.14%	No

<sup>8</sup> Deferral of inspection to the end of the interval as allowed by ASME Section XI Table IWB-2500-1.

## Class 1 Inspections (Continued)

<b>Examination Category</b>	<b>Description</b>	<b>Inspections Required</b>	<b>Inspections Completed</b>	<b>Percentage Completed</b>	<b>Deferral Allowed<sup>9</sup></b>
B-H	Integral Attachment for Vessels	5	3	60%	No
B-J	Pressure Retaining Welds in Piping	224	120	53.57%	No
B-K-1	Integral Attachments for Piping, Pumps and Valves	N/A	N/A	N/A	N/A
B-L-1	Pressure Retaining Welds in Pump Casings	N/A	N/A	N/A	N/A
B-L-2	Pump Casings	1	0	0%	Yes
B-M-1	Pressure Retaining Welds in Valve Bodies	1	0	0%	Yes
B-M-2	Valve Bodies	7	7	100%	Yes
B-N-1	Interior of Reactor Vessel	3	2	66.66%	No
B-N-2	Integrally Welded Core Support Structures and Interior Attachments to Reactor Vessels	2	0	0%	Yes
B-N-3	Removable Core Support Structures	1	0	0%	Yes
B-O	Pressure Retaining Welds in Control Rod Housings	3	0	0%	Yes
B-Q	Steam Generator Tubing <sup>10</sup>	N/A	N/A	N/A	N/A
F-A	Class 1 Component Supports F01.010, F01.011, F01.012 & F01.040 (Code Case N-491)	71	42	59.15%	No

<sup>9</sup> Deferral of inspection to the end of the interval as allowed by ASME Section XI Table IWB-2500-1.

<sup>10</sup> Steam Generator Tubing is examined and documented by the Steam Generator Maintenance Group of the Nuclear Services Division as required by the Station Technical Specifications and is not included in this report.



## Class 2 Inspections

<b>Examination Category</b>	<b>Description</b>	<b>Inspections Required</b>	<b>Inspections Completed</b>	<b>Percentage Completed</b>	<b>Deferral Allowed<sup>11</sup></b>
C-A	Pressure Retaining Welds in Pressure Vessels	29	13	44.83%	No
C-B	Pressure Retaining Nozzle Welds in Vessels	11	7	63.64%	No
C-C	Integral Attachments for Vessels, Piping, Pumps and Valves	68	39	57.35%	No
C-D	Pressure Retaining Bolting Greater Than 2 Inches in Diameter	N/A	N/A	N/A	N/A
C-F-1	Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping	289	155	53.63%	No
C-F-2	Pressure Retaining Welds in Carbon or Low Alloy Steel Piping	46	26	56.52%	No
C-G	Pressure Retaining Welds in Pumps and Valves	20	12	60%	No
F-A	Class 2 Component Supports F01.020, F01.021, F01.022 & F01.040 (Code Case N-491)	229	136	59.39%	No

<sup>11</sup> Deferral of inspection to the end of the interval as allowed by ASME Section XI Table IWB-2500-1.

## **Augmented / Elective Inspections**

<b><i>Description</i></b>	<b><i>Percentage Complete</i></b>
Reactor Coolant Pump Flywheel Inspection	100% of requirements for EOC11 (Outage 4)
NC System	100% of Requirements for EOC11 (Outage 4)

#### **4.0 Final Inservice Inspection Plan**

The final Inservice Inspection Plan shown in this section lists all ASME Section XI Class 1, ASME Section XI Class 2, and Augmented / Elective examinations credited for EOC11 (Outage 4) at Catawba Nuclear Station, Unit 2.

The information shown below is a field description for the reporting format included in this section of the report:

Item Number	=	ASME Section XI Tables IWB-2500-1 (Class 1), IWC-2500-1 (Class 2), IWF-2500-1 (Class 1 and Class 2), and Augmented / Elective Requirements
ID Number	=	Unique Identification Number
Iso / Dwg Numbers	=	Location and/or Detail Drawings
Proc	=	Examination Procedures
Insp Req	=	Examination Technique - Magnetic Particle, Dye Penetrant, etc.
Mat / Sch	=	General Description of Material
Dia / Thk	=	Diameter/Thickness
Cal Blocks	=	Calibration Block Number
Comments	=	General and/or Detail Description

### **CATEGORY B-B, Pressure Retaining Welds in Vessels Other Than Reactor Vessels**

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## Pressurizer

### Inservice Inspection Plan for Interval 2 Outage 4

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Shell-to-Head Welds; Circumferential ****</b>								
B02.011.001	2PZR-W8A	NC	NDE-620	UT	CS	91.500	50337	Pressurizer Lower Head To Shell Circumferential Weld
	Circumferential	CNM 2201.01-110/1				3.750	50236A	Depending upon the examiner's qualifications, Procedure PDI-UT-6 may be used in lieu of Procedure NDE-620.
Class A		CNM 2201.01-110/2		PZR Lower Head to Shell				
<b>Total B02.011 Items:</b>		<b>1</b>						
<b>**** Shell-to-Head Welds; Longitudinal ****</b>								
B02.012.001	2PZR-W9A	NC	NDE-620	UT	CS	91.500	50337	Pressurizer Lower Head To Shell Longitudinal Weld
	Longitudinal	CNM 2201.01-110/1				3.750	50236A	Depending upon the examiner's qualifications, Procedure PDI-UT-6 may be used in lieu of Procedure NDE-620.
Class A		CNM 2201.01-110/2		PZR Lower Head to Shell				
<b>Total B02.012 Items:</b>		<b>1</b>						
<b>Total B02 Items:</b>		<b>2</b>						

**CATEGORY B-D, Full Penetration Welds of  
Nozzels in Vessels**DUKE ENERGY CORPORATION  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS	
**** Nozzle-to-Vessel welds ****									
B03.110.001	2PZR-W1	NC	CNM 2201.01-110/1	NDE-620	UT	CS	24.500	50337	Pressurizer Surge Nozzle To Lower Head Depending upon the examiner's qualifications, Procedure PDI-UT-6 may be used in lieu of Procedure NDE-620.
	Circumferential		CNM 2201.01-110/2				3.750	50236A	
Class A					PZR Surge Nozzle to Lower Head				
Total B03.110 Items:		1							

### **CATEGORY B-D, Full Penetration Welds of Nozzels in Vessels**

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## Pressurizer

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIATHK	CAL BLOCKS	COMMENTS
**** Nozzle Inside Radius Section ****								
B03.120.001	2PZR-W1	NC CNM 2201.01-110/1 CNM 2201.01-110/2	NDE-680	UT	CS	24.500 2.550	50337	Pressurizer Surge Nozzle To Lower Head (Inside Radius)
Class A				PZR Surge Nozzle to Lower Head				
Total B03.120 Items:		1						
Total B03 Items:		2						

**CATEGORY B-F, Pressure Retaining  
Dissimilar Metal Welds****DUKE ENERGY CORPORATION  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** NPS 4 or Larger; Nozzle-to-Safe End Butt Welds ****</b>								
B05.040.001	2PZR-W1SE	NC CNM 2201.01-110/1	NDE-610	UT	SS-CS	14.000	50339	Pressurizer Surge Nozzle Safe End
	Circumferential	CNM 2201.01-110/2				1.640		
Class A	Term end			Nozzle to				
	Dissimilar			Safe End				
B05.040.001A	2PZR-W1SE	NC CNM 2201.01-110/1	NDE-35	PT	SS-CS	14.000		Pressurizer Surge Nozzle Safe End
	Circumferential	CNM 2201.01-110/2				1.640		
Class A	Term end			Nozzle to				
	Dissimilar			Safe End				
<hr/>								
<b>Total B05.040 Items:</b>		<b>2</b>						
<b>Total B05 Items:</b>		<b>2</b>						

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

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## Reactor Vessel

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
**** Closure Head Nuts ****									
B06.010.019	2RPV-179-102-19	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-19
Class A									
B06.010.020	2RPV-179-102-20A	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-20A
Class A									
B06.010.021	2RPV-179-102-21A	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-21A
Class A									
B06.010.022	2RPV-179-102-22	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-22
Class A									
B06.010.023	2RPV-179-102-23	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-23
Class A									
B06.010.024	2RPV-179-102-24	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-24
Class A									
B06.010.025	2RPV-179-102-25	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-25
Class A									
B06.010.026	2RPV-179-102-26	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-26
Class A									



**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

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## Reactor Vessel

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DI/THK	CAL BLOCKS	COMMENTS
B06.010.027	2RPV-179-102-27	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-27
Class A									
B06.010.028	2RPV-179-102-28	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-28
Class A									
B06.010.029	2RPV-179-102-29	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-29
Class A									
B06.010.030	2RPV-179-102-30	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-30
Class A									
B06.010.031	2RPV-179-102-31	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-31
Class A									
B06.010.032	2RPV-179-102-32	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-32
Class A									
B06.010.033	2RPV-179-102-S2	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-S2
Class A									
B06.010.034	2RPV-179-102-34	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-34
Class A									
B06.010.035	2RPV-179-102-35	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-35
Class A									

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter****DUKE ENERGY CORPORATION  
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<b>Reactor Vessel</b>									
ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS	
B06.010.036	2RPV-179-102-36	NC E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	10.580 1.857		RPV Closure Head Nut 2RPV-NUT-36	

Class A

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**Total B06.010 Items: 18**

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

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### Reactor Vessel

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL	BLOCKS	COMMENTS
**** Closure Studs, when removed ****										
B06.030.019	2RPV-179-101-19	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688		50501	RPV Closure Stud 2RPV-STUD-19
Class A										
B06.030.019A	2RPV-179-101-19	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688			RPV Closure Stud 2RPV-STUD-19
Class A										
B06.030.020	2RPV-179-101-20A	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688		50501	RPV Closure Stud 2RPV-STUD-20A
Class A										
B06.030.020A	2RPV-179-101-20A	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688			RPV Closure Stud 2RPV-STUD-20A
Class A										
B06.030.021	2RPV-179-101-21A	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688		50501	RPV Closure Stud 2RPV-STUD-21A
Class A										
B06.030.021A	2RPV-179-101-21A	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688			RPV Closure Stud 2RPV-STUD-21A
Class A										
B06.030.022	2RPV-179-101-22	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688		50501	RPV Closure Stud 2RPV-STUD-22
Class A										
B06.030.022A	2RPV-179-101-22	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688			RPV Closure Stud 2RPV-STUD-22
Class A										

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

**DUKE ENERGY CORPORATION**  
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## Reactor Vessel

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DI/THK	CAL	BLOCKS	COMMENTS
B06.030.023	2RPV-179-101-23	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-23
Class A										
B06.030.023A	2RPV-179-101-23	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud	2RPV-STUD-23
Class A										
B06.030.024	2RPV-179-101-24	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-24
Class A										
B06.030.024A	2RPV-179-101-24	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud	2RPV-STUD-24
Class A										
B06.030.025	2RPV-179-101-25	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-25
Class A										
B06.030.025A	2RPV-179-101-25	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud	2RPV-STUD-25
Class A										
B06.030.026	2RPV-179-101-26	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-26
Class A										
B06.030.026A	2RPV-179-101-26	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud	2RPV-STUD-26
Class A										
B06.030.027	2RPV-179-101-27	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-27
Class A										

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

**DUKE ENERGY CORPORATION**  
**QUALITY ASSURANCE TECHNICAL SERVICES**  
**Inservice Inspection Database Management System**

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## Reactor Vessel

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL	BLOCKS	COMMENTS
B06.030.027A	2RPV-179-101-27	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000			RPV Closure Stud 2RPV-STUD-27
Class A										
B06.030.028	2RPV-179-101-28	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000	50501		RPV Closure Stud 2RPV-STUD-28
Class A										
B06.030.028A	2RPV-179-101-28	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000			RPV Closure Stud 2RPV-STUD-28
Class A										
B06.030.029	2RPV-179-101-29	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000	50501		RPV Closure Stud 2RPV-STUD-29
Class A										
B06.030.029A	2RPV-179-101-29	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000			RPV Closure Stud 2RPV-STUD-29
Class A										
B06.030.030	2RPV-179-101-30	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000	50501		RPV Closure Stud 2RPV-STUD-30
Class A										
B06.030.030A	2RPV-179-101-30	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000			RPV Closure Stud 2RPV-STUD-30
Class A										
B06.030.031	2RPV-179-101-31	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000	50501		RPV Closure Stud 2RPV-STUD-31
Class A										
B06.030.031A	2RPV-179-101-31	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000			RPV Closure Stud 2RPV-STUD-31
Class A										

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

**DUKE ENERGY CORPORATION**  
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## Reactor Vessel

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL	BLOCKS	COMMENTS
B06.030.032	2RPV-179-101-32	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-32
Class A										
B06.030.032A	2RPV-179-101-32	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud	2RPV-STUD-32
Class A										
B06.030.033	2RPV-179-101-S2	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-S2
Class A										
B06.030.033A	2RPV-179-101-S2	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud	2RPV-STUD-S2
Class A										
B06.030.034	2RPV-179-101-34	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-34
Class A										
B06.030.034A	2RPV-179-101-34	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud	2RPV-STUD-34
Class A										
B06.030.035	2RPV-179-101-35	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-35
Class A										
B06.030.035A	2RPV-179-101-35	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud	2RPV-STUD-35
Class A										
B06.030.036	2RPV-179-101-36	NC	E 8871-179-001 CNM 2201.01-67	PDI-UT-5	UT	CS	7.000 57.688	50501	RPV Closure Stud	2RPV-STUD-36
Class A										

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter****DUKE ENERGY CORPORATION  
QUALITY ASSURANCE TECHNICAL SERVICES  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B06.030.036A	2RPV-179-101-36	NC E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		RPV Closure Stud 2RPV-STUD-36

Class A

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**Total B06.030 Items: 36**

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
**** Threads in Flange ****									
B06.040.019	2RPV-THREAD-19	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange
Class A									
B06.040.020	2RPV-THREAD-20	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange
Class A									
B06.040.021	2RPV-THREAD-21	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange
Class A									
B06.040.022	2RPV-THREAD-22	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange
Class A									
B06.040.023	2RPV-THREAD-23	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange
Class A									
B06.040.024	2RPV-THREAD-24	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange
Class A									
B06.040.025	2RPV-THREAD-25	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange
Class A									
B06.040.026	2RPV-THREAD-26	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange
Class A									



**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

**DUKE ENERGY CORPORATION**  
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## Reactor Vessel

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL	BLOCKS	COMMENTS
B06.040.027	2RPV-THREAD-27	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										
B06.040.028	2RPV-THREAD-28	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										
B06.040.029	2RPV-THREAD-29	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										
B06.040.030	2RPV-THREAD-30	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										
B06.040.031	2RPV-THREAD-31	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										
B06.040.032	2RPV-THREAD-32	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										
B06.040.033	2RPV-THREAD-33	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										
B06.040.034	2RPV-THREAD-34	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										
B06.040.035	2RPV-THREAD-35	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS		7.000 12.000	40387	Threads in RPV Flange
Class A										

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter****DUKE ENERGY CORPORATION  
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<b>Reactor Vessel</b>									
ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B06.040.036	2RPV-THREAD-36	NC	E 8871-126-002 CNM 2201.01-52	NDE-640	UT	CS	7.000 12.000	40387	Threads in RPV Flange

Class A

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**Total B06.040 Items: 18**

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

**DUKE ENERGY CORPORATION**  
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**Inservice Inspection Database Management System**

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## Reactor Vessel

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
**** Closure Washers, Bushings ****									
B06.050.019	2RPV-179-103-19	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-19
Class A									
B06.050.020	2RPV-179-103-20A	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-20A
Class A									
B06.050.021	2RPV-179-103-21A	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-21A
Class A									
B06.050.022	2RPV-179-103-22	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-22
Class A									
B06.050.023	2RPV-179-103-23	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-23
Class A									
B06.050.024	2RPV-179-103-24	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-24
Class A									
B06.050.025	2RPV-179-103-25	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-25
Class A									
B06.050.026	2RPV-179-103-26	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-26
Class A									

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter**

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## Reactor Vessel

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ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B06.050.027	2RPV-179-103-27	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-27
Class A									
B06.050.028	2RPV-179-103-28	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-28
Class A									
B06.050.029	2RPV-179-103-29	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-29
Class A									
B06.050.030	2RPV-179-103-30	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-30
Class A									
B06.050.031	2RPV-179-103-31	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-31
Class A									
B06.050.032	2RPV-179-103-32	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-32
Class A									
B06.050.033	2RPV-179-103-S2	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-S2
Class A									
B06.050.034	2RPV-179-103-34	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-34
Class A									
B06.050.035	2RPV-179-103-35	NC	E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS		10.560 1.719	RPV Closure Head Washer 2RPV-Washer-35
Class A									

**CATEGORY B-G-1, Pressure Retaining  
Bolting, Greater than 2" In Diameter****DUKE ENERGY CORPORATION  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B06.050.036	2RPV-179-103-36	NC E 8871-179-001 CNM 2201.01-67	QAL-13	VT-1	CS	10.560 1.719		RPV Closure Head Washer 2RPV-Washer-36

Class A

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**Total B06.050 Items: 18****Total B06 Items: 90**

**CATEGORY B-G-2, Pressure Retaining  
Bolting, 2" And Less In Diameter****DUKE ENERGY CORPORATION  
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12/06/2001**Valves****Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Bolts, Studs, and Nuts ****</b>								
B07.070.021	2NI-54A	NI CN-2NI-59 CNM-1205.00-71	QAL-13	VT-1	SS	1.630 10.500		10" Valve 18 Studs, 18 Nuts
Class A								
B07.070.022	2NI-59	NI CN-2NI-184 CNM-1205.00-62	QAL-13	VT-1	SS	1.630 10.500		10" Valve 18 Studs, 18 Nuts
Class A								
<hr/>								
<b>Total B07.070 Items:</b>		<b>2</b>						
<b>Total B07 Items:</b>		<b>2</b>						

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**CATEGORY B-H, Integral Attachments for****Vessels****Pressurizer****Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Integrally Welded Attachments ****</b>								
B08.020.001	2PZR-SKIRT	CNM 1201.01-66	NDE-25	MT	CS	87.000 1.500		Pressurizer Support Skirt to Lower Head. An ultrasonic examination shall be performed to obtain additional coverage on ID surface (C-D). Reference Request for Relief Serial No. 94-04
Class A								
B08.020.001A	2PZR-SKIRT	CNM 1201.01-66	NDE-952	UT	CS	87.000 1.500	50237B	Pressurizer Support Skirt to Lower Head. An ultrasonic examination shall be performed to obtain additional coverage on ID surface (C-D). Reference Request for Relief Serial No. 94-04
Class A								
<b>Total B08.020 Items:</b>		<b>2</b>						
<b>Total B08 Items:</b>		<b>2</b>						

**CATEGORY B-J, Pressure Retaining Welds In Piping**

**NPS 4 or Larger**

**DUKE ENERGY CORPORATION  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Circumferential Welds ****</b>								
B09.011.047	2NC8-2	NC CN-2NC-8	NDE-600	UT	SS	14.000	*	CNM 2201.01-95
	Circumferential	CN-2553-1.1			160	1.406		P6 To P5
Class A				Pipe to Pipe				* Reference General Requirements Section 8.1.10
B09.011.047A	2NC8-2	NC CN-2NC-8	NDE-35	PT	SS	14.000		CNM 2201.01-95
	Circumferential	CN-2553-1.1			160	1.406		P6 To P5
Class A				Pipe to Pipe				
B09.011.048	2NC8-3	NC CN-2NC-8	NDE-600	UT	SS	14.000	*	CNM 2201.01-95
	Circumferential	CN-2553-1.1			160	1.406		PZR TO P1
Class A				Pipe to PZR Nozzle SE				* Reference General Requirements Section 8.1.10
B09.011.048A	2NC8-3	NC CN-2NC-8	NDE-35	PT	SS	14.000		CNM 2201.01-95
	Circumferential	CN-2553-1.1			160	1.406		PZR TO P1
Class A				Pipe to PZR Nozzle SE				
B09.011.087	2NI74-1	NI CN-2NI-74	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.1			160	0.719		
Class A				90 Degree Elbow to Pipe				
B09.011.087A	2NI74-1	NI CN-2NI-74	NDE-35	PT	SS	6.000		
	Circumferential	CN-2562-1.1			160	0.719		
Class A				90 Degree Elbow to Pipe				
B09.011.088	2NI74-11	NI CN-2NI-74	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.1			160	0.719		
Class A				90 Degree Elbow to Pipe				
B09.011.088A	2NI74-11	NI CN-2NI-74	NDE-35	PT	SS	6.000		
	Circumferential	CN-2562-1.1			160	0.719		
Class A				90 Degree Elbow to Pipe				



**CATEGORY B-J, Pressure Retaining Welds In  
Piping**
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B09.011.089	2NI74-3	NI CN-2NI-74	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.1			160	0.719		
Class A				45 Degree Elbow to Pipe				
B09.011.089A	2NI74-3	NI CN-2NI-74	NDE-35	PT	SS	6.000		
	Circumferential	CN-2562-1.1			160	0.719		
Class A				45 Degree Elbow to Pipe				
B09.011.090	2NI74-9	NI CN-2NI-74	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.1			160	0.719		
Class A				Pipe to 90 Degree Elbow				
B09.011.090A	2NI74-9	NI CN-2NI-74	NDE-35	PT	SS	6.000		
	Circumferential	CN-2562-1.1			160	0.719		
Class A				Pipe to 90 Degree Elbow				
B09.011.093	2NI91-5	NI CN-2NI-91	NDE-600	UT	SS	8.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.2			160	0.906		
Class A				Pipe to 90 Degree Elbow				
B09.011.093A	2NI91-5	NI CN-2NI-91	NDE-35	PT	SS	8.000		
	Circumferential	CN-2562-1.2			160	0.906		
Class A				Pipe to 90 Degree Elbow				
B09.011.094	2NI91-7	NI CN-2NI-91	NDE-600	UT	SS	8.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.2			160	0.906		
Class A				Pipe to 90 Degree Elbow				
B09.011.094A	2NI91-7	NI CN-2NI-91	NDE-35	PT	SS	8.000		
	Circumferential	CN-2562-1.2			160	0.906		
Class A				Pipe to 90 Degree Elbow				
B09.011.095	2NI91-9	NI CN-2NI-91	NDE-600	UT	SS	8.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.2			160	0.906		
Class A				Pipe to 90 Degree Elbow				

**CATEGORY B-J, Pressure Retaining Welds In Piping**DUKE ENERGY CORPORATION  
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## Catawba 2

## Inservice Inspection Plan for Interval 2 Outage 4

■ **NPS 4 or Larger**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B09.011.095A	2NI91-9	NI CN-2NI-91	NDE-35	PT	SS	8.000		
	Circumferential	CN-2562-1.2			160	0.906		
Class A				Pipe to				
				90 Degree Elbow				

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**Total B09.011 Items: 18**

**CATEGORY B-J, Pressure Retaining Welds In Piping**DUKE ENERGY CORPORATION  
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**Inservice Inspection Plan for Interval 2 Outage 4****Less Than NPS 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
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**\*\*\*\* Circumferential Welds \*\*\*\***

B09.021.028	2NI396-5	NI CN-2NI-396	NDE-35	PT	SS		2.000	
	Circumferential	CN-2562-1.2			160		0.344	
Class A					4X2 Reducer to Pipe			

**Total B09.021 Items: 1**

### **CATEGORY B-J, Pressure Retaining Welds In Piping**

**DUKE ENERGY CORPORATION**  
**QUALITY ASSURANCE TECHNICAL SERVICES**  
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## Inservice Inspection Plan for Interval 2 Outage 4

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## **Branch Pipe Connection Welds**

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** NPS 4 or Larger ****</b>									
B09.031.003	2NC13-WN9	NC	CN-2NC-13	NDE-610	UT	SS	12.000	50386	CNM 2201.01-104/7
Branch			CN-2553-1.0			140	2.300		Nozzle B to P1
Class A					Nozzle to Pipe				
B09.031.003A	2NC13-WN9	NC	CN-2NC-13	NDE-35	PT	SS	12.000		CNM 2201.01-104/7
Branch			CN-2553-1.0			140	2.300		Nozzle B to P1
Class A					Nozzle to Pipe				
<b>Total B09.031 Items:</b>		<b>2</b>							
<b>**** Less Than NPS 4 ****</b>									
B09.032.001	2NC13-WN4	NC	CN-2NC-13	NDE-35	PT	SS	2.000		CNM 2201.01-104/9
Branch			CN-2553-1.0			160	1.355		Nozzle E to P1
Class A					Nozzle to Pipe				
B09.032.004	2NC13-WN8A	NC	CN-2NC-13	NDE-35	PT	SS	1.500		CNM 2201.01-104/9
Branch			CN-2553-1.0			160	1.081		Nozzle C to P1
Class A					Nozzle to Pipe				
B09.032.006	2NC9-WN6	NC	CN-2NC-9	NDE-35	PT	SS	2.000		CNM 2201.01-104/2
Branch			CN-2553-1.0			160	1.355		Nozzle D to P2
Class A					Nozzle to Pipe				
<b>Total B09.032 Items:</b>		<b>3</b>							

### CATEGORY B-J, Pressure Retaining Welds In Piping

**DUKE ENERGY CORPORATION**  
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## Socket Welds

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B09.040.009	2NC74-1	NC	CN-2NC-74	NDE-35	PT	SS		2.000	
	Socket		CN-2553-1.0			160		0.344	
Class A	Stress weld								D-Cross Over Leg Nozzle to Pipe
B09.040.010	2NC74-10	NC	CN-2NC-74	NDE-35	PT	SS		2.000	
	Socket		CN-2553-1.0			160		0.344	
Class A									Tee to Pipe
B09.040.011	2NC74-12	NC	CN-2NC-74	NDE-35	PT	SS		2.000	
	Socket		CN-2553-1.0			160		0.344	
Class A									Tee to 2X1/2 Reducing Insert
B09.040.012	2NC74-9	NC	CN-2NC-74	NDE-35	PT	SS		2.000	
	Socket		CN-2553-1.0			160		0.344	
Class A									Pipe to Tee
B09.040.022	2NI295-2	NI	CN-2NI-295	NDE-35	PT	SS		2.000	
	Socket		CN-2562-1.3			160		0.344	
Class A									Pipe to 90 Degree Elbow
B09.040.023	2NI295-4	NI	CN-2NI-295	NDE-35	PT	SS		2.000	
	Socket		CN-2562-1.3			160		0.344	
Class A									Pipe to Special Weld Boss
B09.040.024	2NI297-3	NI	CN-2NI-297	NDE-35	PT	SS		2.000	
	Socket		CN-2562-1.3			160		0.344	
Class A									Elbow 90 Degree to Pipe
B09.040.025	2NI297-5	NI	CN-2NI-297	NDE-35	PT	SS		2.000	
	Socket		CN-2562-1.3			160		0.344	
Class A									Elbow 90 Degree to Pipe

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**CATEGORY B-J, Pressure Retaining Welds In Piping**

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**Socket Welds**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B09.040.026	2NI301-1	NI CN-2NI-301	NDE-35	PT	SS	2.000		
	Socket	CN-2562-1.3			160	0.344		
Class A								Pipe
B09.040.027	2NI301-4	NI CN-2NI-301	NDE-35	PT	SS	2.000		
	Socket	CN-2562-1.3			160	0.344		
Class A								Pipe to Special Weld Boss
B09.040.028	2NI304-1	NI CN-2NI-304	NDE-35	PT	SS	2.000		
	Socket	CN-2562-1.0			160	0.344		
Class A								2X1 1/2 Red Insert to VLV 2NI354
B09.040.029	2NI304-3	NI CN-2NI-304	NDE-35	PT	SS	1.500		
	Socket	CN-2562-1.0			160	0.281		
Class A								2X1 1/2 Red Insert to Pipe
<b>Total B09.040 Items:</b>		<b>12</b>						
<b>Total B09 Items:</b>		<b>36</b>						

## Valves

**CATEGORY B-M-2, Valve Bodies****DUKE ENERGY CORPORATION  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
B12.050.006H	2NI-94	NI CN-2NI-183 CNM-1205.00-62	QAL-14	VT-3	SS 140	10.000 1.000		Inspect one of the following (2NI59,60,70,71,81,82,93 or 94) if disassembled
Class A								
B12.050.007A	2NI-125	NI CN-2NI-94 CNM-1205.00-59	QAL-14	VT-3	SS 160	8.000 0.906		Inspect one of the following (2NI-125 or 129) if disassembled
Class A								
<b>Total B12.050 Items:</b>		<b>10</b>						
<b>Total B12 Items:</b>		<b>10</b>						



**CATEGORY C-A, Pressure Retaining Welds  
In Pressure Vessels****DUKE ENERGY CORPORATION  
QUALITY ASSURANCE TECHNICAL SERVICES  
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12/06/2001****Inservice Inspection Plan for Interval 2 Outage 4****Shell Circumferential Welds**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C01.010.003	2SGD-05-06A	NC CN-2553-1.0	NDE-620	UT	CS	0.000	50366	Steam Generator 2D Transition Cone To Upper
	Circumferential	CNM 2201.01-114				4.000	50236A	Shell PC. 5 To PC. 6A
Class B				Transition Cone to Upper Shell				Depending upon the examiner's qualifications, Procedure PDI-UT-6 may be used in lieu of Procedure NDE-620.
C01.010.005	2SWHX-5-3	NV CN-2554-1.6	NDE-35*	PT	SS	20.000		Seal Water Heat Exchanger Shell To Flange PC. 5
	Circumferential	CNM 1201.06-50				0.187		To PC. 3
Class B				Shell to Flange				* Reference General Requirements Section 1.2.2
Total C01.010 Items:		2						

