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April 30, 2019

Serial: RA-19-0206

10 CFR 50.55a(g)(5)(iii)

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

Subject: Shearon Harris Nuclear Power Plant, Unit 1
Renewed Facility Operating License No. NPF-63
Docket No. 50-400
Proposed Alternative for the Third 10-Year Inservice Inspection Program

Reference: Letter from D. H. Corlett (Progress Energy) to the the U.S. Nuclear Regulatory Commission, *Third Interval Inservice Inspection Program Submittal*, dated April 29, 2008, ADAMS Accession Number ML081330463.

Ladies and Gentlemen:

By letter dated April 29, 2008 (i.e., Reference), Duke Energy Progress, LLC (Duke Energy), submitted the Inservice Inspection Program Plan for the third 10-year inspection interval for the Shearon Harris Nuclear Power Plant, Unit 1 (HNP). During the third inspection interval, the 2001 Edition through 2003 Addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, was used for Class 1, 2, and 3 components, unless otherwise permitted.

During the third 10-year interval, Duke Energy completed the required inservice examinations for HNP, in accordance with the plan, except that certain components could not fully meet the examination requirements specified in the 2001 ASME Code with 2003 Addenda, Section XI, including the clarifications provided in ASME Code Case N-460. Duke Energy has determined that conformance to the Code requirement of essentially 100 percent coverage of weld volume or area examined was impractical due to various constraints and limitations. Accordingly, in accordance with 10 CFR 50.55a(g)(5)(iii), Duke Energy requests NRC approval of the 10 CFR 50.55a relief requests for the locations identified in Table 1 of Enclosure 1, for HNP. Non-destruction examination (NDE) data and coverage plots for HNP are provided in Enclosure 2.

The third 10-year inservice inspection interval for HNP Unit 1 began on May 2, 2007, and ended on May 1, 2018. The third interval end date was extended 12 months in accordance with IWA-2430(d)(1) of the 2001 Edition with the 2003 Addenda. This submittal is being provided to the NRC within 12 months after the expiration of the 10-year inservice inspection interval.

No regulatory commitments are contained in this letter. Please refer any questions regarding this submittal to Mr. Art Zaremba, Director – Nuclear Fleet Licensing, at (980) 373-2062.

Sincerely,

M. Christopher Nolan

Vice President – Nuclear Regulatory Affairs,
Policy, & Emergency Preparedness

LJG/ljg

Enclosures:

1. Relief Request Number I3R-19, Relief Requested in Accordance with 10 CFR 50.55a(g)(5)(iii) for Volumetric Examination of Class 1 and 2 Components
2. Relief Request Number I3R-19, Third Inservice Inspection (ISI) Interval Limited Coverage Non-Destruction Examination (NDE) Data

cc (with Enclosures):

U.S. Nuclear Regulatory Commission, Region II
ATTN: Ms. Catherine Haney, Regional Administrator
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U.S. Nuclear Regulatory Commission
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Enclosure 1

Duke Energy Progress, LLC

Shearon Harris Nuclear Plant, Unit 1

Relief Request I3R-19

Relief Requested in Accordance with 10 CFR 50.55a(g)(5)(iii) for Volumetric Examination of Class 1 and 2 Components

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	1 & 2
References:	IWB-2500, Table IWB-2500-1 IWC-2500, Table IWC-2500-1 ASME Code Case N-460
Examination Categories:	B-A, B-B, B-D, C-A, C-B
Item Numbers:	B1.30, B2.40, B3.110, C1.10, C2.21
Description:	Limited Volumetric Examination Coverage
Component Number:	See Tables 1 and 2 for a list of Component IDs

2.0 APPLICABLE CODE EDITION AND ADDENDA:

The Shearon Harris Nuclear Plant (HNP), Unit 1 third Inservice Inspection (ISI) Interval is based on the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, 2001 Edition through the 2003 Addenda.

