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 $8\frac{1}{2}$ 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 Blythe
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 Mifflin 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: C. J. Hogge, Jr. Date 1-17-2002

Reviewed By: J. E. Curry Date 1-17-2002

Approved By: R. Kevin Rhyne Date 1/17/02

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C/O R. N. McGill
Catawba Nuclear Station

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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 2B 2267-3D	N/A N/A	848 849
Containment Spray Heat Exchanger	Yuba Heat Transfer Corporation	2A 74-N-009-2A 2B 74-N-009-2B	N/A N/A	3330 3331
Seal Water Injection Filter	Pall Trinity Micro Corporation	2A 35367 2B 35366	N/A N/A	19025 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

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

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

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

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

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

Item Number	*Description*	*Total Examined During Outage*
	Reactor Vessel	
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
	Pressurizer	
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
	Steam Generator	
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
	Heat Exchangers	
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)

Item Number	*Description*	*Total Examined During Outage*
	Piping	
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
TOTALS		1

Examination Category B-G-1 — Pressure Retaining Bolting, Greater Than 2" in Diameter

Item Number	Description	Total Examined During Outage
	Reactor Vessel	
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
	Pressurizer	
B06.060	Bolts and Studs	NA
B06.070	Flange Surface (when connection disassembled)	NA
B06.080	Nuts, Bushings and Washers	NA
	Steam Generators	
B06.090	Bolts and Studs	NA
B06.100	Flange Surface (when connection disassembled)	NA
B06.110	Nuts, Bushings and Washers	NA
	Heat Exchangers	
B06.120	Bolts and Studs	NA
B06.130	Flange Surface (when connection disassembled)	NA
B06.140	Nuts, Bushings and Washers	NA
	Piping	
B06.150	Bolts and Studs	NA
B06.160	Flange Surface (when connection disassembled)	NA
B06.170	Nuts, Bushings and Washers	NA

Examination Category B-G-1 (Continued)

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

Examination Category B-G-2 — Pressure Retaining Bolting, 2" and Less in Diameter

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

Examination Category B-H Integral Attachments for Vessels

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

Examination Category B-J Pressure Retaining Welds in Piping

Item Number	Description	Total Examined During Outage
B09.010	**Nominal Pipe Size 4" or Larger**	
B09.011	Circumferential Welds	9
B09.012	Longitudinal Welds[1]	0
B09.020	**Nominal Pipe Size Less than 4"**	
B09.021	Circumferential Welds	1
B09.022	Longitudinal Welds[1]	NA

[1] 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)

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

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

Item Number	Description	Total Examined During Outage
	Piping	
B10.010	Integrally Welded Attachments	NA
	Pumps	
B10.020	Integrally Welded Attachments	NA
	Valves	
B10.030	Integrally Welded Attachments	NA
TOTALS		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**

Item Number	*Description*	*Total Examined During Outage*
	Pumps	
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
	Valves	
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
TOTALS		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

Item Number	*Description*	*Total Examined During Outage*
	Reactor Vessel	
B13.010	Vessel Interior (B-N-1)	0
	Reactor Vessel (PWR)	
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
TOTALS		0

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

Item Number	*Description*	*Total Examined During Outage*
	Reactor Vessel	
B14.010	Welds in CRD Housing	0
TOTALS		0

Examination Category B-P All Pressure Retaining Components

REFERENCE SECTION 11.0 OF THIS REPORT

Examination Category B-Q Steam Generator Tubing

Item Number	*Description*	*Total Examined During Outage*
B16.010	Steam Generator Tubing in Straight Tube Design	NA
B16.020	Steam Generator Tubing in U-Tube Design[2]	NA
TOTALS		NA

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

Item Number	*Description*	*Total Examined During Outage*
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[3]	NA
TOTALS		20

[2] 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.

[3] 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

Item Number	*Description*	*Total Examined During Outage*
C01.010	Shell Circumferential Welds	2
C01.020	Head Circumferential Welds	2
C01.030	Tubesheet to Shell Weld	0
TOTALS		4

Examination Category C-B Pressure Retaining Nozzle Welds in Vessels

Item Number	*Description*	*Total Examined During Outage*
C02.010	**Nozzles in Vessels ≤ 1/2" Nominal Thickness**	
C02.011	Nozzle to Shell (or Head) Weld	2
C02.020	**Nozzles Without Reinforcing Plate in Vessels >1/2" Nominal Thickness**	
C02.021	Nozzle to Shell (or Head) Weld	3
C02.022	Nozzle Inside Radius Section	0

Examination Category C-B (Continued)

C02.030	**Nozzles With Reinforcing Plate in Vessels >1/2" Nominal Thickness**	
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
TOTALS		5

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

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

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

Item Number	*Description*	*Total Examined During Outage*
	Pressure Vessels	
C04.010	Bolts and Studs	NA
	Piping	
C04.020	Bolts and Studs	NA
	Pumps	
C04.030	Bolts and Studs	NA
	Valves	
C04.040	Bolts and Studs	NA
TOTALS		NA

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

Item Number	*Description*	*Total Examined During Outage*
C05.010	**Piping Welds ≥ 3/8" Nominal Wall Thickness for Piping > Nominal Pipe Size 4"**	
C05.011	Circumferential Weld	15
C05.012	Longitudinal Weld[4]	0

[4] 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)

Item Number	*Description*	*Total Examined During Outage*
C05.020	**Piping Welds > 1/5" Nominal Wall Thickness for Piping ≥ Nominal Pipe Size 2" and ≤ Nominal Pipe Size 4"**	
C05.021	Circumferential Weld	5
C05.022	Longitudinal Weld[5]	0
C05.030	Socket Welds	4
C05.040	**Pipe Branch Connections of Branch Piping ≥ Nominal Pipe Size 2"**	
C05.041	Circumferential Weld	0
C05.042	Longitudinal Weld[5]	0
TOTALS		24

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

Item Number	*Description*	*Total Examined During Outage*
C05.050	**Piping Welds ≥ 3/8" Nominal Wall Thickness for Piping > Nominal Pipe Size 4"**	
C05.051	Circumferential Weld	9
C05.052	Longitudinal Weld[5]	0

[5] 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)

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

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

Item Number	*Description*	*Total Examined During Outage*
	Pumps	
C06.010	Pump Casing Welds	NA
	Valves	
C06.020	Valve Body Welds	5
TOTALS		5

[6] 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)

Item Number	*Description*	*Total Examined During Outage*
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[7]	NA
TOTALS		27

[7] Reference Request for Relief Serial No. 96-01.

2.3 ***Augmented / Elective Inspection***

Item Number	*Description*	*Total Examined During Outage*
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
TOTALS		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

Examination Category	Description	Inspections Required	Inspections Completed	Percentage Completed	Deferral Allowed[8]
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

[8] Deferral of inspection to the end of the interval as allowed by ASME Section XI Table IWB-2500-1.

Class 1 Inspections (Continued)

Examination Category	*Description*	*Inspections Required*	*Inspections Completed*	*Percentage Completed*	*Deferral Allowed*[9]
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[10]	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

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

10 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

Examination Category	*Description*	*Inspections Required*	*Inspections Completed*	*Percentage Completed*	*Deferral Allowed* [11]
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

[11] Deferral of inspection to the end of the interval as allowed by ASME Section XI Table IWB-2500-1.

Augmented / Elective Inspections

Description	*Percentage Complete*
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

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
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Catawba 2

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

[redacted] 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
****** Shell-to-Head Welds; Circumferential ******									
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				
Total B02.011 Items:	1								
****** Shell-to-Head Welds; Longitudinal ******									
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				
Total B02.012 Items:	1								
Total B02 Items:	2								

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
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Catawba 2

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

[redacted] 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
****** 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
	Circumferential		CNM 2201.01-110/2				3.750	50236A	Depending upon the examiner's qualifications, Procedure PDI-UT-6 may be used in lieu of Procedure NDE-620.
Class A					PZR Surge Nozzle to Lower Head				

Total B03.110 Items: 1

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QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System

Catawba 2

Inservice Inspection Plan for Interval 2 Outage 4

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

[redacted] Pressurizer

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	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

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QUALITY ASSURANCE TECHNICAL SERVICES
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Catawba 2

Inservice Inspection Plan for Interval 2 Outage 4

CATEGORY B-F, Pressure Retaining Dissimilar Metal Welds

[redacted] Pressurizer

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
****** NPS 4 or Larger; Nozzle-to-Safe End Butt Welds ******									
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				

Total B05.040 Items: 2

Total B05 Items: 2

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

[redacted] Reactor Vessel

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
****** 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

[redacted] Reactor Vessel

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
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Catawba 2
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ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/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									

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Inservice Inspection Database Management System

Catawba 2

Inservice Inspection Plan for Interval 2 Outage 4

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

[redacted] Reactor Vessel

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

Total B06.010 Items: 18

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

Reactor Vessel

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
****** 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

[redacted] Reactor Vessel

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
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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
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

[redacted] Reactor Vessel

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
B06.030.027A	2RPV-179-101-27	NC	E 8871-179-001 CNM 2201.01-67	NDE-25	MT	CS	7.000 57.688		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 57.688	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 57.688		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 57.688	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 57.688		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 57.688	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 57.688		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 57.688	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 57.688		RPV Closure Stud 2RPV-STUD-31
Class A									

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

[redacted] Reactor Vessel

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
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

[redacted] Reactor Vessel

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
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									

Total B06.030 Items: **36**

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

Reactor Vessel

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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

[redacted] Reactor Vessel

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
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									

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

[redacted] Reactor Vessel

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

Total B06.040 Items: 18

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

[redacted] Reactor Vessel

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
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Catawba 2
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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

[redacted] Reactor Vessel

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
B06.050.027	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

[redacted] Reactor Vessel

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
B06.050.036	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

Total B06.050 Items: **18**

Total B06 Items: **90**

CATEGORY B-G-2, Pressure Retaining Bolting, 2" And Less In Diameter

[redacted]Valves

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
****** Bolts, Studs, and Nuts ******									
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									

Total B07.070 Items: 2

Total B07 Items: 2

CATEGORY B-H, Integral Attachments for Vessels

[redacted] Pressurizer

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
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Catawba 2
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ITEM NUMBER	ID NUMBER	SYS ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
****** Integrally Welded Attachments ******								
B08.020.001 Class A	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
B08.020.001A Class A	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

Total B08.020 Items: 2

Total B08 Items: 2

CATEGORY B-J, Pressure Retaining Welds In Piping

NPS 4 or Larger

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
****** Circumferential Welds ******									
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 PZR TO P1
	Circumferential		CN-2553-1.1			160	1.406		* Reference General Requirements Section 8.1.10
Class A					Pipe to PZR Nozzle SE				
B09.011.048A	2NC8-3	NC	CN-2NC-8	NDE-35	PT	SS	14.000		CNM 2201.01-95 PZR TO P1
	Circumferential		CN-2553-1.1			160	1.406		
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

NPS 4 or Larger

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
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

NPS 4 or Larger

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
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			

Total B09.011 Items: 18

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2

CATEGORY B-J, Pressure Retaining Welds In Piping

[redacted] Less Than 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
****** 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

Branch Pipe Connection Welds

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
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Catawba 2
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ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
****** NPS 4 or Larger ******									
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				
Total B09.031 Items:	**2**								
****** Less Than NPS 4 ******									
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				
Total B09.032 Items:	**3**								

CATEGORY B-J, Pressure Retaining Welds In Piping

Socket Welds

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
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

CATEGORY B-J, Pressure Retaining Welds In Piping

Socket Welds

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
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				

Total B09.040 Items: 12

Total B09 Items: 36

CATEGORY B-M-2, Valve Bodies

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
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Valves

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
****** Valve Body, Exceeding NPS 4 ******									
B12.050.001A Class A	2NC-1	NC	CN-2NC-112 CNM-1205.09-01	QAL-14	VT-3	SS 160	6.000 0.719		Inspect one of the following (2NC-1,2,or 3) if disassembled
B12.050.002A Class A	2NC-27	NC	CN-2NC-24 CNM-1205.06-41	QAL-14	VT-3	SS 160	6.000 0.719		Inspect one of the following (2NC-27,or 29) if disassembled
B12.050.002B Class A	2NC-29	NC	CN-2NC-33 CNM-1205.06-41	QAL-14	VT-3	SS 160	6.000 0.719		Inspect one of the following (2NC-27,or 29) if disassembled
B12.050.004E Class A	2NI-175	NI	CN-2NI-70 CNM-1205.00-63	QAL-14	VT-3	SS 160	6.000 0.719		Inspect one of the following (2NI126,134,157,160,175,176,180 or 181) if disassembled
B12.050.004G Class A	2NI-180	NI	CN-2NI-145 CNM-1205.00-63	QAL-14	VT-3	SS 160	6.000 0.719		Inspect one of the following (2NI126,134,157,160,175,176,180 or 181) if disassembled
B12.050.006B Class A	2NI-60	NI	CN-2NI-184 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
B12.050.006E Class A	2NI-81	NI	CN-2NI-55 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
B12.050.006F Class A	2NI-82	NI	CN-2NI-55 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

CATEGORY B-M-2, Valve Bodies

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

Catawba 2

Inservice Inspection Plan for Interval 2 Outage 4

[redacted]Valves

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	QAL-14	VT-3	SS	10.000		Inspect one of the following (2NI59,60,70,71,81,82,93 or 94) if disassembled
			CNM-1205.00-62			140	1.000		
Class A									
B12.050.007A	2NI-125	NI	CN-2NI-94	QAL-14	VT-3	SS	8.000		Inspect one of the following (2NI-125 or 129) if disassembled
			CNM-1205.00-59			160	0.906		
Class A									

Total B12.050 Items: **10**

Total B12 Items: **10**

CATEGORY C-A, Pressure Retaining Welds In Pressure Vessels

Shell Circumferential Welds

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
C01.010.003 Class B	2SGD-05-06A Circumferential	NC	CN-2553-1.0 CNM 2201.01-114	NDE-620	UT Transition Cone to Upper Shell	CS	0.000 4.000	50366 50236A	Steam Generator 2D Transition Cone To Upper Shell PC. 5 To PC. 6A Depending upon the examiner's qualifications, Procedure PDI-UT-6 may be used in lieu of Procedure NDE-620.
C01.010.005 Class B	2SWHX-5-3 Circumferential	NV	CN-2554-1.6 CNM 1201.06-50	NDE-35*	PT Shell to Flange	SS	20.000 0.187		Seal Water Heat Exchanger Shell To Flange PC. 5 To PC. 3 * Reference General Requirements Section 1.2.2

Total C01.010 Items: 2

CATEGORY C-A, Pressure Retaining Welds In Pressure Vessels

Head Circumferential Welds

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
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 Flange
	Circumferential		CNM 1201.06-37				0.750		
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 PC. 6
	Circumferential		CNM 1201.06-50				0.187		
Class B					Shell to Head				* Reference General Requirements Section 1.2.2