**CATEGORY C-A, Pressure Retaining Welds  
In Pressure Vessels****DUKE ENERGY CORPORATION  
QUALITY ASSURANCE TECHNICAL SERVICES  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C01.020.002	2ELDHX-HD-FLG	NV CN-2554-1.0	NDE-630	UT	SS-CS	9.500	CB0803	Excess Letdown Heat Exchanger Elliptical Head To
	Circumferential	CNM 1201.06-37				0.750		Flange
Class B				Head to Flange				
C01.020.016	2SWHX-5-6	NV CN-2554-1.6	NDE-35*	PT	SS	20.000		Seal Water Heat Exchanger Shell To Head PC. 5 To
	Circumferential	CNM 1201.06-50				0.187		PC. 6
Class B				Shell to Head				* Reference General Requirements Section 1.2.2
<b>Total C01.020 Items:</b>		<b>2</b>						
<b>Total C01 Items:</b>		<b>4</b>						

**CATEGORY C-B, Pressure Retaining Nozzle****Welds In Vessels****Nozzles in Vessels <= 1/2 in. Nominal Thickness**

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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Nozzle-to-Shell (or Head) Weld ****</b>								
C02.011.001	2SWHX-5-A	NV	NDE-35	PT	SS	4.000		Seal Water Heat Exchanger Inlet Nozzle To Shell
	Circumferential	CN-2554-1.6				0.237		PC. 5 To PC. A
	Class B	CNM 1201.06-50			Nozzle to Shell			
C02.011.002	2SWHX-5-B	NV	NDE-35	PT	SS	4.000		Seal Water Heat Exchanger Outlet Nozzle To Shell
	Circumferential	CN-2554-1.6				0.237		PC. 5 To PC. B
	Class B	CNM 1201.06-50			Nozzle to Shell			
<hr/>								
<b>Total C02.011 Items:</b>		<b>2</b>						

### **CATEGORY C-B, Pressure Retaining Nozzle Welds In Vessels**

## Nozzles Without Reinforcing Plate In Vessels > 1/2 in. Nom. Thickness

**DUKE ENERGY CORPORATION**  
**QUALITY ASSURANCE TECHNICAL SERVICES**  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Nozzle-to-Shell (or Head) Weld ****</b>								
C02.021.001	2SGB-06A-18	NC	NDE-620	UT	CS	6.000	50366	Steam Generator 2B Auxiliary FDWTR Nozzle To Shell
	Circumferential	CNM-2201.01-102/1				3.890	50236A	PC. 6A To PC. 18
Class B		CNM-2201.01-106/1		Nozzle to Shell				Depending upon the examiner's qualifications, Procedure PDI-UT-6 may be used in lieu of Procedure NDE-620.
C02.021.001A	2SGB-06A-18	NC	NDE-25	MT	CS	6.000		Steam Generator 2B Auxiliary FDWTR Nozzle To Shell
	Circumferential	CNM-2201.01-102/1				3.890		PC. 6A To PC. 18
Class B		CNM-2201.01-106/1		Nozzle to Shell				
C02.021.004	2BNSHX-3-N1	NS	NDE-630	UT	SS	12.000	50380	Containment Spray Heat Exchanger 2B Inlet Nozzle To Channel
	Circumferential	CN-2563-1.0				0.500		PC. 3 To PC. N1
Class B		CNM 1201.06-0090		Inlet Nozzle to Channel				
C02.021.004A	2BNSHX-3-N1	NS	NDE-35	PT	SS	12.000		Containment Spray Heat Exchanger 2B Inlet Nozzle To Channel
	Circumferential	CN-2563-1.0				0.500		PC. 3 To PC. N1
Class B		CNM 1201.06-0090		Inlet Nozzle to Channel				
C02.021.005	2BNSHX-3-N2	NS	NDE-630	UT	SS	12.000	50380	Containment Spray Heat Exchanger 2B Outlet Nozzle To Channel
	Circumferential	CN-2563-1.0				0.500		PC. 3 To PC. N2
Class B		CNM 1201.06-0090		Outlet Nozzle to Channel				
C02.021.005A	2BNSHX-3-N2	NS	NDE-35	PT	SS	12.000		Containment Spray Heat Exchanger 2B Outlet Nozzle To Channel
	Circumferential	CN-2563-1.0				0.500		PC. 3 To PC. N2
Class B		CNM 1201.06-0090		Outlet Nozzle to Channel				
<b>Total C02.021 Items:</b>		<b>6</b>						
<b>Total C02 Items:</b>		<b>8</b>						

**CATEGORY C-C, Integral Attachments For  
Vessels, Piping, Pumps, And Valves**

DUKE ENERGY CORPORATION  
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**Pressure Vessels****Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Integrally Welded Attachments ****</b>								
C03.010.002	2SWHX-SUPP	ND CN-2554-1.6	NDE-35	PT	SS	0.000		Seal Water Heat Exchanger Shell To Support Weld
	Circumferential	CNM 1201.06-50				0.750		PC. 5 To PC. 31 And PC. 32 (One Each Side)
Class B				Shell to Support				

**Total C03.010 Items: 1**

**CATEGORY C-C, Integral Attachments For  
Vessels, Piping, Pumps, And Valves****DUKE ENERGY CORPORATION  
QUALITY ASSURANCE TECHNICAL SERVICES  
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12/06/2001**Piping****Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
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**\*\*\*\* Integrally Welded Attachments \*\*\*\***

C03.020.063	2-R-SM-1546	SM CN-2491-SM007	NDE-25	MT	CS	34.000		Welded Attachment
	Rigid Support	CN-2593-1.0				0.750		

Class B

C03.020.077	2-R-SM-1537	SM CN-2491-SM007	NDE-25	MT	CS	34.000		Welded Attachment
	Mech Snubber	CN-2593-1.0				0.750		

Class B

C03.020.080	2-R-SM-1541	SM CN-2491-SM007	NDE-25	MT	CS	34.000		Welded Attachment
	Mech Snubber	CN-2593-1.0				0.750		

Class B

**Total C03.020 Items: 3****Total C03 Items: 4**

**CATEGORY C-F-1, Pressure Retaining Welds  
In Austenitic SS or High Alloy Piping**

**Piping Welds >= 3/8 in. Nominal Wall Thickness  
for Piping > NPS 4**

**DUKE ENERGY CORPORATION  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Circumferential Weld ****</b>								
C05.011.001	2CA59-22	CA CN-2CA-59	NDE-610	UT	SS-CS	6.000	50331	
	Circumferential	CN-2592-1.1			80	0.432	50319	
Class B	Dissimilar			Pipe to 45 Degree Elbow				
C05.011.001A	2CA59-22	CA CN-2CA-59	NDE-35	PT	SS-CS	6.000		
	Longitudinal	CN-2592-1.1			80	0.432		
Class B	Dissimilar			Pipe to 45 Degree Elbow				
C05.011.002	2CA59-23	CA CN-2CA-59	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2592-1.1			80	0.432		
Class B				45 Degree Elbow to Pipe				
C05.011.002A	2CA59-23	CA CN-2CA-59	NDE-35	PT	SS	6.000		
	Circumferential	CN-2592-1.1			80	0.432		
Class B				45 Degree Elbow to Pipe				
C05.011.003	2CA59-25	CA CN-2CA-59	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2592-1.1			80	0.432		
Class B				45 Degree Elbow to Pipe				
C05.011.003A	2CA59-25	CA CN-2CA-59	NDE-35	PT	SS	6.000		
	Circumferential	CN-2592-1.1			80	0.432		
Class B				45 Degree Elbow to Pipe				
C05.011.016	2CA72-53	CA CN-2CA-72	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2592-1.1			80	0.432		
Class B				Tee to 45 Degree Elbow				
C05.011.016A	2CA72-53	CA CN-2CA-72	NDE-35	PT	SS	6.000		
	Circumferential	CN-2592-1.1			80	0.432		
Class B				Tee to 45 Degree Elbow				

**CATEGORY C-F-1, Pressure Retaining Welds  
In Austenitic SS or High Alloy Piping**

**DUKE ENERGY CORPORATION  
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**Piping Welds >= 3/8 in. Nominal Wall Thickness  
for Piping > NPS 4**

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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C05.011.017	2CA72-58	CA CN-2CA-72	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2592-1.1			80	0.432		
Class B				45 Degree Elbow to Pipe				
C05.011.017A	2CA72-58	CA CN-2CA-72	NDE-35	PT	SS	6.000		
	Circumferential	CN-2592-1.1			80	0.432		
Class B				45 Degree Elbow to Pipe				
C05.011.018	2CA72-60	CA CN-2CA-72	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2592-1.1			80	0.432		
Class B				45 Degree Elbow to Pipe				
C05.011.018A	2CA72-60	CA CN-2CA-72	NDE-35	PT	SS	6.000		
	Circumferential	CN-2592-1.1			80	0.432		
Class B				45 Degree Elbow to Pipe				
C05.011.131	2NI86-2	NI CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.3			160	0.719		
Class B				90 Degree Elbow to Pipe				
C05.011.131A	2NI86-2	NI CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential	CN-2562-1.3			160	0.719		
Class B				90 Degree Elbow to Pipe				
C05.011.132	2NI86-3	NI CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.3			160	0.719		
Class B				Pipe to 90 Degree Elbow				
C05.011.132A	2NI86-3	NI CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential	CN-2562-1.3			160	0.719		
Class B				Pipe to 90 Degree Elbow				
C05.011.133	2NI86-12	NI CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2562-1.3			160	0.719		
Class B				45 Degree Elbow to Pipe				



**CATEGORY C-F-1, Pressure Retaining Welds  
In Austenitic SS or High Alloy Piping**

**DUKE ENERGY CORPORATION  
QUALITY ASSURANCE TECHNICAL SERVICES  
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**Inservice Inspection Plan for Interval 2 Outage 4**

**Piping Welds  $\geq$  3/8 in. Nominal Wall Thickness  
for Piping  $>$  NPS 4**

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C05.011.133A	2NI86-12	NI	CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential		CN-2562-1.3			160	0.719		
Class B						45 Degree Elbow to Pipe			
C05.011.134	2NI86-13	NI	CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2562-1.3			160	0.719		
Class B						45 Degree Elbow to 45 Degree Elbow			
C05.011.134A	2NI86-13	NI	CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential		CN-2562-1.3			160	0.719		
Class B						45 Degree Elbow to 45 Degree Elbow			
C05.011.135	2NI86-15	NI	CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2562-1.3			160	0.719		
Class B						45 Degree Elbow to Pipe			
C05.011.135A	2NI86-15	NI	CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential		CN-2562-1.3			160	0.719		
Class B						45 Degree Elbow to Pipe			
C05.011.136	2NI86-16	NI	CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2562-1.3			160	0.719		
Class B						45 Degree Elbow to 45 Degree Elbow			
C05.011.136A	2NI86-16	NI	CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential		CN-2562-1.3			160	0.719		
Class B						45 Degree Elbow to 45 Degree Elbow			
C05.011.137	2NI86-18	NI	CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2562-1.3			160	0.719		
Class B						90 Degree Elbow to Pipe			
C05.011.137A	2NI86-18	NI	CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential		CN-2562-1.3			160	0.719		
Class B						90 Degree Elbow to Pipe			

**CATEGORY C-F-1, Pressure Retaining Welds  
In Austenitic SS or High Alloy Piping**

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**Catawba 2**

**Inservice Inspection Plan for Interval 2 Outage 4**

**Piping Welds  $\geq$  3/8 in. Nominal Wall Thickness  
for Piping  $>$  NPS 4**

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C05.011.138	2NI86-19	NI	CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2562-1.3			160	0.719		
Class B					Pipe to 90 Degree Elbow				
C05.011.138A	2NI86-19	NI	CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential		CN-2562-1.3			160	0.719		
Class B					Pipe to 90 Degree Elbow				
C05.011.139	2NI86-20	NI	CN-2NI-86	NDE-600	UT	SS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2562-1.3			160	0.719		
Class B					45 Degree Elbow to Pipe				
C05.011.139A	2NI86-20	NI	CN-2NI-86	NDE-35	PT	SS	6.000		
	Circumferential		CN-2562-1.3			160	0.719		
Class B					45 Degree Elbow to Pipe				

**Total C05.011 Items: 30**

**CATEGORY C-F-1, Pressure Retaining Welds  
In Austenitic SS or High Alloy Piping**

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**Inservice Inspection Plan for Interval 2 Outage 4**

**Piping Welds > 1/5 in. Nom Wall For Piping >=**  
**NPS 2 And <= NPS 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Circumferential Weld ****</b>								
C05.021.230	2NV20-1	NV CN-2NV-20	NDE-600	UT	SS	3.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2554-1.1			40	0.216		
Class B				90 Degree Elbow to Pipe				
C05.021.230A	2NV20-1	NV CN-2NV-20	NDE-35	PT	SS	3.000		
	Circumferential	CN-2554-1.1			40	0.216		
Class B				90 Degree Elbow to Pipe				
C05.021.231	2NV20-2	NV CN-2NV-20	NDE-600	UT	SS	3.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2554-1.1			40	0.216		
Class B				Pipe to 90 Degree Elbow				
C05.021.231A	2NV20-2	NV CN-2NV-20	NDE-35	PT	SS	3.000		
	Circumferential	CN-2554-1.1			40	0.216		
Class B				Pipe to 90 Degree Elbow				
C05.021.232	2NV20-5	NV CN-2NV-20	NDE-600	UT	SS	4.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2554-1.1			40	0.237		
Class B				Pipe to VLV 2NV-204				
C05.021.232A	2NV20-5	NV CN-2NV-20	NDE-35	PT	SS	4.000		
	Circumferential	CN-2554-1.1			40	0.237		
Class B				Pipe to VLV 2NV-204				
C05.021.233	2NV20-7	NV CN-2NV-20	NDE-600	UT	SS	4.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2554-1.1			40	0.237		
Class B				Tee to Pipe				
C05.021.233A	2NV20-7	NV CN-2NV-20	NDE-35	PT	SS	4.000		
	Circumferential	CN-2554-1.1			40	0.237		
Class B				Tee to Pipe				

**CATEGORY C-F-1, Pressure Retaining Welds  
In Austenitic SS or High Alloy Piping****DUKE ENERGY CORPORATION  
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**Piping Welds > 1/5 in. Nom Wall For Piping >=  
NPS 2 And <= NPS 4****Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C05.021.234	2NV20-8	NV CN-2NV-20	NDE-600	UT	SS	4.000	*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2554-1.1			40	0.237		
Class B				Pipe to Tee				
C05.021.234A	2NV20-8	NV CN-2NV-20	NDE-35	PT	SS	4.000		
	Circumferential	CN-2554-1.1			40	0.237		
Class B				Pipe to Tee				

**Total C05.021 Items: 10**

**CATEGORY C-F-1, Pressure Retaining Welds  
In Austenitic SS or High Alloy Piping**

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**Socket Welds**

**Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C05.030.101	2NV16-10	NV CN-2NV-16	NDE-35	PT	SS	2.000		
	Socket	CN-2554-1.7			160	0.344		
Class B				Pipe to Flange				
C05.030.102	2NV16-11	NV CN-2NV-16	NDE-35	PT	SS	2.000		
	Socket	CN-2554-1.7			160	0.344		
Class B				Flange to Pipe				
C05.030.103	2NV16-12	NV CN-2NV-16	NDE-35	PT	SS	2.000		
	Socket	CN-2554-1.7			160	0.344		
Class B				Pipe to VLV 2NV288				
C05.030.104	2NV16-14	NV CN-2NV-16	NDE-35	PT	SS	2.000		
	Socket	CN-2554-1.7			160	0.344		
Class B				Pipe to Half Coupling				

**Total C05.030 Items: 4**

**CATEGORY C-F-2, Pressure Retaining Welds  
In Carbon Or Low Alloy Steel Piping**

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**Piping Welds  $\geq$  3/8 in. Nominal Wall Thickness  
for Piping  $>$  NPS 4**

**Catawba 2**

**Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIATHK	CAL	BLOCKS	COMMENTS
<b>**** Circumferential Weld ****</b>									
C05.051.005	2CA67-1	CA CN-2CA-67	NDE-600	UT	CS	6.000		*	Steam Generator 2B
	Circumferential	CN-2592-1.1			80	0.432			* Reference General Requirements Section 8.1.10
Class B	Term end				90 Degree Elbow to 2BSG Nozzle				
C05.051.005A	2CA67-1	CA CN-2CA-67	NDE-25	MT	CS	6.000			Steam Generator 2B
	Circumferential	CN-2592-1.1			80	0.432			
Class B	Term end				90 Degree Elbow to 2BSG Nozzle				
C05.051.010	2CA93-9	CA CN-2CA-93	NDE-600	UT	CS	6.000		*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2592-1.1			80	0.432			
Class B					90 Degree Elbow to Pipe				
C05.051.010A	2CA93-9	CA CN-2CA-93	NDE-25	MT	CS	6.000			
	Circumferential	CN-2592-1.1			80	0.432			
Class B					90 Degree Elbow to Pipe				
C05.051.057	2CF66-29	CF CN-2CF-66	NDE-600	UT	CS	16.000		*	Steam Generator 2C
	Circumferential	CN-2591-1.1			80	0.844			* Reference General Requirements Section 8.1.10
Class B	Term end				90 Degree Elbow to SG2C Nozzle				
C05.051.057A	2CF66-29	CF CN-2CF-66	NDE-25	MT	CS	16.000			Steam Generator 2C
	Circumferential	CN-2591-1.1			80	0.844			
Class B	Term end				90 Degree Elbow to SG2C Nozzle				
C05.051.058	2CF66-38	CF CN-2CF-66	NDE-600	UT	CS	16.000		*	* Reference General Requirements Section 8.1.10
	Circumferential	CN-2591-1.1			80	0.844			
Class B					Pipe to 90 Degree Elbow				
C05.051.058A	2CF66-38	CF CN-2CF-66	NDE-25	MT	CS	16.000			
	Circumferential	CN-2591-1.1			80	0.844			
Class B					Pipe to 90 Degree Elbow				

**CATEGORY C-F-2, Pressure Retaining Welds  
In Carbon Or Low Alloy Steel Piping**

**Piping Welds  $\geq$  3/8 in. Nominal Wall Thickness  
for Piping  $>$  NPS 4**

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ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C05.051.059	2CF67-26	CF	CN-2CF-67	NDE-600	UT	CS	16.000	*	Steam Generator 2D
	Circumferential		CN-2591-1.1			80	0.844		* Reference General Requirements Section 8.1.10
Class B	Term end				90 Degree Elbow to SG2D Nozzle				
C05.051.059A	2CF67-26	CF	CN-2CF-67	NDE-25	MT	CS	16.000		Steam Generator 2D
	Circumferential		CN-2591-1.1			80	0.844		
Class B	Term end				90 Degree Elbow to SG2D Nozzle				
C05.051.060	2CF67-39	CF	CN-2CF-67	NDE-600	UT	CS	16.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2591-1.1			80	0.844		
Class B					90 Degree Elbow to Pipe				
C05.051.060A	2CF67-39	CF	CN-2CF-67	NDE-25	MT	CS	16.000		
	Circumferential		CN-2591-1.1			80	0.844		
Class B					90 Degree Elbow to Pipe				
C05.051.105	2SM14-2	SM	CN-2SM-14	NDE-600	UT	CS	34.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2593-1.0				1.375		
Class B					Pipe to 90 Degree Elbow				
C05.051.105A	2SM14-2	SM	CN-2SM-14	NDE-25	MT	CS	34.000		
	Circumferential		CN-2593-1.0				1.375		
Class B					Pipe to 90 Degree Elbow				
C05.051.106	2SM14-3	SM	CN-2SM-14	NDE-600	UT	CS	34.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2593-1.0				1.375		
Class B					90 Degree Elbow to Pipe				
C05.051.106A	2SM14-3	SM	CN-2SM-14		MT	CS	34.000		
	Circumferential		CN-2593-1.0				1.375		
Class B					90 Degree Elbow to Pipe				
C05.051.154	2SV6-4	SV	CN-2SV-6	NDE-600	UT	CS	6.000	*	* Reference General Requirements Section 8.1.10
	Circumferential		CN-2593-1.0			80	0.432		
Class B					Pipe to 90 Degree Elbow				

**CATEGORY C-F-2, Pressure Retaining Welds  
In Carbon Or Low Alloy Steel Piping**DUKE ENERGY CORPORATION  
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**Piping Welds  $\geq$  3/8 in. Nominal Wall Thickness  
for Piping  $>$  NPS 4****Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
C05.051.154A	2SV6-4	SV CN-2SV-6	NDE-25	MT	CS	6.000		
	Circumferential	CN-2593-1.0			80	0.432		
Class B				Pipe to				
				90 Degree Elbow				

**Total C05.051 Items: 18****Total C05 Items: 62**



**CATEGORY C-G, Pressure Retaining Welds  
In Pumps And Valves**

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**Valves**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DI/THK	CAL BLOCKS	COMMENTS
<b>**** Valve Body Welds ****</b>								
C06.020.004	2NI-9A	NI	NDE-35	PT	SS	4.000		Valve Body Weld - Valve Numbers in Valve Group
	Circumferential	CN-2562-1.0				0.867		2NI-9A, 2NI-10B
Class B		CNM-1205.00-83			Valve Body to Bonnet			
C06.020.006	2NI-117	NI	NDE-35	PT	SS	4.000		Valve Body Weld - Valve Numbers in Valve Group
	Circumferential	CN-2562-1.2				0.534		2NI-117, 2NI-149
Class B		CNM-1205.00-90			Valve Body to Bonnet			
C06.020.008	2NI-121A	NI	NDE-35	PT	SS	4.000		Valve Body Weld - Valve Numbers in Valve Group
	Circumferential	CN-2562-1.2				0.867		2NI-121A, 2NI-152B
Class B		CNM-1205.00-87			Valve Body to Bonnet			
C06.020.012	2NS-98	NS	NDE-35	PT	SS	8.000		Valve Body Weld - Valve Numbers in Valve Group
	Circumferential	CN-2563-1.0				0.477		2NS-98, 2NS-99
Class B		CNM-1205.00-152			Valve Body to Bonnet			
C06.020.013	2NV-292	NV	NDE-35	PT	SS	4.000		Valve Body Weld - Valve Numbers in Valve Group
	Circumferential	CN-2554-1.7				0.867		2NV-272, 2NV-292, 2NV-485, 2NV-488
Class B		CNM-1205.00-82			Valve Body to Bonnet			
<hr/>								
<b>Total C06.020 Items:</b>		<b>5</b>						
<b>Total C06 Items:</b>		<b>5</b>						

**CATEGORY D-B, Systems In Support Of ECC,  
CHR, Atmos. Cleanup, And Reactor RHR**DUKE ENERGY CORPORATION  
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Component Supports and Restraints ****</b>								
D02.020.009	2-R-KC-0387	KC CN-2492-KC066	QAL-14	VT-3	NA	6.000		Welded Attachment
	Rigid Support	CN-2573-1.3				0.906		To Be Done With F01.031.053
Class C								
D02.020.013	2-R-RN-0012	RN CN-2492-RN105	QAL-14	VT-3	NA	18.000		Welded Attachment
	Rigid Support	CN-2574-2.4				0.750		To Be Done With F01.030.156
Class C								
<hr/>								
<b>Total D02.020 Items:</b>		<b>2</b>						
<b>Total D02 Items:</b>		<b>2</b>						

**CATEGORY F-A, Supports**

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**Class 1 Piping Supports****Catawba 2****Inservice Inspection Plan for Interval 2 Outage 4**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIATHK	CAL BLOCKS	COMMENTS
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**\*\*\*\* One-Directional \*\*\*\***

F01.010.005	2-R-NC-1512	NC CN-2491-NC039	QAL-14	VT-3	NA		6.000	
	Rigid Support	CN-2553-1.1					0.000	
Class A								

F01.010.006	2-R-NC-1514	NC CN-2491-NC039	QAL-14	VT-3	NA		6.000	
	Rigid Support	CN-2553-1.1					0.000	
Class A								

F01.010.094	2-R-NV-1070	NV CN-2491-NV095	QAL-14	VT-3	NA		2.000	
	Rigid Support	CN-2554-1.5					0.000	
Class A								

F01.010.095	2-R-NV-1072	NV CN-2491-NV095	QAL-14	VT-3	NA		2.000	
	Rigid Support	CN-2554-1.5					0.000	
Class A								

F01.010.096	2-R-NV-1075	NV CN-2491-NV095	QAL-14	VT-3	NA		2.000	
	Rigid Support	CN-2554-1.5					0.000	
Class A								

**Total F01.010 Items: 5**

**\*\*\*\* Multidirectional \*\*\*\***

F01.011.031	2-R-ND-1005	ND CN-2491-ND001	QAL-14	VT-3	NA		12.000	
	Rigid Support	CN-2561-1.1					0.000	
Class A								

F01.011.032	2-R-ND-1006	ND CN-2491-ND001	QAL-14	VT-3	NA		12.000	
	Rigid Support	CN-2561-1.1					0.000	
Class A								

F01.011.053	2-R-NI-1548	NI CN-2491-NI067	QAL-14	VT-3	NA		8.000	
	Rigid Support	CN-2562-1.2					0.000	
Class A								

### **CATEGORY F-A, Supports**

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## Class 1 Piping Supports

## Catawba 2

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ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
F01.011.054	2-R-NI-1549	NI	CN-2491-NI067	QAL-14	VT-3	NA		8.000	
	Rigid Support		CN-2562-1.2					0.000	
Class A									
<b>Total F01.011 Items: 4</b>									
<b>**** Thermal Movement ****</b>									
F01.012.003	2-R-NC-1503	NC	CN-2491-NC039	QAL-14	VT-3	NA		4.000	
	Constant Support		CN-2553-1.1					0.000	
Class A									
F01.012.004	2-R-NC-1504	NC	CN-2491-NC039	QAL-14	VT-3	NA		6.000	
	Constant Support		CN-2553-1.1					0.000	
Class A									
F01.012.005	2-R-NC-1505	NC	CN-2491-NC039	QAL-14	VT-3	NA		6.000	
	Spring Hgr		CN-2553-1.1					0.000	
Class A									
F01.012.006	2-R-NC-1518	NC	CN-2491-NC039	QAL-14	VT-3	NA		6.000	
	Mech Snubber		CN-2553-1.1					0.000	
Class A									
F01.012.007	2-R-NC-1520	NC	CN-2491-NC039	QAL-14	VT-3	NA		6.000	
	Mech Snubber		CN-2553-1.1					0.000	
Class A									
F01.012.008	2-R-NC-1747	NC	CN-2491-NC079	QAL-14	VT-3	NA		1.500	
	Mech Snubber		CN-2553-1.0					0.000	
Class A									
F01.012.009	2-R-NC-1749	NC	CN-2491-NC079	QAL-14	VT-3	NA		1.500	
	Spring Hgr		CN-2553-1.0					0.000	
Class A									

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### Inservice Inspection Plan for Interval 2 Outage 4

## Class 1 Piping Supports

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
F01.012.031	2-R-ND-1000	ND	CN-2491-ND001	QAL-14	VT-3	NA		12.000	
	Spring Hgr		CN-2561-1.1					0.000	
Class A									
F01.012.091	2-R-NV-1074	NV	CN-2491-NV095	QAL-14	VT-3	NA		2.000	
	Mech Snubber		CN-2554-1.5					0.000	
Class A									
Total F01.012 Items:		9							

**CATEGORY F-A, Supports**

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**Catawba 2****Inservice Inspection Plan for Interval 2 Outage 4****Class 2 Piping Supports**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
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**\*\*\*\* One-Directional \*\*\*\***

F01.020.069	2-R-NI-1682	NI CN-2491-NI066 CN-2562-1.3	QAL-14	VT-3	NA	6.000 0.000		
Rigid Support								
Class B								

F01.020.070	2-R-NI-1683	NI CN-2491-NI066 CN-2562-1.3	QAL-14	VT-3	NA	6.000 0.000		
Rigid Support								
Class B								

F01.020.099	2-R-NS-1140	NS CN-2491-NS007 CN-2563-1.0	QAL-14	VT-3	NA	8.000 0.000		
Rigid Support								
Class B								

F01.020.100	2-R-NS-1141	NS CN-2491-NS007 CN-2563-1.0	QAL-14	VT-3	NA	8.000 0.000		
Rigid Support								
Class B								

F01.020.154	2-A-NV-3417	NV CN-2492-NV038 CN-2554-1.2	QAL-14	VT-3	NA	4.000 0.000		
Rigid Support								
Class B								

F01.020.155	2-A-NV-3418	NV CN-2492-NV040 CN-2554-1.2	QAL-14	VT-3	NA	4.000 0.000		
Rigid Support								
Class B								

F01.020.205	2-R-SM-1543	SM CN-2491-SM007 CN-2593-1.0	QAL-14	VT-3	NA	34.000 0.000		
Rigid Support								
Class B								

<b>Total F01.020 Items:</b>	<b>7</b>							
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**\*\*\*\* Multidirectional \*\*\*\***

F01.021.073	2-R-NI-1616	NI CN-2491-NI056 CN-2562-1.3	QAL-14	VT-3	NA	6.000 0.000		
Rigid Support								
Class B								

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### Inservice Inspection Plan for Interval 2 Outage 4