3.0 APPLICABLE CODE REQUIREMENTS:

3.1. Examination Category B-A

The extent of examination requirement for Examination Category B-A, Item Number B1.30, per Table IWB-2500-1, requires a volumetric examination of essentially 100% of the weld length for shell-to-flange welds as shown in Figure IWB-2500-4.

3.2 Examination Category B-B

The extent of examination requirement for Examination Category B-B, Item Number B2.40, per Table IWB-2500-1, requires a volumetric examination of essentially 100% of the weld length for tubesheet-to-head welds as shown in Figure IWB-2500-6.

3.3 Examination Category B-D

The extent of examination requirement for Examination Category B-D, Item Number B3.110, per Table IWB-2500-1, requires a volumetric examination of all pressurizer nozzle-to-vessel welds as shown in Figure IWB-2500-7(b).

3.4 Examination Category C-A

The extent of examination requirement for Examination Category C-A, Item Number C1.10, per Table IWC-2500-1 requires a volumetric examination of essentially 100% of the weld length of the shell circumferential welds as shown in Figure IWC-2500-1.

3.5 Examination Category C-B

The extent of examination requirement for Examination Category C-B, Item Number C2.21, per Table IWC-2500-1, requires a volumetric and surface examination of the nozzle-to-head welds as shown in Figure IWC-2500-4(a). Note 4 in Table IWC-2500-1 states, in the case of multiple vessels of similar design, size, and service (such as steam

generators, heat exchangers), the required examinations may be limited to one vessel or distributed among the vessels.

3.6 ASME Code Case N-460

HNP Unit 1 adopted ASME Code Case N-460, “Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1”, which defines “essentially 100%” as greater than 90% coverage of the examination volume or surface area, as applicable. The greater than 90% minimum coverage was applied to all surface and volumetric examination required by ASME Section XI.

4.0 IMPRACTICALITY OF COMPLIANCE:

Pursuant to 10 CFR 50.55a(g)(5)(iii), relief is requested on the basis that conformance with ASME Section XI Code requirements is impractical. Due to plant configuration or component geometry, greater than 90% coverage of the required volume and/or area could not be obtained for these welds. The components or plant would have to be redesigned and modified to obtain additional coverage, which is impractical.

Table 1 provides a summary of the examination limitations for each component for which relief is requested. The table also indicates the outage the component was examined, the coverage percentage obtained for each component, and other pertinent design information. This table is the cumulative list of the limited ASME Section XI examinations performed during the third ISI interval.

Enclosure 1 provides limitation calculations and/or coverage plots which were extracted from the non-destructive examination (NDE) summary sheets that detail the examination limitations.

Accordingly, pursuant to 10 CFR 50.55a(g)(5)(iii), Duke Energy has determined that conformance with the code requirement to examine essentially 100% of the weld volume or area is impractical due to various constraints and limitations described in Table 1 and Enclosure 1. Duke Energy requests NRC approval of the proposed alternative as stated below.

5.0 BURDEN CAUSED BY COMPLIANCE:

Compliance with the applicable ASME Section XI Code volumetric examination requirements can only be accomplished by redesigning and refabricating the subject and/or surrounding components. Based on this, the ASME Section XI Code requirements are deemed impractical in accordance with 10 CFR 50.55a(g)(5)(iii)

6.0 PROPOSED ALTERNATIVE AND BASIS FOR USE:

6.1. Examination Category B-A

HNP Unit 1 has performed the ASME Section XI Code required examinations to the extent practical, maximizing code required coverage. Examinations were conducted using personnel, equipment and procedures qualified in accordance with ASME Section XI,

2001 Edition through the 2003 Addenda. Table 1 details the limitations incurred. Due to the physical interferences causing these limitations, there are no alternative examination techniques currently available to increase coverage, and no alternative weld selection is available to gain additional coverage. Radiography (RT) is not a desired option because RT is limited in the ability to detect service induced flaws.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1, Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test provides additional assurance of pressure boundary integrity. In addition to the above code required examinations (volumetric and pressure test), reactor building normal sump monitoring and reactor building area radiation monitoring contribute to ensuring pressure boundary integrity by providing means to detect reactor coolant leakage and take prompt corrective actions.