Total C01.020 Items: 2

Total C01 Items: 4

CATEGORY C-B, Pressure Retaining Nozzle Welds In Vessels

Nozzles in Vessels <= 1/2 in. Nominal Thickness

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
****** Nozzle-to-Shell (or Head) Weld ******									
C02.011.001	2SWHX-5-A	NV		NDE-35	PT	SS	4.000		Seal Water Heat Exchanger Inlet Nozzle To Shell PC. 5 To PC. A
	Circumferential		CN-2554-1.6				0.237		
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 PC. 5 To PC. B
	Circumferential		CN-2554-1.6				0.237		
Class B			CNM 1201.06-50		Nozzle to Shell				

Total C02.011 Items: 2

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

CATEGORY C-B, Pressure Retaining Nozzle Welds In Vessels

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

Catawba 2

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
****** Nozzle-to-Shell (or Head) Weld ******									
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	CN-2563-1.0	NDE-630	UT	SS	12.000	50380	Containment Spray Heat Exchanger 2B Inlet Nozzle To Channel
	Circumferential		CNM 1201.06-0090				0.500		PC. 3 To PC. N1
Class B			CNM 2201.06-2		Inlet Nozzle to Channel				
C02.021.004A	2BNSHX-3-N1	NS	CN-2563-1.0	NDE-35	PT	SS	12.000		Containment Spray Heat Exchanger 2B Inlet Nozzle To Channel
	Circumferential		CNM 1201.06-0090				0.500		PC. 3 To PC. N1
Class B			CNM 2201.06-2		Inlet Nozzle to Channel				
C02.021.005	2BNSHX-3-N2	NS	CN-2563-1.0	NDE-630	UT	SS	12.000	50380	Containment Spray Heat Exchanger 2B Outlet Nozzle To Channel
	Circumferential		CNM 1201.06-0090				0.500		PC. 3 To PC. N2
Class B			CNM 2201.06-2		Outlet Nozzle to Channel				
C02.021.005A	2BNSHX-3-N2	NS	CN-2563-1.0	NDE-35	PT	SS	12.000		Containment Spray Heat Exchanger 2B Outlet Nozzle To Channel
	Circumferential		CNM 1201.06-0090				0.500		PC. 3 To PC. N2
Class B			CNM 2201.06-2		Outlet Nozzle to Channel				

Total C02.021 Items: 6

Total C02 Items: 8

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

Pressure Vessels

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
****** Integrally Welded Attachments ******									
C03.010.002	2SWHX-SUPP	ND	CN-2554-1.6	NDE-35	PT	SS	0.000		Seal Water Heat Exchanger Shell To Support Weld PC. 5 To PC. 31 And PC. 32 (One Each Side)
	Circumferential		CNM 1201.06-50				0.750		
Class B					Shell to Support				

Total C03.010 Items: 1

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

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

Catawba 2

Inservice Inspection Plan for Interval 2 Outage 4

[redacted] Piping

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

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
Inservice Inspection Plan for Interval 2 Outage 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

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
****** Circumferential Weld ******									
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					Pipe to				
	Dissimilar				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					Pipe to				
	Dissimilar				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				

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

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

Catawba 2

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
C05.011.017	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				

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

Catawba 2

Inservice Inspection Plan for Interval 2 Outage 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

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			

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

Catawba 2

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

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
C05.011.138	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

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

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
****** Circumferential Weld ******									
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				

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

Catawba 2

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

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

[redacted] Socket Welds

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
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

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

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

Piping Welds >= 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	DIA/THK	CAL BLOCKS	COMMENTS
****** Circumferential Weld ******									
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			

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

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

Piping Welds >= 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	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			

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

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

Piping Welds >= 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	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

Valves

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
****** Valve Body Welds ******									
C06.020.004	2NI-9A	NI		NDE-35	PT	SS	4.000		Valve Body Weld - Valve Numbers in Valve Group 2NI-9A, 2NI-10B
	Circumferential		CN-2562-1.0				0.867		
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 2NI-117, 2NI-149
	Circumferential		CN-2562-1.2				0.534		
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 2NI-121A, 2NI-152B
	Circumferential		CN-2562-1.2				0.867		
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 2NS-98, 2NS-99
	Circumferential		CN-2563-1.0				0.477		
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 2NV-272, 2NV-292, 2NV-485, 2NV-488
	Circumferential		CN-2554-1.7				0.867		
Class B			CNM-1205.00-82		Valve Body to Bonnet				

Total C06.020 Items: 5

Total C06 Items: 5

CATEGORY D-B, Systems In Support Of ECC, CHR, Atmos. Cleanup, And Reactor RHR

[redacted] Integral Attachment

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
****** Component Supports and Restraints ******									
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									

Total D02.020 Items: 2

Total D02 Items: 2

CATEGORY F-A, Supports

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
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
****** 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

Class 1 Piping Supports

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								
Total F01.011 Items:	**4**								
****** Thermal Movement ******									
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								

CATEGORY F-A, Supports

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

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
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
****** One-Directional ******									
F01.020.069	2-R-NI-1682	NI	CN-2491-NI066	QAL-14	VT-3	NA	6.000		
	Rigid Support		CN-2562-1.3				0.000		
Class B									
F01.020.070	2-R-NI-1683	NI	CN-2491-NI066	QAL-14	VT-3	NA	6.000		
	Rigid Support		CN-2562-1.3				0.000		
Class B									
F01.020.099	2-R-NS-1140	NS	CN-2491-NS007	QAL-14	VT-3	NA	8.000		
	Rigid Support		CN-2563-1.0				0.000		
Class B									
F01.020.100	2-R-NS-1141	NS	CN-2491-NS007	QAL-14	VT-3	NA	8.000		
	Rigid Support		CN-2563-1.0				0.000		
Class B									
F01.020.154	2-A-NV-3417	NV	CN-2492-NV038	QAL-14	VT-3	NA	4.000		
	Rigid Support		CN-2554-1.2				0.000		
Class B									
F01.020.155	2-A-NV-3418	NV	CN-2492-NV040	QAL-14	VT-3	NA	4.000		
	Rigid Support		CN-2554-1.2				0.000		
Class B									
F01.020.205	2-R-SM-1543	SM	CN-2491-SM007	QAL-14	VT-3	NA	34.000		
	Rigid Support		CN-2593-1.0				0.000		
Class B									
Total F01.020 Items:	**7**								
****** Multidirectional ******									
F01.021.073	2-R-NI-1616	NI	CN-2491-NI056	QAL-14	VT-3	NA	6.000		
	Rigid Support		CN-2562-1.3				0.000		
Class B									

CATEGORY F-A, Supports

Class 2 Piping Supports

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

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
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
Total F01.021 Items:	**10**								
****** Thermal Movement ******									
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									

CATEGORY F-A, Supports

Class 2 Piping Supports

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									

Total F01.022 Items: 9

CATEGORY F-A, Supports

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									

CATEGORY F-A, Supports

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
Inservice Inspection Plan for Interval 2 Outage 4

Class 3 Piping Supports

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		
	Rigid Support		CN-2573-1.0				0.000		
	Class C								
F01.030.102	2-R-KD-0066	KD	CN-2493-KD020	QAL-14	VT-3	NA	8.000		
	Rigid Support		CN-2609-1.0				0.000		
	Class C								
F01.030.121	2-R-LD-0027	LD	CN-2493-LD005	QAL-14	VT-3	NA	6.000		
	Rigid Support		CN-2609-2.2				0.000		
	Class C								
F01.030.123	2-R-LD-0001	LD	CN-2493-LD028	QAL-14	VT-3	NA	6.000		
	Rigid Support		CN-2609-2.0				0.000		
	Class C								
F01.030.155	2-R-RN-0010	RN	CN-2492-RN105	QAL-14	VT-3	NA	18.000		
	Rigid Support		CN-2574-2.4				0.000		
	Class C								
F01.030.156	2-R-RN-0012	RN	CN-2492-RN105	QAL-14	VT-3	NA	18.000		To Be Done With D02.020.013
	Rigid Support		CN-2574-2.4				0.000		
	Class C								
F01.030.157	2-R-RN-0015	RN	CN-2492-RN105	QAL-14	VT-3	NA	18.000		
	Rigid Support		CN-2574-2.4				0.000		
	Class C								
F01.030.158	2-R-RN-0018	RN	CN-2492-RN105	QAL-14	VT-3	NA	18.000		
	Rigid Support		CN-2574-2.4				0.000		
	Class C								

Total F01.030 Items: 16

****** Multidirectional ******

CATEGORY F-A, Supports

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

Catawba 2

Inservice Inspection Plan for Interval 2 Outage 4

Class 3 Piping Supports

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

CATEGORY F-A, Supports

DUKE ENERGY CORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
Inservice Inspection Database Management System
Catawba 2
Inservice Inspection Plan for Interval 2 Outage 4

Class 1,2,3 Supports

ITEM NUMBER	ID NUMBER	SYS	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIA/THK	CAL BLOCKS	COMMENTS
****** Supports Other Than Piping Supports ******									
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									

Total F01.040 Items: 3

Total F01 Items: 67

CATEGORY , Augmented

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

Catawba 2

Inservice Inspection Plan for Interval 2 Outage 4

[redacted] Reactor Coolant Pump Flywheel Inspection

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

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

Catawba 2

Inservice Inspection Plan for Interval 2 Outage 4

[redacted]

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)	=	Y Yes N No
RFR (Request for Relief)	=	Y Yes N No
Comments	=	General and/or Detail Description

DUKE ENER(;ORPORATION
QUALITY ASSURANCE TECHNICAL SERVICES
In-Service Inspection Database Management System
Catawba 2 Inservice Inspection Listing
Interval 2 Outage 4

EOC 11
Plant: Catawba 2

Run D
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ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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	

ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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	

ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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	

ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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	

ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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	

ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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	

ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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	

ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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	

ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
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.

Item Number	***Request for Relief Serial Number***
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
A Duke Energy Company

Duke Power
4800 Concord Rd.
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(803) 831-4251 OFFICE
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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

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 O8-H12
Washington, D.C. 20555-0001

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

ID Number	Item Number	Configuration
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

ID Number	Item Number	Configuration
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

ID Number	Item Number	Configuration
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

ID Number	Item Number	Configuration
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 45^0 refracted longitudinal wave striking the inside surface of a pipe will produce a 22.9^0 refracted shear wave in addition to the normally expected 45^0 reflected longitudinal wave.

$$\text{Sin}^{-1} = (\sin 45^0 \times V_s) \div V_L$$

$$= (0.707 \times 0.123) \div 0.223$$

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

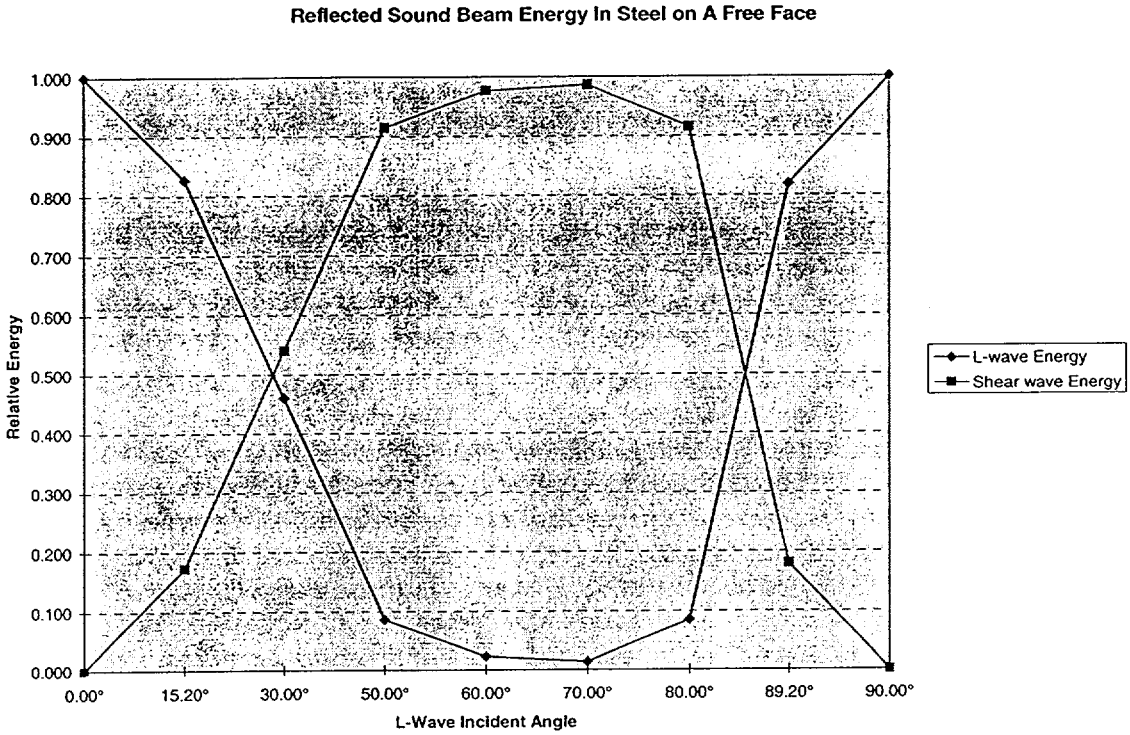
V_s is the shear wave velocity of the stainless steel safe end/pipe material in inches /μsec.

V_L is the longitudinal wave velocity of the stainless steel safe/pipe end material in inches/μsec.

As shown in the graph below, the mode conversion process creates two sound beams of differing intensities reflecting off the inside surface[1]. 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.

[1]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

ID Number	Item Number	Configuration
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 Rhyne **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

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1433 | Form NDE-UT-2A

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 Level: III

Examiner: Larry Mauldin Level: III

Pyrometer S/N: MCNDE 27010

Cal Due: 2/14/2002

Procedure: NDE-620 Rev: 8

FC: 00-07

Calibration Sheet No: 0102054, 0102055, 0102056

Scans:

45 ☐ _____ dB 70 ☒ 59 dB

45T ☐ _____ dB 70T ☒ 59 dB

60 ☒ 74/71.5 dB

60T ☒ 74/71.5 dB

Other: _____ dB

Configuration: ZR Surge Nozzle to Lower Hea

S2 Flow S1

NOZZLE to HEAD

Scan Surface: OD

Applies to NDE-680 only

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 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) ☒ 90% or greater coverage obtained: yes ☐ no ☒

Sheet 1 of 12

Reviewed By: Gary J Moss Level: II Date: 10-11-01

Authorized Inspector: Robert Mizer Date: 10/17/01

Item No: B03.110.001

REQUEST FOR RELIEF #01-003 ATTACHMENT 2

ASH 11/9/01

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2PZR-W1 | Item No: B03.110.001 | Remarks:

☐ NO SCAN
☒ LIMITED SCAN
SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 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

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

☒ NO SCAN
☐ LIMITED SCAN
SURFACE: ☒ 1 ☐ 2
BEAM DIRECTION: ☐ 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

Remarks: DUE TO NOZZLE CONFIGURATION.