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
F01.021.074	2-R-NI-1617	NI	CN-2491-NI056	QAL-14	VT-3	NA		6.000	
	Rigid Support		CN-2562-1.3					0.000	
Class B									
F01.021.075	2-R-NI-1618	NI	CN-2491-NI056	QAL-14	VT-3	NA		6.000	
	Rigid Support		CN-2562-1.3					0.000	
Class B									
F01.021.076	2-R-NI-1680	NI	CN-2491-NI066	QAL-14	VT-3	NA		6.000	
	Rigid Support		CN-2562-1.3					0.000	
Class B									
F01.021.077	2-R-NI-1681	NI	CN-2491-NI066	QAL-14	VT-3	NA		6.000	
	Rigid Support		CN-2562-1.3					0.000	
Class B									
F01.021.102	2-R-NS-1117	NS	CN-2491-NS009	QAL-14	VT-3	NA		8.000	
	Rigid Support		CN-2563-1.0					0.000	
Class B									
F01.021.103	2-R-NS-1125	NS	CN-2491-NS009	QAL-14	VT-3	NA		8.000	
	Rigid Support		CN-2563-1.0					0.000	
Class B									
F01.021.153	2-R-NV-0062	NV	CN-2492-NV035	QAL-14	VT-3	NA		3.000	
	Rigid Support		CN-2554-1.2					0.000	
Class B									
F01.021.154	2-R-NV-0063	NV	CN-2492-NV035	QAL-14	VT-3	NA		3.000	
	Rigid Support		CN-2554-1.2					0.000	
Class B									
F01.021.155	2-R-NV-0064	NV	CN-2492-NV035	QAL-14	VT-3	NA		3.000	
	Rigid Support		CN-2554-1.2					0.000	
Class B									

### **CATEGORY F-A, Supports**

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ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>Total F01.021 Items:</b>		<b>10</b>							
<b>**** Thermal Movement ****</b>									
F01.022.013	2-R-CF-1559	CF	CN-2491-CF003	QAL-14	VT-3	NA		18.000	
	Mech Snubber		CN-2591-1.1					0.000	
Class B									
F01.022.014	2-R-CF-1563	CF	CN-2491-CF003	QAL-14	VT-3	NA		18.000	
	Spring Hgr		CN-2591-1.1					0.000	
Class B									
F01.022.143	2-A-NV-0358	NV	CN-2492-NV064	QAL-14	VT-3	NA		2.000	
	Spring Hgr		CN-2554-1.5					0.000	
Class B									
F01.022.144	2-R-NV-0136	NV	CN-2492-NV064	QAL-14	VT-3	NA		2.000	
	Spring Hgr		CN-2554-1.5					0.000	
Class B									
F01.022.193	2-R-SA-1518	SA	CN-2491-SA002	QAL-14	VT-3	NA		6.000	
	Spring Hgr		CN-2593-1.1					0.000	
Class B									
F01.022.194	2-R-SA-1520	SA	CN-2491-SA002	QAL-14	VT-3	NA		6.000	
	Mech Snubber		CN-2593-1.1					0.000	
Class B									
F01.022.205	2-R-SM-1541	SM	CN-2491-SM007	QAL-14	VT-3	NA		34.000	
	Mech Snubber		CN-2593-1.0					0.000	
Class B									
F01.022.206	2-R-SM-1542	SM	CN-2491-SM007	QAL-14	VT-3	NA		34.000	
	Mech Snubber		CN-2593-1.0					0.000	
Class B									



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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
F01.022.208	2-R-SM-1549	SM CN-2491-SM007	QAL-14	VT-3	NA	34.000		
	Mech Snubber	CN-2593-1.0				0.000		

Class B

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**Total F01.022 Items: 9**

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### **Class 3 Piping Supports**

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
**** One-Directional ****									
F01.030.004	2-R-CA-0104	CA	CN-2492-CA027	QAL-14	VT-3	NA		4.000	
	Rigid Support		CN-2592-1.1					0.000	
Class C									
F01.030.005	2-R-CA-0236	CA	CN-2492-CA029	QAL-14	VT-3	NA		4.000	
	Rigid Support		CN-2592-1.1					0.000	
Class C									
F01.030.006	2-R-CA-0239	CA	CN-2492-CA029	QAL-14	VT-3	NA		4.000	
	Rigid Support		CN-2592-1.1					0.000	
Class C									
F01.030.059	2-R-KC-0283	KC	CN-2492-KC057	QAL-14	VT-3	NA		16.000	
	Rigid Support		CN-2573-1.0					0.000	
Class C									
F01.030.060	2-R-KC-0285	KC	CN-2492-KC057	QAL-14	VT-3	NA		16.000	
	Rigid Support		CN-2573-1.0					0.000	
Class C									
F01.030.061	2-R-KC-0425	KC	CN-2492-KC057	QAL-14	VT-3	NA		16.000	
	Rigid Support		CN-2573-1.0					0.000	
Class C									
F01.030.062	2-R-KC-0291	KC	CN-2492-KC062	QAL-14	VT-3	NA		20.000	
	Rigid Support		CN-2573-1.0					0.000	
Class C									
F01.030.063	2-R-KC-0293	KC	CN-2492-KC062	QAL-14	VT-3	NA		20.000	
	Rigid Support		CN-2573-1.0					0.000	
Class C									

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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
F01.030.064	2-R-KC-0371	KC CN-2492-KC062	QAL-14	VT-3	NA	20.000	0.000	
	Rigid Support	CN-2573-1.0						
Class C								
F01.030.102	2-R-KD-0066	KD CN-2493-KD020	QAL-14	VT-3	NA	8.000	0.000	
	Rigid Support	CN-2609-1.0						
Class C								
F01.030.121	2-R-LD-0027	LD CN-2493-LD005	QAL-14	VT-3	NA	6.000	0.000	
	Rigid Support	CN-2609-2.2						
Class C								
F01.030.123	2-R-LD-0001	LD CN-2493-LD028	QAL-14	VT-3	NA	6.000	0.000	
	Rigid Support	CN-2609-2.0						
Class C								
F01.030.155	2-R-RN-0010	RN CN-2492-RN105	QAL-14	VT-3	NA	18.000	0.000	
	Rigid Support	CN-2574-2.4						
Class C								
F01.030.156	2-R-RN-0012	RN CN-2492-RN105	QAL-14	VT-3	NA	18.000	0.000	To Be Done With D02.020.013
	Rigid Support	CN-2574-2.4						
Class C								
F01.030.157	2-R-RN-0015	RN CN-2492-RN105	QAL-14	VT-3	NA	18.000	0.000	
	Rigid Support	CN-2574-2.4						
Class C								
F01.030.158	2-R-RN-0018	RN CN-2492-RN105	QAL-14	VT-3	NA	18.000	0.000	
	Rigid Support	CN-2574-2.4						
Class C								

**Total F01.030 Items: 16**

\*\*\*\* Multidirectional \*\*\*\*

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### **Class 3 Piping Supports**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIATHK CAL BLOCKS	COMMENTS
F01.031.053	2-R-KC-0387 Rigid Support	KC CN-2492-KC066 CN-2573-1.3	QAL-14	VT-3	NA	6.000 0.000	To Be Done With D02.020.009
Class C							
F01.031.101	2-R-KD-0040 Rigid Support	KD CN-2493-KD023 CN-2609-1.0	QAL-14	VT-3	NA	6.000 0.000	
Class C							
<b>Total F01.031 Items:</b>		<b>2</b>					
<b>**** Thermal Movement ****</b>							
F01.032.054	2-R-KC-0420 Mech Snubber	KC CN-2492-KC068 CN-2573-1.2	QAL-14	VT-3	NA	8.000 0.000	
Class C							
F01.032.223	2-R-VN-0096 Mech Snubber	VN CN-2493-VN012 CN-2609-5.0	QAL-14	VT-3	NA	26.000 0.000	
Class C							
<b>Total F01.032 Items:</b>		<b>2</b>					

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**Class 1,2,3 Supports**

ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
<b>**** Supports Other Than Piping Supports ****</b>								
F01.040.002	2PZR-SKIRT	CN-2553-1.0	QAL-14	VT-3	NA		0.000	PZR Support Skirt
	Rigid Support	CNM 2201.01.110					0.000	
Class A								
F01.040.003	2PZR-SUPPORT	CN-2553-1.0	QAL-14	VT-3	NA		0.000	PZR Lower Support Frame
	Rigid Support	CN-1070-14					0.000	
Class A								
F01.040.108	2SWHX-SUPPORT	NC CN-2554-1.6	QAL-14	VT-3	NA		0.000	Seal Water Heat Exchanger Support
	Rigid Support	CNM 1201.06-50					0.000	
Class B								
<hr/>								
<b>Total F01.040 Items:</b>		<b>3</b>						
<b>Total F01 Items:</b>		<b>67</b>						

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## Reactor Coolant Pump Flywheel Inspection

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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
**** NRC Regulatory Guide 1.14 ****								
G01.001.004	2RCP-2D	NC CN-2NC-015 CN-2553-1.0	NDE-949	UT	CS	0.000 0.000	50237	Reactor Coolant Pump 2D Flywheel A qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle one-half of the outer radius or a surface examination (MT and/or PT) of exposed surfaces of the removed flywheels may be conducted at approximately 10 year intervals coinciding with the Inservice Inspection Schedule as required by ASME Section XI.
Class A								
Total G01.001 Items:		1						
Total G01 Items:		1						

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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
H02.001.001	2-R-NC-1929	NC CN-2NC-094 CN-2491-NC-052	NDE-35	PT	SS	0.750 0.218		Class 2 Welded Attachment Pipe to Anchor Pad Weld
Class B				Pipe to Anchor Pad				

**Total H02.001 Items: 1**

**Total H02 Items: 1**

## **5.0 Results Of Inspections Performed**

The results of each examination shown in the final Inservice Inspection Plan (Section 4.0 of this report) are included in this section. The completion date and status for each examination are shown. Limited examinations are described in further detail in Section 5.2. All examinations revealing reportable indications are described in further detail in Section 6.0.

**5.1** The information shown below is a field description for the reporting format included in this section of the report:

Item Number	=	ASME Section XI Tables IWB-2500-1 (Class 1), IWC-2500-1 (Class 2), IWF-2500-1 (Class 1 and Class 2), and Augmented / Elective Requirements
ID Number	=	Unique Identification Number
System	=	Plant System Designation
Insp Date	=	Date of Examination
Insp Status	=	CLR Clear REC Recordable REP Reportable
Insp Limited	=	Indicates inspection was limited Coverage obtained is listed
Geo Ref (Geometric Reflector applies only to UT)	=	<u>Y</u> Yes <u>N</u> No
RFR (Request for Relief)	=	<u>Y</u> Yes <u>N</u> No
Comments	=	General and/or Detail Description



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B02.011.001	2PZR-W8A	NC	09/23/2001	CLR	---	N	N	
B02.012.001	2PZR-W9A	NC	09/23/2001	CLR	---	N	N	
B03.110.001	2PZR-W1	NC	10/09/2001	CLR	42.80%	N	Y	Request for Relief Serial No. 01-003
B03.120.001	2PZR-W1	NC	10/09/2001	CLR	---	N	N	
B05.040.001	2PZR-W1SE	NC	10/09/2001	CLR	---	N	N	
B05.040.001A	2PZR-W1SE	NC	10/09/2001	CLR	---	N	N	
B06.010.019	2RPV-179-102-19	NC	10/02/2001	CLR	---	N	N	
B06.010.020	2RPV-179-102-20A	NC	09/27/2001	CLR	---	N	N	
B06.010.021	2RPV-179-102-21A	NC	09/27/2001	CLR	---	N	N	
B06.010.022	2RPV-179-102-22	NC	09/27/2001	CLR	---	N	N	
B06.010.023	2RPV-179-102-23	NC	09/27/2001	CLR	---	N	N	
B06.010.024	2RPV-179-102-24	NC	09/27/2001	CLR	---	N	N	
B06.010.025	2RPV-179-102-25	NC	09/27/2001	CLR	---	N	N	
B06.010.026	2RPV-179-102-26	NC	09/27/2001	CLR	---	N	N	
B06.010.027	2RPV-179-102-27	NC	09/27/2001	CLR	---	N	N	
B06.010.028	2RPV-179-102-28	NC	09/27/2001	CLR	---	N	N	
B06.010.029	2RPV-179-102-29	NC	09/27/2001	CLR	---	N	N	
B06.010.030	2RPV-179-102-30	NC	09/27/2001	CLR	---	N	N	
B06.010.031	2RPV-179-102-31	NC	09/27/2001	CLR	---	N	N	
B06.010.032	2RPV-179-102-32	NC	10/02/2001	CLR	---	N	N	
B06.010.033	2RPV-179-102-S2	NC	10/02/2001	CLR	---	N	N	
B06.010.034	2RPV-179-102-34	NC	10/02/2001	CLR	---	N	N	
B06.010.035	2RPV-179-102-35	NC	10/02/2001	CLR	---	N	N	
B06.010.036	2RPV-179-102-36	NC	10/02/2001	CLR	---	N	N	
B06.030.019	2RPV-179-101-19	NC	10/01/2001	CLR	---	N	N	
B06.030.019A	2RPV-179-101-19	NC	10/02/2001	CLR	---	N	N	
B06.030.020	2RPV-179-101-20A	NC	09/27/2001	CLR	---	N	N	
B06.030.020A	2RPV-179-101-20A	NC	09/27/2001	CLR	---	N	N	
B06.030.021	2RPV-179-101-21A	NC	09/27/2001	CLR	---	N	N	
B06.030.021A	2RPV-179-101-21A	NC	09/27/2001	CLR	---	N	N	
B06.030.022	2RPV-179-101-22	NC	09/27/2001	CLR	---	N	N	
B06.030.022A	2RPV-179-101-22	NC	09/27/2001	CLR	---	N	N	
B06.030.023	2RPV-179-101-23	NC	09/27/2001	CLR	---	N	N	
B06.030.023A	2RPV-179-101-23	NC	09/27/2001	CLR	---	N	N	
B06.030.024	2RPV-179-101-24	NC	09/27/2001	CLR	---	N	N	
B06.030.024A	2RPV-179-101-24	NC	09/27/2001	CLR	---	N	N	

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B06.030.025	2RPV-179-101-25	NC	09/27/2001	CLR	---	N	N	
B06.030.025A	2RPV-179-101-25	NC	09/27/2001	CLR	---	N	N	
B06.030.026	2RPV-179-101-26	NC	09/27/2001	CLR	---	N	N	
B06.030.026A	2RPV-179-101-26	NC	09/27/2001	CLR	---	N	N	
B06.030.027	2RPV-179-101-27	NC	09/27/2001	CLR	---	N	N	
B06.030.027A	2RPV-179-101-27	NC	09/27/2001	CLR	---	N	N	
B06.030.028	2RPV-179-101-28	NC	09/27/2001	CLR	---	N	N	
B06.030.028A	2RPV-179-101-28	NC	09/27/2001	CLR	---	N	N	
B06.030.029	2RPV-179-101-29	NC	09/27/2001	CLR	---	N	N	
B06.030.029A	2RPV-179-101-29	NC	09/27/2001	CLR	---	N	N	
B06.030.030	2RPV-179-101-30	NC	09/27/2001	CLR	---	N	N	
B06.030.030A	2RPV-179-101-30	NC	09/27/2001	CLR	---	N	N	
B06.030.031	2RPV-179-101-31	NC	09/27/2001	CLR	---	N	N	
B06.030.031A	2RPV-179-101-31	NC	09/27/2001	CLR	---	N	N	
B06.030.032	2RPV-179-101-32	NC	10/01/2001	CLR	---	N	N	
B06.030.032A	2RPV-179-101-32	NC	10/02/2001	CLR	---	N	N	
B06.030.033	2RPV-179-101-S2	NC	10/01/2001	CLR	---	N	N	
B06.030.033A	2RPV-179-101-S2	NC	10/02/2001	CLR	---	N	N	
B06.030.034	2RPV-179-101-34	NC	10/01/2001	CLR	---	N	N	
B06.030.034A	2RPV-179-101-34	NC	10/02/2001	CLR	---	N	N	
B06.030.035	2RPV-179-101-35	NC	10/01/2001	CLR	---	N	N	
B06.030.035A	2RPV-179-101-35	NC	10/02/2001	CLR	---	N	N	
B06.030.036	2RPV-179-101-36	NC	10/01/2001	CLR	---	N	N	
B06.030.036A	2RPV-179-101-36	NC	10/02/2001	CLR	---	N	N	
B06.040.019	2RPV-THREAD-19	NC	09/20/2001	CLR	---	N	N	
B06.040.020	2RPV-THREAD-20	NC	09/20/2001	CLR	---	N	N	
B06.040.021	2RPV-THREAD-21	NC	09/20/2001	CLR	---	N	N	
B06.040.022	2RPV-THREAD-22	NC	09/20/2001	CLR	---	N	N	
B06.040.023	2RPV-THREAD-23	NC	09/20/2001	CLR	---	N	N	
B06.040.024	2RPV-THREAD-24	NC	09/20/2001	CLR	---	N	N	
B06.040.025	2RPV-THREAD-25	NC	09/20/2001	CLR	---	N	N	
B06.040.026	2RPV-THREAD-26	NC	09/20/2001	CLR	---	N	N	
B06.040.027	2RPV-THREAD-27	NC	09/20/2001	CLR	---	N	N	
B06.040.028	2RPV-THREAD-28	NC	09/20/2001	CLR	---	N	N	
B06.040.029	2RPV-THREAD-29	NC	09/20/2001	CLR	---	N	N	
B06.040.030	2RPV-THREAD-30	NC	09/20/2001	CLR	---	N	N	

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B06.040.031	2RPV-THREAD-31	NC	09/20/2001	CLR	---	N	N	
B06.040.032	2RPV-THREAD-32	NC	09/20/2001	CLR	---	N	N	
B06.040.033	2RPV-THREAD-33	NC	09/20/2001	CLR	---	N	N	
B06.040.034	2RPV-THREAD-34	NC	09/20/2001	CLR	---	N	N	
B06.040.035	2RPV-THREAD-35	NC	09/20/2001	CLR	---	N	N	
B06.040.036	2RPV-THREAD-36	NC	09/20/2001	CLR	---	N	N	
B06.050.019	2RPV-179-103-19	NC	09/28/2001	CLR	---	N	N	
B06.050.020	2RPV-179-103-20A	NC	09/28/2001	CLR	---	N	N	
B06.050.021	2RPV-179-103-21A	NC	09/28/2001	CLR	---	N	N	
B06.050.022	2RPV-179-103-22	NC	09/28/2001	CLR	---	N	N	
B06.050.023	2RPV-179-103-23	NC	09/28/2001	CLR	---	N	N	
B06.050.024	2RPV-179-103-24	NC	09/28/2001	CLR	---	N	N	
B06.050.025	2RPV-179-103-25	NC	09/28/2001	CLR	---	N	N	
B06.050.026	2RPV-179-103-26	NC	09/27/2001	CLR	---	N	N	
B06.050.027	2RPV-179-103-27	NC	09/25/2001	CLR	---	N	N	
B06.050.028	2RPV-179-103-28	NC	09/27/2001	CLR	---	N	N	
B06.050.029	2RPV-179-103-29	NC	09/27/2001	CLR	---	N	N	
B06.050.030	2RPV-179-103-30	NC	09/27/2001	CLR	---	N	N	
B06.050.031	2RPV-179-103-31	NC	09/27/2001	CLR	---	N	N	
B06.050.032	2RPV-179-103-32	NC	09/25/2001	CLR	---	N	N	
B06.050.033	2RPV-179-103-S2	NC	10/01/2001	CLR	---	N	N	
B06.050.034	2RPV-179-103-34	NC	09/25/2001	CLR	---	N	N	
B06.050.035	2RPV-179-103-35	NC	10/01/2001	CLR	---	N	N	
B06.050.036	2RPV-179-103-36	NC	09/25/2001	CLR	---	N	N	
B07.070.021	2NI-54A	NI	09/29/2001	CLR	---	N	N	
B07.070.022	2NI-59	NI	10/06/2001	CLR	---	N	N	
B08.020.001	2PZR-SKIRT		09/23/2001	CLR	---	N	N	
B08.020.001A	2PZR-SKIRT		09/23/2001	CLR	75.16%	Y	N	
B09.011.047	2NC8-2	NC	10/09/2001	CLR	---	N	N	
B09.011.047A	2NC8-2	NC	10/09/2001	CLR	---	N	N	
B09.011.048	2NC8-3	NC	10/09/2001	CLR	---	Y	N	
B09.011.048A	2NC8-3	NC	10/09/2001	CLR	---	N	N	
B09.011.087	2NI74-1	NI	09/25/2001	CLR	---	N	N	
B09.011.087A	2NI74-1	NI	09/25/2001	CLR	---	N	N	
B09.011.088	2NI74-11	NI	09/25/2001	CLR	---	N	N	
B09.011.088A	2NI74-11	NI	09/25/2001	CLR	---	N	N	

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B09.011.089	2NI74-3	NI	09/25/2001	CLR	---	N	N	
B09.011.089A	2NI74-3	NI	09/25/2001	CLR	---	N	N	
B09.011.090	2NI74-9	NI	09/25/2001	CLR	---	N	N	
B09.011.090A	2NI74-9	NI	09/25/2001	CLR	---	N	N	
B09.011.093	2NI91-5	NI	09/26/2001	CLR	---	N	N	
B09.011.093A	2NI91-5	NI	09/26/2001	CLR	---	N	N	
B09.011.094	2NI91-7	NI	09/26/2001	CLR	---	Y	N	
B09.011.094A	2NI91-7	NI	09/26/2001	CLR	---	N	N	
B09.011.095	2NI91-9	NI	09/26/2001	CLR	---	Y	N	
B09.011.095A	2NI91-9	NI	09/26/2001	CLR	---	N	N	
B09.021.028	2NI396-5	NI	09/20/2001	CLR	---	N	N	
B09.031.003	2NC13-WN9	NC	09/19/2001	CLR	22.87%	N	Y	Request for Relief Serial No. 01-003
B09.031.003A	2NC13-WN9	NC	09/19/2001	CLR	---	N	N	
B09.032.001	2NC13-WN4	NC	09/26/2001	CLR	---	N	N	
B09.032.004	2NC13-WN8A	NC	09/19/2001	CLR	---	N	N	
B09.032.006	2NC9-WN6	NC	09/19/2001	CLR	---	N	N	
B09.040.009	2NC74-1	NC	09/19/2001	CLR	---	N	N	
B09.040.010	2NC74-10	NC	09/19/2001	CLR	---	N	N	
B09.040.011	2NC74-12	NC	09/19/2001	CLR	---	N	N	
B09.040.012	2NC74-9	NC	09/19/2001	CLR	---	N	N	
B09.040.022	2NI295-2	NI	09/29/2001	CLR	---	N	N	
B09.040.023	2NI295-4	NI	09/29/2001	CLR	---	N	N	
B09.040.024	2NI297-3	NI	09/29/2001	CLR	---	N	N	
B09.040.025	2NI297-5	NI	09/29/2001	CLR	---	N	N	
B09.040.026	2NI301-1	NI	10/01/2001	CLR	---	N	N	
B09.040.027	2NI301-4	NI	10/01/2001	CLR	---	N	N	
B09.040.028	2NI304-1	NI	09/20/2001	CLR	---	N	N	
B09.040.029	2NI304-3	NI	09/20/2001	CLR	---	N	N	
B12.050.001A	2NC-1	NC	04/18/2000	CLR	---	N	N	
B12.050.002A	2NC-27	NC	09/25/2001	CLR	---	N	N	
B12.050.002B	2NC-29	NC	09/27/2001	CLR	---	N	N	
B12.050.004E	2NI-175	NI	10/03/2001	REC	---	N	N	
B12.050.004G	2NI-180	NI	10/04/2001	CLR	---	N	N	
B12.050.006B	2NI-60	NI	10/03/2001	CLR	---	N	N	
B12.050.006E	2NI-81	NI	10/03/2001	CLR	---	N	N	
B12.050.006F	2NI-82	NI	10/02/2001	REC	---	N	N	

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B12.050.006H	2NI-94	NI	10/03/2001	CLR	---	N	N	
B12.050.007A	2NI-125	NI	10/04/2001	CLR	---	N	N	
C01.010.003	2SGD-05-06A	NC	09/27/2001	CLR	---	N	N	
C01.010.005	2SWHX-5-3	NV	09/06/2001	CLR	---	N	N	
C01.020.002	2ELDHX-HD-FLG	NV	10/01/2001	CLR	---	Y	N	
C01.020.016	2SWHX-5-6	NV	09/06/2001	CLR	---	N	N	
C02.011.001	2SWHX-5-A	NV	09/06/2001	CLR	---	N	N	
C02.011.002	2SWHX-5-B	NV	09/06/2001	CLR	---	N	N	
C02.021.001	2SGB-06A-18	NC	09/28/2001	CLR	75.00%	N	Y	Request for Relief Serial No. 01-003
C02.021.001A	2SGB-06A-18	NC	09/28/2001	CLR	---	N	N	
C02.021.004	2BNSHX-3-N1	NS	09/11/2001	CLR	49.03%	Y	Y	Request for Relief Serial No. 01-003
C02.021.004A	2BNSHX-3-N1	NS	09/11/2001	CLR	---	N	N	
C02.021.005	2BNSHX-3-N2	NS	09/11/2001	CLR	49.03%	Y	Y	Request for Relief Serial No. 01-003
C02.021.005A	2BNSHX-3-N2	NS	09/11/2001	CLR	---	N	N	
C03.010.002	2SWHX-SUPP	ND	09/06/2001	CLR	---	N	N	
C03.020.063	2-R-SM-1546	SM	10/02/2001	CLR	---	N	N	
C03.020.077	2-R-SM-1537	SM	10/02/2001	CLR	---	N	N	
C03.020.080	2-R-SM-1541	SM	10/02/2001	CLR	---	N	N	
C05.011.001	2CA59-22	CA	10/03/2001	CLR	---	N	N	
C05.011.001A	2CA59-22	CA	10/01/2001	CLR	---	N	N	
C05.011.002	2CA59-23	CA	10/03/2001	CLR	---	N	N	
C05.011.002A	2CA59-23	CA	10/01/2001	CLR	---	N	N	
C05.011.003	2CA59-25	CA	10/03/2001	CLR	---	N	N	
C05.011.003A	2CA59-25	CA	10/01/2001	CLR	---	N	N	
C05.011.016	2CA72-53	CA	10/02/2001	CLR	---	N	N	
C05.011.016A	2CA72-53	CA	10/02/2001	CLR	---	N	N	
C05.011.017	2CA72-58	CA	10/02/2001	CLR	---	N	N	
C05.011.017A	2CA72-58	CA	10/02/2001	CLR	---	N	N	
C05.011.018	2CA72-60	CA	10/02/2001	CLR	---	N	N	
C05.011.018A	2CA72-60	CA	10/02/2001	CLR	---	N	N	
C05.011.131	2NI86-2	NI	09/29/2001	CLR	---	N	N	
C05.011.131A	2NI86-2	NI	09/29/2001	CLR	---	N	N	
C05.011.132	2NI86-3	NI	09/29/2001	CLR	---	N	N	
C05.011.132A	2NI86-3	NI	09/29/2001	CLR	---	N	N	
C05.011.133	2NI86-12	NI	09/29/2001	CLR	---	N	N	
C05.011.133A	2NI86-12	NI	09/29/2001	CLR	---	N	N	

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C05.011.134	2NI86-13	NI	09/29/2001	CLR	---	N	N	
C05.011.134A	2NI86-13	NI	09/29/2001	CLR	---	N	N	
C05.011.135	2NI86-15	NI	09/29/2001	CLR	---	Y	N	
C05.011.135A	2NI86-15	NI	09/29/2001	CLR	---	N	N	
C05.011.136	2NI86-16	NI	09/29/2001	CLR	---	N	N	
C05.011.136A	2NI86-16	NI	09/29/2001	CLR	---	N	N	
C05.011.137	2NI86-18	NI	09/29/2001	CLR	---	Y	N	
C05.011.137A	2NI86-18	NI	09/29/2001	CLR	---	N	N	
C05.011.138	2NI86-19	NI	09/29/2001	CLR	---	N	N	
C05.011.138A	2NI86-19	NI	09/29/2001	CLR	---	N	N	
C05.011.139	2NI86-20	NI	09/29/2001	CLR	---	N	N	
C05.011.139A	2NI86-20	NI	09/29/2001	CLR	---	N	N	
C05.021.230	2NV20-1	NV	09/12/2001	CLR	---	N	N	
C05.021.230A	2NV20-1	NV	09/11/2001	CLR	---	N	N	
C05.021.231	2NV20-2	NV	09/12/2001	CLR	---	N	N	
C05.021.231A	2NV20-2	NV	09/11/2001	CLR	---	N	N	
C05.021.232	2NV20-5	NV	09/12/2001	CLR	61.09%	N	Y	Request for Relief Serial No. 01-003
C05.021.232A	2NV20-5	NV	09/11/2001	CLR	---	N	N	
C05.021.233	2NV20-7	NV	09/12/2001	CLR	---	N	N	
C05.021.233A	2NV20-7	NV	09/11/2001	CLR	---	N	N	
C05.021.234	2NV20-8	NV	09/12/2001	CLR	---	N	N	
C05.021.234A	2NV20-8	NV	09/11/2001	CLR	---	N	N	
C05.030.101	2NV16-10	NV	09/06/2001	CLR	---	N	N	
C05.030.102	2NV16-11	NV	09/06/2001	CLR	---	N	N	
C05.030.103	2NV16-12	NV	09/06/2001	CLR	---	N	N	
C05.030.104	2NV16-14	NV	09/06/2001	CLR	---	N	N	
C05.051.005	2CA67-1	CA	09/28/2001	CLR	---	Y	N	
C05.051.005A	2CA67-1	CA	09/28/2001	CLR	---	N	N	
C05.051.010	2CA93-9	CA	09/30/2001	CLR	---	Y	N	
C05.051.010A	2CA93-9	CA	09/30/2001	CLR	---	N	N	
C05.051.057	2CF66-29	CF	09/28/2001	CLR	---	Y	N	
C05.051.057A	2CF66-29	CF	09/28/2001	CLR	---	N	N	
C05.051.058	2CF66-38	CF	09/28/2001	CLR	---	Y	N	
C05.051.058A	2CF66-38	CF	09/28/2001	CLR	---	N	N	
C05.051.059	2CF67-26	CF	09/28/2001	CLR	---	Y	N	
C05.051.059A	2CF67-26	CF	09/28/2001	CLR	---	N	N	