Based on the acceptable results for the coverage completed by the volumetric examination, the pressure testing (VT-2) examinations required by Section XI, and the leakage monitoring, it is Duke's position that the combination of examinations provide a reasonable assurance of quality and safety.

6.2 Examination Category B-B

HNP Unit 1 has performed the ASME Section XI Code required examinations to the extent practical, maximizing code required coverage. Examinations were conducted using personnel, equipment and procedures qualified in accordance with ASME Section XI, 2001 Edition through the 2003 Addenda. Table 1 details the limitations incurred. Due to the physical interferences causing these limitations, there are no alternative examination techniques currently available to increase coverage, and no alternative weld selection is available to gain additional coverage. Radiography (RT) is not a desired option because RT is limited in the ability to detect service induced flaws.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1, Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test provides additional assurance of pressure boundary integrity. In addition to the above code required examinations (volumetric and pressure test), reactor building normal sump monitoring and reactor building area radiation monitoring contribute to ensuring pressure boundary integrity by providing means to detect reactor coolant leakage and take prompt corrective actions.

Based on the acceptable results for the coverage completed by the volumetric examination, the pressure testing (VT-2) examinations required by Section XI, and the leakage monitoring, it is Duke's position that the combination of examinations provide a reasonable assurance of quality and safety.

6.3 Examination Category B-D

HNP Unit 1 has performed the ASME Section XI Code required examinations to the extent practical, maximizing code required coverage. Examinations were conducted using personnel, equipment and procedures qualified in accordance with ASME Section XI, 2001 Edition through the 2003 Addenda. Table 1 details the limitations incurred. Due to the physical interferences causing these limitations, there are no alternative examination

techniques currently available to increase coverage, and no alternative weld selection is available to gain additional coverage. Radiography (RT) is not a desired option because RT is limited in the ability to detect service induced flaws.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1, Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test provides additional assurance of pressure boundary integrity. In addition to the above code required examinations (volumetric and pressure test), reactor building normal sump monitoring and reactor building area radiation monitoring contribute to ensuring pressure boundary integrity by providing means to detect reactor coolant leakage and take prompt corrective actions.

Based on the acceptable results for the coverage completed by the volumetric examination, the pressure testing (VT-2) examinations required by Section XI, and the leakage monitoring, it is Duke's position that the combination of examinations provide a reasonable assurance of quality and safety.

6.4 Examination Category C-A

HNP Unit 1 has performed the ASME Section XI Code required examination to the extent practical, maximizing code required coverage. Examinations were conducted using personnel, equipment and procedures qualified in accordance with ASME Section XI, 2001 Edition through the 2003 Addenda. Table 1 details the limitations incurred. Axial scans looking for circumferentially oriented flaws were limited to the shell side only. Circumferential scans looking for axially oriented flaws were complete. Due to the physical interferences causing the limitations, there are no alternative examination techniques currently available to increase coverage, and no alternative weld selection is available to gain additional coverage. Radiography (RT) is not a desired option because RT is limited in the ability to detect service induced flaws.

The volume of coverage obtained during the ultrasonic examination along with ongoing leakage tests once every ISI Period provide reasonable assurance that structural integrity is being maintained.

6.5 Examination Category C-B

HNP Unit 1 has performed the ASME Section XI Code required examinations to the extent practical, maximizing code required coverage. Examinations were conducted using personnel, equipment and procedures qualified in accordance with ASME Section XI, 2001 Edition through the 2003 Addenda. Table 1 details the limitations incurred. Due to the physical interferences causing these limitations, there are no alternative examination techniques currently available to increase the volumetric coverage, and no alternative weld selection is available to gain additional coverage. Radiography (RT) is not a desired option because RT is limited in the ability to detect service induced flaws. Liquid penetrant (PT) examinations were performed on these welds to satisfy the surface examination requirement resulting in 100% coverage obtained and no recordable indications. The PT data is also included in Enclosure 2 for reference.