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

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

Prepared By: David K. [illegible] Level: III Date: 10/04/01 | Sketch(s) attached ☐ yes ☒ no | Sheet 2 of 12

Reviewed By: Gary J. Moss Date: 10-11-01 | Authorized Inspector: Robert McGee Date: 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	Volume Calculation
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

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: Gary Moss Level: II Date: 10-11-01

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	Volume Calculation
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

Coverage Calculations

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 Larry Mauldin Level: III Date: 10/9/2001

Reviewed By: Gary J Moss Level: II Date: 10-11-01

4 of 18

PRESSURIZER SURGE NOZZLE TO LOWER HEAD

EXAM AREAS

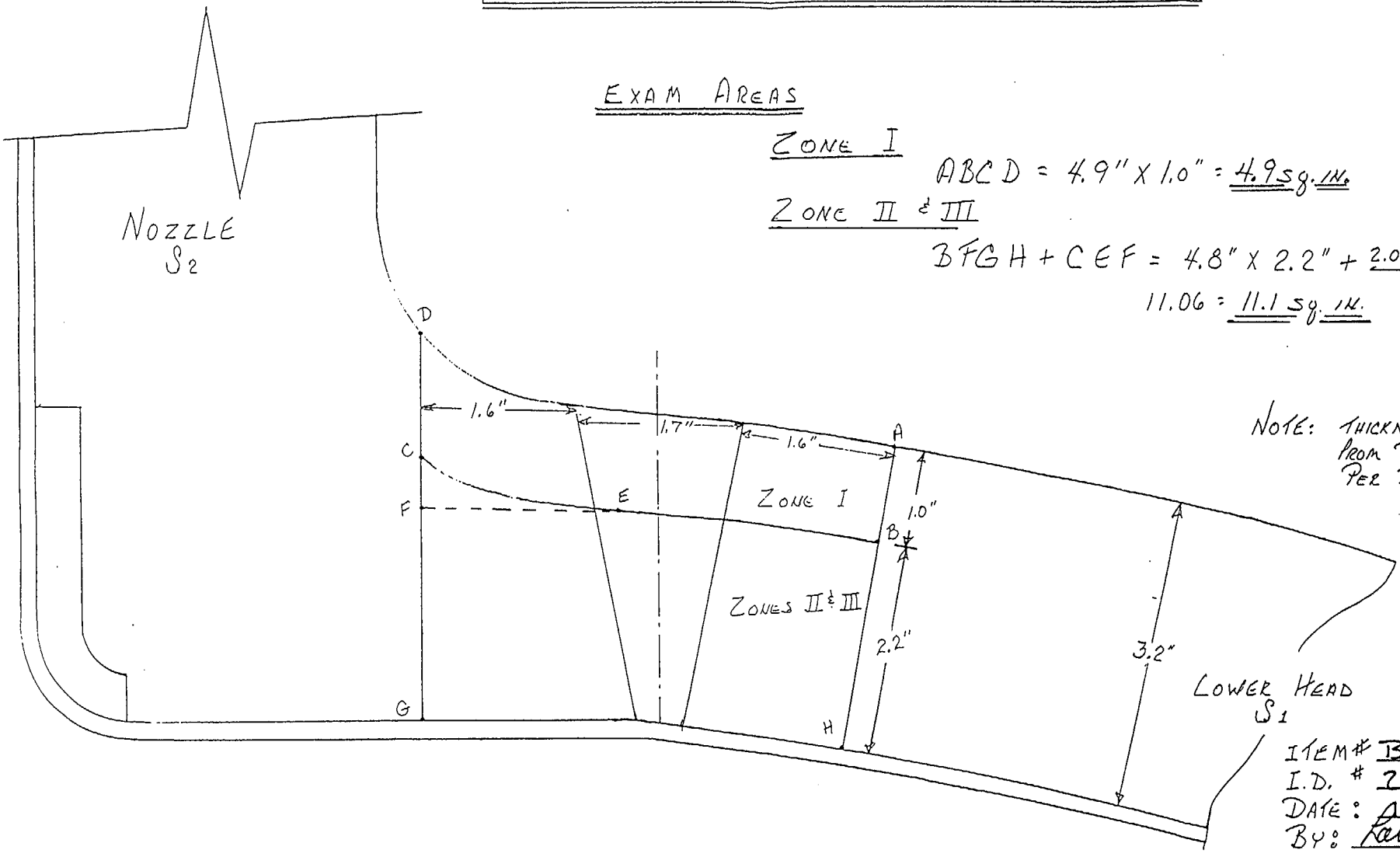
ZONE I

ABCD = 4.9" X 1.0" = 4.9 sq. in.

ZONE II & III

BFGH + CEF = 4.8" X 2.2" + $\frac{2.0" \times .5"}{2}$ =

11.06 = 11.1 sq. in.



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

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

PRESSURIZER SURGE NOZZLE TO LOWER HEAD

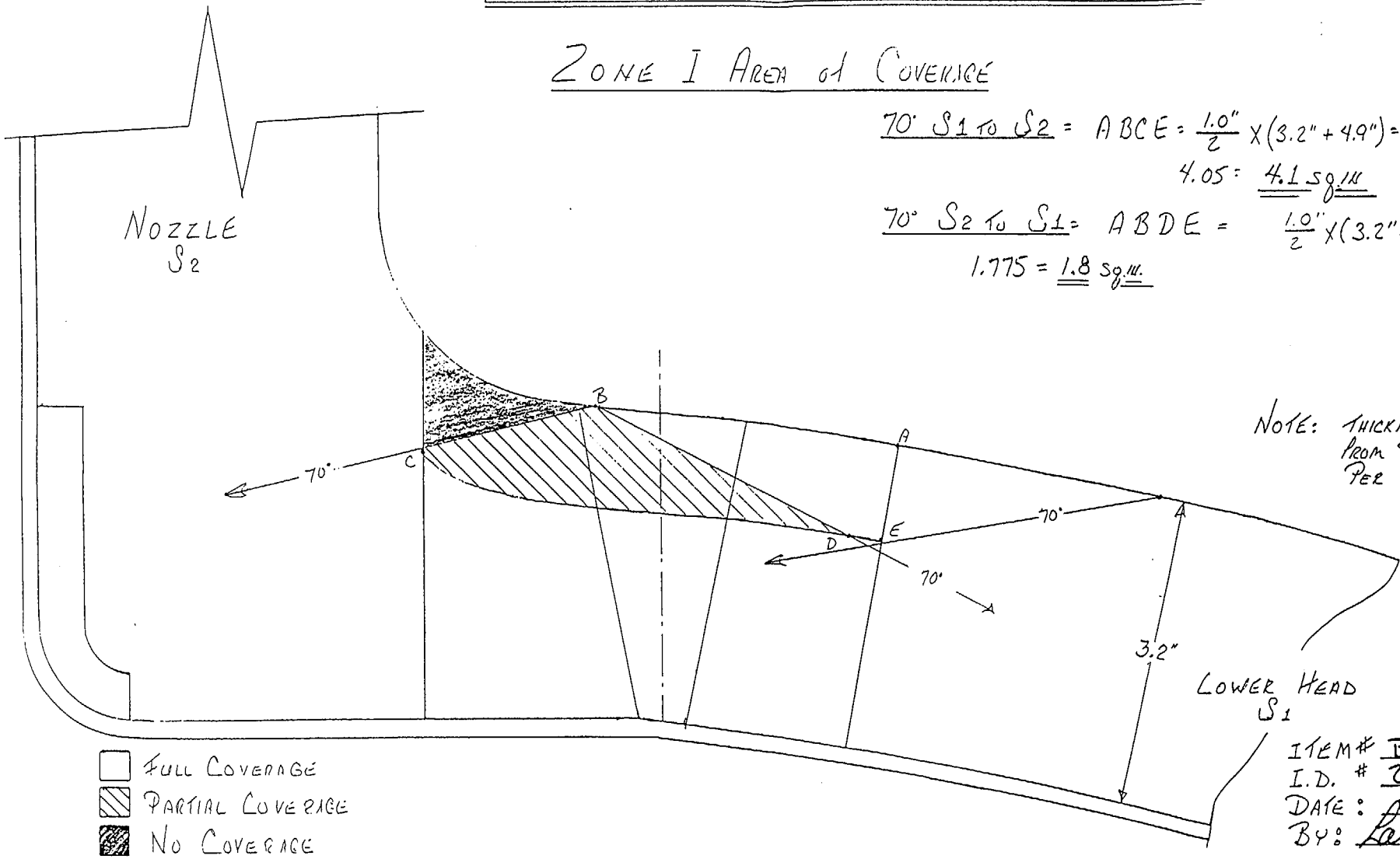
ZONE I AREA of COVERAGE

70° S1 to S2 = ABCE = $\frac{1.0"}{2}$ X (3.2" + 4.9") =

4.05 = 4.1 sq.in.

70° S2 to S1 = ABDE = $\frac{1.0"}{2}$ X (3.2" + .35") =

1.775 = 1.8 sq.in.



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: Larry Mauldin

PRESSURIZER SURGE NOZZLE TO LOWER HEAD

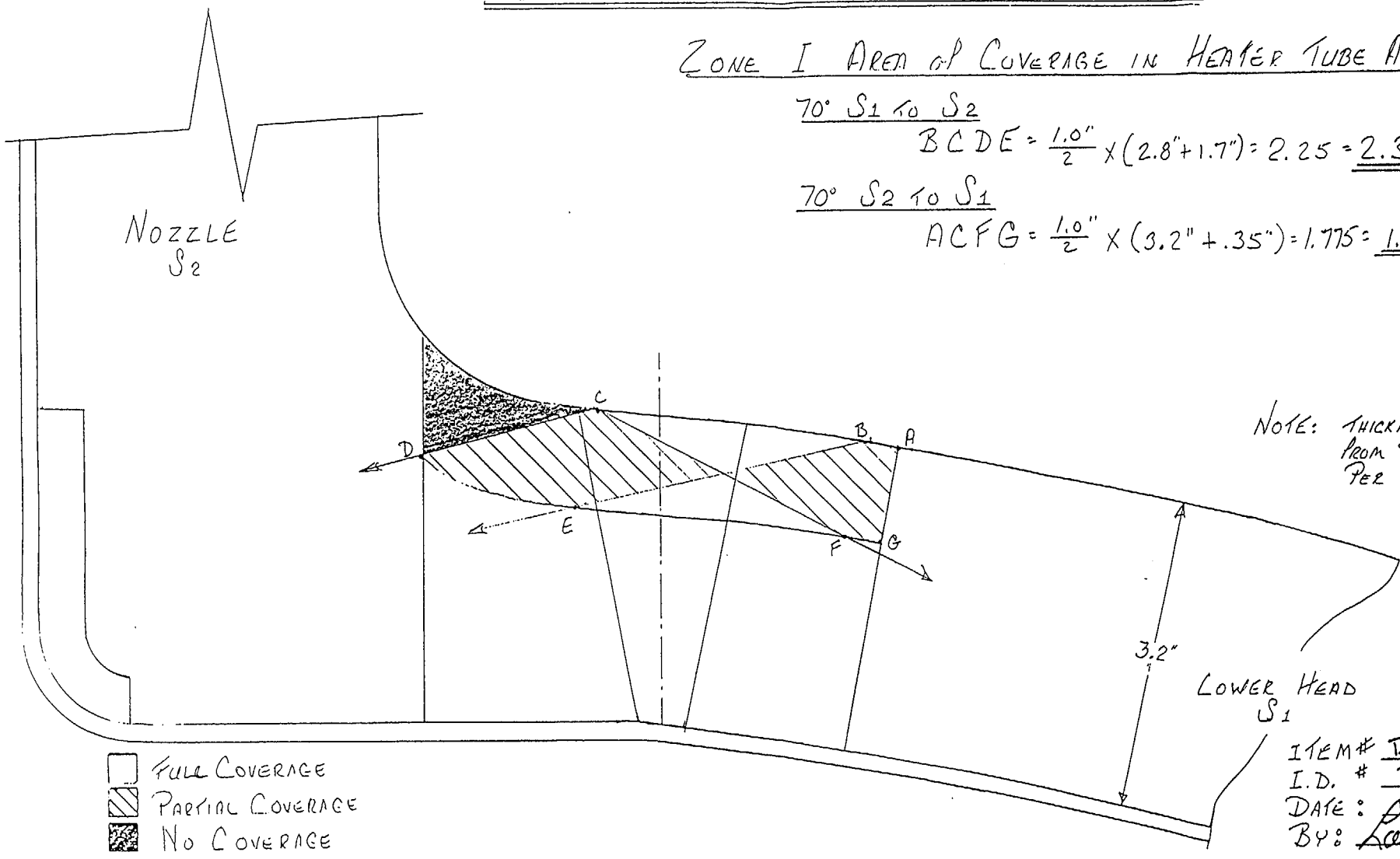
ZONE I AREA OF COVERAGE IN HEATER TUBE AREA

70° S_1 TO S_2

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

70° S_2 TO S_1

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



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

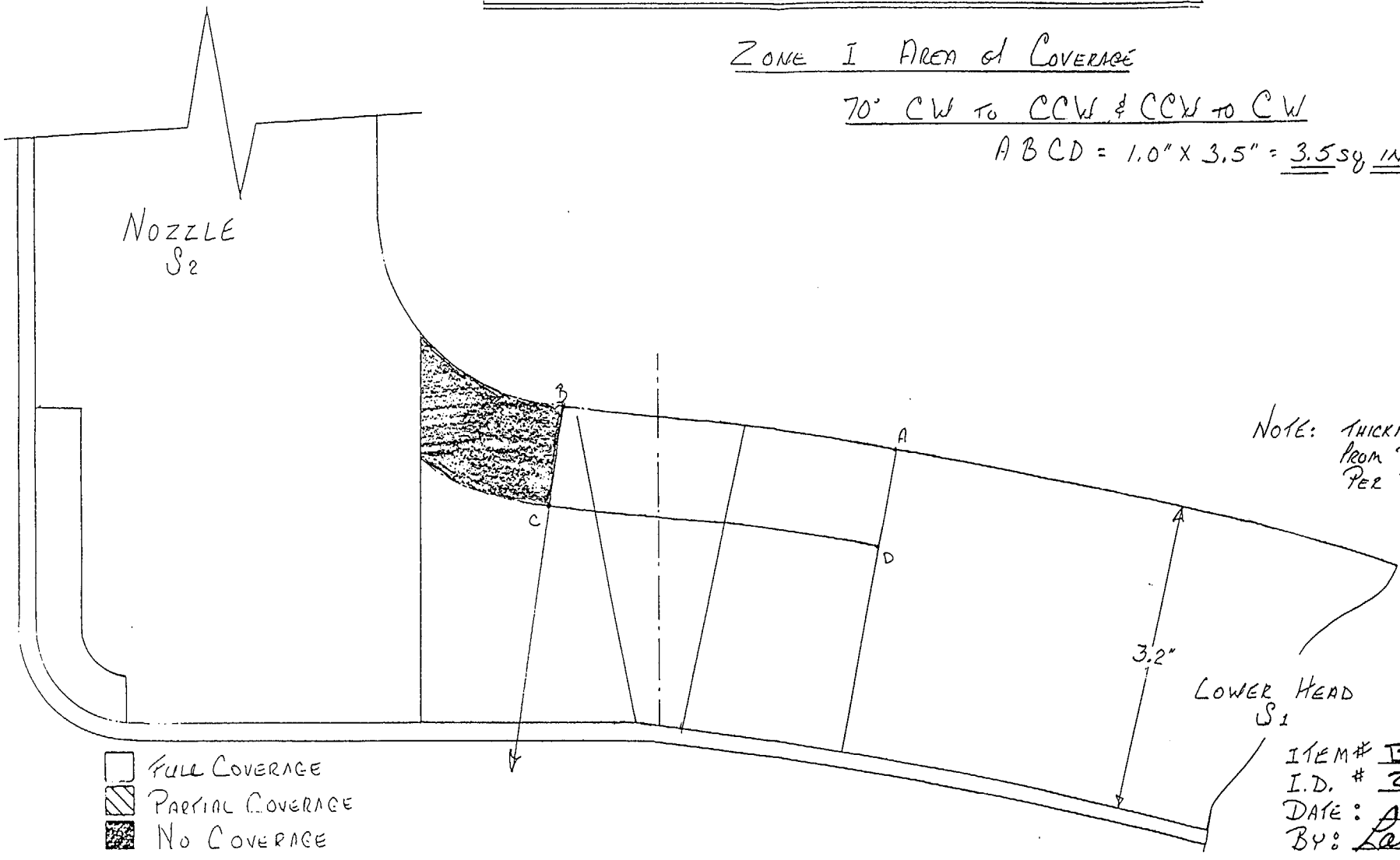
ITEM # B03.110.001
I.D. # 2PZR-W1
DATE: 10/09/01
BY: Laura Thaulow