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C05.051.060	2CF67-39	CF	09/28/2001	CLR	---	Y	N	
C05.051.060A	2CF67-39	CF	09/28/2001	CLR	---	N	N	
C05.051.105	2SM14-2	SM	09/28/2001	CLR	---	N	N	
C05.051.105A	2SM14-2	SM	09/28/2001	CLR	---	N	N	
C05.051.106	2SM14-3	SM	09/28/2001	CLR	---	N	N	
C05.051.106A	2SM14-3	SM	09/28/2001	CLR	---	N	N	
C05.051.154	2SV6-4	SV	09/30/2001	CLR	---	Y	N	
C05.051.154A	2SV6-4	SV	09/30/2001	CLR	---	N	N	
C06.020.004	2NI-9A	NI	09/06/2001	CLR	---	N	N	
C06.020.006	2NI-117	NI	09/06/2001	CLR	---	N	N	
C06.020.008	2NI-121A	NI	09/06/2001	CLR	---	N	N	
C06.020.012	2NS-98	NS	09/06/2001	CLR	---	N	N	
C06.020.013	2NV-292	NV	09/06/2001	CLR	---	N	N	
D02.020.009	2-R-KC-0387	KC	09/20/2001	CLR	---	N	N	
D02.020.013	2-R-RN-0012	RN	09/20/2001	CLR	---	N	N	
F01.010.005	2-R-NC-1512	NC	09/23/2001	CLR	---	N	N	
F01.010.006	2-R-NC-1514	NC	09/20/2001	CLR	---	N	N	
F01.010.094	2-R-NV-1070	NV	09/20/2001	CLR	---	N	N	
F01.010.095	2-R-NV-1072	NV	09/20/2001	CLR	---	N	N	
F01.010.096	2-R-NV-1075	NV	09/20/2001	CLR	---	N	N	
F01.011.031	2-R-ND-1005	ND	09/20/2001	CLR	---	N	N	
F01.011.032	2-R-ND-1006	ND	09/20/2001	CLR	---	N	N	
F01.011.053	2-R-NI-1548	NI	09/20/2001	CLR	---	N	N	
F01.011.054	2-R-NI-1549	NI	09/20/2001	CLR	---	N	N	
F01.012.003	2-R-NC-1503	NC	09/23/2001	REC	---	N	N	
F01.012.004	2-R-NC-1504	NC	09/20/2001	CLR	---	N	N	
F01.012.005	2-R-NC-1505	NC	09/20/2001	CLR	---	N	N	
F01.012.006	2-R-NC-1518	NC	09/20/2001	CLR	---	N	N	
F01.012.007	2-R-NC-1520	NC	09/20/2001	CLR	---	N	N	
F01.012.008	2-R-NC-1747	NC	09/20/2001	CLR	---	N	N	
F01.012.009	2-R-NC-1749	NC	09/20/2001	CLR	---	N	N	
F01.012.031	2-R-ND-1000	ND	09/20/2001	CLR	---	N	N	
F01.012.091	2-R-NV-1074	NV	09/20/2001	CLR	---	N	N	
F01.020.069	2-R-NI-1682	NI	09/20/2001	CLR	---	N	N	
F01.020.070	2-R-NI-1683	NI	09/20/2001	CLR	---	N	N	
F01.020.099	2-R-NS-1140	NS	09/23/2001	CLR	---	N	N	

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F01.020.100	2-R-NS-1141	NS	09/23/2001	CLR	---	N	N	
F01.020.154	2-A-NV-3417	NV	09/16/2001	CLR	---	N	N	
F01.020.155	2-A-NV-3418	NV	09/15/2001	CLR	---	N	N	
F01.020.205	2-R-SM-1543	SM	09/24/2001	CLR	---	N	N	
F01.021.073	2-R-NI-1616	NI	09/20/2001	CLR	---	N	N	
F01.021.074	2-R-NI-1617	NI	09/20/2001	CLR	---	N	N	
F01.021.075	2-R-NI-1618	NI	09/20/2001	CLR	---	N	N	
F01.021.076	2-R-NI-1680	NI	09/20/2001	CLR	---	N	N	
F01.021.077	2-R-NI-1681	NI	09/20/2001	CLR	---	N	N	
F01.021.102	2-R-NS-1117	NS	09/23/2001	CLR	---	N	N	
F01.021.103	2-R-NS-1125	NS	09/23/2001	CLR	---	N	N	
F01.021.153	2-R-NV-0062	NV	09/16/2001	CLR	---	N	N	
F01.021.154	2-R-NV-0063	NV	09/15/2001	CLR	---	N	N	
F01.021.155	2-R-NV-0064	NV	09/15/2001	CLR	---	N	N	
F01.022.013	2-R-CF-1559	CF	09/26/2001	CLR	---	N	N	
F01.022.014	2-R-CF-1563	CF	09/26/2001	CLR	---	N	N	
F01.022.143	2-A-NV-0358	NV	09/21/2001	CLR	---	N	N	
F01.022.144	2-R-NV-0136	NV	09/16/2001	CLR	---	N	N	
F01.022.193	2-R-SA-1518	SA	09/20/2001	CLR	---	N	N	
F01.022.194	2-R-SA-1520	SA	09/20/2001	CLR	---	N	N	
F01.022.205	2-R-SM-1541	SM	09/15/2001	CLR	---	N	N	
F01.022.206	2-R-SM-1542	SM	09/15/2001	CLR	---	N	N	
F01.022.208	2-R-SM-1549	SM	09/15/2001	REC	---	N	N	
F01.030.004	2-R-CA-0104	CA	09/20/2001	CLR	---	N	N	
F01.030.005	2-R-CA-0236	CA	09/15/2001	CLR	---	N	N	
F01.030.006	2-R-CA-0239	CA	09/20/2001	CLR	---	N	N	
F01.030.059	2-R-KC-0283	KC	09/20/2001	CLR	---	N	N	
F01.030.060	2-R-KC-0285	KC	09/20/2001	CLR	---	N	N	
F01.030.061	2-R-KC-0425	KC	09/20/2001	CLR	---	N	N	
F01.030.062	2-R-KC-0291	KC	09/20/2001	CLR	---	N	N	
F01.030.063	2-R-KC-0293	KC	09/20/2001	CLR	---	N	N	
F01.030.064	2-R-KC-0371	KC	09/20/2001	CLR	---	N	N	
F01.030.102	2-R-KD-0066	KD	09/20/2001	CLR	---	N	N	
F01.030.121	2-R-LD-0027	LD	09/15/2001	CLR	---	N	N	
F01.030.123	2-R-LD-0001	LD	09/18/2001	CLR	---	N	N	
F01.030.155	2-R-RN-0010	RN	09/20/2001	CLR	---	N	N	



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F01.030.156	2-R-RN-0012	RN	09/20/2001	CLR	---	N	N	
F01.030.157	2-R-RN-0015	RN	09/20/2001	CLR	---	N	N	
F01.030.158	2-R-RN-0018	RN	09/20/2001	CLR	---	N	N	
F01.031.053	2-R-KC-0387	KC	09/20/2001	CLR	---	N	N	
F01.031.101	2-R-KD-0040	KD	09/26/2001	CLR	---	N	N	
F01.032.054	2-R-KC-0420	KC	09/20/2001	CLR	---	N	N	
F01.032.223	2-R-VN-0096	VN	09/15/2001	CLR	---	N	N	
F01.040.002	2PZR-SKIRT		10/09/2001	CLR	---	N	N	
F01.040.003	2PZR-SUPPORT		10/09/2001	CLR	---	N	N	
F01.040.108	2SWHX-SUPPORT	NC	09/27/2001	CLR	---	N	N	
G01.001.004	2RCP-2D	NC	10/10/2001	CLR	---	N	N	
H02.001.001	2-R-NC-1929	NC	10/01/2001	CLR	---	N	N	

- 5.2** Limited examinations (i.e., 90% or less of the required examination coverage obtained) identified during EOC11 (Outage 4) are shown below. A copy of the Request for Relief is contained in Section 9.0 of this report.

<b><u>Item Number</u></b>	<b><u>Request for Relief Serial Number</u></b>
B03.110.001	01-003
B09.031.003	01-003
C02.021.001	01-003
C02.021.004	01-003
C02.021.005	01-003
C02.021.232	01-003

## **6.0 Reportable Indications**

EOC11 (Outage 4) had no reportable indications.

## **7.0 Personnel, Equipment and Material Certifications**

All personnel who performed or evaluated the results of inservice inspections from April 8, 2000 to October 22, 2001 at Catawba Nuclear Station, Unit 2, were certified in accordance with the requirements of the 1989 Edition of ASME Section XI, with no Addenda. The appropriate certification records for each inspector are on file at Catawba Nuclear Station or copies can be obtained by contacting the Duke Energy Corporate Office in Charlotte, North Carolina.

Records of periodic calibration of inspection equipment are on file at Catawba Nuclear Station or copies can be obtained by contacting the Duke Energy Corporate Office in Charlotte, North Carolina.

Records of materials used (i.e., NDE consumables) are on file at Catawba Nuclear Station or copies can be obtained by contacting the Duke Energy Corporate Office in Charlotte, North Carolina.

## **8.0 Corrective Action**

No corrective action was required as a result of examinations performed during EOC11 (Outage 4).

## **9.0 Reference Documents**

The following reference documents apply to the inservice inspections performed during EOC11 (Outage 4) at Catawba Nuclear Station, Unit 2.

- Duke Energy Corporation Catawba Nuclear Station, Unit 2 Docket Number 50-414, Request for Relief Serial Number 01-003 Limited Weld Coverage During End-of-Cycle 11 Refueling Outage



**Duke Power**  
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Gary R. Peterson  
Vice President  
Catawba Nuclear Station

December 20, 2001

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Subject: Duke Energy Corporation  
Catawba Nuclear Station, Unit 2  
Docket Number 50-414  
Request for Relief Number 01-003  
Limited Weld Examinations in End-of-Cycle 11  
Refueling Outage

Please find attached, pursuant to 10 CFR 50.4 and 10 CFR 50.55a(g)(5)(iii), Request for Relief Number 01-003. This request pertains to limited weld examinations during the Unit 2 End-of-Cycle 11 Refueling Outage. Duke is requesting that NRC review and approve this Request for Relief at your earliest available opportunity.

There are no regulatory commitments contained in this letter or its attachment.

If you have any questions concerning this subject, please call L.J. Rudy at (803) 831-3084.

Very truly yours,

Gary R. Peterson

LJR/s

Attachment

Document Control Desk  
Page 2  
December 20, 2001

xc (with attachment):

L.A. Reyes, Regional Administrator  
U.S. Nuclear Regulatory Commission, Region II  
Atlanta Federal Center  
61 Forsyth St., SW, Suite 23T85  
Atlanta, GA 30303

D.J. Roberts, Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
Catawba Nuclear Station

C.P. Patel, Senior Project Manager (addressee only)  
U.S. Nuclear Regulatory Commission  
Mail Stop 08-H12  
Washington, D.C. 20555-0001



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Page 3  
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bxc (with attachment):

G.D. Gilbert  
L.J. Rudy  
R.K. Rhyne  
K.E. Nicholson  
R.N. McGill  
RGC File  
Document Control File 801.01  
ELL-EC050  
NCMPA-1  
NCEMC  
PMPA  
SREC

**DUKE ENERGY CORPORATION**

**STATION: CATAWBA NUCLEAR STATION    UNIT 2**

**10-YEAR INTERVAL REQUEST FOR RELIEF NO. 01-003**

Duke Energy Corporation has determined that conformance with certain ASME Section XI Code requirements is impractical. Therefore, pursuant to 10CFR50.55a(g)(5)(iii), Duke Energy requests relief from applicable portions of the code.

Reference Attachment 1 for welds addressed by this relief request. There are six (6) welds in this request: one B-D, one B-J, three C-B, and one C-F-1.

ASME Section XI Code of Record: 1989 Edition with no addenda  
Interval: Second Ten-Year Interval; Second Inspection Period  
Applicable Code Case: N-460

**I.    System/Component(s) for Which Relief is Requested:**

ASME Section XI Code Class 1 Examination Category B-D  
Full Penetration Welds of Nozzles In Vessels

<u>ID Number</u>	<u>Item Number</u>	<u>Configuration</u>
2PZR-W1	B03.110.001	Pressurizer Nozzle-to-Vessel Welds

**II.   Code Requirement:**

ASME Section XI 1989 Edition with no addenda,  
Examination Category B-D, Item No. B03.110, Figure IWB-  
2500-7 (b), Examination Volume A-B-C-D-E-F-G-H.

**III. Code Requirement from which Relief is Requested:**

Relief is being sought from the requirement to examine 100% of the volume A-B-C-D-E-F-G-H shown in Figure IWB-2500-7(b).

**IV. Basis for Relief:**

During the ultrasonic examination of the Pressurizer Surge Nozzle to Head Weld, 2PZR-W1 shown in Attachment 2, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 42.80%. Limitations are caused by the weld geometry that restricts access to only one side of the weld, and the proximity of heater tubes that restrict the scanning surface. The percentage of coverage reported represents the aggregate coverage obtained from one scan perpendicular to the weld axis and two scans, 180° apart parallel to the weld.

**V. Alternate Examinations or Testing:**

No additional examinations are planned during the current interval for 2PZR-W1. Radiography is not practical because of the geometry of the component, which prevents placement of the film and exposure source. Duke Energy Corporation will continue to use the most effective ultrasonic techniques available to obtain maximum coverage for future examination of this weld.

**VI. Justification for the Granting of Relief:**

Although the examination volume A-B-C-D-E-F-G-H in Figure IWB-2500-7(b) for ID Number 2PZR-W1 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. For results of the examination, reference Attachment 2.

Pressurizer Surge Nozzle to Head Weld, 2PZR-W1 is located inside containment and is part of the reactor coolant system pressure boundary. General Design Criterion 30, "Quality of Reactor Coolant Pressure

Boundary," of Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," mandates that means be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage. If a leak were to develop at this weld location, the instrumentation available to the operators for detection and monitoring of leakage would provide prompt and qualitative information necessary to permit them to take immediate corrective action. If a leak should develop, the only corrective action would be to shutdown and depressurize the reactor coolant system, since the component is non-isolable.

Plant Technical Specifications dictate that a reactor coolant system water inventory balance be performed on a regular basis. A normal operating practice is to perform this computer based mass balance on a daily frequency and/or whenever the operators suspect any abnormal changes to other leakage detection systems. A plant technical specification requires that if the leak rate cannot be reduced below 1 gpm unidentified that the plant be put in hot standby within 6 hours and in cold shutdown within the following 30 hours. Leakage as a result of a failed weld discussed in this section would show up as unidentified leakage and subject to the 1 gpm limit.

Other leakage detection systems available to the operator and dictated per plant technical specifications are:

- Containment Atmosphere Gaseous and Particulate Radioactivity Monitoring System (EMF monitors 38 & 39) which would detect airborne radiological activity;
- Containment Floor and Equipment Sump Level and Flow Monitoring Subsystem where unidentified accumulated water on the containment floor would be monitored and evaluated as sump level changes;
- Containment Ventilation Unit Condensate Drain Tank Level Monitoring Subsystem which collects and measures as unidentified leakage the moisture removed from the containment atmosphere.

Additionally, other indicators are also available to the operator that a leak exists or may be developing:

- Containment Atmosphere Iodine Monitor (EMF 40)

- Charging / Letdown system mismatches;
- Containment humidity indications;
- Pre-Cycle walkdowns performed each outage while system is at operating temperature and pressure prior to criticality;
- Post-Cycle walkdowns performed at operating temperature and pressure performed during unit shutdown.

**VII. Implementation Schedule:**

This examination will continue to be scheduled in accordance with the requirements of ASME Section XI for future inspection intervals.

**I. System/Component(s) for Which Relief is Requested:**

ASME Section XI Code Class 1 Examination Category B-J  
Pressure Retaining Welds in Piping; Branch Pipe  
Connection Welds

<u>ID Number</u>	<u>Item Number</u>	<u>Configuration</u>
2NC13-WN9	B09.031.003	Nozzle to Pipe

**II. Code Requirement:**

ASME Section XI 1989 Edition with no addenda,  
Examination Category B-J, Item No. B09.031, Figure IWB-  
2500-8(c).

ASME Section XI, Appendix III, Paragraph III-4420, 1989  
Edition with no addenda as modified by Code Case N-460.  
"The examination shall be performed using a  
sufficiently long examination beam path to provide  
coverage of the required examination volume in two-beam  
path directions. The examination shall be performed  
from two sides of the weld, where practicable, or from  
one side of the weld, as a minimum."

**III. Code Requirement from which Relief is Requested:**

Relief is being sought from the requirement to examine  
the weld in two beam path directions.

**IV. Basis for Relief:**

During the ultrasonic examination of this branch pipe  
connection weld, 2NC13-WN9 shown in Attachment 3,  
greater than 90% of the required examination volume as  
allowed by Code Case N-460 could not be achieved. The  
examination coverage was limited to 22.87% of the  
required examination volume. This is an austenitic  
stainless steel branch connection weld where access is  
limited to the main run pipe side of the weld. The main  
run of pipe is cast stainless steel. The percentage of  
coverage reported represents the aggregate coverage  
obtained from one scan parallel to the pipe axis and  
two scans, 180° apart in the circumferential direction

on each weld. The weld design prevented any scan from the branch connection side. In order to achieve more coverage the weld would have to be re-designed to allow scanning from both sides.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration. Duke Energy Corporation uses refracted longitudinal waves to examine cast austenitic welds.

**V. Alternate Examinations or Testing:**

No additional examinations are planned during the current interval for 2NC13-WN9. Radiography is not practical because of the geometry of the component, which prevents placement of the film and exposure. Duke Energy Corporation will continue to use the most effective ultrasonic techniques available to obtain maximum coverage for future examination of this weld.

**VI. Justification for the Granting of Relief:**

Although the examination requirements as defined in ASME Section XI 1989 Edition with No Addenda, Appendix III, Paragraph III-4420, for ID Number 2NC13-WN9, could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. For results of the examination, reference Attachment 3.

2NC13-WN9 is located inside containment and is part of the reactor coolant system pressure boundary. General Design Criterion 30, "Quality of Reactor Coolant Pressure Boundary," of Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," mandates that means be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage. If a leak were to develop at this weld location, the instrumentation available to the operators for detection and monitoring of leakage would provide prompt and qualitative information necessary to permit them to take immediate corrective action. If a leak should develop, the only

corrective action would be to shutdown and depressurize the reactor coolant system, since the component is non-isolable.

Plant Technical Specifications dictate that a reactor coolant system water inventory balance be performed on a regular basis. A normal operating practice is to perform this computer based mass balance on a daily frequency and/or whenever the operators suspect any abnormal changes to other leakage detection systems. A plant technical specification requires that if the leak rate cannot be reduced below 1 gpm unidentified that the plant be put in hot standby within 6 hours and in cold shutdown within the following 30 hours. Leakage as a result of a failed weld discussed in this section would show up as unidentified leakage and subject to the 1 gpm limit.

Other leakage detection systems available to the operator and dictated per plant technical specifications are:

- Containment Atmosphere Gaseous and Particulate Radioactivity Monitoring System (EMF monitors 38 & 39) which would detect airborne radiological activity;
- Containment Floor and Equipment Sump Level and Flow Monitoring Subsystem where unidentified accumulated water on the containment floor would be monitored and evaluated as sump level changes;
- Containment Ventilation Unit Condensate Drain Tank Level Monitoring Subsystem which collects and measures as unidentified leakage the moisture removed from the containment atmosphere.

Additionally, other indicators are also available to the operator that a leak exists or may be developing:

- Containment Atmosphere Iodine Monitor (EMF 40)
- Charging / Letdown system mismatches;
- Containment humidity indications;
- Pre-Cycle walkdowns performed each outage while system is at operating temperature and pressure prior to criticality;
- Post-Cycle walkdowns performed at operating temperature and pressure performed during unit shutdown.



**VII. Implementation Schedule:**

This examination will continue to be scheduled in accordance with the requirements of ASME Section XI for future inspection intervals.

**I. System/Component(s) for Which Relief is Requested:**

ASME Section XI Code Class 2 Examination Category  
C-B Pressure Retaining Nozzle Welds in Vessels; Nozzle  
to Shell (or Head) Weld

<u>ID Number</u>	<u>Item Number</u>	<u>Configuration</u>
2SGB-06A-18	C02.021.001	Nozzle to Shell Weld

**II. Code Requirement:**

ASME Section XI 1989 Edition with no addenda,  
Examination Category C-B, Item No. C02.021, Figure IWC-  
2500-4 (a). ASME Section V, Article 4, Paragraph T-  
424.1 states: "The volume shall be examined by moving  
the search unit over the examination surface so as to  
scan the entire examination volume."

**III. Code Requirement from which Relief is Requested:**

Relief is being sought from the requirement to scan the  
entire examination volume C-D-E-F shown in Figure IWC-  
2500-4(a).

**IV. Basis for Relief:**

During the ultrasonic examination of Steam Generator 2B  
Auxiliary Feedwater Nozzle-to-Shell Weld 2SGB-06A-18,  
Item Number C02.021.001, greater than 90% coverage of  
the required examination volume could not be obtained.  
The examination coverage was limited to 75.00% of the  
required examination volume. This is a ferritic nozzle  
to shell weld where access is limited to the vessel  
shell side only. The weld would have to be re-designed  
to allow scanning from both sides in order to achieve  
greater than 90% coverage. The percentage of coverage  
reported represents the aggregate coverage obtained  
from one scan perpendicular to the weld axis and two  
scans, 180° apart parallel to the weld as shown in  
Attachment 4.

**V. Alternate Examinations or Testing:**

No additional examinations are planned during the current interval for ID Number 2SGB-06A-18. Radiography is not an acceptable alternative because of access restrictions for source and film placement. Duke Energy Corporation will continue to use the most effective ultrasonic techniques available to obtain maximum coverage for future examination of this weld.

**VI. Justification for the Granting of Relief:**

Although the entire examination volume C-D-E-F in Figure IWC-2500-4(a) for ID Number 2SGB-06A-18 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. For results of the examination, reference Attachment 4.

Steam Generator 2B Auxiliary Feedwater Nozzle-to-Shell Weld 2SGB-06A-18 is located inside containment and is part of the secondary system pressure boundary. If a leak were to develop at this weld location, the instrumentation available to the operators for detection and monitoring of leakage would provide prompt and qualitative information necessary to permit them to take immediate corrective action. If a leak should develop, the probable corrective action would be shutdown and depressurize the steam generators, since the weld is non-isolable.

Other leakage detection systems available to the operator and dictated per plant technical specifications are:

- Containment Floor and Equipment Sump Level and Flow Monitoring Subsystem where unidentified accumulated water on the containment floor would be monitored and evaluated as sump level changes;
- Containment Ventilation Unit Condensate Drain Tank Level Monitoring Subsystem which collects and measures as unidentified leakage the moisture removed from the containment atmosphere.

Additionally, other indicators are also available to the operator that a leak exists or may be developing:

- Containment humidity indications;

- Pre-Cycle walkdowns performed each outage while system is at operating temperature and pressure prior to criticality;
- Post-Cycle walkdowns performed at operating temperature and pressure performed during unit shutdown.

#### **VII. Implementation Schedule:**

This examination will continue to be scheduled in accordance with the requirements of ASME Section XI for future inspection intervals.

**I. System/Component(s) for Which Relief is Requested:**

ASME Section XI Code Class 2 Examination Category  
C-B Pressure Retaining Nozzle Welds in Vessels; Nozzle  
to Shell (or Head) Weld

<u>ID Number</u>	<u>Item Number</u>	<u>Configuration</u>
2BNSHX-3-N1	C02.021.004	Nozzle to Channel Weld
2BNSHX-3-N2	C02.021.005	Nozzle to Channel Weld

**II. Code Requirement:**

ASME Section XI 1989 Edition with no addenda, Category  
C-B, Item No. C02.021, Figure IWC-2500-4(a).  
ASME Section XI, Appendix III, Paragraph III-4420, 1989  
Edition with no addenda as modified by Code Case N-460.  
"The examination shall be performed using a  
sufficiently long examination beam path to provide  
coverage of the required examination volume in two-beam  
path directions. The examination shall be performed  
from two sides of the weld, where practicable, or from  
one side of the weld, as a minimum."

**III. Code Requirement from which Relief is Requested:**

Relief is being sought from the requirement to perform  
the examination from two beam path directions.

**IV. Basis for Relief:**

During the ultrasonic examination of the Containment  
Spray Heat Exchanger Inlet and Outlet Nozzle to Channel  
Welds 2BNSHX-3-N1 and 2BNSHX-3-N2 shown in Attachments  
5 and 6, respectively, greater than 90% coverage of the  
required examination volume could not be obtained. The  
examination coverage for both welds was limited to  
49.03%. Austenitic weld metal characteristics and  
single sided access caused by the component geometry

prevents two-beam path direction coverage of the examination volume. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. In order to achieve two beam path direction coverage, the welds would have to be re-designed to allow scanning from both sides.

The most effective ultrasonic technique for the examination of dissimilar metal welds uses refracted longitudinal waves. The longitudinal wave is preferred as the austenitic weld metal creates highly attenuative barriers to shear wave ultrasound. The longitudinal wave is less affected by these difficulties. However, the longitudinal wave is affected by mode conversion when it strikes the inside surface of the safe end or pipe at any angle other than a right angle to the surface.

The calculations below show that a  $45^{\circ}$  refracted longitudinal wave striking the inside surface of a pipe will produce a  $22.9^{\circ}$  refracted shear wave in addition to the normally expected  $45^{\circ}$  reflected longitudinal wave.

$$\begin{aligned}\sin^{-1} &= (\sin 45^{\circ} \times V_s) \div V_L \\ &= (0.707 \times 0.123) \div 0.223\end{aligned}$$

Where:  $\sin^{-1}$  is the shear wave angle

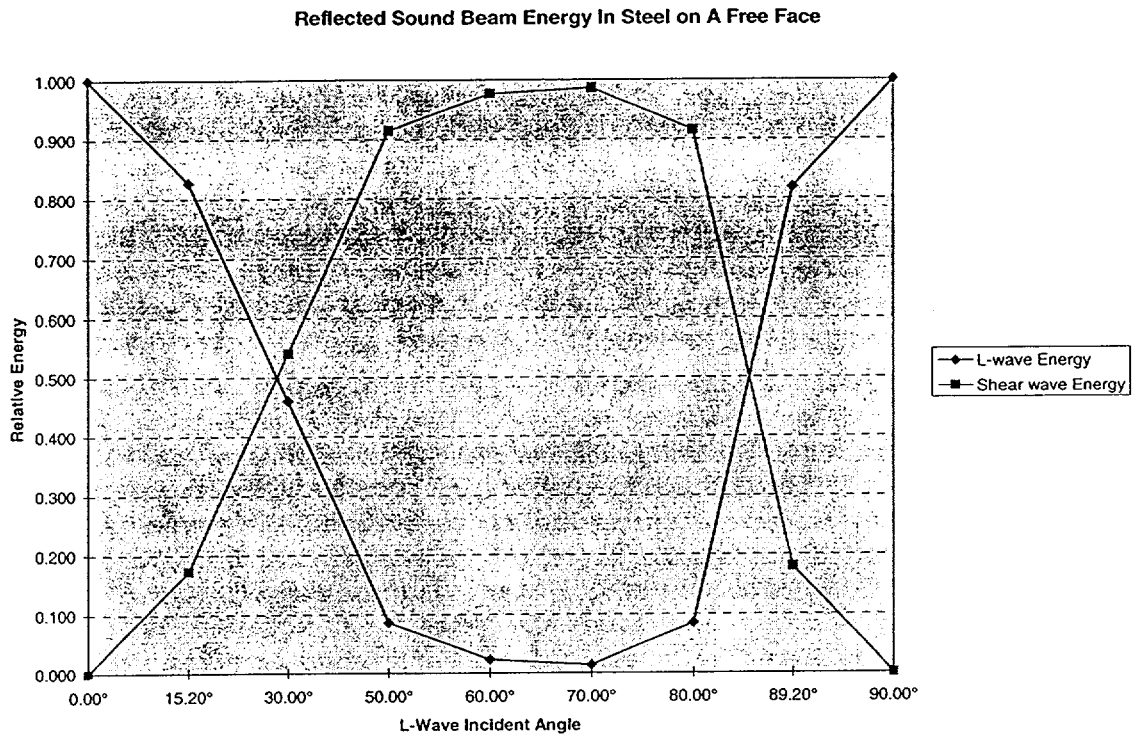
$V_s$  is the shear wave velocity of the stainless steel safe end/pipe material in inches / $\mu$ sec.

$V_L$  is the longitudinal wave velocity of the stainless steel safe/pipe end material in inches/ $\mu$ sec.

As shown in the graph below, the mode conversion process creates two sound beams of differing intensities reflecting off the inside surface<sup>1</sup>. At incident angles greater than 30 degrees, the shear wave will predominate. However, the shear wave is attenuated and scattered by the austenitic weld metal and the layer of buttering. The examination sensitivity is degraded to such an extent that any examination using the second sound path leg is meaningless. Therefore, the two-beam path direction coverage requirement is impractical.

In order to obtain the required two-beam path direction coverage, welds would have to be re-designed to allow scanning from both sides.

<sup>1</sup>Firestone, F.A.: Tricks with the Supersonic Reflectoscope, J. Soc. Nondestructive Testing, vol. 7, no. 2, Fall 1948.