The volume of coverage obtained during the ultrasonic examination along with ongoing leakage tests once every ISI Period provide reasonable assurance that structural integrity is being maintained.

7.0 DURATION OF PROPOSED ALTERNATIVE:

This request is proposed for the HNP Unit 1, Third Inservice Inspection Interval identified below:

HNP Unit 1, Third Inservice Inspection Interval:

Start Date: May 2, 2007 End Date: May 1, 2018[1]

Note 1: The third interval end date was extended 12 months in accordance with IWA-2430(d)(1).

8.0 PRECEDENTS:

8.1. Shearon Harris, Unit 1 – Relief Request 2R1-019, 2R1-020, 2R1-021, 2R1-022, 2R2-009, 2R2-010 and 2R2-011 for the Second 10-Year Interval Inservice Inspection Program Plan (ADAMS Accession Number ML093561419).

8.2. Robinson, Unit 2 – Relief Request RR-20 for Limited Examinations Performed in the Fourth Ten-Year Inservice Inspection Program Plan (ADAMS Accession Number ML 13178A006).

8.3. Catawba Nuclear Station, Units 1 and 2 – Relief Request 17-CN-001 Regarding Category B-J Pressure Retaining Welds for the Third 10-Year Inservice Inspection Interval (ADAMS Accession Number ML18016A178).

9.0 REFERENCES:

9.1. 2001 Edition through 2003 Addenda, ASME Code, Section XI, “Rules for Inservice Inspection of Nuclear Power Plant Components”.

9.2. ASME Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1.

Table 1
Shearon Harris Nuclear Plant, Unit 1
List of Components with Limited Examination Coverage

Exam Category / Item Number	Component ID (Summary #)	Exam Requirements Figure No. and (Method)	Component Description (System)[Note 1]	Outage Examined	Material	Nominal Pipe Size (Thickness)	Exam Angle / Frequency/ Mode of Propagation	Percent Coverage Obtained	Appendix VIII Qualified Exam	Remarks (NDE Coverage Plots and Calculations)
B-A B1.30	II-RV-001FTHW-RV-18FA,B,C (H-03772)	Volumetric IWB-2500-4 (UT)	RPV Shell-to-Flange Weld (RPV)	H1R15	Shell: SA-533 GR B CL 1, Flange: SA-508, CL 2	N/A (7.0”)	45°/2.25 MHz/ Shear 60°/2.25 MHz/ Shear	71.7%	No	The impracticality was caused by the geometric configuration of the RPV flange transition to the head. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 1-9)
B-B B2.40	II-SG-001SGB-TSTHW-06-01 (H-03872)	Volumetric IWB-2500-6 (UT)	SG Tubesheet - To-Head Weld (RC)	H1R17	SA-508 Cl 3a	N/A (5.26”)	45°/2.25 MHz/ Shear 60°/2.25 MHz/ Shear	Weld Material: 70.1% Base Metal: 75.2%	No	The impracticality was caused by the geometric configuration of the SG inlet nozzle and obstructions cause by the SG supports. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 10-15)

Table 1
Shearon Harris Nuclear Plant, Unit 1
List of Components with Limited Examination Coverage