PRESSURIZER SURGE NOZZLE TO LOWER HEAD

ZONE I AREA of COVERAGE

70° CW TO CCW & CCW TO CW

ABCD = 1.0" X 3.5" = 3.5 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 Maulden

PRESSURIZER SURGE NOZZLE TO LOWER HEAD

ZONES II & III COVERAGE

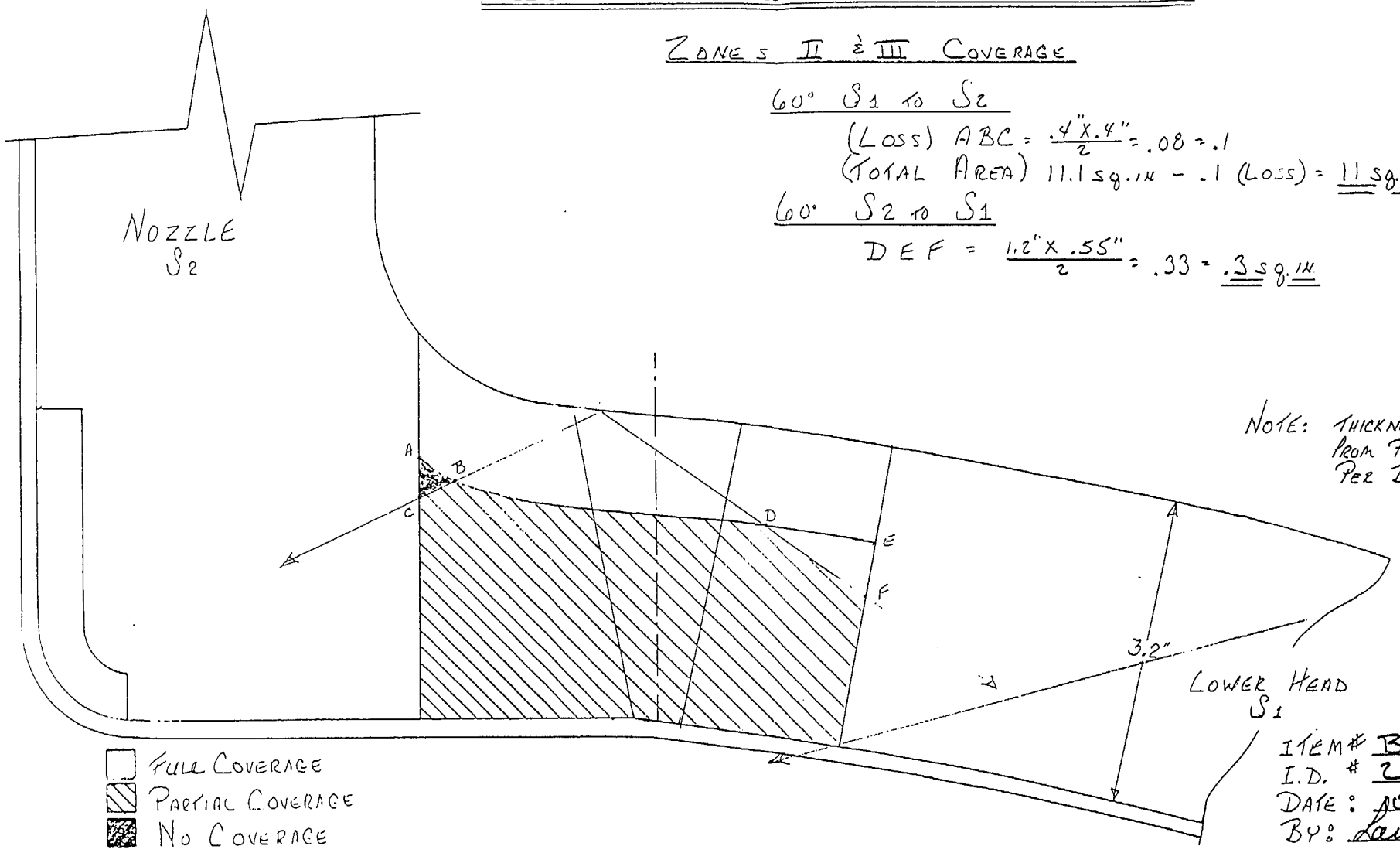
60° S1 to S2

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

(TOTAL AREA) 11.1 sq.in - .1 (LOSS) = 11 sq.in.

60° S2 to S1

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



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

FULL COVERAGE
PARTIAL COVERAGE
NO COVERAGE

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

PRESSURIZER SURGE NOZZLE TO LOWER HEAD

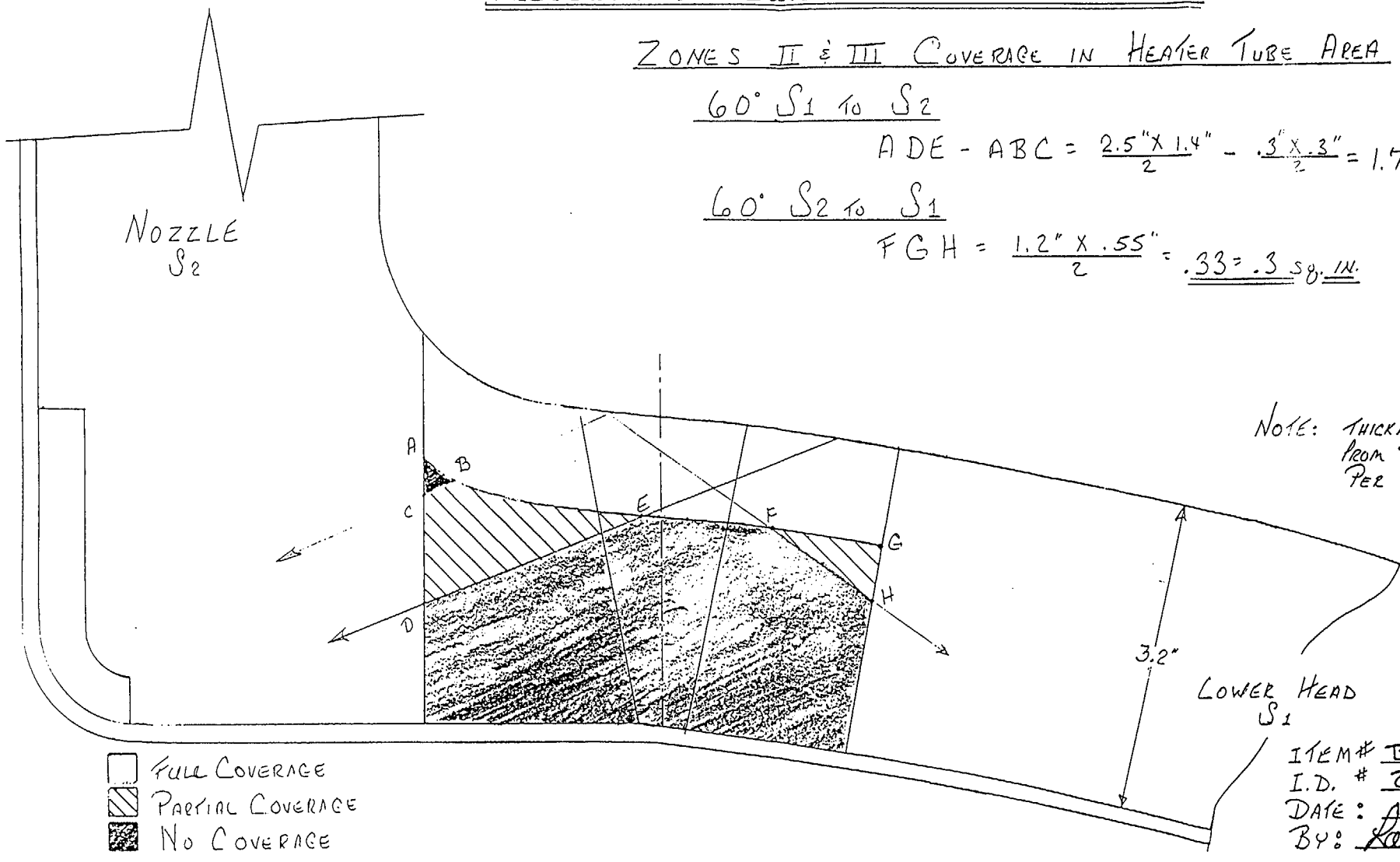
ZONES II & III COVERAGE IN HEATER TUBE AREA

60° S1 to S2

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

60° S2 to S1

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



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

FULL COVERAGE
PARTIAL COVERAGE
NO COVERAGE

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

PRESSURIZER SURGE NOZZLE TO LOWER HEAD

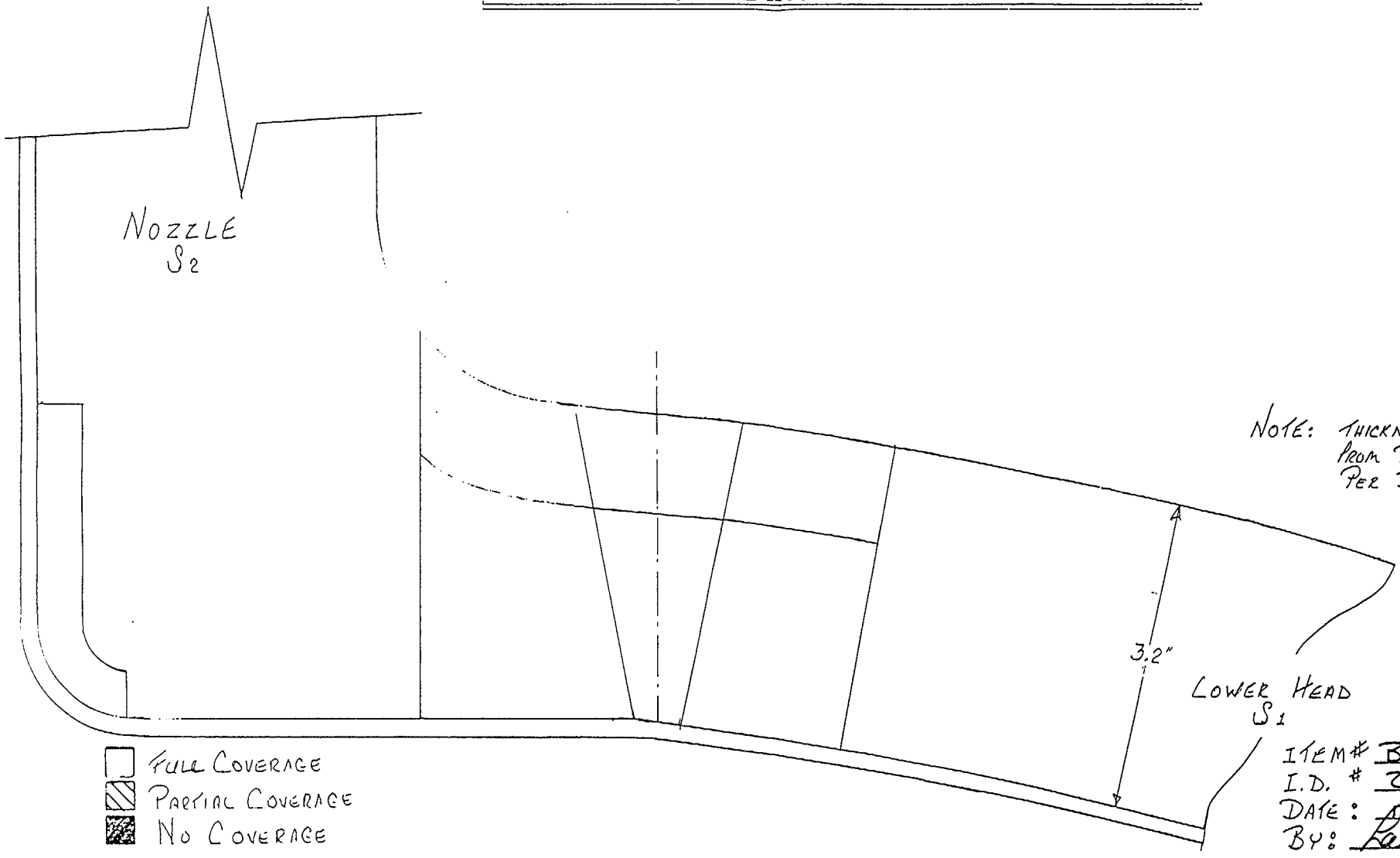
ZONES II & III 60° CW TO CCW & CCW TO CW

ABCD 2.2" X 2.7" = 5.94 = 5.9 SQ. IN.