#### V. Alternate Examinations or Testing:

No additional examinations are planned during the current interval for weld Numbers 2BNSHX-3-N1 and 2BNSHX-3-N2. Radiography is not an acceptable alternative because of access restrictions for source and film placement. Duke Energy Corporation will continue to use the most effective ultrasonic techniques available to obtain maximum coverage for future examination of these welds.

#### VI. Justification for the Granting of Relief:

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWC-2500-4 (a) could not be covered in two beam path

directions, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. These welds were examined using procedures and calibration blocks in accordance with ASME Section XI, Appendix III.

Containment Spray (NS) is used to control pressure inside the containment vessel during a safety injection with high containment pressure. This system is not used for normal operation of the plant.

The area that contains the welds (Containment Spray Heat Exchanger Inlet and Outlet Nozzle to Channel) is surveyed twice a day by Operations during their routine rounds. One of the items that must be checked off is for general condition of the room containing the heat exchanger. It is reasonable to expect the operator making these rounds to detect any external leaks from these welds.

This same area is also surveyed once a week by a periodic test that is used to specifically look for radioactive leaks outside containment. This area must be surveyed and signed off. If a leak were encountered, it would be written up in a work request and a Problem Investigation Process form filled out. The Fluid Leak Management Process then examines the leak. The leak is either repaired or set up for periodic monitoring. A leak in the NS system would also have to be entered into the Emergency Core Cooling System Leakage Program managed by Technical Specification 5.5.3.

## **VII. Implementation Schedule:**

These examinations will continue to be scheduled in accordance with the requirements of ASME Section XI for future inspection intervals.



**I. System/Component(s) for Which Relief is Requested:**

ASME Section XI Examination Category C-F-1 Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping; Circumferential Weld

<u>ID Number</u>	<u>Item Number</u>	<u>Configuration</u>
2NV20-5	C05.021.232	Pipe to Valve

**II. Code Requirement:**

ASME Section XI 1989 Edition with no addenda, Examination Category C-F-1, Item No. C05.021, Figure IWC-2500-7 (a), Examination Volume C-D-E-F.

**III. Code Requirement from which Relief is Requested:**

Relief is being sought from the requirement to examine 100% of Volume C-D-E-F shown in Figure IWC-2500-7 (a).

**IV. Basis for Relief:**

During the ultrasonic examination of this pipe to valve weld, 2NV20-5 shown in Attachment 7, greater than 90% of the required examination volume as allowed by Code Case N-460 could not be achieved. The examination coverage was limited to 61.09% of the required examination volume. This is an austenitic stainless steel pipe to valve weld where access is limited to the pipe side of the weld only. The percentage of coverage reported represents the aggregate coverage obtained from one scan parallel to the pipe axis and two scans, 180° apart in the circumferential direction on each weld. The weld design prevented any axial scan from the valve side. In order to achieve more coverage the weld would have to be re-designed to allow scanning from both sides.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through

the weld. Refracted longitudinal waves provide better penetration. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

#### **V. Alternate Examinations or Testing:**

No additional examinations are planned during the current interval for ID Number 2NV20-5. Because of the valve configuration, radiography would not provide any additional coverage. Duke Energy Corporation will use the most effective ultrasonic techniques available to obtain maximum coverage for future examination of this weld.

#### **VI. Justification for the Granting of Relief:**

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWC-2500-7 (a) could not be covered, the amount of coverage obtained for these examinations provides an acceptable level of quality and integrity. These welds were examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

This weld is located on the Seal Return Line from the Reactor Coolant Pumps. This same line also provides mini-flow protection for the high head safety injection pumps. The seal return line containing this weld is normally in service during power operations. The Seal Return Line containing the weld is located in the Auxiliary Building. During power operations and unit refueling outages, the Seal Return Line is accessible for visual inspections.

If a leak were to occur at the weld in question (at Valve 2NV-204), there are several periodic tests and

evaluations that are performed by established procedures that should identify the leakage for prompt OPS/ENG evaluation:

- During power operation, any leakage from the Seal Return Line would be identified as a mass loss in the reactor coolant system water inventory balance. As described above, a normal operating practice is to perform this computer based mass balance on a daily frequency and/or whenever the operators suspect any abnormal changes to other leakage detection systems. A plant technical specification requires that if the leak rate cannot be reduced below 1 gpm unidentified that the plant be put in hot standby within 6 hours and in cold shutdown within the following 30 hours. Leakage as a result of a failed weld discussed in this section would show up as unidentified leakage and subject to the 1-gpm limit.
- If a leak were to occur at the subject weld, the water would spill on the floor in the Auxiliary Building and flow to a floor drain and then to the Floor Drain Tank. Our Chemistry department periodically monitors the tank level and evaluates unidentified leakage for correction.

This same area is also surveyed once a week by a periodic test that is used to specifically look for radioactive leaks outside containment. This area must be surveyed and signed off. If a leak were encountered, it would be written up in a work request and a Problem Investigation Process form filled out. The Fluid Leak Management Process then examines the leak. The leak is either repaired or set up for periodic monitoring.

#### **VII. Implementation Schedule:**

This examination will continue to be scheduled in accordance with the requirements of ASME Section XI for future inspection intervals.

Finally, for all of the welds covered by this request for relief, in the event that a through wall leak were discovered, the affected component would be subjected to an operability determination as required by existing plant processes. Should the affected component be determined to be inoperable, the applicable Technical Specification remedial actions would be followed.

The following individuals contributed to the development of this RFR:

Jim McArdle (NDE Level III) provided Sections II-V and part of Section VI

David Goforth (Systems Engineer) provided part of Section VI

Andy Hogge (Sponsor) compiled the remaining sections

Sponsored By:

A. J. Hogge, Jr. Date 12/19/2001

Approved By:

R. Kevin Rhyme Date 12/19/01

Attachment 1	Description Table
Attachment 2	UT Examination Data B03.110.001
Attachment 3	UT Examination Data B09.031.003
Attachment 4	UT Examination Data C02.021.001
Attachment 5	UT Examination Data C02.021.004
Attachment 6	UT Examination Data C02.021.005
Attachment 7	UT Examination Data C05.021.232

ASME Class 1 & 2 Inservice Inspection Request For Relief 01-003  
 For Catawba Unit 2 Based on ASME Section XI - 1989 Code

Item No.	Exam Category/ Figure No.	System Or Component	Area To Be Examined	Reason For Request	Licensee Proposed Alternate Examination
B03.110.001	B-D IWB-2500-7 (b)	Pressurizer	Pressurizer Surge Nozzle to Lower Head	Limited scan due to the weld geometry that restricts access to only one side of the weld, and the proximity of heater tubes that restricts the scanning surface. Actual coverage obtained = 42.80% (See Attachment 2)	None
B09.031.003	B-J IWB-2500-8(c) Appendix III, Paragraph III-4420	NC System	Reactor Coolant System Nozzle to Pipe	Limited scan due to access limited to the main run pipe side of the weld. Actual coverage obtained = 22.87% (See Attachment 3)	None

ASME Class 1 & 2 Inservice Inspection Request For Relief 01-003  
 For Catawba Unit 2 Based on ASME Section XI - 1989 Code

Item No.	Exam Category /Figure No.	System Or Component	Area To Be Examined	Reason For Request	Licensee Proposed Alternate Examination
C02.021.001	C-B IWC-2500-4 (a)	Steam Generator	Steam Generator 2B Auxilliary Feedwater Nozzle to Shell	Limited scan due to access limited to the vessel shell side only. Actual coverage obtained = 75% (See Attachment 4)	None
C02.021.004	C-B IWC-2500-4(a) Appendix III, Paragraph III-4420	Containment Spray Heat Exchanger	Containment Spray Heat Exchanger Outlet Nozzle to Channel	Limited scan due to single-sided access caused by the component geometry. Actual coverage obtained = 49.03% (See Attachment 5)	None
C02.021.005	C-B IWC-2500-4(a) Appendix III, Paragraph III-4420	Containment Spray Heat Exchanger	Containment Spray Heat Exchanger Inlet Nozzle to Channel	Limited scan due to single-sided access caused by the component geometry. Actual coverage obtained = 49.03% (See Attachment 6)	None

ASME Class 1 & 2 Inservice Inspection Request For Relief 01-003  
For Catawba Unit 2 Based on ASME Section XI - 1989 Code

Item No.	Exam Category /Figure No.	System Or Component	Area To Be Examined	Reason For Request	Licensee Proposed Alternate Examination
C05.021.232	C-F-1 IWC-2500-7 (a)	NV System	Chemical and Volume Control Valve 2NV- 204 to Pipe	Limited scan due to access limited to the pipe side of the weld only. Actual coverage obtained = 61.09% (See Attachment 7)	None



<b>DUKE POWER COMPANY</b>										Exam Start: 1433		Form NDE-UT-2A		
<b>ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS</b>										Exam Finish: 1504		Revision 4		
Station: CNS			Unit: 2		Component/Weld ID: 2PZR-W1						Date: 10/9/2001			
Weld Length (in.): 77"			Surface Condition: AS GROUND				Lo: 9.2.3		Surface Temperature: 71 ° F					
Examiner: David Zimmerman <i>David Zimmerman</i>			Level: III		Scans: 45 <input type="checkbox"/> _____ dB    70 <input checked="" type="checkbox"/> 59 dB 45T <input type="checkbox"/> _____ dB    70T <input checked="" type="checkbox"/> 59 dB 60 <input checked="" type="checkbox"/> 74/71.5 dB 60T <input checked="" type="checkbox"/> 74/71.5 dB Other: _____ dB				Pyrometer S/N: MCNDE 27010					
Examiner: Larry Mauldin <i>Larry Mauldin</i>			Level: III						Cal Due: 2/14/2002					
Procedure: NDE-620    Rev: 8			FC: 00-07						Configuration: ZR Surge Nozzle to Lower Head					
Calibration Sheet No: 0102054, 0102055, 0102056									S2    Flow    S1 NOZZLE to HEAD Scan Surface: OD					
										Applies to NDE-680 only Skew Angle: N/A				

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac		DO NOT WRITE IN THIS SPACE		
NRI	60/70														

Remarks:			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet 1 of 12
Reviewed By: <i>Sandy Moss</i>	Level: <i>B</i>	Date: 10-11-01	Authorized Inspector: <i>Robert M. Liv</i> Date: 10/17/01 Item No: B03.110.001

REQUEST FOR RELIEF #01-003 ATTACHMENT 2

AH 11/16/01

DUKE POWER COMPANY ISI LIMITATION REPORT				FORM NDE-UT-4	
				Revision 1	
Component/Weld ID: 2PZR-W1		Item No: B03.110.001		Remarks:	
<input type="checkbox"/> NO SCAN <input checked="" type="checkbox"/> LIMITED SCAN		SURFACE <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2		BEAM DIRECTION <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____		INCHES FROM WO _____ 3.0" _____ to _____ BEYOND _____		* There are 20 (.75" Dia. @) Heater Tubes. 70°L loss-2.3" @ = 46 in. / 60°L loss-3.2" @ = 64 in.	
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input checked="" type="checkbox"/> 60 <input checked="" type="checkbox"/> Other 70°		FROM _____ N/A _____ DEG to _____ N/A _____ DEG			
<input checked="" type="checkbox"/> NO SCAN <input type="checkbox"/> LIMITED SCAN		SURFACE <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2		BEAM DIRECTION <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw	
FROM L _____ N/A _____ to L _____ N/A _____		INCHES FROM WO _____ 3.0" _____ to _____ BEYOND _____		DUE TO NOZZLE CONFIGURATION.	
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input checked="" type="checkbox"/> 60 <input checked="" type="checkbox"/> Other 70°		FROM _____ 0 _____ DEG to _____ 360 _____ DEG			
<input type="checkbox"/> NO SCAN <input type="checkbox"/> LIMITED SCAN		SURFACE <input type="checkbox"/> 1 <input type="checkbox"/> 2		BEAM DIRECTION <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____		INCHES FROM WO _____ to _____			
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____		FROM _____ DEG to _____ DEG			
<input type="checkbox"/> NO SCAN <input type="checkbox"/> LIMITED SCAN		SURFACE <input type="checkbox"/> 1 <input type="checkbox"/> 2		BEAM DIRECTION <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____		INCHES FROM WO _____ to _____			
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____		FROM _____ DEG to _____ DEG			
Prepared By: <u>David K. B.</u>		Level: <u>III</u>		Date: <u>10/09/01</u>	
Reviewed By: <u>Sam Moss</u>		Date: <u>10-11-01</u>		Sketch(s) attached <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
		Authorized Inspector: <u>Robert Miller</u>		Date: <u>10/17/01</u>	

FORM NDE-UT-4

Revision 1

Component/Weld ID: 2PZR-W1

Item No: B03.110.001

Remarks:

☐ NO SCAN

SURFACE

BEAM DIRECTION

☒ LIMITED SCAN☐ 1 ☒ 2☒ 1 ☐ 2 ☐ cw ☐ ccw

FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ 3.0" \_\_\_\_\_ to \_\_\_\_\_ BEYOND \_\_\_\_\_

ANGLE: ☐ 0 ☐ 45 ☒ 60 ☒ Other 70°

FROM \_\_\_\_\_ N/A \_\_\_\_\_ DEG to \_\_\_\_\_ N/A \_\_\_\_\_ DEG

\* There are 20 (.75" Dia. @) Heater Tubes. 70°L loss-2.3" @ = 46 in. / 60°L loss-3.2" @ = 64 in.

☒ NO SCAN

SURFACE

BEAM DIRECTION

☐ LIMITED SCAN☒ 1 ☐ 2☐ 1 ☒ 2 ☒ cw ☒ ccw

FROM L \_\_\_\_\_ N/A \_\_\_\_\_ to L \_\_\_\_\_ N/A \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ 3.0" \_\_\_\_\_ to \_\_\_\_\_ BEYOND \_\_\_\_\_

ANGLE: ☐ 0 ☐ 45 ☒ 60 ☒ Other 70°

FROM \_\_\_\_\_ 0 \_\_\_\_\_ DEG to \_\_\_\_\_ 360 \_\_\_\_\_ DEG

DUE TO NOZZLE CONFIGURATION.

☐ NO SCAN

SURFACE

BEAM DIRECTION

☐ LIMITED SCAN☐ 1 ☐ 2☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ to \_\_\_\_\_

ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other \_\_\_\_\_

FROM \_\_\_\_\_ DEG to \_\_\_\_\_ DEG

☐ NO SCAN

SURFACE

BEAM DIRECTION

☐ LIMITED SCAN☐ 1 ☐ 2☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ to \_\_\_\_\_

ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other \_\_\_\_\_

FROM \_\_\_\_\_ DEG to \_\_\_\_\_ DEG

Prepared By: David K. B.Level: IIIDate: 10/09/01Sketch(s) attached ☐ yes ☒ noSheet 2 of 12Reviewed By: Sam MossDate: 10-11-01Authorized Inspector: Robert MillerDate: 10/17/01

**DUKE POWER COMPANY**  
**Limited Examination Coverage Worksheet**

NDE-91-1

Revision 0

**Examination Volume/Area Defined**

☐ Base Metal      ☐ Weld      ☐ Near Surface      ☐ Bolting      ☐ Inner Radius

**Area Calculation**

See Drwg. For Calculations  
 Zone I = 4.9 sq. in.  
 Zone II & III = 11.1 sq. in.

**Volume Calculation**

Zone I = 4.9 sq.in. X 78 in. = 382.2 cu.in.  
 Zone II & III = 11.1 sq.in. X 78 in. = 865.8 cu.in.  
 Loss = 70° -- 46 in., 60° -- 64 in. for heater tubes

**Coverage Calculations**

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	70	2	4.1	32	131.2	156.8	
1	70	2	2.3	46	105.8	225.4	
2	70	1	1.8	78	140.4	382.2	
3	70	CW	3.5	78	273	382.2	
4	70	CCW	3.5	78	273	382.2	
5	60	2	11	14	154	155.4	
5	60	2	1.8	64	115.2	710.4	
6	60	1	.3	78	23.4	865.8	
7	60	CW	5.9	78	460.2	865.8	
8	60	CCW	5.9	78	460.2	865.8	

Item No: B03.110.001

Prepared By: Larry Mauldin

Level: III

Date: 10/9/2001

Reviewed By:

Level: II

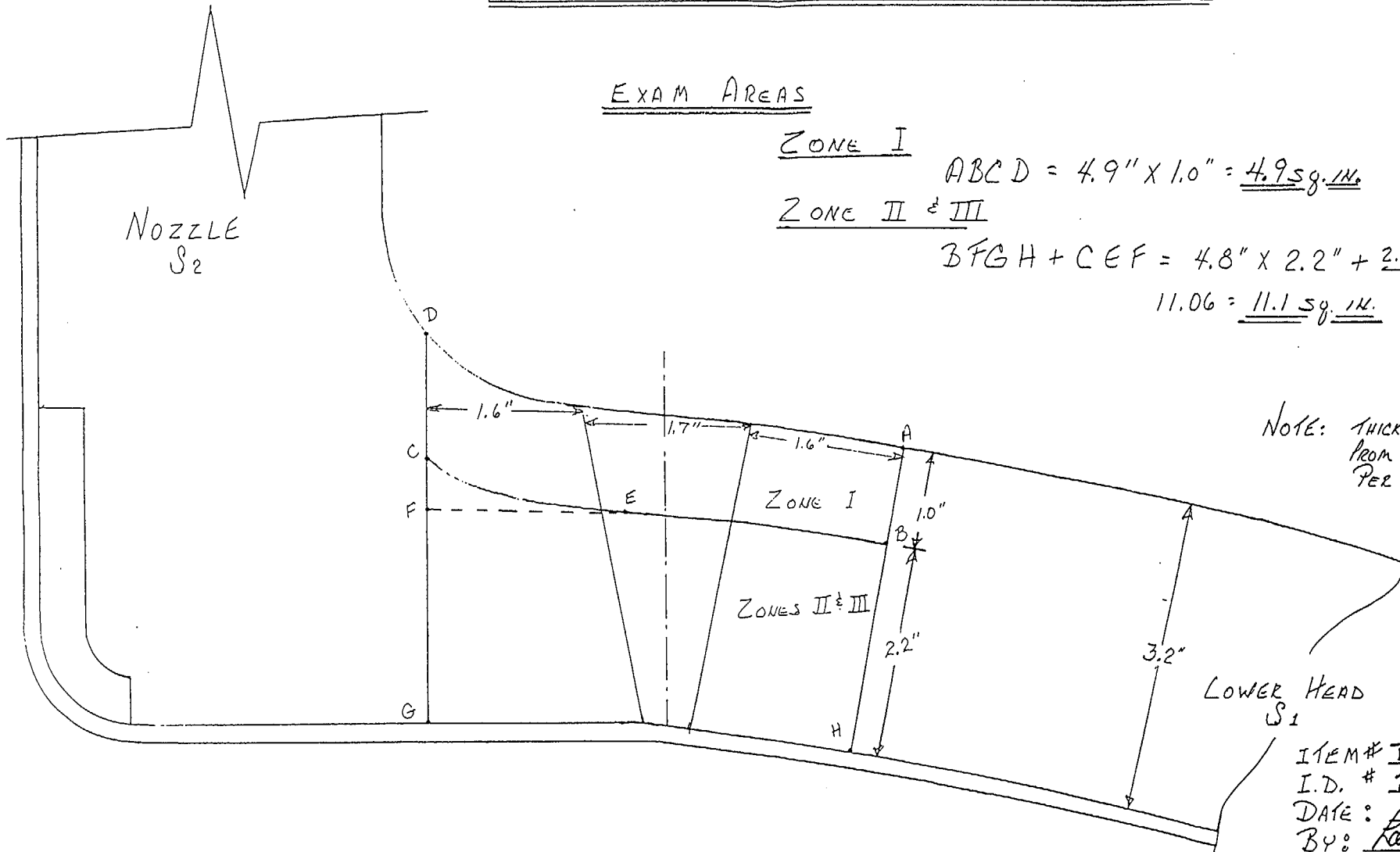
Date: 10-11-01

<b>DUKE POWER COMPANY</b> Limited Examination Coverage Worksheet						NDE-91-1	
						Revision 0	
<b>Examination Volume/Area Defined</b>							
<input type="checkbox"/> Base Metal <input type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius							
<b>Area Calculation</b>				<b>Volume Calculation</b>			
See Drwg. For Calculations Zone I = 4.9 sq. in. Zone II & III = 11.1 sq. in.				Zone I = 4.9 sq.in. X 78 in. = 382.2 cu.in. Zone II & III = 11.1 sq.in. X 78 in. = 865.8 cu.in. Loss = 70° -- 46 in., 60° -- 64 in. for heater tubes			
<b>Coverage Calculations</b>							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
					2136.4	4992	42.80

			Item No: B03.110.001
Prepared By: Larry Mauldin <i>Larry Mauldin</i>	Level: III	Date: 10/9/2001	
Reviewed By: <i>Gay Moss</i>	Level: <i>B</i>	Date: <i>10-11-01</i>	

4/1/02

PG. 504 12



# Pressurizer Surge Nozzle to Lower Head

## Zone I Area of Coverage

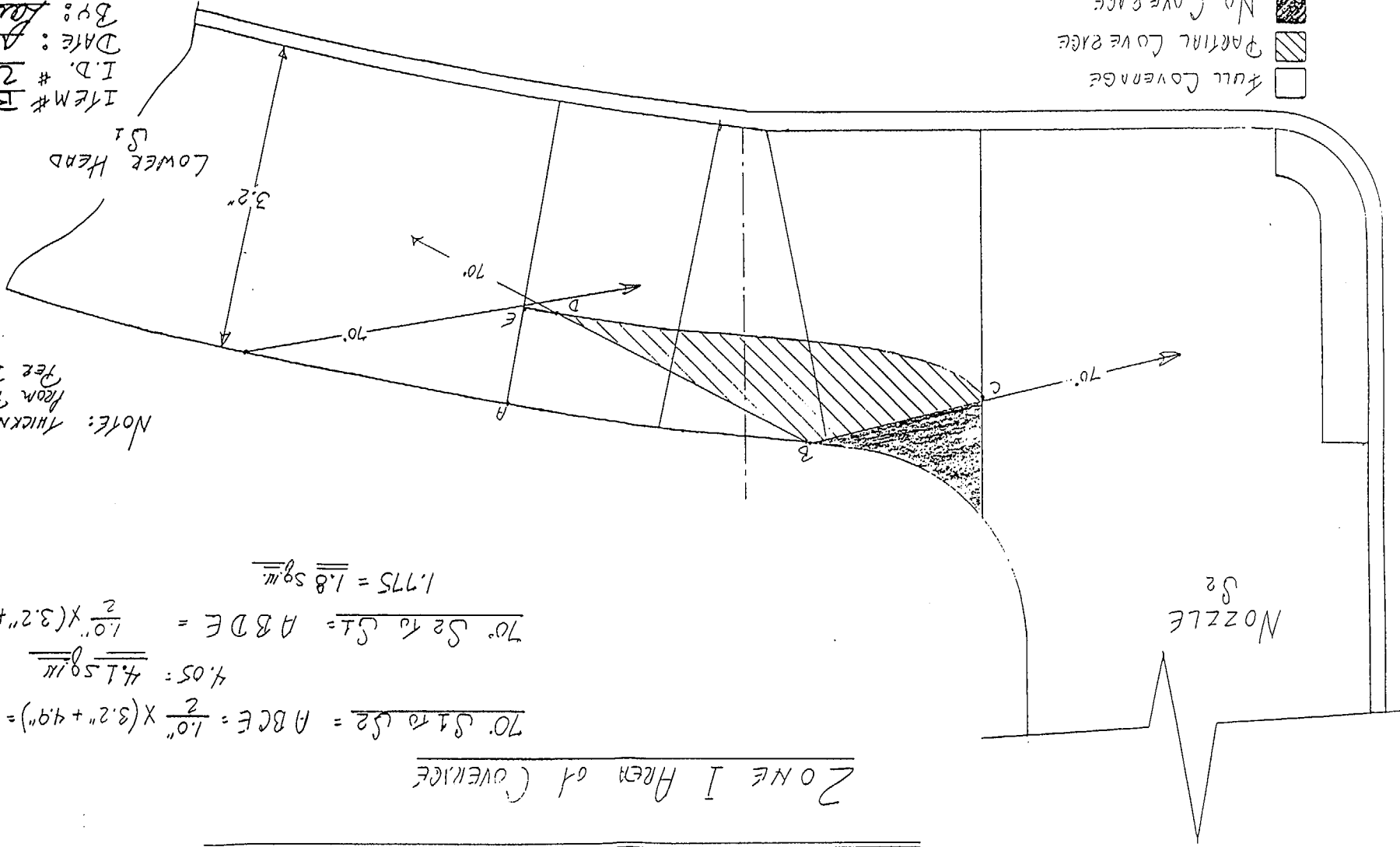
$$70^\circ \text{ S1 to S2} = \frac{A B C E}{1.0''} \times (3.2'' + 4.9'') =$$

$$4.05 = \frac{4.15 \text{ sg. in.}}{1.0''}$$

$$70^\circ \text{ S2 to S1} = \frac{A B D E}{1.0''} \times (3.2'' + .85'') =$$

$$1.775 = \frac{1.8 \text{ sg. in.}}{1.0''}$$

Note: Thicknesses taken from PSI Data, per B&W.



- ☐ Full Coverage
- ☒ Partial Coverage
- ☒ No Coverage

Item # B03.110.001  
I.D. # 2P28-W1  
Date: 10/05/01  
By: Paul Thibault

# PRESSURIZER SURGE NOZZLE TO LOWER HEAD

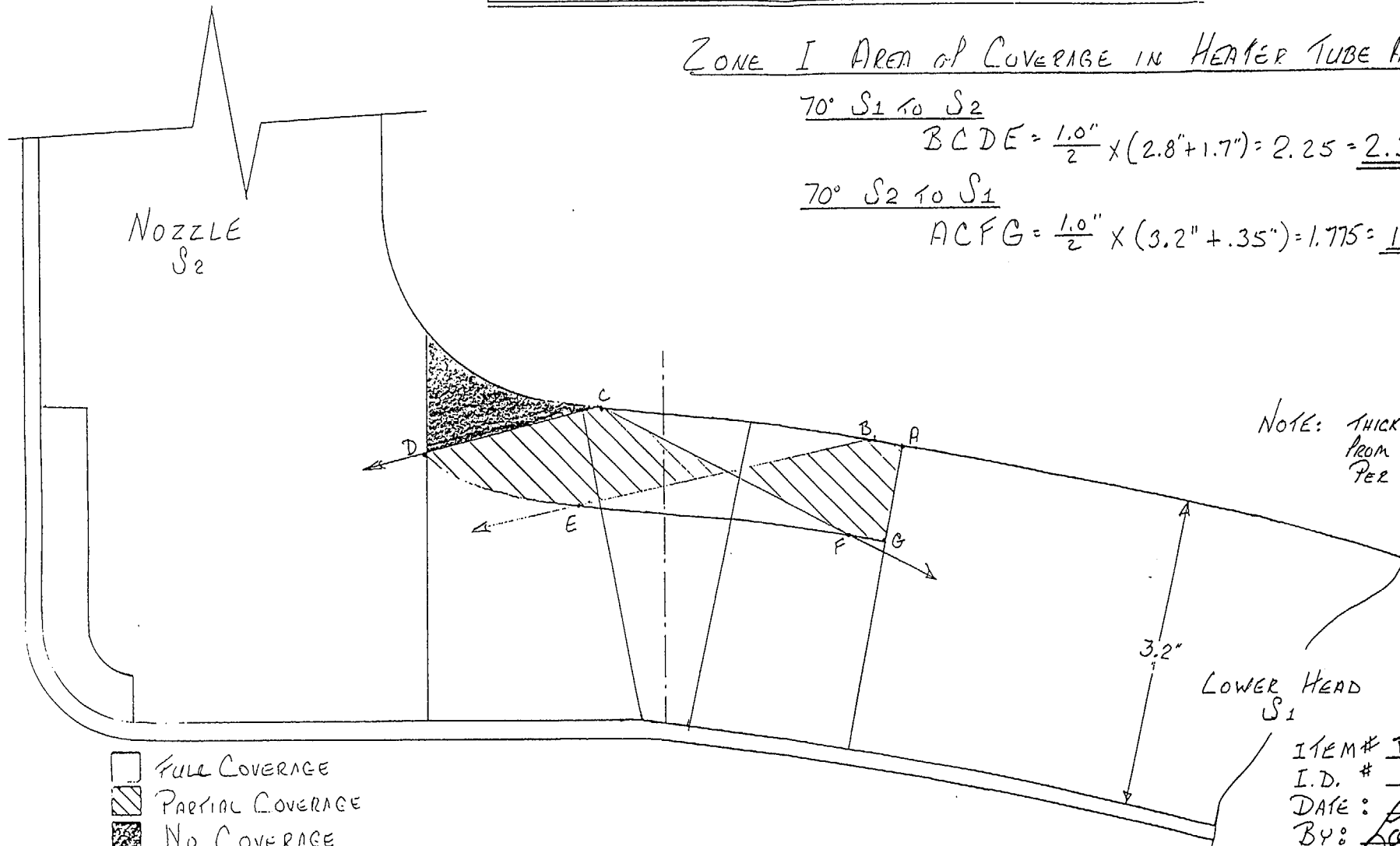
## ZONE I AREA OF COVERAGE IN HEATER TUBE AREA

70° S<sub>1</sub> TO S<sub>2</sub>

$$BCDE = \frac{1.0''}{2} \times (2.8'' + 1.7'') = 2.25 = \underline{\underline{2.3 \text{ sq. in.}}}$$

70° S<sub>2</sub> TO S<sub>1</sub>

$$ACFG = \frac{1.0''}{2} \times (3.2'' + .35'') = 1.775 = \underline{\underline{1.8 \text{ sq. in.}}}$$



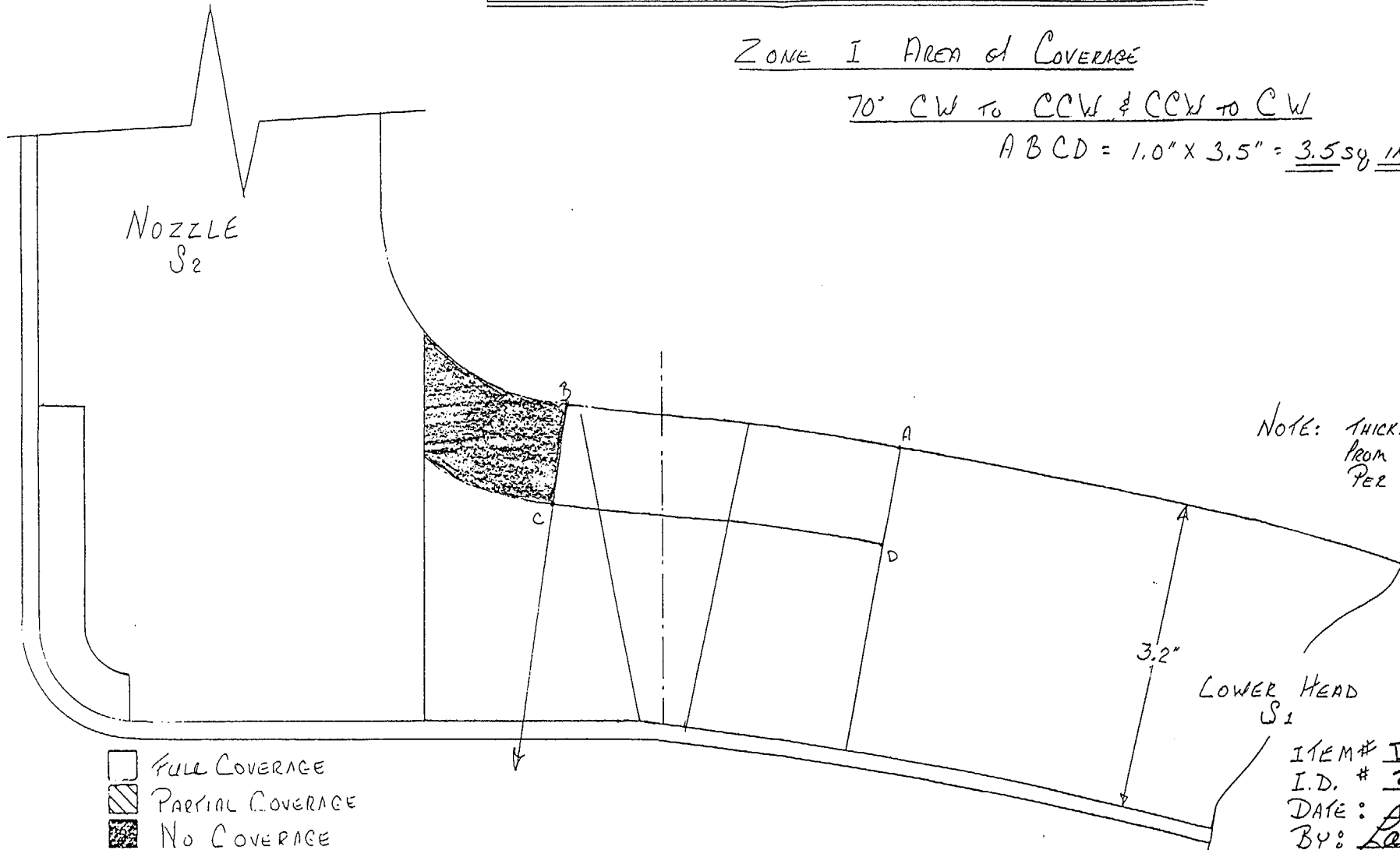
ITEM# B03.110.001  
I.D. # 2PER-W1  
DATE: 10/09/01  
BY: Larry Thacker

# PRESSURIZER SURGE NOZZLE TO LOWER HEAD

## ZONE I AREA of COVERAGE

70° CW TO CCW & CCW TO CW

$$A B C D = 1.0" \times 3.5" = \underline{\underline{3.5 \text{ sq. in.}}}$$



NOTE: THICKNESSES TAKEN  
FROM PSI DATA,  
PER B&W.