Exam Category / Item Number	Component ID (Summary #)	Exam Requirements Figure No. and (Method)	Component Description (System)[Note 1]	Outage Examined	Material	Nominal Pipe Size (Thickness)	Exam Angle / Frequency/ Mode of Propagation	Percent Coverage Obtained	Appendix VIII Qualified Exam	Remarks (NDE Coverage Plots and Calculations)
B-D B3.110	II-PZR-01NTHW-10 (H-02997)	Volumetric IWB-2500-7(b) (UT)	Pressurizer Safety Nozzle to Upper Head Weld (RC)	H1R15	Nozzle: SA-508 CL 2 Shell: SA-533 Gr A CL 2	N/A (Minimum Thickness 2.09" including cladding)	0°/2.25 MHz/ Long 45°/2.25 MHz/ Shear 60°/2.25 MHz/ Shear	67.14%	No	The impracticality was caused by the geometric configuration of the PZR safety nozzle transition to the upper head. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 16-28)
B-D B3.110	II-PZR-01NTHW-11 (H-02998)	Volumetric IWB-2500-7(b) (UT)	Pressurizer Safety Nozzle to Upper Head Weld (RC)	H1R15	Nozzle: SA-508 CL 2 SA-533 Gr A CL 2	N/A (Minimum Thickness 2.09" including cladding)	0°/2.25 MHz/Long 45°/2.25 MHz/ Shear 60°/2.25MHz/ Shear	67.14%	No	The impracticality was caused by the geometric configuration of the PZR safety nozzle transition to the upper head. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 29-41)

Table 1
Shearon Harris Nuclear Plant, Unit 1
List of Components with Limited Examination Coverage

Exam Category / Item Number	Component ID (Summary #)	Exam Requirements Figure No. and (Method)	Component Description (System)[Note 1]	Outage Examined	Material	Nominal Pipe Size (Thickness)	Exam Angle / Frequency/ Mode of Propagation	Percent Coverage Obtained	Appendix VIII Qualified Exam	Remarks (NDE Coverage Plots and Calculations)
B-D B3.110	II-PZR-01NTHW-12 (H-02999)	Volumetric IWB-2500-7(b) (UT)	Pressurizer Safety Nozzle to Upper Head Weld (RC)	H1R15	Nozzle: SA-508 CL 2 SA-533 Gr A CL 2	N/A (Minimum Thickness 2.09" including cladding)	0°/2.25 MHz/Long 45°/2.25 MHz/ Shear 60°/2.25 MHz/ Shear	67.14%	No	The impracticality was caused by the geometric configuration of the PZR safety nozzle transition to the upper head. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 42-54)
B-D B3.110	II-PZR-01NTHW-09 (H-02996)	Volumetric IWB-2500-7(b) (UT)	Pressurizer Spray Nozzle to Upper Head Weld (RC)	H1R17	Nozzle: SA-508 CL 2 SA-533 Gr A CL 2	N/A (Minimum Thickness 2.69" including cladding)	0°/2.25 MHz/Long 45°/2.25 MHz/ Shear 60°/2.25 MHz/ Shear	67.14%	No	The impracticality was caused by the geometric configuration of the PZR spray nozzle transition to the upper head. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 55-74)

Table 1
Shearon Harris Nuclear Plant, Unit 1
List of Components with Limited Examination Coverage

Exam Category / Item Number	Component ID (Summary #)	Exam Requirements Figure No. and (Method)	Component Description (System)[Note 1]	Outage Examined	Material	Nominal Pipe Size (Thickness)	Exam Angle / Frequency/ Mode of Propagation	Percent Coverage Obtained	Appendix VIII Qualified Exam	Remarks (NDE Coverage Plots and Calculations)
B-D B3.110	II-PZR-01NTHW-13 (H-03000)	Volumetric IWB-2500-7(b) (UT)	Pressurizer Relief Nozzle to Upper Head Weld (RC)	H1R17	Nozzle: SA-508 CL 2 SA-533 Gr A CL 2	N/A (Minimum Thickness 2.09" including cladding)	0°/2.25 MHz/Long 45°/2.25 MHz/ Shear 60°/2.25MHz/ Shear	69.26%	No	The impracticality was caused by the geometric configuration of the PZR relief nozzle transition to the upper head. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 75-79)
B-D B3.110	II-PZR-01NTHW-08 (H-02995)	Volumetric IWB-2500-7(b) (UT)	Pressurizer Surge Nozzle to Lower Head Weld (RC)	H1R17	Nozzle: SA-508 CL 2 SA-533 Gr A CL 2	N/A (Minimum Thickness 2.74" including cladding)	0°/2.25 MHz/Long 45°/2.25MHz/ Shear 60°/2.25MHz/ Shear	59.1%	No	The impracticality was caused by the geometric configuration of the PZR surge nozzle transition to the lower head. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 80-84)