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

ITEM# B03.110.001
I.D. # ZPZR-W1
DATE: 10/09/01
BY: Larry Maulden

PRESSURIZER SURGE NOZZLE TO LOWER HEAD



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

- ☐ FULL COVERAGE
- ▨ PARTIAL COVERAGE
- ▩ NO COVERAGE

ITEM# B03.110.001
I.D. # 2PER-W1
DATE: 00/09/01
BY: Larry Maulden

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1040 | Form NDE-UT-2A

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 Level: III

Examiner: Gary J. Moss Level: II

Pyrometer S/N: MCNDE 27010

Cal Due: 2/14/2002

Procedure: NDE-610 Rev: 4

FC: *

Calibration Sheet No: 0102008, 0102009

Scans:

45 ☒ 63 dB 70 ☐ ____ dB

45T ☒ 63 dB 70T ☐ ____ dB

60 ☐ ____ dB

60T ☐ ____ dB

Other: ____ dB

Configuration: Branch to Pipe

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 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	45°	AXIAL													
NRI	45°	CIRC													

Remarks: * FC 97-01, 98-20

Limitations: (see NDE-UT-4) ☒ 90% or greater coverage obtained: yes ☐ no ☒

Sheet 1 of 6

Reviewed By: Level: Date:

Authorized Inspector: Date:

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:

NOZZLE CONFIGURATION

☒ NO SCAN
☐ LIMITED SCAN
SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 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

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

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

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

Prepared By: David K. Bruner | Level: III | Date: 9/20/01 | Sketch(s) attached ☒ yes ☐ no DKB 9/20/01 | Sheet 2 of 6

Reviewed By: Larry Maulden | Date: 9/21/01 | Authorized Inspector: Robert McGill | Date: 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	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 #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: David K. Zimmerman	Level: III	Date: 9/20/01
Reviewed By: Larry Moulder	Level: III	Date: 9.21.01

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	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: David K. Zimmerman Level: III Date: 9/20/01

Reviewed By: Larry Maulden Level: III Date: 9-21-01

12 1/8" NOZZLE

DRAWING #1

INSPECTION AREA:

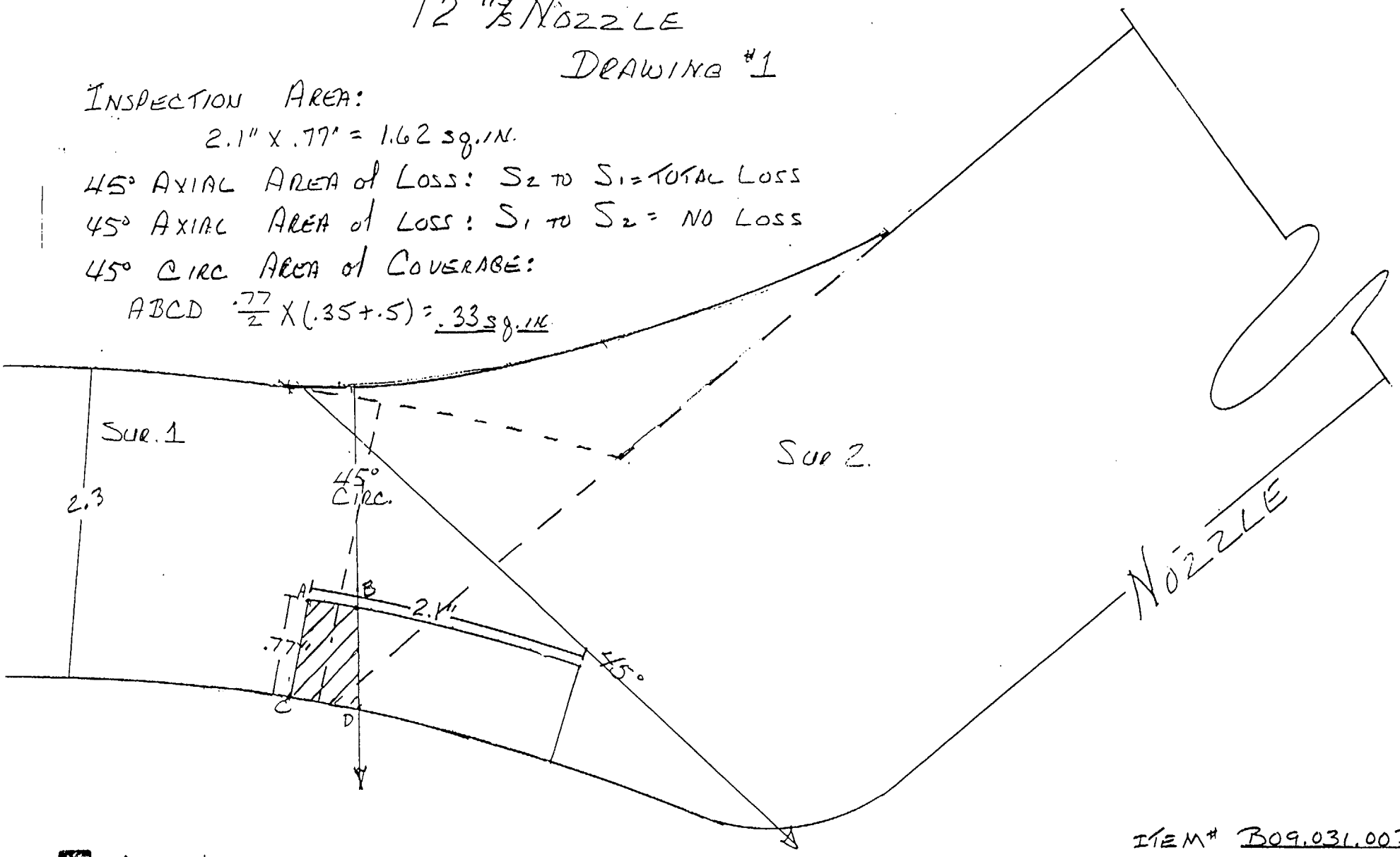
2.1" X .77" = 1.62 sq.IN.

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 $\frac{.77}{2}$ X (.35+.5) = .33 sq.IN.



▨ - AXIAL LOSS

▨ - CIRC. LOSS

SCALE 1-1

ITEM# B09.031.003

I.D.# 2NC13-WN9

BY: Daniel K. Bell III

DATE: 9/20/01

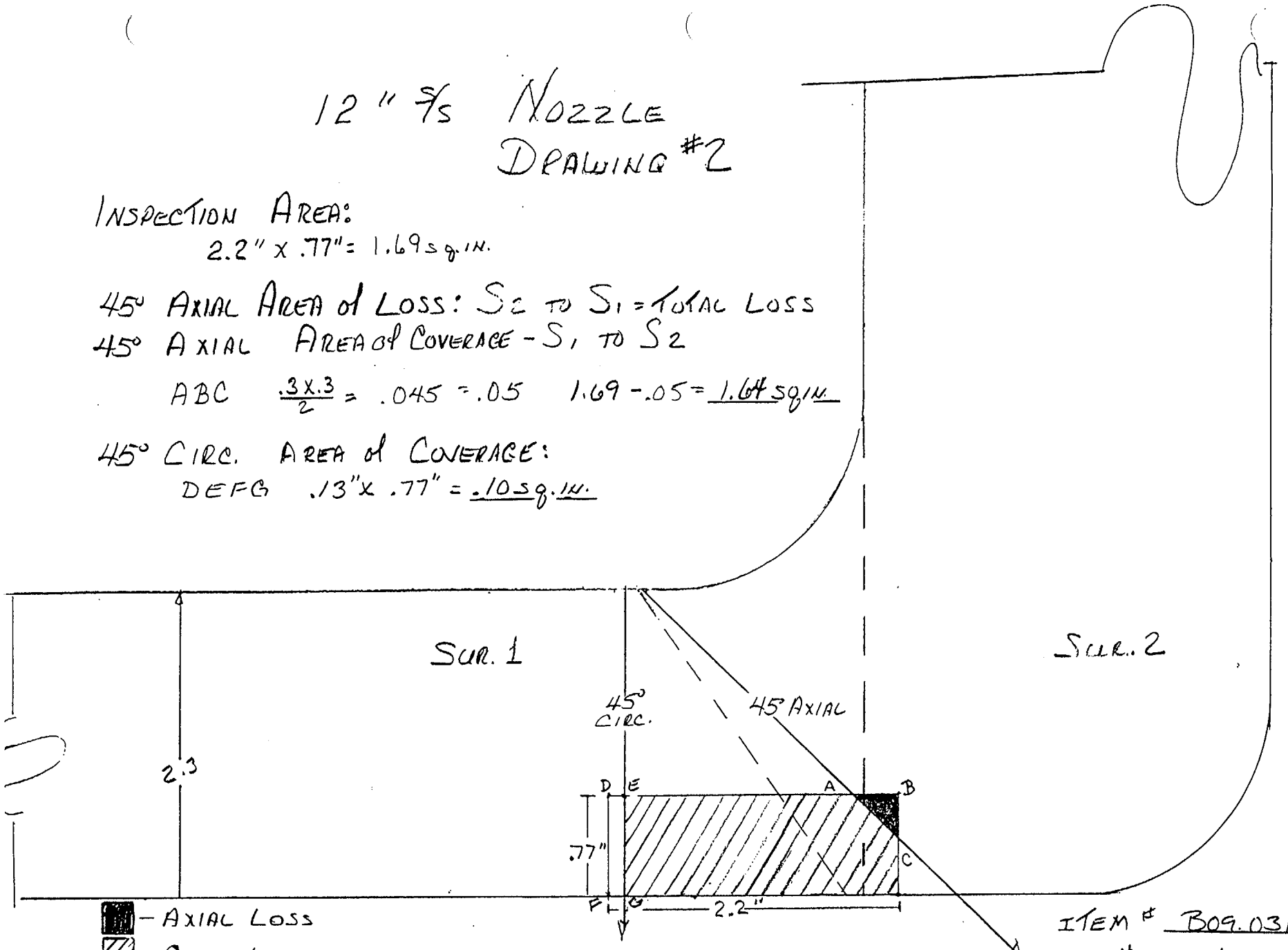
12" 9/s Nozzle
Drawing #2

Inspection Area:
2.2" x .77" = 1.69 sq. in.

45° Axial Area of Loss: S2 to S1 = Total Loss
45° Axial Area of Coverage - S1 to S2

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

45° Circ. Area of Coverage:
DEFG .13" x .77" = .10 sq. in.



- Axial Loss
- Circ. Loss

Scale 1-1

Item # B09.031.003
I.D. # 2NC13-WN9
By: Daniel K. Zimmerman III
Date: 9/20/01

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1210 | Form NDE-UT-2A

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 Gary J. Moss Level: II

Examiner: David Zimmerman David K. Zimmerman Level: III

Pyrometer S/N: MCNDE 27010

Cal Due: 2/14/2002

Procedure: NDE-620 Rev: 8

FC: 00-07

Calibration Sheet No: 0102033, 0102034, 0102035

Scans:

45 ☐ _____ dB 70 ☒ 59.0 dB

45T ☐ _____ dB 70T ☒ 59.0 dB

60 ☒ 72.5/71.5dB

60T ☒ 72.5/71.5dB

Other: _____ dB

Configuration: Nozzle to Shell

S2 Flow S1

NOZZLE to SHELL

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 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														

Remarks:

Limitations: (see NDE-UT-4) ☒ 90% or greater coverage obtained: yes ☐ no ☒

Sheet 1 of 4

Reviewed By: Gary Moulder Level: III Date: 10-02-01

Authorized Inspector: Robert McGill Date: 10/17/01

Item No: C02.021.001

REQUEST FOR RELIEF #04003 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
☐ LIMITED SCAN
SURFACE: ☒ 1 ☐ 2
BEAM DIRECTION: ☐ 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
Remarks: DUE TO NOZZLE CONFIGURATION

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

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

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

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

Reviewed By: Larry Nowlin Date: 10-02-01 | Authorized Inspector: Robert McKee Date: 10/17/01

DUKE POWER COMPANY

Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

3 of 4

Examination Volume/Area Defined

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

Area Calculation	Volume Calculation
1.375 IN. X 1.75 IN.= 2.4 SQ.IN.	2.4 SQ.IN. X 70 IN.= 168 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
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

Item No: C02.021.001

Prepared By: David K. Zimmerman Level: III Date: 9/28/1901

Reviewed By: Larry Mauldin Level: III Date: 10-02-01

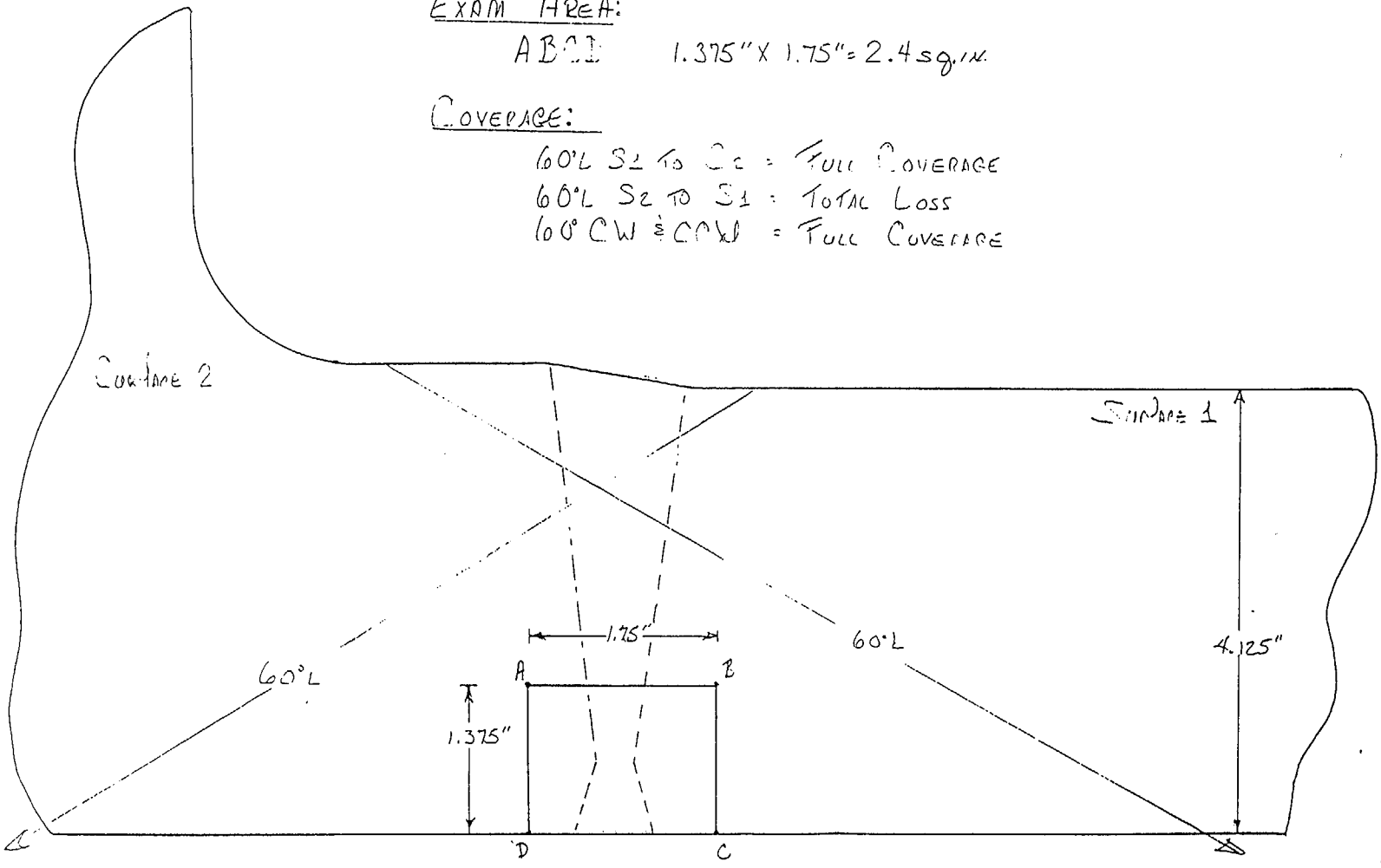
AUXILLAR. FEEDWATER NOZZLE

EXAM AREA:

ABCD 1.375" X 1.75" = 2.4 sq. in.