ITEM# B03.110.001  
I.D. # 2PER-W1  
DATE: 10/09/01  
BY: Larry Thacker



# PRESSURIZER SURGE NOZZLE TO LOWER HEAD

## ZONE 5 II & III COVERAGE

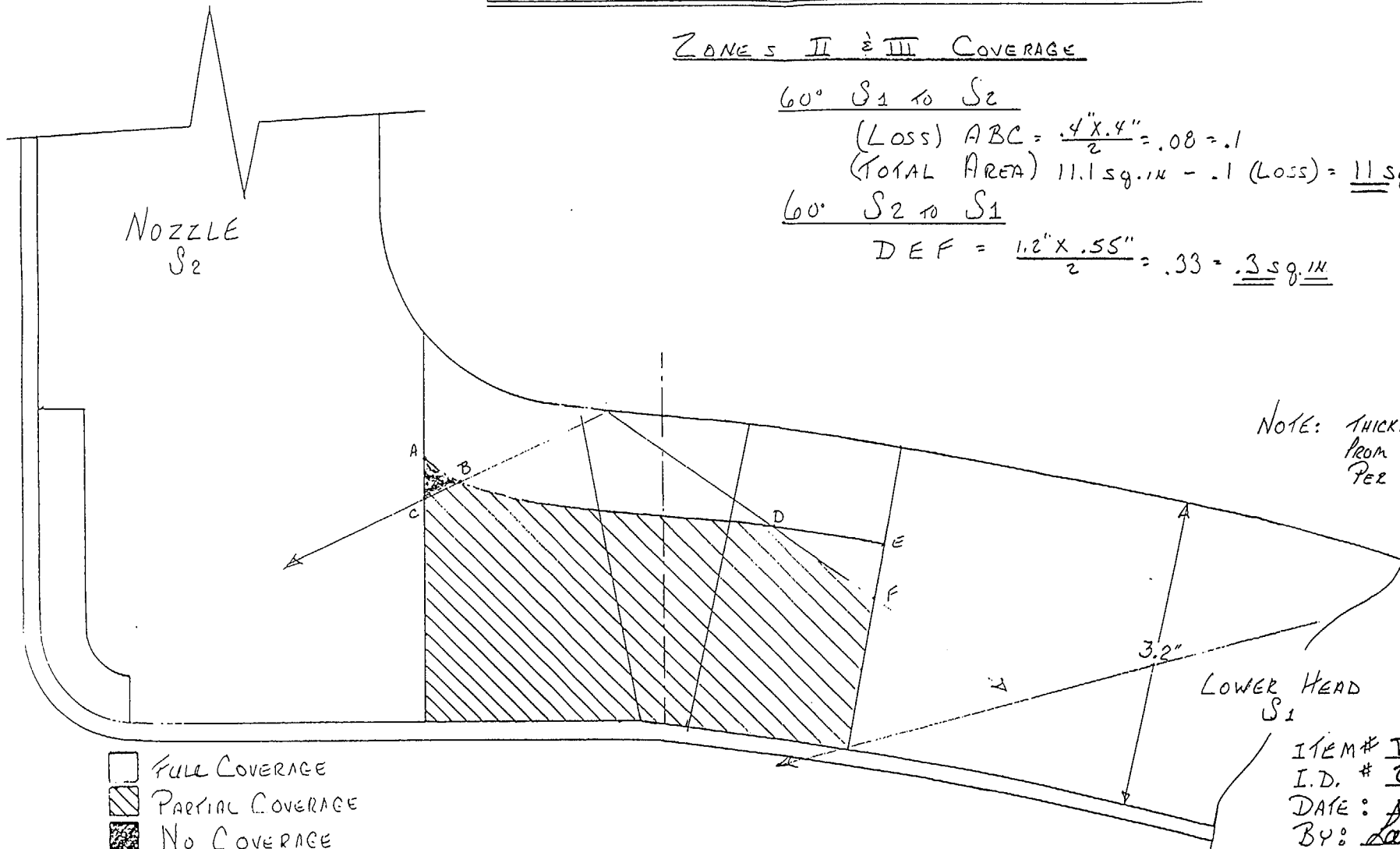
60° S<sub>1</sub> TO S<sub>2</sub>

$$(LOSS) ABC = \frac{.4" \times .4"}{2} = .08 \approx .1$$

$$(TOTAL AREA) 11.1 \text{ sq. in.} - .1 (LOSS) = \underline{\underline{11 \text{ sq. in.}}}$$

60° S<sub>2</sub> TO S<sub>1</sub>

$$DEF = \frac{1.2" \times .55"}{2} = .33 \approx \underline{\underline{.3 \text{ sq. in.}}}$$



NOTE: THICKNESSES TAKEN  
FROM PSI DATA,  
PER B&W.

ITEM# B03.110.001

I.D. # 2PER-W1

DATE: 10/09/01

BY: Larry Thaddeus

# PRESSURIZER SURGE NOZZLE TO LOWER HEAD

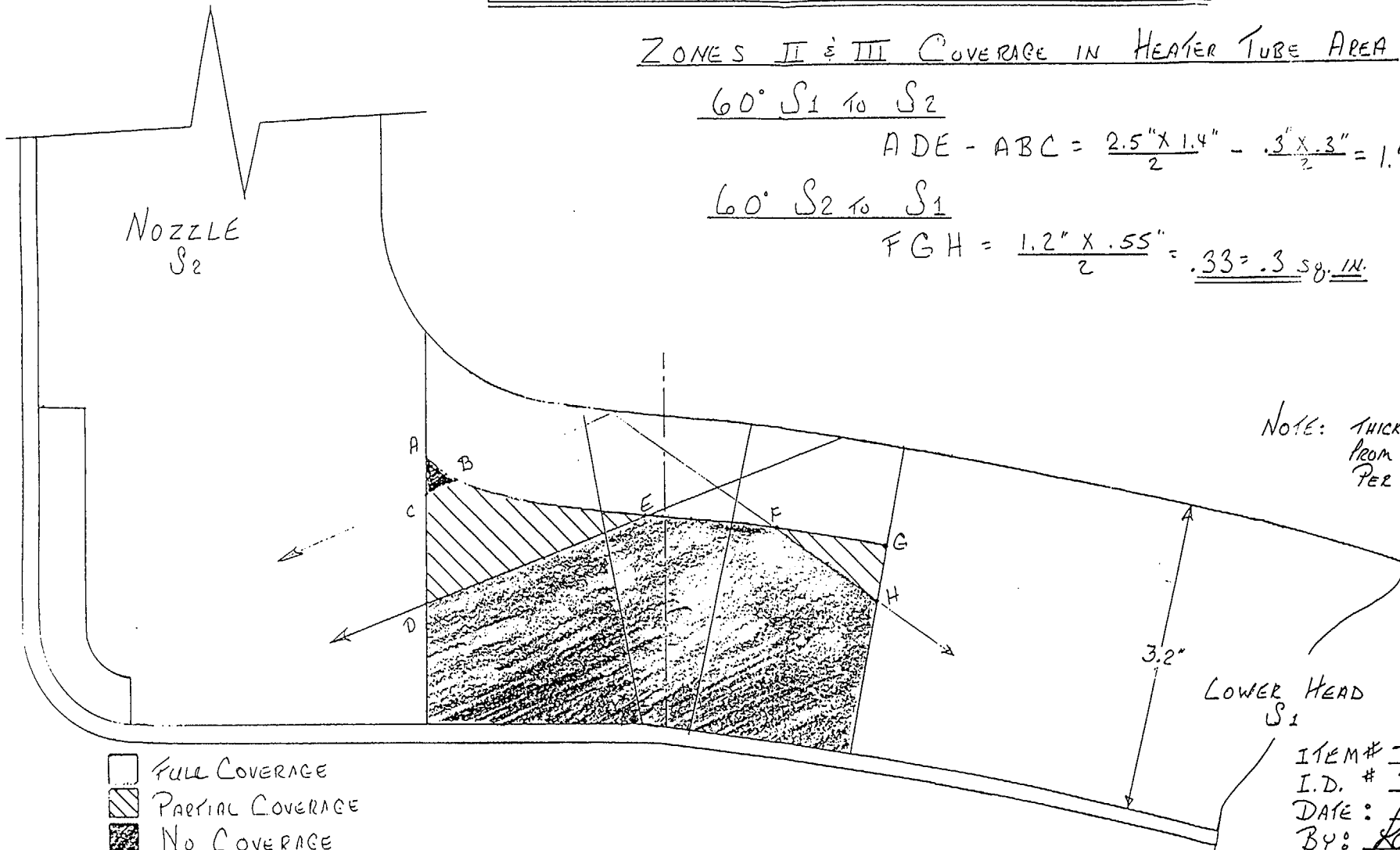
## ZONE S II & III COVERAGE IN HEATER TUBE AREA

60° S<sub>1</sub> TO S<sub>2</sub>

$$ADE - ABC = \frac{2.5" \times 1.4"}{2} - \frac{.3" \times .3"}{2} = 1.795 = \underline{\underline{1.8 \text{ sq. in.}}}$$

60° S<sub>2</sub> TO S<sub>1</sub>

$$FGH = \frac{1.2" \times .55"}{2} = .33 = \underline{\underline{.3 \text{ sq. in.}}}$$



NOTE: THICKNESSES TAKEN  
FROM PSI DATA,  
PER B&W.

ITEM# B03.110.001  
I.D. # 2PZR-W1  
DATE: 10/09/01  
BY: Kerry Mauldin

# PRESSURIZER SURGE NOZZLE TO LOWER HEAD

ZONES II & III 60° CW TO CCM & CCM TO CW

ABCD  $2.2" \times 2.7" = 5.94 = \underline{\underline{5.958.14}}$



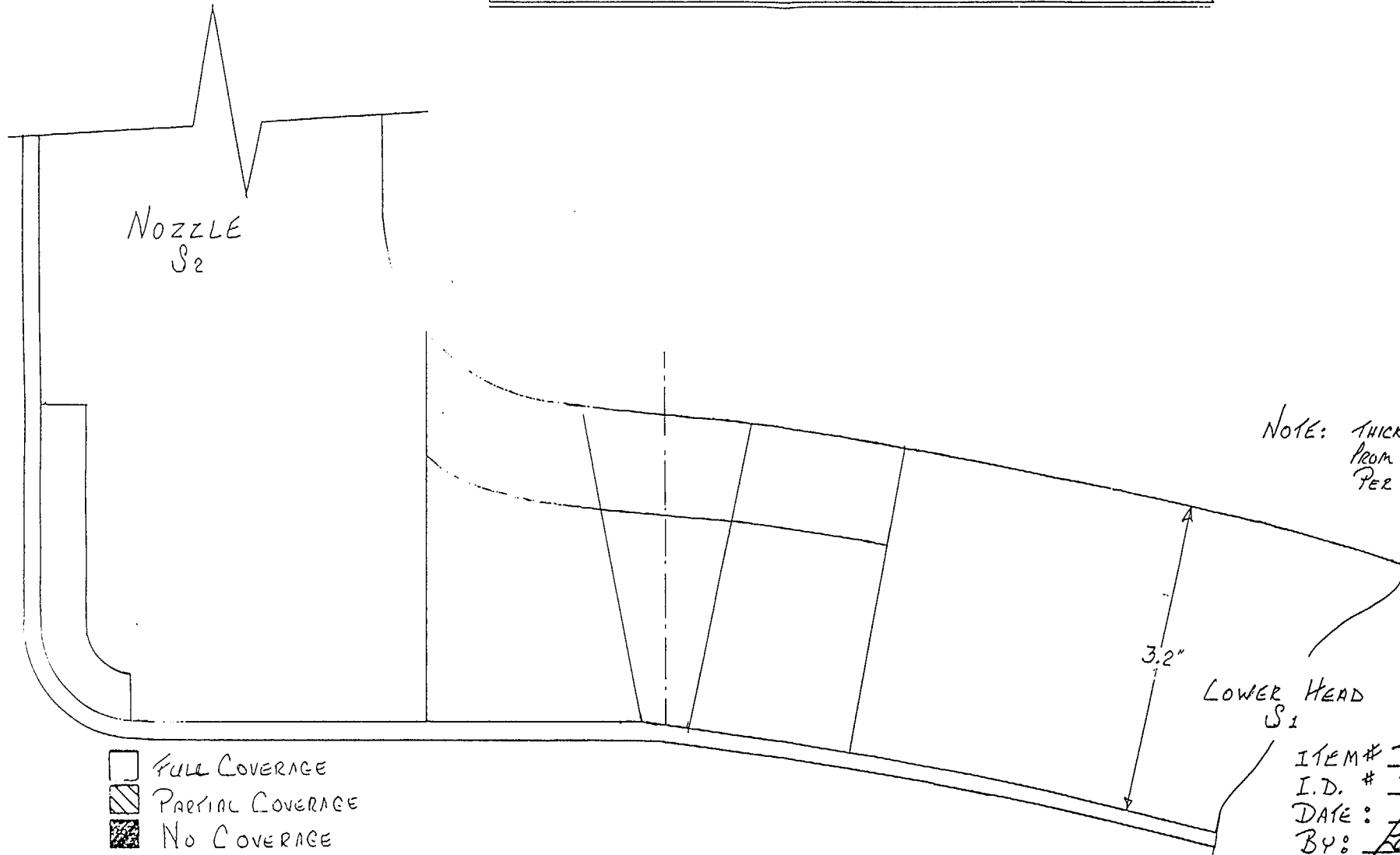
NOTE: THICKNESSES TAKEN  
FROM PSI DATA,  
PER B&W.

LOWER HEAD  
S1

☐ FULL COVERAGE  
☒ PARTIAL COVERAGE  
☒ NO COVERAGE

ITEM # B03,110.001  
 I.D. # ZPER-W1  
 DATE: 10/09/01  
 BY: Gary Thacker

PRESSURIZER SURGE NOZZLE TO LOWER HEAD



NOTE: THICKNESSES TAKEN  
FROM PSI DATA,  
PER B&W.

ITEM# B03.110.001  
I.D. # ZPER-W1  
DATE: 10/05/01  
BY: Larry Thauler

<b>DUKE POWER COMPANY</b>										Exam Start: 1040		Form NDE-UT-2A		
<b>ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS</b>										Exam Finish: 1059		Revision 4		
Station: CNS			Unit: 2		Component/Weld ID: 2NC13-WN9						Date: 9/19/2001			
Weld Length (in.): 38"			Surface Condition: AS GROUND				Lo: 9.2.3		Surface Temperature: 70 ° F					
Examiner: David Zimmerman <i>David Zimmerman</i>			Level: III		Scans: 45 <input checked="" type="checkbox"/> 63 dB 70 <input type="checkbox"/> _____ dB 45T <input checked="" type="checkbox"/> 63 dB 70T <input type="checkbox"/> _____ dB 60 <input type="checkbox"/> _____ dB 60T <input type="checkbox"/> _____ dB Other: _____ dB						Pyrometer S/N: MCNDE 27010			
Examiner: Gary J. Moss <i>Gary J. Moss</i>			Level: II								Cal Due: 2/14/2002			
Procedure: NDE-610 Rev: 4			FC: *								Configuration: Branch to Pipe			
Calibration Sheet No: 0102008, 0102009											S1 _____ Flow _____ S2 _____ Pipe _____ to _____ Branch _____ Scan Surface: OD Applies to NDE-680 only Skew Angle: N/A			

IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA		DO NOT WRITE IN THIS SPACE	WRITE SPACE	
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	45°	AXIAL													
NRI	45°	CIRC													

Remarks: * FC 97-01, 98-20			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet <u>1</u> of <u>6</u>
Reviewed By: <i>Remy Maullu</i>	Level: <u>III</u>	Date: <u>9-21-01</u>	Authorized Inspector: <i>Robert M. [Signature]</i> Date: <u>10/17/01</u> Item No: B09.031.003

*REQUEST FOR RELIEF #01-003 ATTACHMENT 3*

# DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 2NC13-WN9

Item No: B09.031.003

Remarks:

☒ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1 ☒ 2      ☒ 1 ☐ 2 ☒ cw ☒ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ 2.0" \_\_\_\_\_ to \_\_\_\_\_ BEYOND \_\_\_\_\_  
 ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other \_\_\_\_\_ FROM \_\_\_\_\_ 0 \_\_\_\_\_ DEG to \_\_\_\_\_ 360 \_\_\_\_\_ DEG

NOZZLE CONFIGURATION

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1 ☐ 2      ☐ 1 ☐ 2 ☐ cw ☐ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ to \_\_\_\_\_  
 ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other \_\_\_\_\_ FROM \_\_\_\_\_ DEG to \_\_\_\_\_ DEG

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1 ☐ 2      ☐ 1 ☐ 2 ☐ cw ☐ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ to \_\_\_\_\_  
 ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other \_\_\_\_\_ FROM \_\_\_\_\_ DEG to \_\_\_\_\_ DEG

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1 ☐ 2      ☐ 1 ☐ 2 ☐ cw ☐ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ to \_\_\_\_\_  
 ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other \_\_\_\_\_ FROM \_\_\_\_\_ DEG to \_\_\_\_\_ DEG

Prepared By: *Daniel K. B.*

Level: *III*

Date: *9/20/01*

Sketch(s) attached ☒ yes ☒ no *DKZ* *9/20/01* Sheet *2* of *6*

Reviewed By: *Larry Mauldin*

Date: *9/21/01*

Authorized Inspector: *Robert M. Hill*

Date: *10/17/01*

<b>DUKE POWER COMPANY</b> <b>Limited Examination Coverage Worksheet</b>	NDE-91-1
	Revision 0

Examination Volume/Area Defined	
<input checked="" type="checkbox"/> Base Metal <input checked="" type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius	
Area Calculation	Volume Calculation
PROFILE #1 2.1" X .77" = 1.62 SQ. IN. PROFILE #2 2.2" X .77" = 1.69 SQ. IN.	63" DIA. / 2 = 31.5" @ PROFILE PROFILE 1 1.62 SQ. IN. X 31.5" = 51.03 CU. IN. PROFILE 2 1.69 SQ. IN. X 31.5" = 53.24 CU. IN.

Coverage Calculations						
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)
PROFILE #1						
1	45°	2	1.62	19	30.78	30.78
1	45°	2	0	12.5	0	20.25
2	45°	1	0	31.5	0	51.03
3	45°	CW	.33	19	6.27	30.78
3	45°	CW	0	12.5	0	20.25
4	45°	CCW	.33	19	6.27	30.78
4	45°	CCW	.33	12.5	0	20.25

		Item No:	B09.031.003
Prepared By:	<i>David K. Z...</i>	Level:	<i>III</i>
		Date:	<i>9/20/01</i>
Reviewed By:	<i>Kerry Maulder</i>	Level:	<i>III</i>
		Date:	<i>9-21-01</i>

<b>DUKE POWER COMPANY</b> <b>Limited Examination Coverage Worksheet</b>	NDE-91-1
	Revision 0

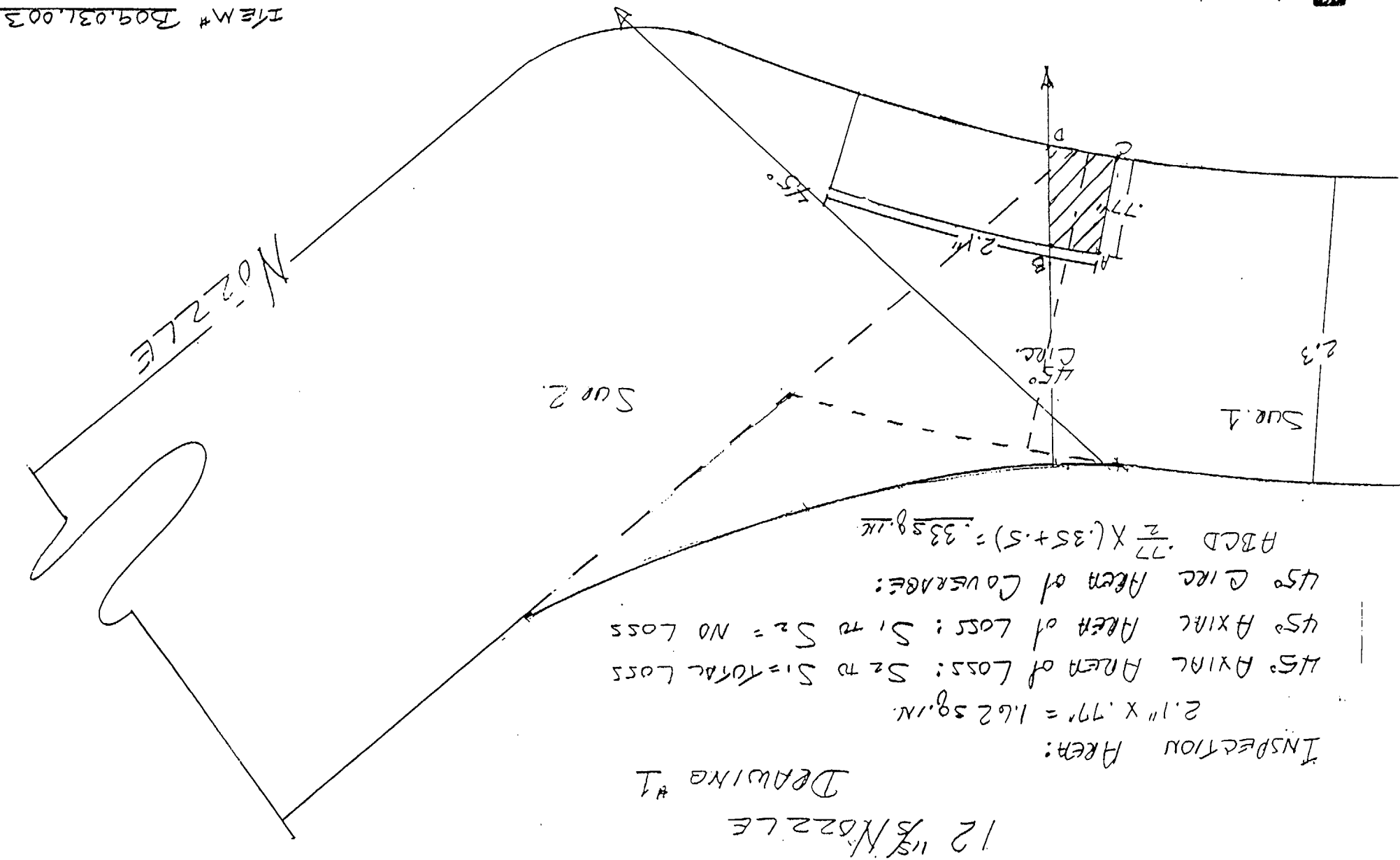
Examination Volume/Area Defined	
<input checked="" type="checkbox"/> Base Metal <input checked="" type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius	
Area Calculation	Volume Calculation
PROFILE #1 2.1" X .77" = 1.62 SQ. IN. PROFILE #2 2.2" X .77" = 1.69 SQ. IN.	63" DIA. / 2 = 31.5" @ PROFILE PROFILE 1 1.62 SQ. IN. X 31.5" = 51.03 CU. IN. PROFILE 2 1.69 SQ. IN. X 31.5" = 53.24 CU. IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
PROFILE #2							
1	45°	2	1.64	19	31.16	32.11	
1	45°	2	0	12.5	0	21.13	
2	45°	1	0	31.5	0	53.24	
3	45°	CW	.10	19	1.9	32.11	
3	45°	CW	0	12.5	0	21.13	
4	45°	CCW	.10	19	1.9	32.24	
4	45°	CCW	0	12.5	0	21.13	
					95.38	417.08	22.87

		Item No:	B09.031.003
Prepared By:	<i>Daniel K. Zy...</i>	Level:	<i>III</i>
Date:	<i>9/20/01</i>		
Reviewed By:	<i>Randy Maudlin</i>	Level:	<i>III</i>
Date:	<i>9-21-01</i>		



- Axial Loss  
 - Circ. Loss  
 SCALE 1-1



INSPECTION AREA:  
 $2.1" \times .77" = 1.62 \text{ sq. in.}$   
 45° AXIAL AREA OF LOSS:  $S_2$  TO  $S_1$  = TOTAL LOSS  
 45° AXIAL AREA OF LOSS:  $S_1$  TO  $S_2$  = NO LOSS  
 45° CIRC AREA OF COVERAGE:  
 $ABCD \cdot \frac{2}{77} \times (.35 + .5) = .33 \text{ sq. in.}$

12" NOZZLE  
 DRAWING #1

ITEM# B09.031.003  
 I.D.# 21113-WING  
 BY: [Signature]  
 DATE: 5/20/01  
 5 of 6