Table 1
Shearon Harris Nuclear Plant, Unit 1
List of Components with Limited Examination Coverage

Exam Category / Item Number	Component ID (Summary #)	Exam Requirements Figure No. and (Method)	Component Description (System)[Note 1]	Outage Examined	Material	Nominal Pipe Size (Thickness)	Exam Angle / Frequency/ Mode of Propagation	Percent Coverage Obtained	Appendix VIII Qualified Exam	Remarks (NDE Coverage Plots and Calculations)
C-A C1.10	II-RHR-01RHRA-CSW-02A,B,C (H-03713)	Volumetric IWC-2500-1 (UT)	"A" RHR Heat Exchanger Shell Circumferential Weld (RH)	H1R15	SA-240-TP 304	N/A (Minimum Thickness 0.696")	45°/2.25MHz/ Shear 60°/2.25MHz/ Shear	75%	No	The impracticality was caused by the geometric configuration of the flange. Axial scans looking for circumferential flaws were limited to the shell side only due to the adjacent flange on the other side of the weld. Obtaining the code required volume is impractical due to configuration. (Enclosure 2, Pages 85-88)
C-B C2.21	II-BIT-01NTHW-04 (H-01354)	Surface and Volumetric IWC-2500-4(a) (PT and UT)	Boron Injection Tank Inlet Nozzle to Head Weld (SI)	H1R19 (PT) H1R20 (UT)	Nozzle: SA-182 F304 Shell: SA-240 TP304	N/A (2.0")	45°/1.5MHz/ Shear 60°/2.25MHz/ Shear 45°/2.0MHz/ RL 60°/2.0MHz/RL	78.6%	No	The impracticality was caused by the geometric configuration of the BIT inlet nozzle transition to the head. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 89-98)

Table 1
Shearon Harris Nuclear Plant, Unit 1
List of Components with Limited Examination Coverage

Exam Category / Item Number	Component ID (Summary #)	Exam Requirements Figure No. and (Method)	Component Description (System)[Note 1]	Outage Examined	Material	Nominal Pipe Size (Thickness)	Exam Angle / Frequency/ Mode of Propagation	Percent Coverage Obtained	Appendix VIII Qualified Exam	Remarks (NDE Coverage Plots and Calculations)
C-B C2.21	II-BIT-01NTHW-03 (H-01353)	Surface and Volumetric IWC-2500-4(a) (PT and UT)	Boron Injection Tank Outlet Nozzle to Head Weld (SI)	H1R19 (PT) H1R20 (UT)	Nozzle: SA-182 F304 Shell: SA-240 TP304	N/A (2.0”)	45°/1.5MHz/ Shear 60°/2.25MHz/ Shear 45°/2.0MHz/ RL 60°/2.0MHz/RL	76.5%	No	The impracticality was caused by the geometric configuration of the BIT head transition to the outlet nozzle. Due to the configuration, obtaining the code required coverage is impractical. (Enclosure 2, Pages 99-108)

Note 1: The following systems and their abbreviations are listed here:

- Reactor Pressure Vessel (RPV)
- Reactor Coolant System (RC)
- Residual Heat Removal (RH)
- Safety Injection (SI)

Enclosure 2

Relief Request I3R-19

Shearon Harris Nuclear Plant, Unit 1

Third Inservice Inspection (ISI) Interval Limited Coverage Non-Destruction Examination (NDE) Examination Data