COVERAGE:

60°L S2 TO S1 = FULL COVERAGE
60°L S2 TO S1 = TOTAL LOSS
60° CW & CCW = FULL COVERAGE



I.D. # 2SGB-06A-18
ITEM # C02.021.001
BY: Daniel B. III
DATE: 9/28/01

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1008 | Exam Finish: 1028 | Form NDE-UT-2A | 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

Examiner: Gayle E. Houser Level: III

Pyrometer S/N: MCNDE 27008

Cal Due: 2/14/2002

Procedure: NDE-630 Rev: 2

FC: 99-02

Calibration Sheet No: 0102001, 0102002, 0102003

Scans:

45 ☐ ____ dB 70 ☒ 64 dB

45T ☒ 34 dB 70T ☐ ____ dB

60 ☒ 62 dB

60T ☐ ____ dB

Other: ____ dB

Configuration: Nozzle to Shell

S2 Flow S1

NOZZLE to SHELL

Scan Surface: OD

Applies to NDE-680 only

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 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	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) ☒ 90% or greater coverage obtained: yes ☐ no ☒

Sheet 1 of 9

Reviewed By: Level: Date:

Authorized Inspector: Date:

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:

	SURFACE	BEAM DIRECTION		Remarks
☒ NO SCAN ☐ 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 ☒ 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 ☒ 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 ☒ 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: [signature] Level: III Date: 9/11/01 **Sketch(s) attached** ☒ yes ☐ no Sheet 2 of 9

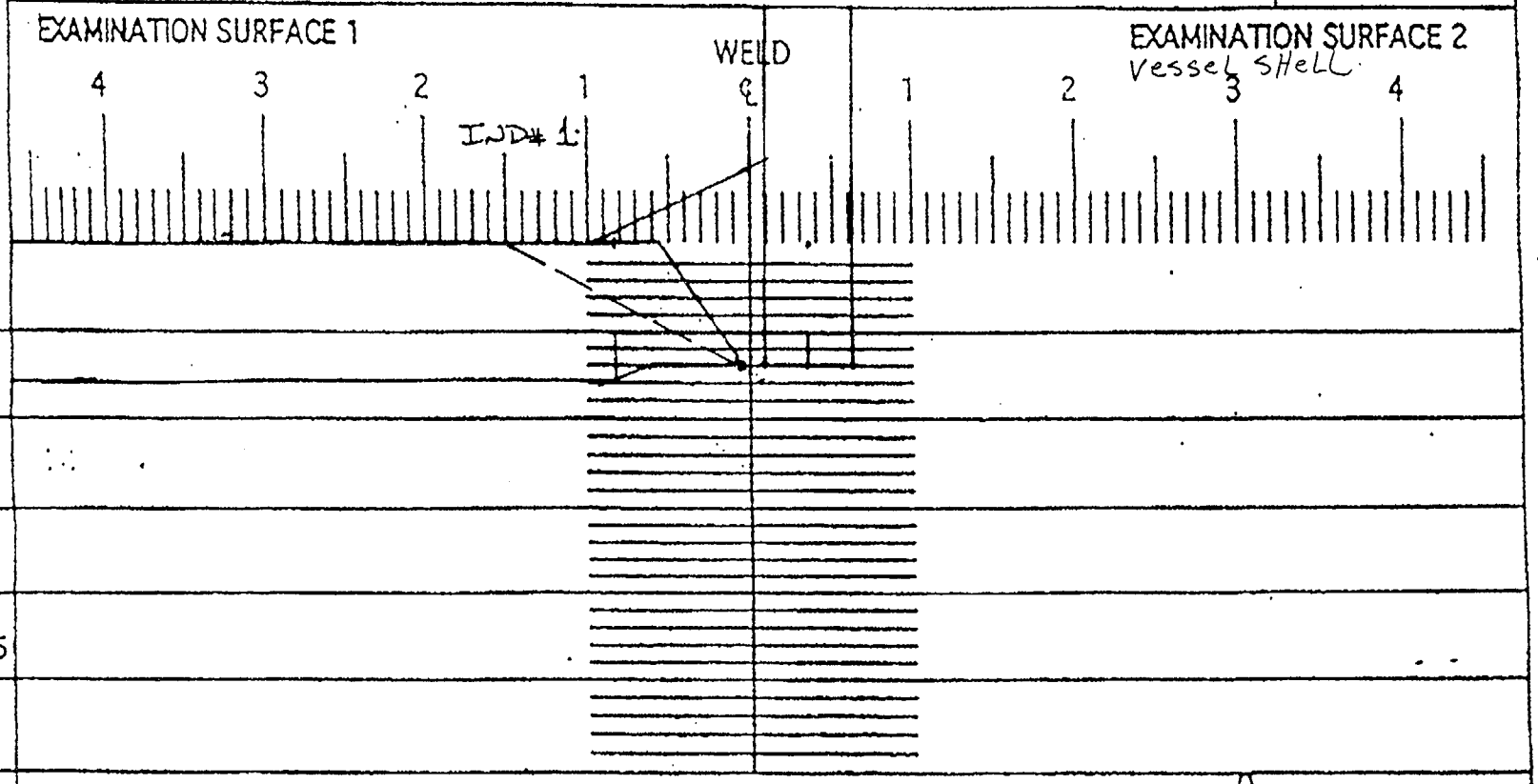
Reviewed By: Larry Maudlin Date: 9/18/01 Authorized Inspector: Robert Mullis Date: 10/17/01

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

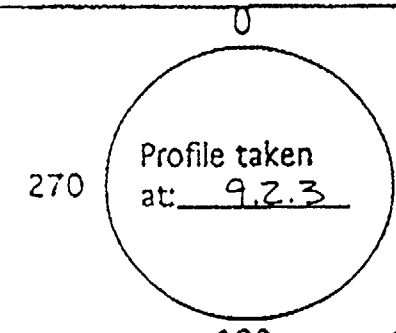
NDE-UT-5

Revision 1



Component ID/Weld No. 2BNSHX-3-N1

: Remarks:



Item No: C02.021.004

Examiner:	Level: III	Date: 9/11/01
Reviewed By: Laura Maulden	Level: III	Date: 9/18/01
Authorized Inspector: Robert D. McLin		Date: 10/17/01

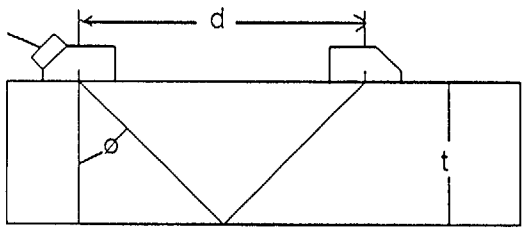
Sheet 3 of 9

DUKE POWER COMPANY

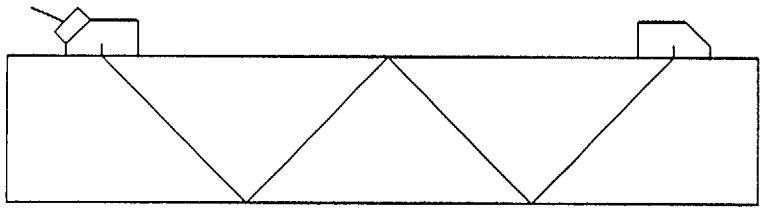
ULTRASONIC BEAM ANGLE MEASUREMENT RECORD

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	Level III	Date 9/11/2001	Examiner Jay A. Eaton	Level III	Date 9/11/2001
Reviewed By Larry Maulden	Level III	Date 9-18-01	Authorized Inspector Robert McGee		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 ☐ Yes ☒ No previous data available

Examiner:	Level:	Date:		Sheet 5 of 9
Jay A. Eaton	III	9/11/2001		
Reviewer:	Level:	Date:	Authorized Inspector:	Date:
Larry Maulden	III	9-18-01	Robert McGee	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	Volume Calculation
(0.25 in x 1.1 in) + (0.15 in x 0.05 in / 2) = 0.283 sq. in.	0.283 sq. in. x 40in. = 11.32 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

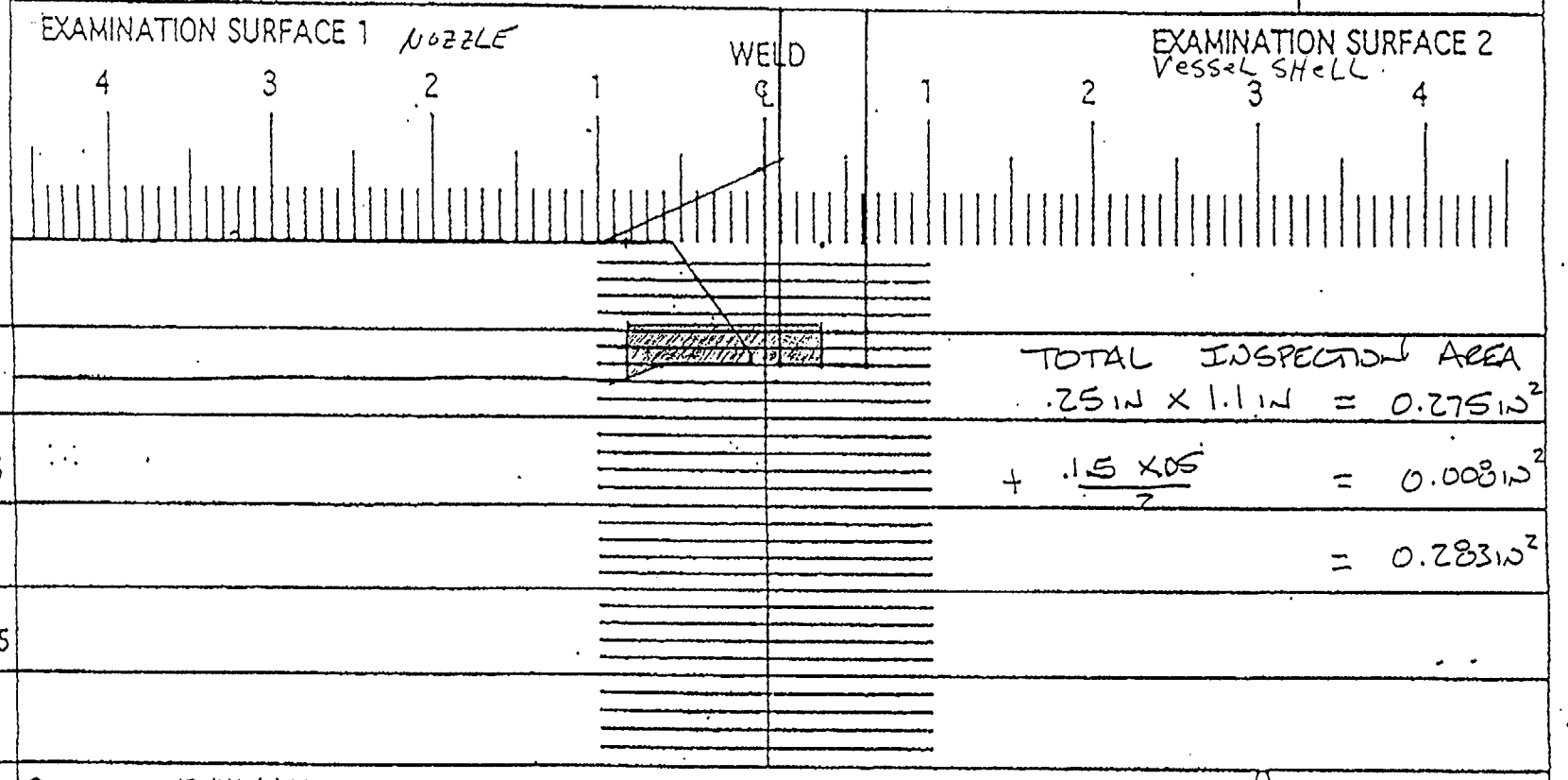
Reviewed By: Larry Maulden Level: III Date: 9-18-01

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



TOTAL INSPECTION AREA

.25 IN X 1.1 IN = 0.275 IN^2

+ $\frac{.15 \times .05}{2}$ = 0.008 IN^2

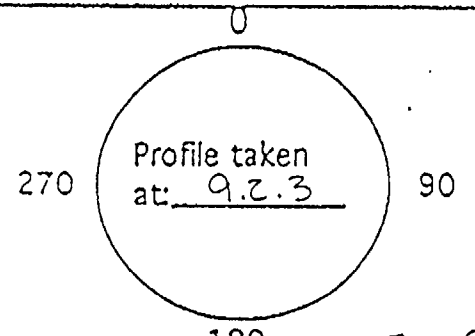
= 0.283 IN^2

Component ID/Weld No. 2BNSHX-3-N1

Remarks:

Item No: C02.021.004

Examiner:		Level: III	Date: 9/11/01
Reviewed By:		Level: III	Date: 9/18/01
Authorized Inspector:			Date: 10/17/01



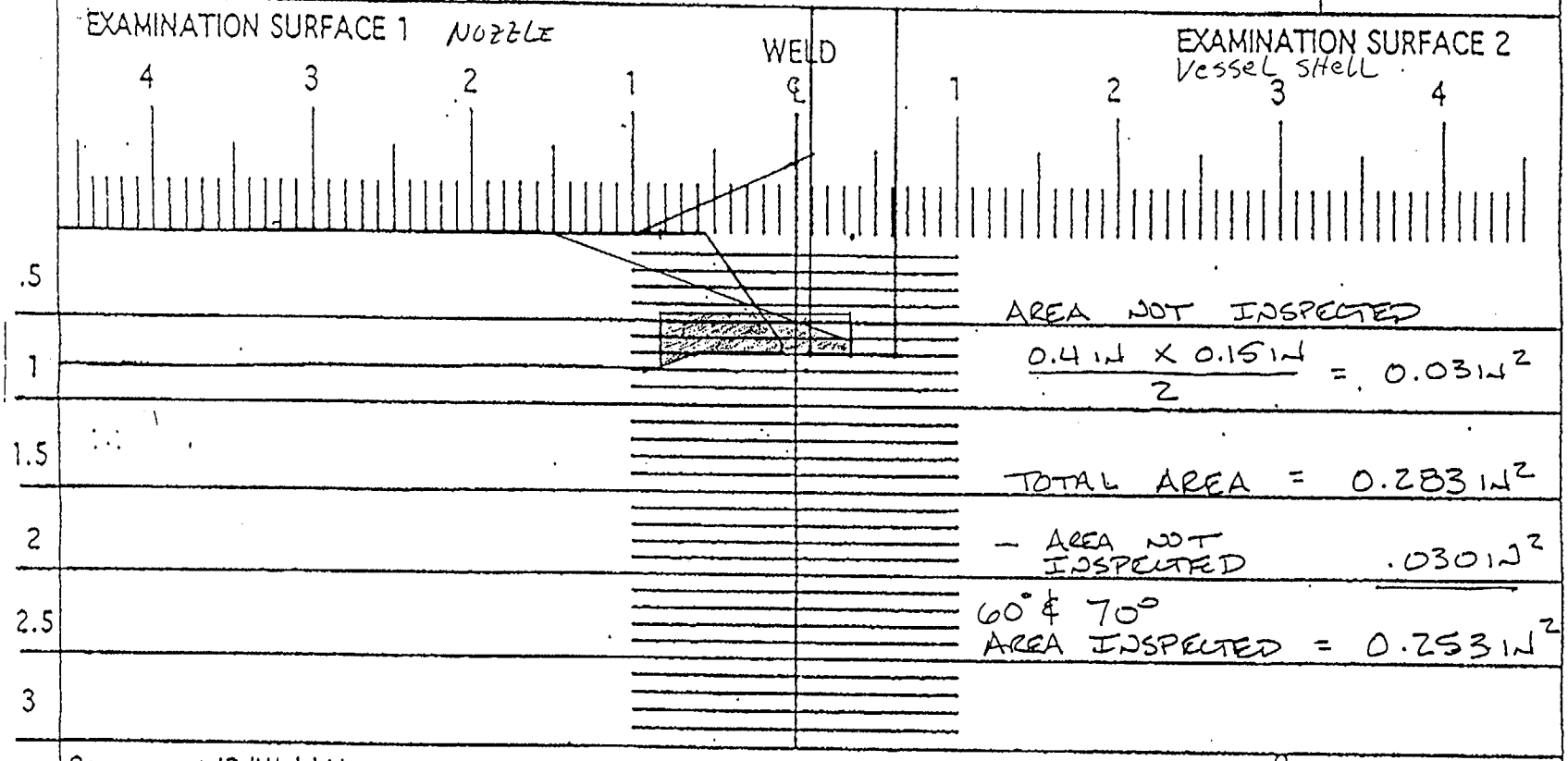
Sheet 7 of 9

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



AREA NOT INSPECTED

$\frac{0.4\,in \times 0.15\,in}{2} = 0.03\,in^2$

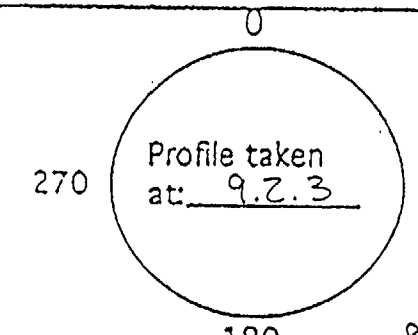
TOTAL AREA = $0.283\,in^2$

– AREA NOT INSPECTED $.030\,in^2$

60° & 70°
AREA INSPECTED = $0.253\,in^2$

Component ID/Weld No. 2BNSHX-3-N1

Remarks:



Item No: C02.021.004

Examiner:	Level: III	Date: 9/11/01
Reviewed By:	Level: III	Date: 9/18/01
Authorized Inspector:		Date: 10/17/01

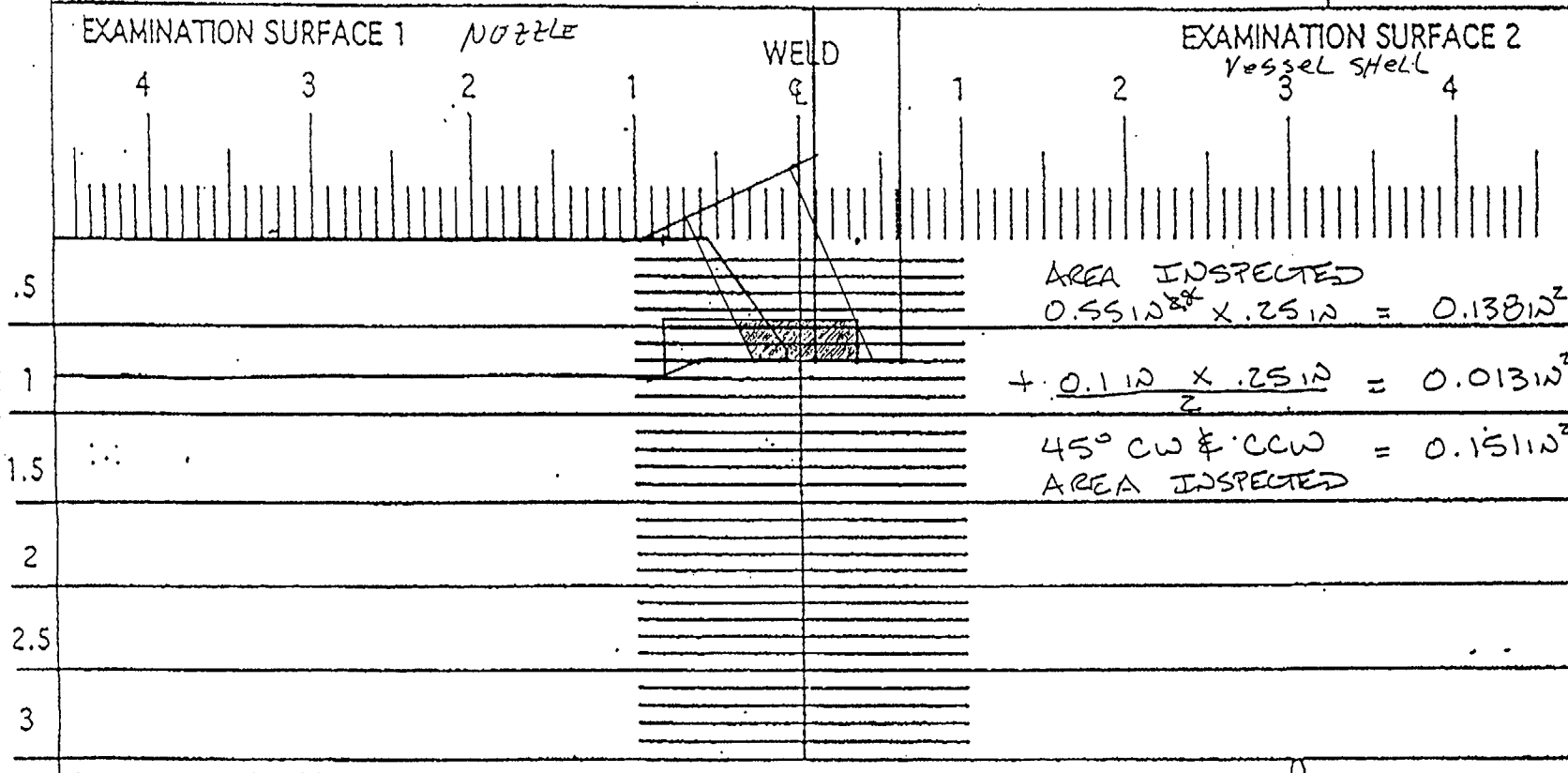
Sheet 8 of 9

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



AREA INSPECTED
$0.551N^{\&\&} \times .25IN = 0.1381N^2$

$+ \frac{0.1IN \times .25IN}{2} = 0.013IN^2$

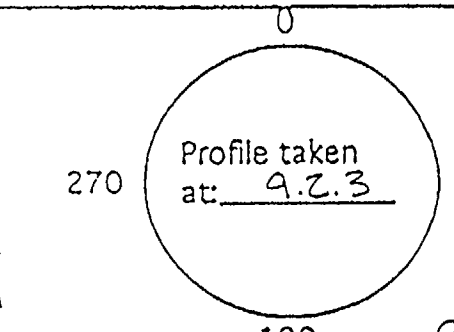
45° CW & CCW AREA INSPECTED $= 0.1511N^2$

Component ID/Weld No. 2BNSHX-3-N1

: Remarks:

Item No: C02.021.004

Examiner:	Level: III	Date: 9/11/01
Reviewed By: Larry Maulden	Level: III	Date: 9/18/01
Authorized Inspector: Robert McGee		Date: 10/17/01



Sheet 9 of 9

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1008 | Form NDE-UT-2A

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 Level: III

Examiner: Gayle E. Houser Level: III

Pyrometer S/N: MCNDE 27008

Cal Due: 2/14/2002

Procedure: NDE-630 Rev: 2

FC: 99-02

Calibration Sheet No: 0102001, 0102002, 0102003

Scans:

45 ☐ _____ dB 70 ☒ 64 dB

45T ☒ 34 dB 70T ☐ _____ dB

60 ☒ 62 dB

60T ☐ _____ dB

Other: _____ dB

Configuration: Nozzle to Shell

S2 Flow S1

NOZZLE to SHELL

Scan Surface: OD

Applies to NDE-680 only

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 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"*	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) ☒ 90% or greater coverage obtained: yes ☐ no ☒

Sheet 1 of 9

Reviewed By: Larry Mauldin Level: III Date: 9-18-01

Authorized Inspector: Robert McGill 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:

	SURFACE	BEAM DIRECTION	
☒ NO SCAN ☐ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	WELD TAPER
FROM L _____ to L _____	INCHES FROM WO CL - 0.9" to BEYOND		
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70°	FROM 0 DEG to 360 DEG		
☐ NO SCAN ☒ LIMITED SCAN	☒ 1 ☐ 2	☐ 1 ☒ 2 ☐ cw ☐ ccw	WELD TAPER
FROM L _____ to L _____	INCHES FROM WO CL + 0.9" to BEYOND		
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70°	FROM 0 DEG to 360 DEG		
☐ NO SCAN ☒ LIMITED SCAN	☒ 1 ☐ 2	☐ 1 ☐ 2 ☒ cw ☒ ccw	WELD TAPER SURF. 1
FROM L _____ to L _____	INCHES FROM WO CL to C + 0.6"		
ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other _____	FROM 0 DEG to 360 DEG		
☐ NO SCAN ☒ LIMITED SCAN	☐ 1 ☒ 2	☐ 1 ☐ 2 ☒ cw ☒ ccw	WELD TAPER SURF. 2
FROM L _____ to L _____	INCHES FROM WO CL -0.1 to BEYOND		
ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other _____	FROM 0 DEG to 360		

Prepared By: [signature] Level: III Date: 9/11/01 **Sketch(s) attached** ☒ yes ☐ no Sheet 2 of 9

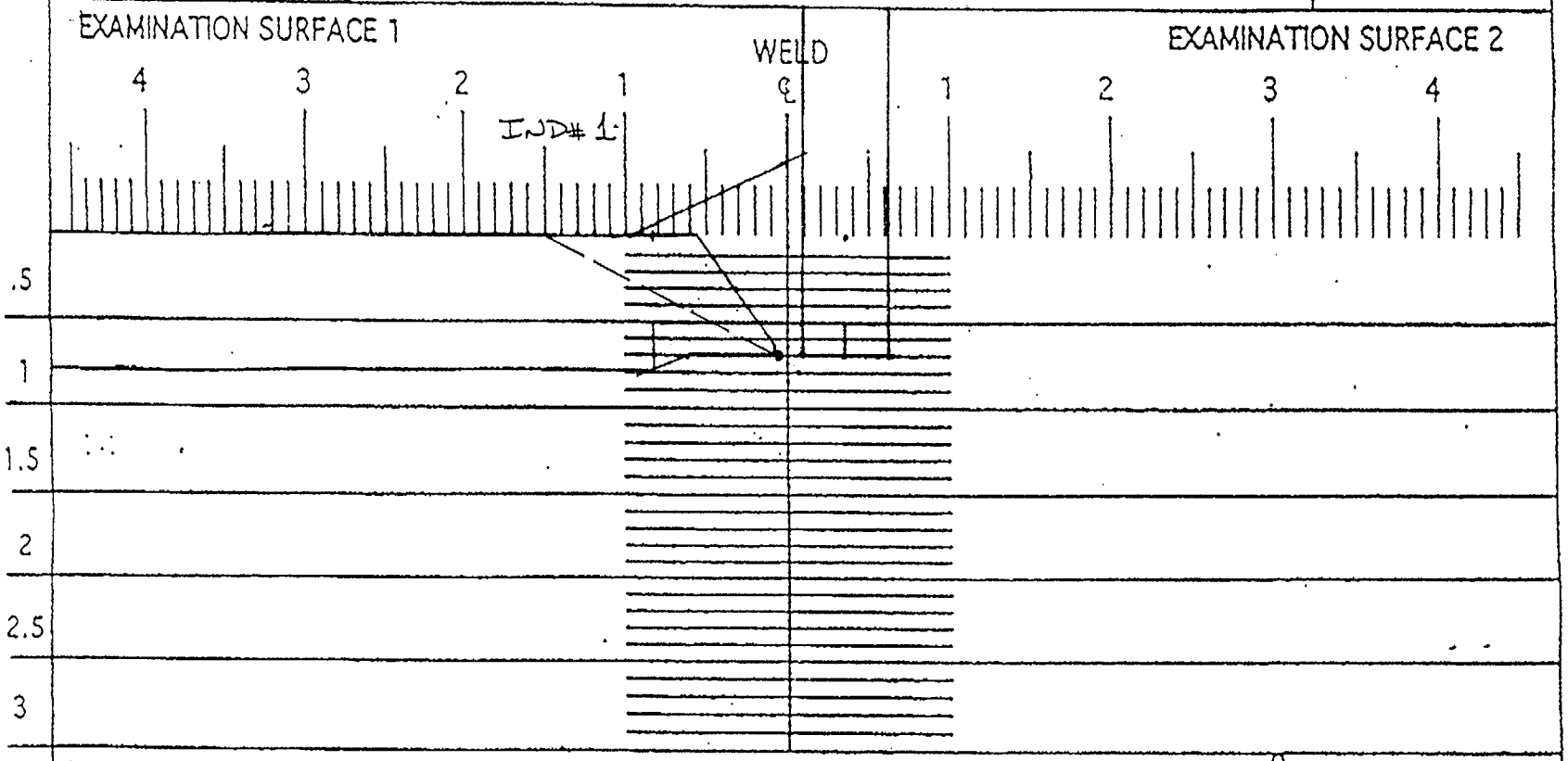
Reviewed By: [signature] Date: 9-18-01 Authorized Inspector: [signature] Date: 10/17/01

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

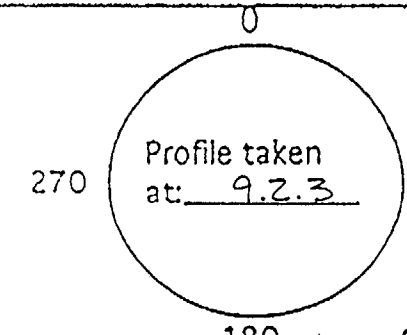
NDE-UT-5

Revision 1



Component ID/Weld No. ZBNSHX-3-NZ

: Remarks:



Item No: C02.021.005

Examiner:	Level: III	Date: 9/11/01
Reviewed By: Lance Maulden	Level: III	Date: 9-18-01
Authorized Inspector: Robert McGee		Date: 10/17/01

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 ☐ Yes ☒ No previous data available

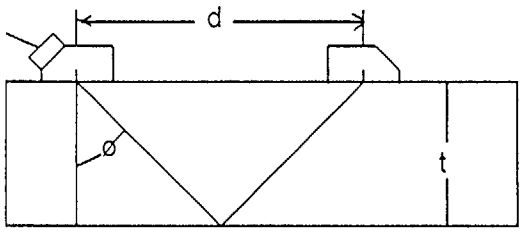
Examiner:	Level:	Date:		Sheet 4 of 9
Jay A. Eaton	III	9/11/2001		
Reviewer: Larry Maulden	Level: III	Date: 9-18-01	Authorized Inspector: Robert McGill	Date: 10/17/01

DUKE POWER COMPANY

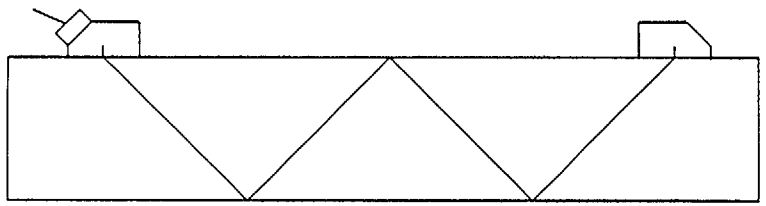
ULTRASONIC BEAM ANGLE MEASUREMENT RECORD