# 12" $\frac{5}{8}$ NOZZLE DRAWING #2

INSPECTION AREA:

$$2.2" \times .77" = 1.69 \text{ sq. in.}$$

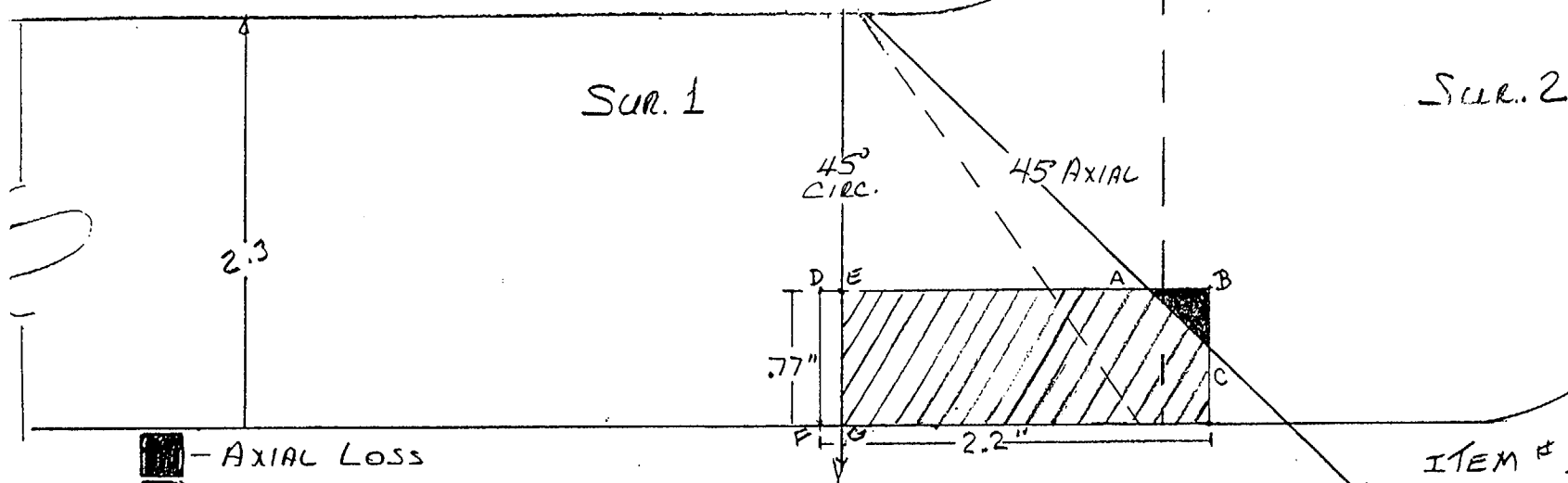
45° AXIAL AREA of LOSS:  $S_2$  TO  $S_1$  = TOTAL LOSS



45° AXIAL AREA of COVERAGE -  $S_1$  TO  $S_2$

$$ABC \quad \frac{.3 \times .3}{2} = .045 = .05 \quad 1.69 - .05 = \underline{1.64 \text{ sq. in.}}$$

45° CIRC. AREA of COVERAGE:

$$DEFG \quad .13" \times .77" = \underline{.10 \text{ sq. in.}}$$



 - AXIAL LOSS  
 - CIRC. LOSS  
 SCALE 1-1

ITEM # B09.031.003  
 I.D. # 2NC13-WN/9  
 BY: David K. Z. IV  
 DATE: 9/20/01  
 10 of 6

<b>DUKE POWER COMPANY</b>										Exam Start: 1210		Form NDE-UT-2A	
<b>ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS</b>										Exam Finish: 1236		Revision 4	
Station: CNS			Unit: 2		Component/Weld ID: 2SGB-06A-18						Date: 9/28/2001		
Weld Length (in.): 18.8"			Surface Condition: AS GROUND				Lo: 9.2.3		Surface Temperature: 69 ° F				
Examiner: Gary J. Moss <i>Gary J. Moss</i> Level: II			Scans: 45 <input type="checkbox"/> _____ dB    70 <input checked="" type="checkbox"/> 59.0 dB 45T <input type="checkbox"/> _____ dB    70T <input checked="" type="checkbox"/> 59.0 dB 60 <input checked="" type="checkbox"/> 72.5/71.5 dB 60T <input checked="" type="checkbox"/> 72.5/71.5 dB Other: _____ dB				Pyrometer S/N: MCNDE 27010						
Examiner: David Zimmerman <i>David K. Z</i> Level: III							Cal Due: 2/14/2002						
Procedure: NDE-620    Rev: 8    FC: 00-07 Calibration Sheet No: 0102033, 0102034, 0102035							Configuration: Nozzle to Shell S2 Flow S1 NOZZLE to SHELL Scan Surface: OD <b>Applies to NDE-680 only</b> Skew Angle: N/A						

IND #	<i>4</i>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA		DO NOT WRITE IN THIS SPACE	WRITE SPACE	
	NRI					50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				

Remarks:			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet <u>1</u> of <u>4</u>
Reviewed By: <i>Larry Maulder</i>	Level: <i>III</i>	Date: <i>10-02-01</i>	Authorized Inspector: <i>Robert McElv</i> Date: <i>10/17/01</i> Item No: C02.021.001

*PERMIST END RELIEF # 01003 ATTACHMENT 4*

**DUKE POWER COMPANY**  
**ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 2SGB-06A-18

Item No: C02.021.001

Remarks:

☒ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☒ 1   ☐ 2      ☐ 1   ☒ 2   ☐ cw   ☐ ccw  
FROM L   N/A   to L   N/A   INCHES FROM WO   2.6"   to   BEYOND    
ANGLE: ☐ 0   ☐ 45   ☐ 60   ☐ Other            FROM   0   DEG to   360   DEG

DUE TO NOZZLE CONFIGURATION

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1   ☐ 2      ☐ 1   ☐ 2   ☐ cw   ☐ ccw  
FROM L            to L            INCHES FROM WO            to             
ANGLE: ☐ 0   ☐ 45   ☐ 60   ☐ Other            FROM            DEG to            DEG

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1   ☐ 2      ☐ 1   ☐ 2   ☐ cw   ☐ ccw  
FROM L            to L            INCHES FROM WO            to             
ANGLE: ☐ 0   ☐ 45   ☐ 60   ☐ Other            FROM            DEG to            DEG

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1   ☐ 2      ☐ 1   ☐ 2   ☐ cw   ☐ ccw  
FROM L            to L            INCHES FROM WO            to             
ANGLE: ☐ 0   ☐ 45   ☐ 60   ☐ Other            FROM            DEG to            DEG

Prepared By: David K. Zimmerman *David K. Zimmerman* Level: III Date: 9/28/1901 Sketch(s) attached ☐ yes ☒ no Sheet 2 of 4

Reviewed By: *Larry Maeder* Date: 10-02-01 Authorized Inspector: *Robert m. L...* Date: 10/17/01

<b>DUKE POWER COMPANY</b> <b>Limited Examination Coverage Worksheet</b>						NDE-91-1	
						Revision 0	
<b>Examination Volume/Area Defined</b>							
<input checked="" type="checkbox"/> Base Metal <input checked="" type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius							
<b>Area Calculation</b>				<b>Volume Calculation</b>			
1.375 IN. X 1.75 IN. = 2.4 SQ.IN.				2.4 SQ.IN. X 70 IN. = 168 CU.IN.			
<b>Coverage Calculations</b>							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	60°L	2	2.4	70	168	168	
2	60°L	1	0	70	0	168	
3	60°L	CW	2.4	70	168	168	
4	60°L	CCW	2.4	70	168	168	100.00
					504	672	75.00

304

		Item No: C02.021.001
Prepared By: David K. Zimmerman <i>David K Zimmerman</i>	Level: III	Date: 9/28/1901
Reviewed By: <i>Larry Mauldin</i>	Level: <u>III</u>	Date: 10-02-01

# AUXILIARY. FLOODWATER NOZZLE

EXAM AREA:

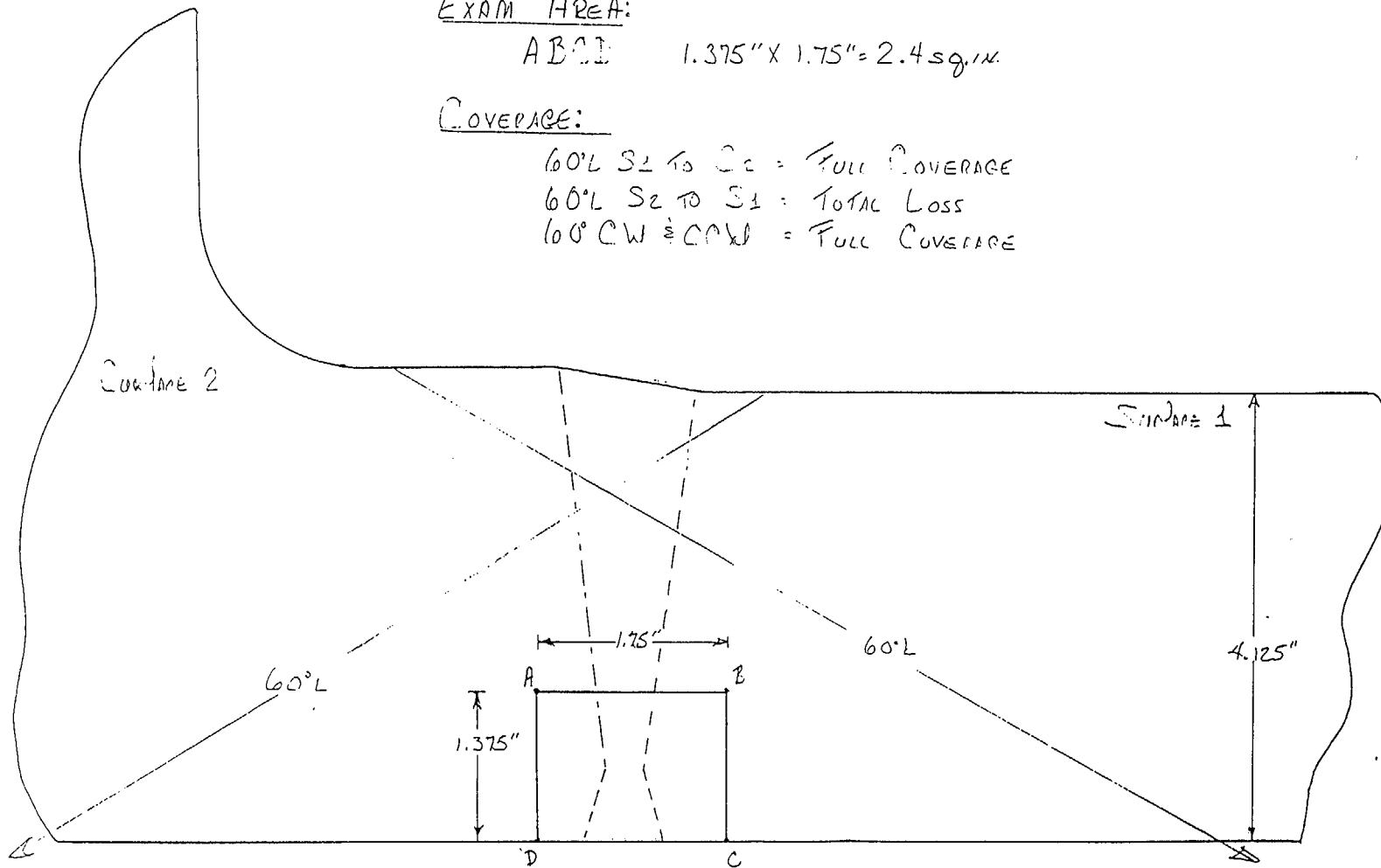
ABCD  $1.375" \times 1.75" = 2.4 \text{ sq. in.}$

COVERAGE:

60°L S2 TO S2 = FULL COVERAGE

60°L S2 TO S1 = TOTAL LOSS

60°CW  $\approx$  COW = FULL COVERAGE



I.D. # 25478-06A-18

ITEM # 602.021.001

BY: Daniel J. III

DATE: 9/28/01

Pg. 4 of 4

<b>DUKE POWER COMPANY</b>										Exam Start: 1008		Form NDE-UT-2A	
<b>ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS</b>										Exam Finish: 1028		Revision 4	
Station: CNS			Unit: 2		Component/Weld ID: 2BNSHX-3-N1						Date: 9/11/2001		
Weld Length (in.): 40.03			Surface Condition: AS GROUND				Lo: 9.2.3		Surface Temperature: 87 ° F				
Examiner: Jay A. Eaton			Level: III		Scans: 45 <input type="checkbox"/> _____ dB    70 <input checked="" type="checkbox"/> 64 dB 45T <input checked="" type="checkbox"/> 34 dB    70T <input type="checkbox"/> _____ dB 60 <input checked="" type="checkbox"/> 62 dB 60T <input type="checkbox"/> _____ dB Other: _____ dB				Pyrometer S/N: MCNDE 27008				
Examiner: Gayle E. Houser			Level: III						Cal Due: 2/14/2002				
Procedure: NDE-630    Rev: 2			FC: 99-02						Configuration: Nozzle to Shell				
Calibration Sheet No: 0102001, 0102002, 0102003									S2 _____ Flow _____ S1 _____ NOZZLE to SHELL Scan Surface: OD <b>Applies to NDE-680 only</b> Skew Angle: N/A				

IND #		Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA		DO NOT WRITE IN THIS SPACE		
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
1	60°L	200	1.5"	.5"*	10.0"	360°	INT.	IND.				2	1	AXIAL	NO

\* FROM TOE OF WELD

Remarks: 60° & 70° L WERE SCANNED @ LESS THAN SCANNING DB(REF. + 14 DB) DUE TO SIGNAL TO NOISE RATIO			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet <u>1</u> of <u>9</u>
Reviewed By:	Level: III	Date: 9-18-01	Authorized Inspector: <div style="float: right;">Date: 10/17/01</div>
			Item No: C02.021.004

REQUEST FOR RELIEF # 01-003 ATTACHMENT 5

# DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 2BNSHX-3-N1

Item No: C02.021.004

Remarks:

☒ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1 ☒ 2      ☒ 1 ☐ 2 ☐ cw ☐ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_ CL - 0.9" \_\_\_\_ to \_\_\_\_ BEYOND \_\_\_\_  
 ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70°      FROM \_\_\_\_ 0 \_\_\_\_ DEG to \_\_\_\_ 360 \_\_\_\_ DEG

WELD TAPER

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☒ LIMITED SCAN      ☒ 1 ☐ 2      ☐ 1 ☒ 2 ☐ cw ☐ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_ CL + 0.9" \_\_\_\_ to \_\_\_\_ BEYOND \_\_\_\_  
 ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70°      FROM \_\_\_\_ 0 \_\_\_\_ DEG to \_\_\_\_ 360 \_\_\_\_ DEG

WELD TAPER

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☒ LIMITED SCAN      ☒ 1 ☐ 2      ☐ 1 ☐ 2 ☒ cw ☒ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_ CL \_\_\_\_ to \_\_\_\_ C + 0.6" \_\_\_\_  
 ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other \_\_\_\_\_      FROM \_\_\_\_ 0 \_\_\_\_ DEG to \_\_\_\_ 360 \_\_\_\_ DEG

WELD TAPER SURF. 1

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☒ LIMITED SCAN      ☐ 1 ☒ 2      ☐ 1 ☐ 2 ☒ cw ☒ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_ CL - 0.1 \_\_\_\_ to \_\_\_\_ BEYOND \_\_\_\_  
 ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other \_\_\_\_\_      FROM \_\_\_\_ 0 \_\_\_\_ DEG to \_\_\_\_ 360 \_\_\_\_

WELD TAPER SURF. 2

Prepared By:

Level: III

Date: 9/11/01

Sketch(s) attached ☒ yes ☐ no

Sheet 2 of 9

Reviewed By:

Date: 9/18/01

Authorized Inspector:

Date: 10/17/01



DUKE POWER COMPANY  
UT PROFILE/PLOT SHEET

NDE-UT-5

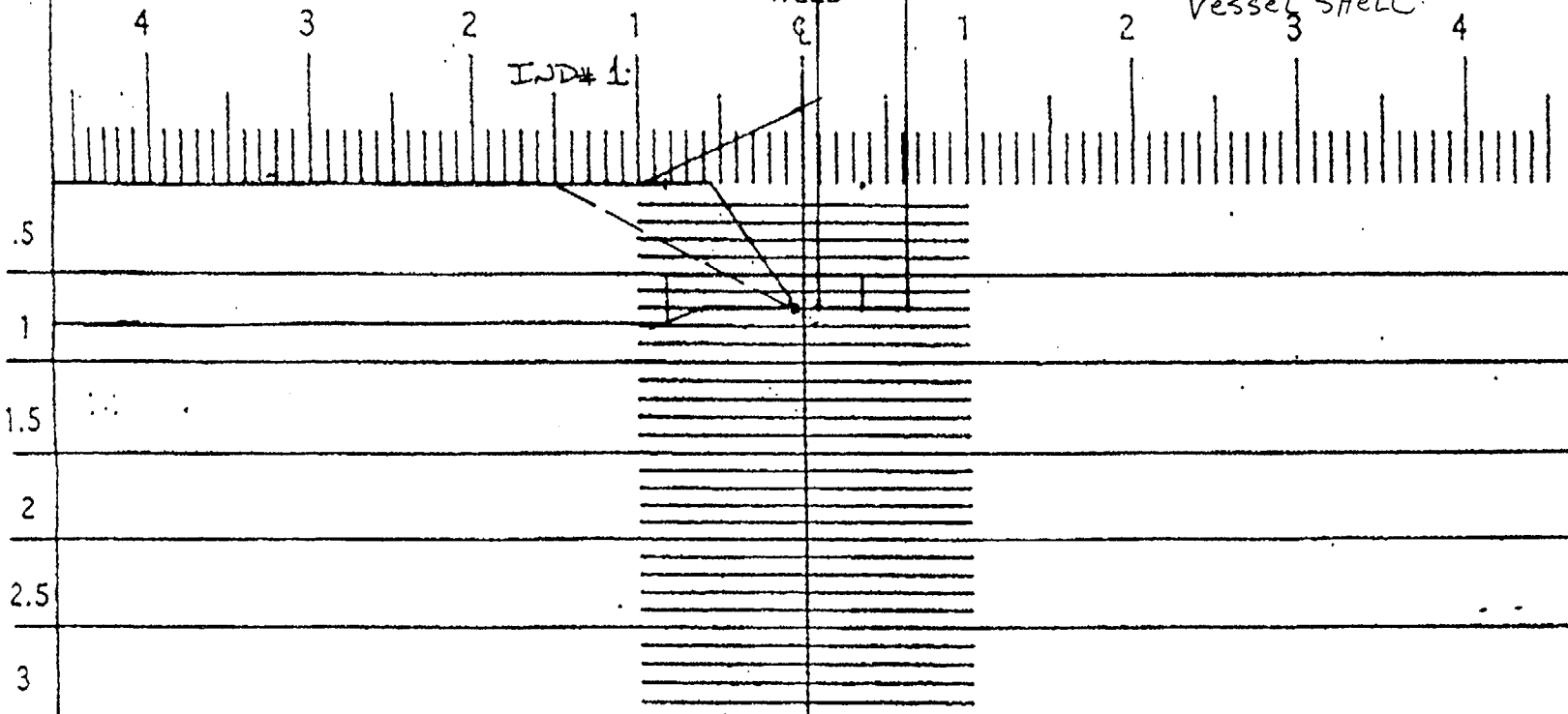
Revision 1

EXAMINATION SURFACE 1

WELD

EXAMINATION SURFACE 2

Vessel Shell



Component ID/Weld No. ZBNSHX-3-N1

: Remarks:

270

Profile taken  
at: 9.2.3

90

Examiner:

Item No: C02.021.004

Level: III

Date: 9/11/01

Reviewed By:

Level: III

Date: 9/18/01

Authorized Inspector:

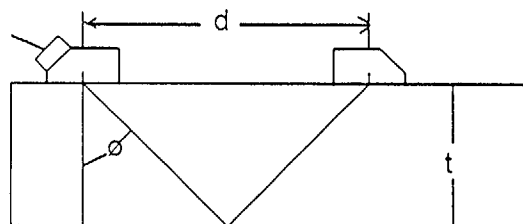
Date: 10/17/01

180 Sheet 3 of 9

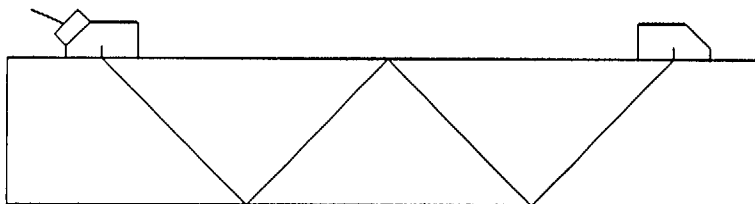
**DUKE POWER COMPANY**  
**ULTRASONIC BEAM ANGLE MEASUREMENT RECORD**

Form NDE-UT-9

Revision 3



$$\tan \phi = \frac{(d/2)}{t}$$



For thin wall pipe use 2nd Vee path

$$\tan \phi = \frac{(d/2)}{2t}$$

1. Take thickness measurements between . wedge locations.
2. Place search unit on straight turn of pipe, and peak the signal.
3. Measure distance (d) between exit points.
4. Calculate beam angle with formula as shown using measured wall thickness.
5. Use the measured beam angle to determine coverage and when plotting any indications.

Pipe Size: \_\_\_\_\_ 12 IN. \_\_\_\_\_

Pipe Schedule: \_\_\_\_\_ N/A \_\_\_\_\_

Nominal 45 deg: d= 1.4 ; t= 0.75 ; measured angle= 43.03 deg

Nominal 60 deg: d= 0 ; t= 0 ; measured angle= 0.00 deg

Nominal 70 deg: d= 0 ; t= 0 ; measured angle= 0.00 deg

Item No.  
C02.021.004

Examiner  
Gayle E. Houser

*Gayle E. Houser*

Level  
III

Date  
9/11/2001

Examiner  
Jay A. Eaton

*Jay A. Eaton*

Level  
III

Date  
9/11/2001

Reviewed By

*Larry Mauldin*

Level  
III

Date  
9-18-01

Authorized Inspector

*Robert McElroy*

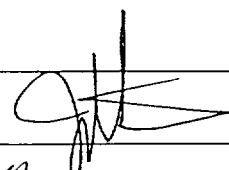
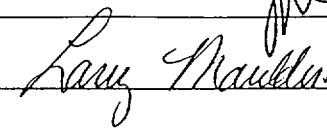
Date  
10/17/01

DUKE POWER COMPANY				Form NDE-UT-8	
ULTRASONIC INDICATION RESOLUTION SHEET				Revision 1	
Acceptance Standard: IND. #1 - 60°L IS A GEOMETRIC REFLECTOR DUE TO WELD ROOT CONFIGURATION.					
Item No: C02.021.004					
Acceptable Indications: IND. #1					
Rejectable Indications: N/A					
These indications have been compared with previous ultrasonic data <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No previous data available					
Examiner: Jay A. Eaton		Level: III	Date: 9/11/2001	Sheet <u>5</u> of <u>9</u>	
Reviewer: Larry Mauldin		Level: III	Date: 9-18-01	Authorized Inspector: Robert M. Ellis	Date: 10/17/01

<b>DUKE POWER COMPANY</b> <b>Limited Examination Coverage Worksheet</b>	NDE-91-1
	Revision 0

<b>Examination Volume/Area Defined</b> <input checked="" type="checkbox"/> Base Metal <input checked="" type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius	
<b>Area Calculation</b> $(0.25 \text{ in} \times 1.1 \text{ in}) + (0.15 \text{ in} \times 0.05 \text{ in} / 2) = 0.283 \text{ sq. in.}$	<b>Volume Calculation</b> $0.283 \text{ sq. in.} \times 40 \text{ in.} = 11.32 \text{ cubic in.}$

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	60&70	S1	.253	40	10.12	11.32	
2	60&70	S2	0	40	0	11.32	
3	45	CW	.151	40	6.04	11.32	
4	45	CCW	.151	40	6.04	11.32	
		Total	Aggregate	Coverage	22.2	45.28	49.03

		Item No:	C02.021.004
Prepared By: JAY EATON		Level: III	Date: 9/11/2001
Reviewed By: 		Level: <u>III</u>	Date: 9-18-01

DUKE POWER COMPANY  
UT PROFILE/PLOT SHEET

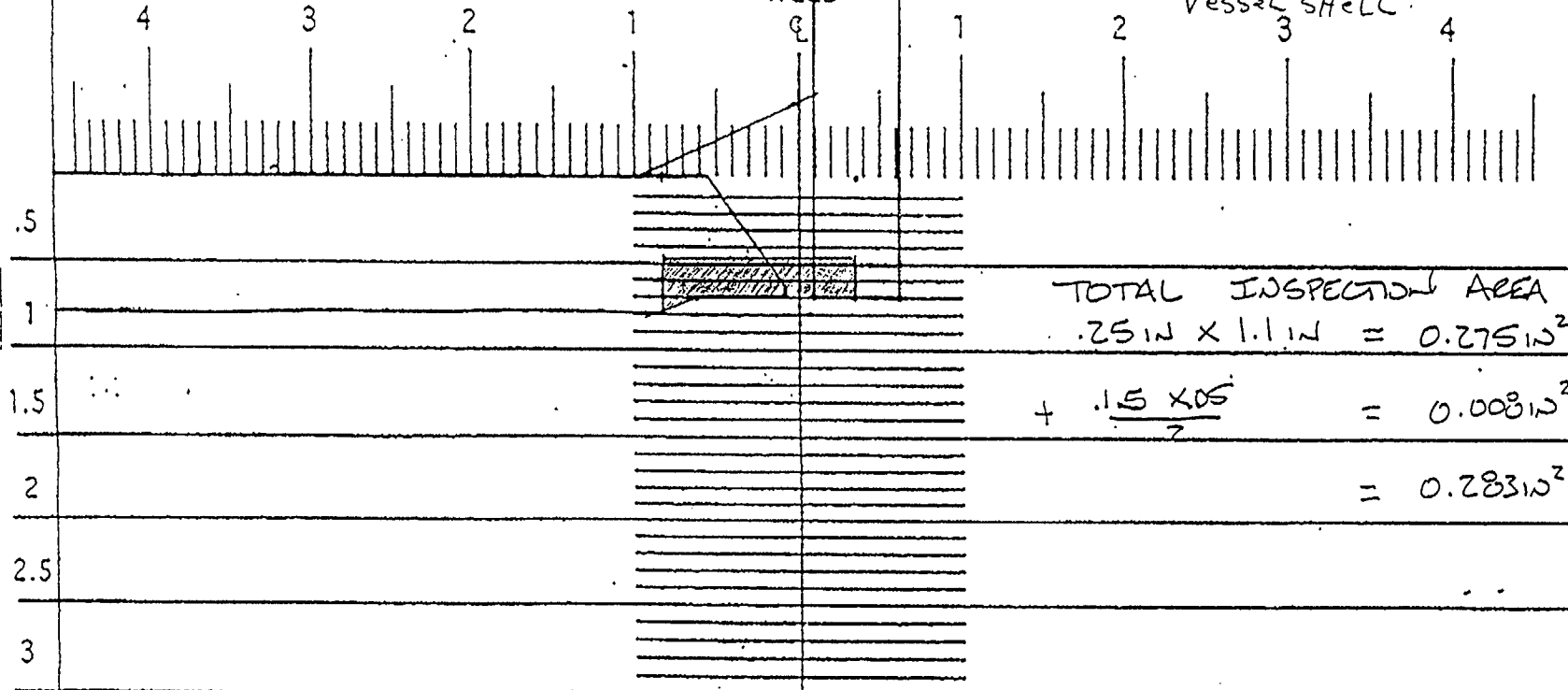
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 NOZZLE

WELD

EXAMINATION SURFACE 2  
VESSEL SHELL



Component ID/Weld No.