UT Calibration Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-15
Summary No.:	H-03772	Procedure Rev.:	3 TR-A	Report No.:	UT-09-034
Workscope:	ISI	Work Order No.:	1313525	Page:	1 of 9

Code:	2001 Ed 2003 Add	Cat./Item:	B-A/B1.30	Location:	Containment 263'
Drawing No.:	1-ISI-RV-1	Description:	Reactor Vessel Head to Flange Weld		
System ID:	RC-1005				
Component ID:	II-RV-001FTHW-RV-18FA,B,C	Size/Length:	493"	Thickness/Diameter:	7"/157" ID
Limitations:	VESSEL HEAD CONFIGURATION	Start Time:	1020	Finish Time:	1140

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	1.2272	Range:	10"
M'tl Cal/Vel:	0.2342	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	LONGITUDAL
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	26.5	Circ. Gain (dB):	26.5

10 Screen Div. = 10 in. of Sound Path

Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.:	UT-005-1		
Thickness:	7.0	Dia.:	157"
Cal. Blk. Temp.	66°	Temp. Tool:	68951
Comp. Temp.:	86°	Temp. Tool:	68951

Search Unit

Serial No.:	C29344		
Manufacturer:	KB AeroTech		
Size:	0.75"	Shape:	Round
Freq.:	2.25 MHz	Style:	Gamma
Exam Angle:	0°	# of Elements:	1
Mode:	Longitudinal		
Measured Angle:	N/A		
Wedge Style:	N/A		

Search Unit Cable

Type:	RG-58		
Length:	6'	No. Conn.:	0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 50.5

CW ☑ CCW ☑ Scan dB: 50.5

Exam Surface:	OD
Surface Condition:	GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	0830	4/24/2009
Inter. Cal.	1020	4/24/2009
Inter. Cal.	1240	4/24/2009
Inter. Cal.	N/A	
Final Cal.	1530	4/24/2009

Couplant

Cal. Batch:	05225
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05225
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	792221
Type:	CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T SDH	83	1.6	1.641
1/2T SDH	45	3.4	3.376
3/4T SDH	22	5.2	5.163
ID	60	7.1	7.132

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
32.5	SDH	66	0.7	0.736

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: *71.7% Reviewed Previous Data: Yes

Comments: *Verified previously recorded limitations and coverage calculations from report ISI-210T-00-002 (See Extracted Pages Attached). Examination was in a Radiation area.

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/24/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Scott Larson Level III			4/29/2009
Other	Level	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P	III-PDI		4/28/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie-Slaughter	5/5/09

This Document is a QA Record

UT Calibration Examination

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-15
Summary No.: H-03772 | Procedure Rev.: 3 TR-A | Report No.: UT-09-034
Workscope: ISI | Work Order No.: 1313525 | Page: 2 of 9

Code: 2001 Ed 2003 Add | Cat./Item: B-A/B1.30 | Location: Containment 263'
Drawing No.: 1-ISI-RV-1 | Description: Reactor Vessel Head to Flange Weld
System ID: RC-1005
Component ID: II-RV-001FTHW-RV-18FA,B,C | Size/Length: 493" | Thickness/Diameter: 7"/157" ID
Limitations: VESSEL HEAD CONFIGURATION | Start Time: 1140 | Finish Time: 1220

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	12.1922	Range:	15"
M'tl Cal/Vel:	0.1270	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	SHEARWAVE
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	44*	Circ. Gain (dB):	44*

10 Screen Div. = 15 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-005-1
Thickness: 7.0 | Dia.: 157"
Cal. Blk. Temp. 66° | Temp. Tool: 68951
Comp. Temp.: 86° | Temp. Tool: 68951

Search Unit

Serial No.: C18133
Manufacturer: KB AeroTech
Size: .5" x 1" | Shape: Rect.
Freq.: 2.25 MHz | Style: Gamma
Exam Angle: 45° | # of Elements: 1
Mode: Shearwave
Measured Angle: 45°
Wedge Style: LUCITE