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	Level	Date	Examiner	Level	Date
Gayle E. Houser	III	9/11/2001	Jay A. Eaton	III	9/11/2001
Reviewed By	Level	Date	Authorized Inspector		Date
	III	9-18-01			10/17/07

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	Volume Calculation
(0.25 in x 1.1 in) + (0.15 in x 0.05 in / 2) = 0.283 sq. in.	0.283 sq. in. x 40in. = 11.32 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

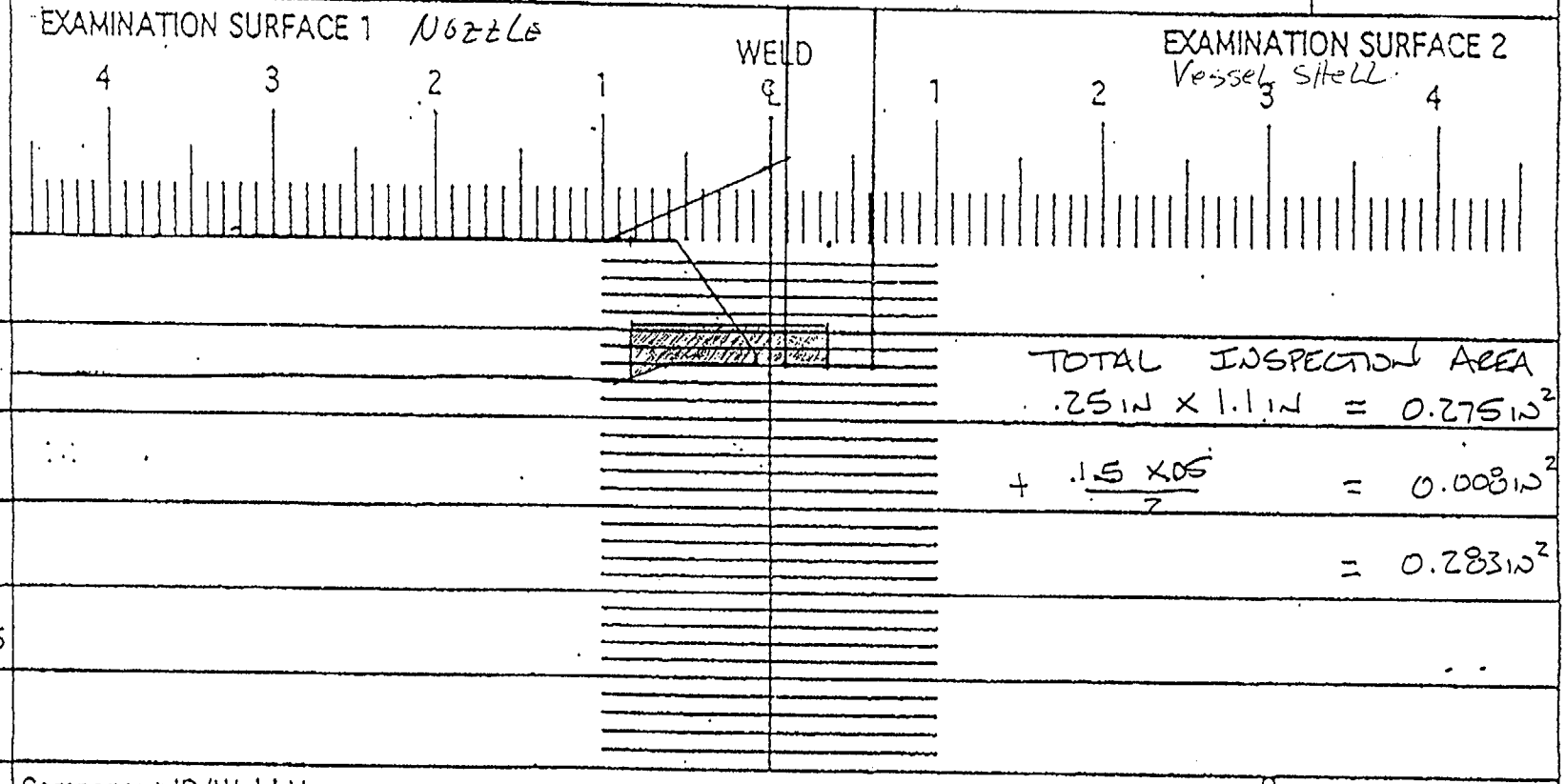
Reviewed By: Larry Maulden Level: III Date: 9-18-01

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



TOTAL INSPECTION AREA

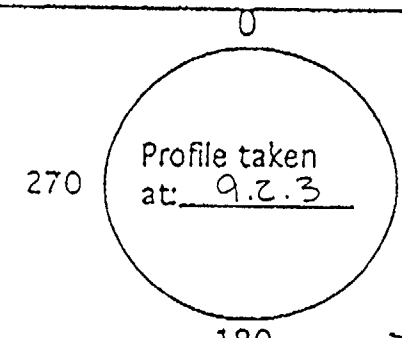
$.25\text{IN} \times 1.1\text{IN} = 0.275\text{IN}^2$

$+ \frac{.15 \times .05}{2} = 0.008\text{IN}^2$

$= 0.283\text{IN}^2$

Component ID/Weld No. ZBNSHX-3-NZ

: Remarks:



Item No: C02.021.005

Examiner:	Level: III	Date: 9/11/01
Reviewed By: Paul Snyder	Level: III	Date: 9.18.01
Authorized Inspector: Robert McNeil		Date: 10/17/01

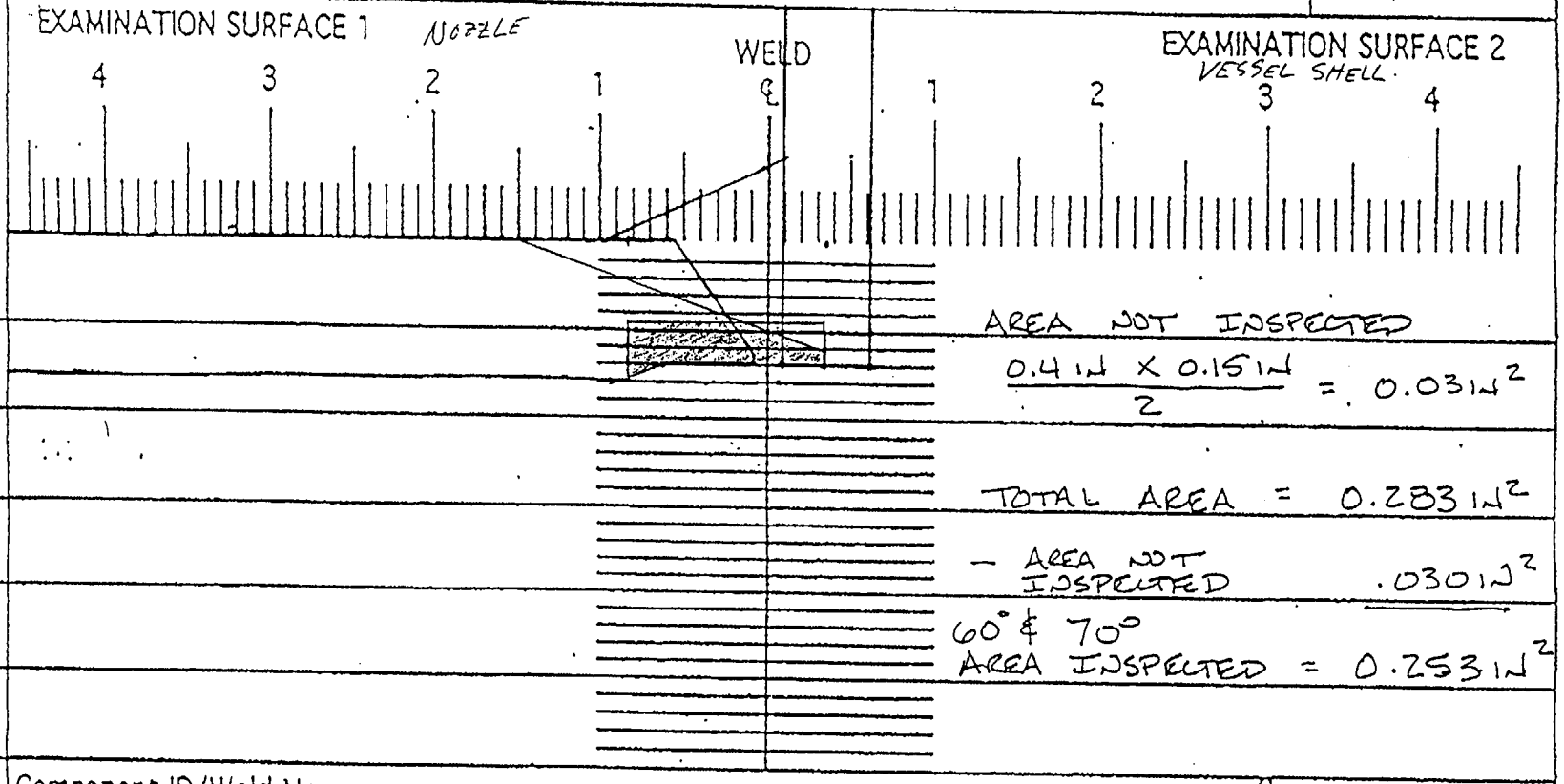
Sheet 7 of 9

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



AREA NOT INSPECTED

$\frac{0.4\text{ in} \times 0.15\text{ in}}{2} = .031\text{ in}^2$

TOTAL AREA = 0.283 in^2

− AREA NOT INSPECTED $.030\text{ in}^2$

60° & 70°

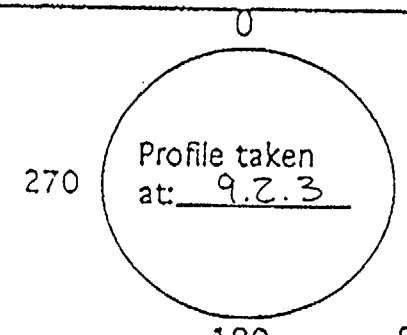
AREA INSPECTED = 0.253 in^2

Component ID/Weld No. ZBNSHX-3-NZ

Remarks:

Item No: C02.021.005

Examiner:	Level: III	Date: 9/11/01
Reviewed By: Larry Maulden	Level: III	Date: 9-18-01
Authorized Inspector: Robert McNeil		Date: 10/17/01



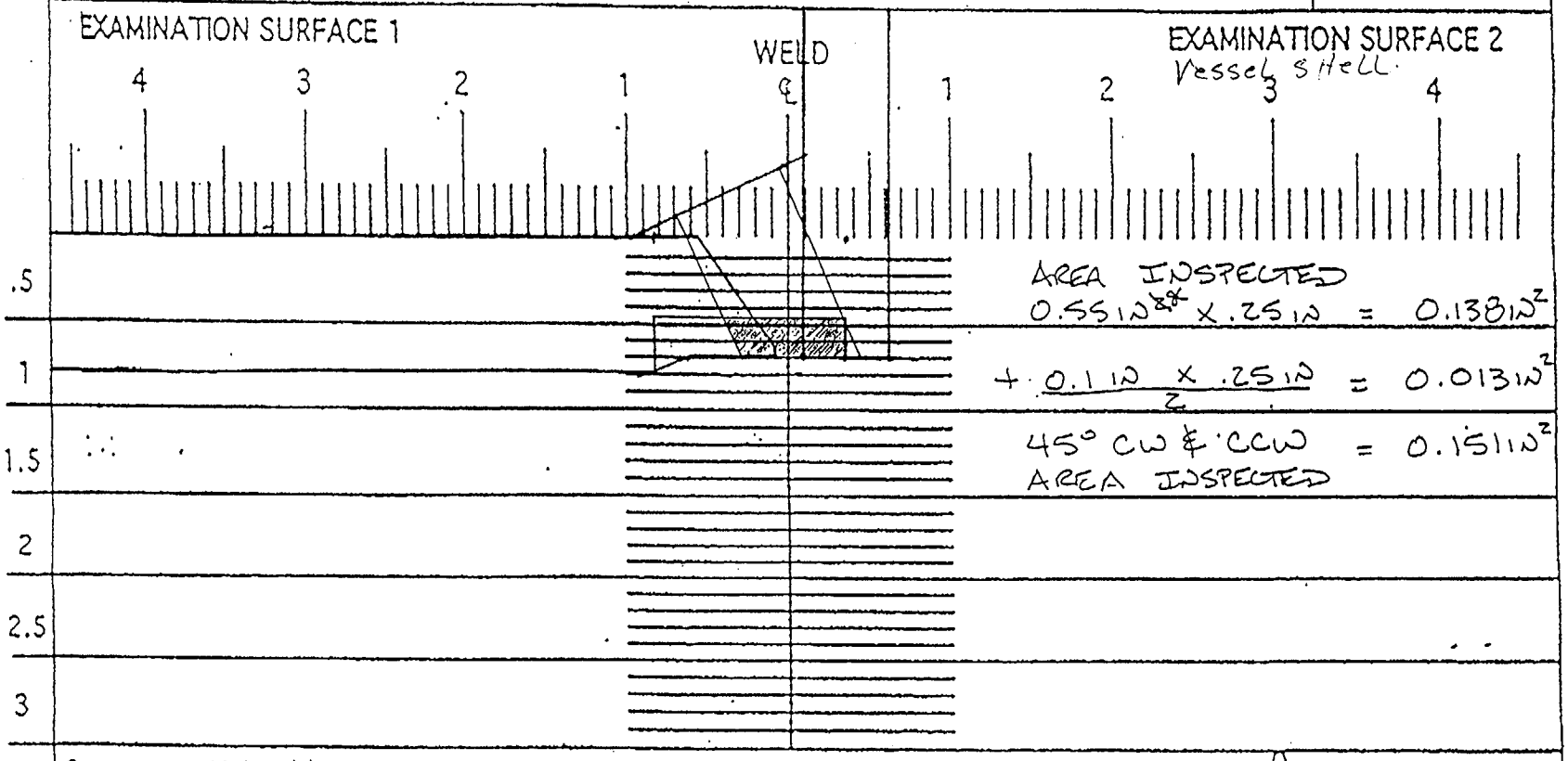
Sheet 8 of 9

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

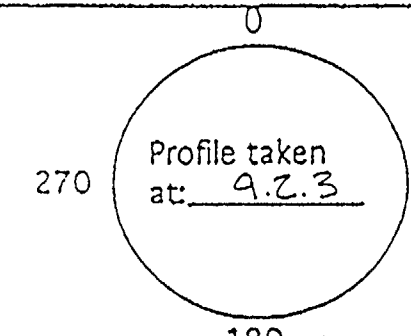
NDE-UT-5

Revision 1



Component ID/Weld No. 2BNSHX-3-NZ

: Remarks:



Item No: C02.021.005

Examiner:	Level: III	Date: 9/11/01
Reviewed By: Lance Shaulder	Level: III	Date: 9-18-01
Authorized Inspector: Robert McGill		Date: 10/17/01

Sheet 9 of 9