ZBNJSHX-3-N1

Remarks:

Examiner:

Item No:

CDZ.021.004

Level: III

Date: 9/11/01

Reviewed By:

Level: III

Date: 9/18/01

Authorized Inspector:

Date: 10/17/01

270

Profile taken  
at: 9.2.3

90

180 Sheet 7 of 9

DUKE POWER COMPANY  
UT PROFILE/PLOT SHEET

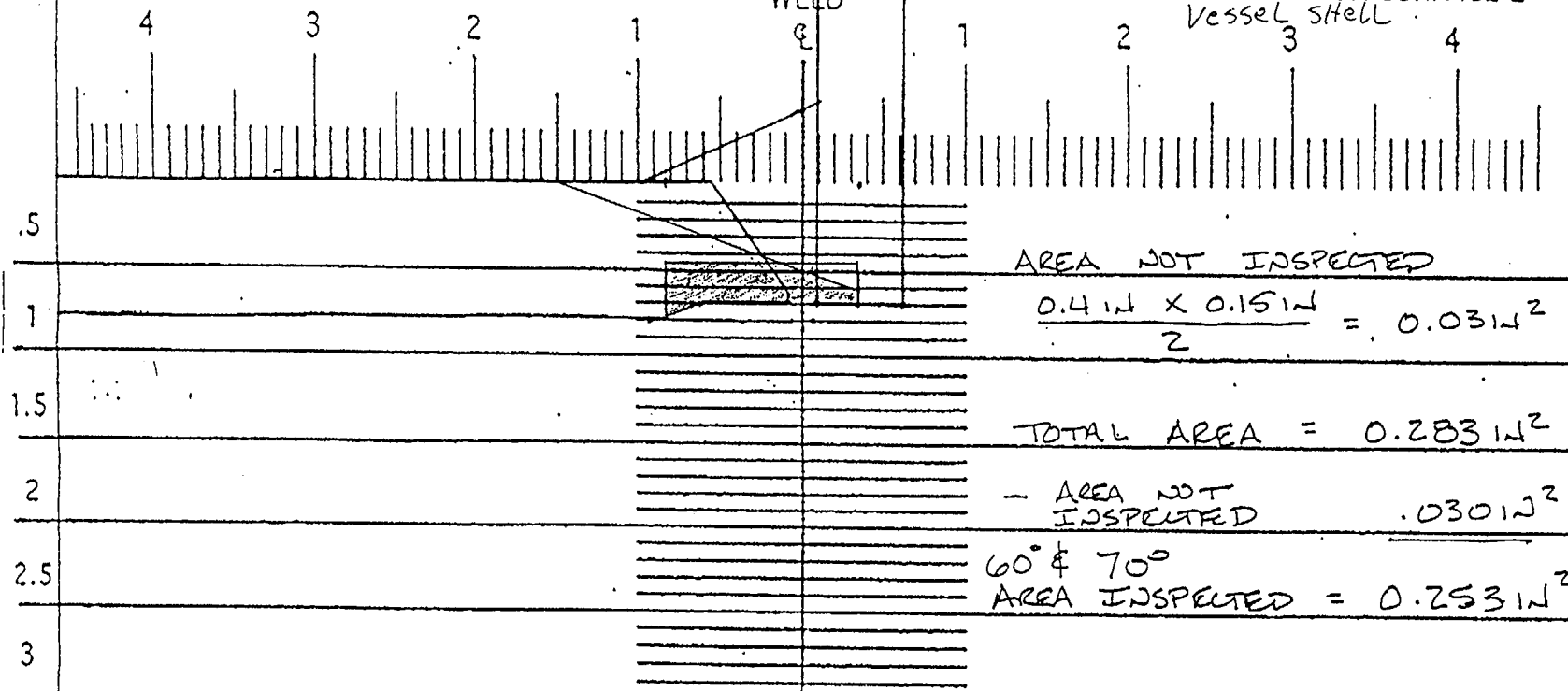
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 NOZZLE

WELD

EXAMINATION SURFACE 2  
Vessel shell



Component ID/Weld No. ZBN SHX-3-N1

Remarks:

Examiner:

Item No: C02.021.004

Level: III

Date: 9/11/01

Reviewed By:

Level: II

Date: 9/18/01

Authorized Inspector:

Date: 10/17/01

270

Profile taken  
at: 9.2.3

90

180 Sheet 8 of 9

DUKE POWER COMPANY  
UT PROFILE/PLOT SHEET

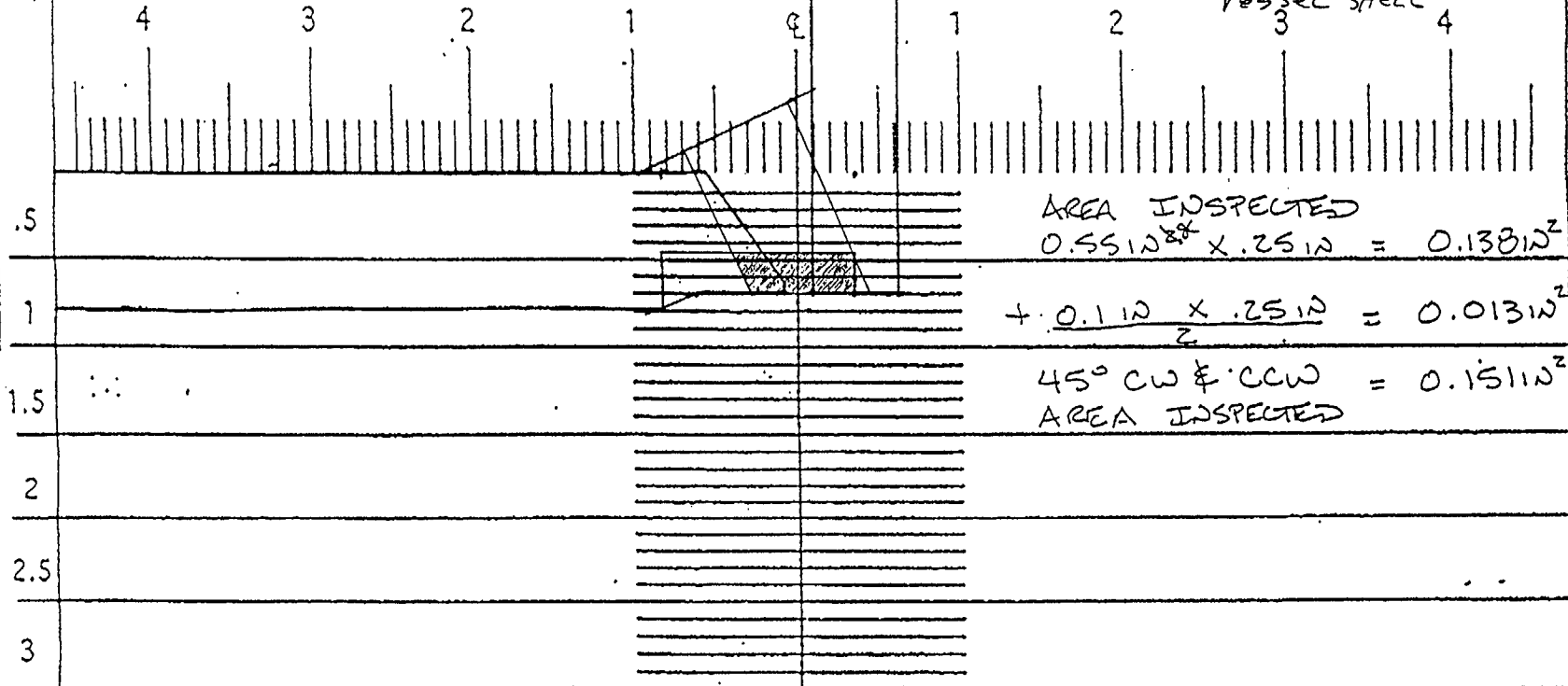
NDE-UT-5

Revision .1

EXAMINATION SURFACE 1 NOZZLE

EXAMINATION SURFACE 2

Vessel Shell



Component ID/Weld No. ZBUSHX-3-N1

Remarks:

270

Profile taken  
at: 9.2.3

90

Examiner:

Item No: COZ.021.004

Level: III

Date: 9/11/01

Reviewed By:

Level: III

Date: 9/18/01

Authorized Inspector:

Date: 10/17/01

180 Sheet 9 of 9

<b>DUKE POWER COMPANY</b>										Exam Start: 1008		Form NDE-UT-2A	
<b>ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS</b>										Exam Finish: 1028		Revision 4	
Station: CNS			Unit: 2		Component/Weld ID: 2BNSHX-3-N2						Date: 9/11/2001		
Weld Length (in.): 40.03			Surface Condition: AS GROUND				Lo: 9.2.3		Surface Temperature: 87 ° F				
Examiner: Jay A. Eaton <i>[Signature]</i>			Level: III		Scans: 45 <input type="checkbox"/> _____ dB    70 <input checked="" type="checkbox"/> 64 dB 45T <input checked="" type="checkbox"/> 34 dB    70T <input type="checkbox"/> _____ dB 60 <input checked="" type="checkbox"/> 62 dB 60T <input type="checkbox"/> _____ dB Other: _____ dB				Pyrometer S/N: MCNDE 27008				
Examiner: Gayle E. Houser <i>[Signature]</i>			Level: III						Cal Due: 2/14/2002				
Procedure: NDE-630    Rev: 2			FC: 99-02						Configuration: Nozzle to Shell				
Calibration Sheet No: 0102001, 0102002, 0102003									S2 _____ Flow _____ S1 _____ NOZZLE to SHELL Scan Surface: OD <b>Applies to NDE-680 only</b> Skew Angle: N/A				

IND #	<i>[Symbol]</i>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac		DO NOT WRITE IN THIS SPACE		
1	60°L	251	1.7"	.5" <i>[Symbol]</i>	26"	360°	INT.	IND.				2	1	AXIAL	NO

\* FROM TOE OF WELD

Remarks: 60° & 70° L WERE SCANNED @ LESS THAN SCANNING DB( REF. + 14DB) DUE TO SIGNAL TO NOISE RATIO			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet <u>1</u> of <u>9</u>
Reviewed By: <i>[Signature]</i>	Level: IV	Date: 9-18-01	Authorized Inspector: <i>[Signature]</i> Date: 10/17/01 Item No: C02.021.005

REQUEST FOR RELIEF #01-003 ATTACHMENT 6



# DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 2BNSHX-3-N2

Item No: C02.021.005

Remarks:

☒ NO SCAN      SURFACE      BEAM DIRECTION  
☐ LIMITED SCAN      ☐ 1 ☒ 2      ☒ 1 ☐ 2 ☐ cw ☐ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ CL - 0.9" \_\_\_\_\_ to \_\_\_\_\_ BEYOND \_\_\_\_\_  
 ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70°      FROM \_\_\_\_\_ 0 \_\_\_\_\_ DEG to \_\_\_\_\_ 360 \_\_\_\_\_ DEG

WELD TAPER

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☒ LIMITED SCAN      ☒ 1 ☐ 2      ☐ 1 ☒ 2 ☐ cw ☐ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ CL + 0.9" \_\_\_\_\_ to \_\_\_\_\_ BEYOND \_\_\_\_\_  
 ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70°      FROM \_\_\_\_\_ 0 \_\_\_\_\_ DEG to \_\_\_\_\_ 360 \_\_\_\_\_ DEG

WELD TAPER

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☒ LIMITED SCAN      ☒ 1 ☐ 2      ☐ 1 ☐ 2 ☒ cw ☒ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ CL \_\_\_\_\_ to \_\_\_\_\_ C + 0.6" \_\_\_\_\_  
 ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other \_\_\_\_\_      FROM \_\_\_\_\_ 0 \_\_\_\_\_ DEG to \_\_\_\_\_ 360 \_\_\_\_\_ DEG

WELD TAPER SURF. 1

☐ NO SCAN      SURFACE      BEAM DIRECTION  
☒ LIMITED SCAN      ☐ 1 ☒ 2      ☐ 1 ☐ 2 ☒ cw ☒ ccw  
 FROM L \_\_\_\_\_ to L \_\_\_\_\_ INCHES FROM WO \_\_\_\_\_ CL - 0.1 \_\_\_\_\_ to \_\_\_\_\_ BEYOND \_\_\_\_\_  
 ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other \_\_\_\_\_      FROM \_\_\_\_\_ 0 \_\_\_\_\_ DEG to \_\_\_\_\_ 360 \_\_\_\_\_ DEG

WELD TAPER SURF. 2

Prepared By:

Level: III

Date: 9/11/01

Sketch(s) attached ☒ yes ☐ no

Sheet 2 of 9

Reviewed By:

Date: 9-18-01

Authorized Inspector:

Date: 10/17/02

DUKE POWER COMPANY  
UT PROFILE/PLOT SHEET

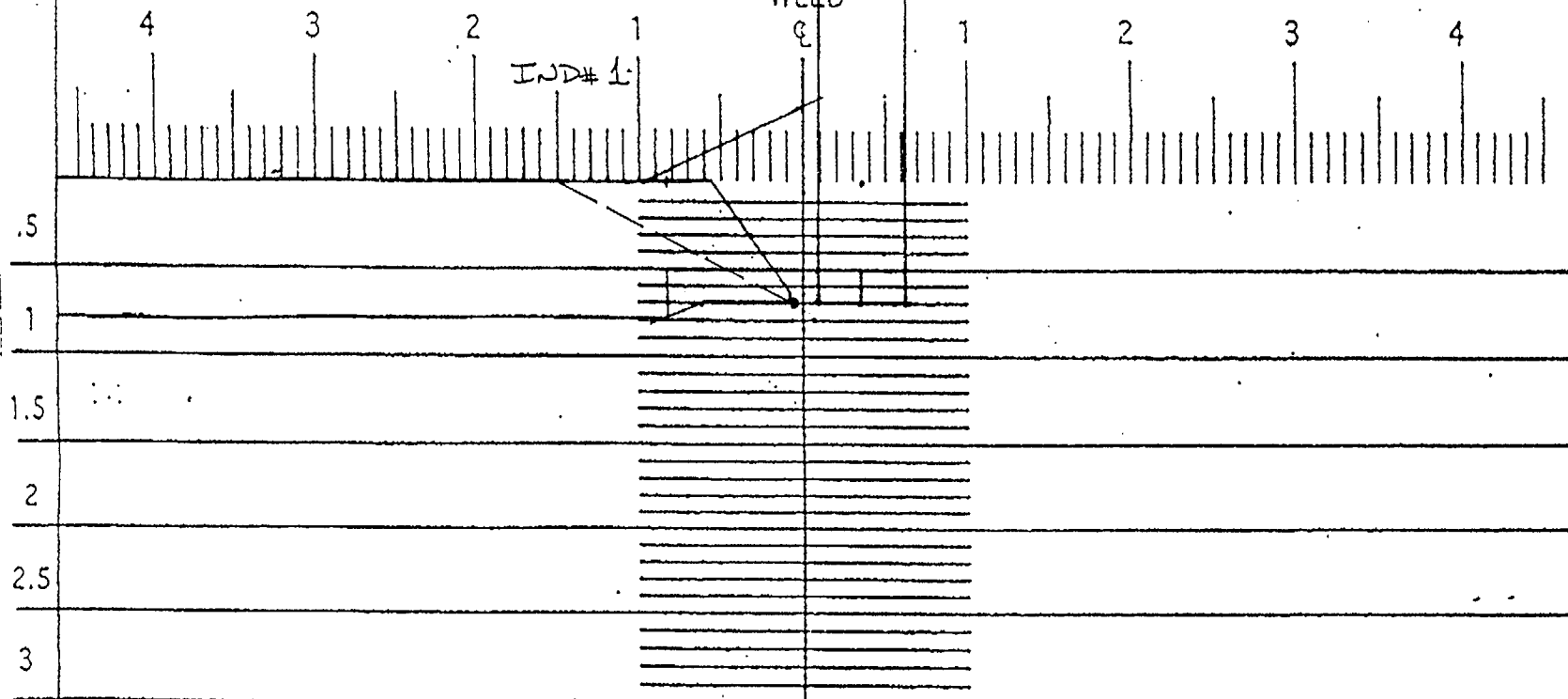
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1

WELD

EXAMINATION SURFACE 2



Component ID/Weld No. ZBNSHX-3-NZ

Remarks:

270

Profile taken  
at: 9.2.3

90

Examiner:

Item No: C02.021.005

Level: III

Date: 9/11/01

Reviewed By:

Level: III

Date: 9/18/01

Authorized Inspector:

Robert McNeil

Date: 10/17/01

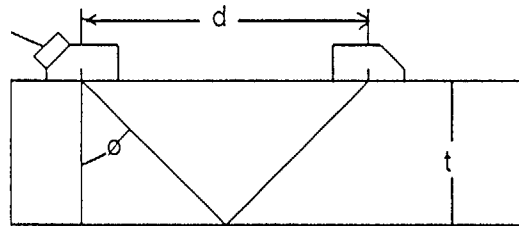
180 Sheet 3 of 9

DUKE POWER COMPANY				Form NDE-UT-8	
ULTRASONIC INDICATION RESOLUTION SHEET				Revision 1	
Acceptance Standard: IND. #1 - 60°L IS A GEOMETRIC REFLECTOR DUE TO WELD ROOT CONFIGURATION.					
Item No: C02.021.005					
Acceptable Indications: IND. #1					
Rejectable Indications: N/A					
These indications have been compared with previous ultrasonic data <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No previous data available					
Examiner: Jay A. Eaton		Level: III	Date: 9/11/2001	Sheet <u>4</u> of <u>9</u>	
Reviewer: <i>Larry Mauldin</i>		Level: III	Date: 9-18-01	Authorized Inspector: <i>Robert McNeil</i>	Date: 10/17/01

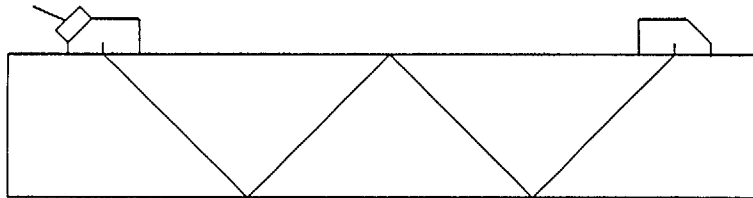
**DUKE POWER COMPANY**  
**ULTRASONIC BEAM ANGLE MEASUREMENT RECORD**

Form NDE-UT-9

Revision 3



$$\tan \phi = \frac{(d/2)}{t}$$



For thin wall pipe use 2nd Vee path

$$\tan \phi = \frac{(d/2)}{2t}$$

1. Take thickness measurements between wedge locations.
2. Place search unit on straight turn of pipe, and peak the signal.
3. Measure distance (d) between exit points.
4. Calculate beam angle with formula as shown using measured wall thickness.
5. Use the measured beam angle to determine coverage and when plotting any indications.

Pipe Size: \_\_\_\_\_ 12 IN. \_\_\_\_\_

Pipe Schedule: \_\_\_\_\_ N/A \_\_\_\_\_

Nominal 45 deg: d= 1.4 ; t= 0.75 ; measured angle= 43.03 deg

Nominal 60 deg: d= 0 ; t= 0 ; measured angle= 0.00 deg

Nominal 70 deg: d= 0 ; t= 0 ; measured angle= 0.00 deg

Item No.  
C02.021.005

Examiner Gayle E. Houser	Level III	Date 9/11/2001	Examiner Jay A. Eaton	Level III	Date 9/11/2001
Reviewed By Ray Mauller	Level III	Date 9-18-01	Authorized Inspector Robert M. [Signature]		Date 10/17/01

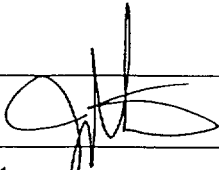
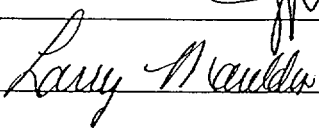
5 of 9

<b>DUKE POWER COMPANY</b> <b>Limited Examination Coverage Worksheet</b>	NDE-91-1
	Revision 0

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
$(0.25 \text{ in} \times 1.1 \text{ in}) + (0.15 \text{ in} \times 0.05 \text{ in} / 2) = 0.283 \text{ sq. in.}$	$0.283 \text{ sq. in.} \times 40 \text{ in.} = 11.32 \text{ cubic in.}$

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	60&70	S1	.253	40	10.12	11.32	
2	60&70	S2	0	40	0	11.32	
3	45	CW	.151	40	6.04	11.32	
4	45	CCW	.151	40	6.04	11.32	
		TOTAL	AGGREGATE	COVERAGE	22.2	45.28	49.03

		Item No:	C02.021.005
Prepared By: JAY EATON		Level: III	Date: 9/11/2001
Reviewed By: 		Level: IV	Date: 9.18.01

60.7

DUKE POWER COMPANY  
UT PROFILE/PLOT SHEET

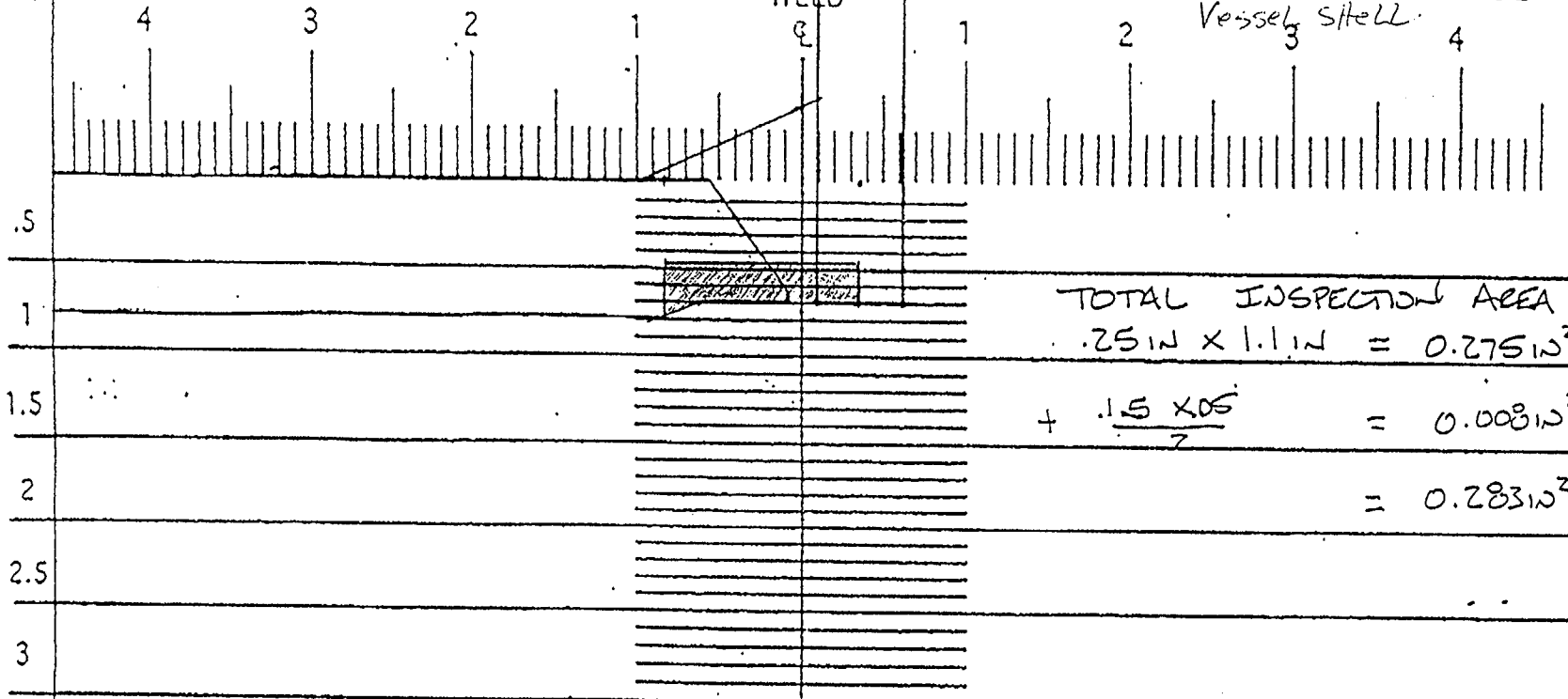
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 Nozzle

WELD

EXAMINATION SURFACE 2  
Vessel Shell



TOTAL INSPECTION AREA  
 $.25 \text{ IN} \times 1.1 \text{ IN} = 0.275 \text{ IN}^2$   
 $+ \frac{.15 \times .05}{2} = 0.008 \text{ IN}^2$   
 $= 0.283 \text{ IN}^2$

Component ID/Weld No. ZBN SHX-3-NZ

Remarks:

Examiner:

Item No: C02.021.005

Level: III

Date: 9/11/01

Reviewed By:

Level: III

Date: 9/18/01

Authorized Inspector:

Date: 10/17/01

Profile taken  
at: 9.2.3

DUKE POWER COMPANY  
UT PROFILE/PLOT SHEET

NDE-UT-5

Reylston 1

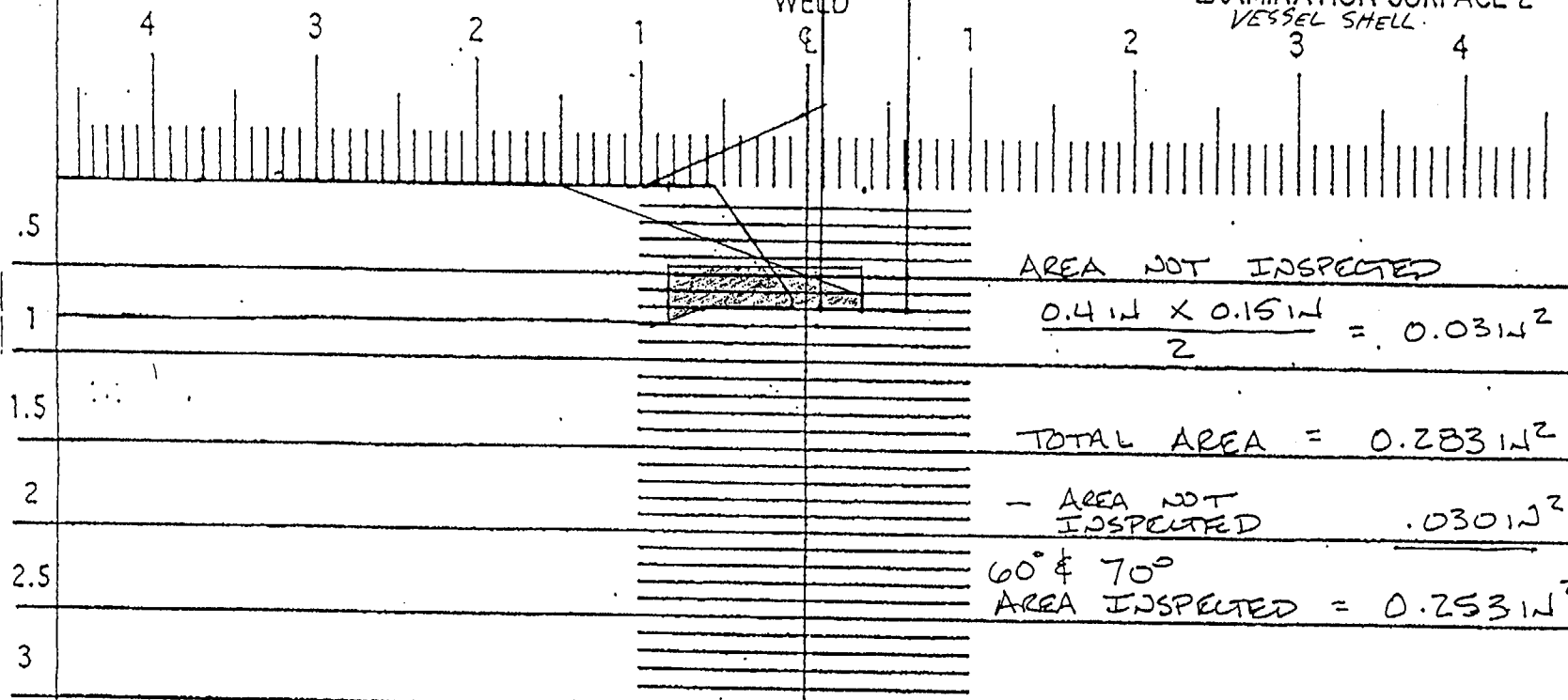
EXAMINATION SURFACE 1

NOZZLE

WELD

EXAMINATION SURFACE 2

VESSEL SHELL



Component ID/Weld No.

ZBN5HX-3-NZ

Remarks:

Examiner:

Reviewed By:

Authorized Inspector:

Item No:

COZ.021.005

Level: III

Date: 9/11/01

Level: III

Date: 9-18-01

Date: 10/17/01

270

Profile taken  
at: 9.2.3

90

180 Sheet 8 of 9

DUKE POWER COMPANY  
UT PROFILE/PLOT SHEET

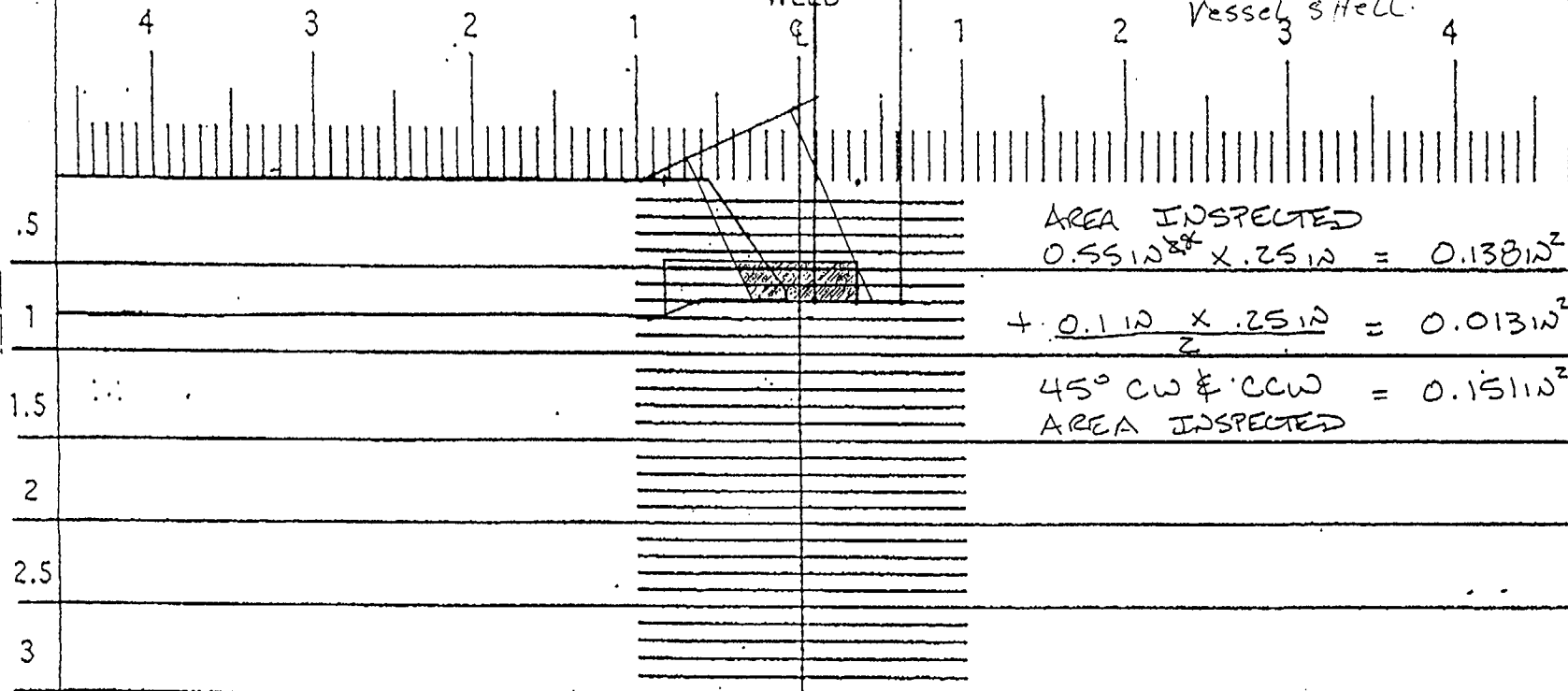
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1

EXAMINATION SURFACE 2

Vessel Shell



Component ID/Weld No. ZBN SHX - 3 - NZ

Remarks:

270

Profile taken  
at: 9.2.3

90

Examiner:

Item No: COZ.021.005

Level: III

Date: 9/11/01

Reviewed By:

Level: III

Date: 9/18/01

Authorized Inspector: Robert McNeil

Date: 10/17/07

180 Sheet 9 of 9