Search Unit Cable

Type: RG-58
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 62
CW ☑ CCW ☑ Scan dB: 62
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	0830	4/24/2009
Inter. Cal.	1020	4/24/2009
Inter. Cal.	1240	4/24/2009
Inter. Cal.		
Final Cal.	1530	4/24/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221
Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T SDH	84	1.6	2.398
1/2T SDH	42	3.3	4.946
3/4T SDH	26	5.2	7.768
5/4T SDH	9	8.6	12.86
ID NOTCH	24	7	10.51

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
44	SDH	50	0.7	1.057

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: * DB CHANGE FOR 3/4T AND 5/4T = +6 DB. VERIFIED PREVIOUSLY RECORDED LIMITATIONS. SEE ISI REPORT ISI-210T-00-002 COVERAGE CALCULATION.

Percent Of Coverage Obtained > 90%: 71.7% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/24/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Scott Larson Level III			4/29/2009
Other	Level	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P	III-PDI		4/28/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie Slaughter 5/4/09	

This Document is a QA Record

UT Calibration Examination

Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-15
Summary No.:	H-03772	Procedure Rev.:	3 TR-A	Report No.:	UT-09-034
Workscope:	ISI	Work Order No.:	1313525	Page:	3 of 9

Code:	2001 Ed 2003 Add	Cat./Item:	B-A/B1.30	Location:	Containment 263'
Drawing No.:	1-ISI-RV-1	Description:	Reactor Vessel Head to Flange Weld		
System ID:	RC-1005				
Component ID:	II-RV-001FTHW-RV-18FA,B,C	Size/Length:	493"	Thickness/Diameter:	7"/157" ID
Limitations:	VESSEL HEAD CONFIGURATION	Start Time:	1220	Finish Time:	1430

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	15.2428	Range:	30"
M'tl Cal/Vel:	0.1270	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	SHEARWAVE
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	54*	Circ. Gain (dB):	54*

10 Screen Div. = 30 in. of Sound Path

Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.:	UT-005-1		
Thickness:	7.0	Dia.:	157"
Cal. Blk. Temp.	66	Temp. Tool:	68951
Comp. Temp.:	86	Temp. Tool:	68951

Search Unit

Serial No.:	C18130		
Manufacturer:	KBA		
Size:	.50"x1.0"	Shape:	Rect.
Freq.:	2.25 MHz	Style:	GAMMA
Exam Angle:	60°	# of Elements:	1
Mode:	SHEARWAVE		
Measured Angle:	61		
Wedge Style:	LUCITE		

Search Unit Cable

Type: RG-58 Length: 6' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 72

CW ☑ CCW ☑ Scan dB: 72

Exam Surface: OD

Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	0830	4/24/2009
Inter. Cal.	1020	4/24/2009
Inter. Cal.	1240	4/24/2009
Inter. Cal.		
Final Cal.	1530	4/24/2009

Couplant

Cal. Batch:	05225
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05225
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	792221
Type:	CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T SDH	82	1.3	3.845
1/2T SDH	43	2.6	7.930
3/4T SDH	20	4.5	13.46
5/4T SDH	7	8.0	24.00
ID NOTCH	10	6.8	19.85

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
54	SDH	69	0.5	1.567

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 71.7% Reviewed Previous Data: Yes

Comments: * DB CHANGE FOR 3/4T AND 5/4T = +7 DB. VERIFIED PREVIOUSLY RECORDED LIMITATIONS. SEE ISI REPORT ISI-210T-00-002 FOR COVERAGE

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/24/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Scott Larson Level III		Scott Larson	4/29/2009
Other	Level	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P	III-PDI	Shp Dugan	4/28/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie Slaughter	5/5/09

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Sketch or Photo: Y:\Shared\Iddeal\HNP_Data\Outage Scans\RO-15\UT-09-034A.JPG

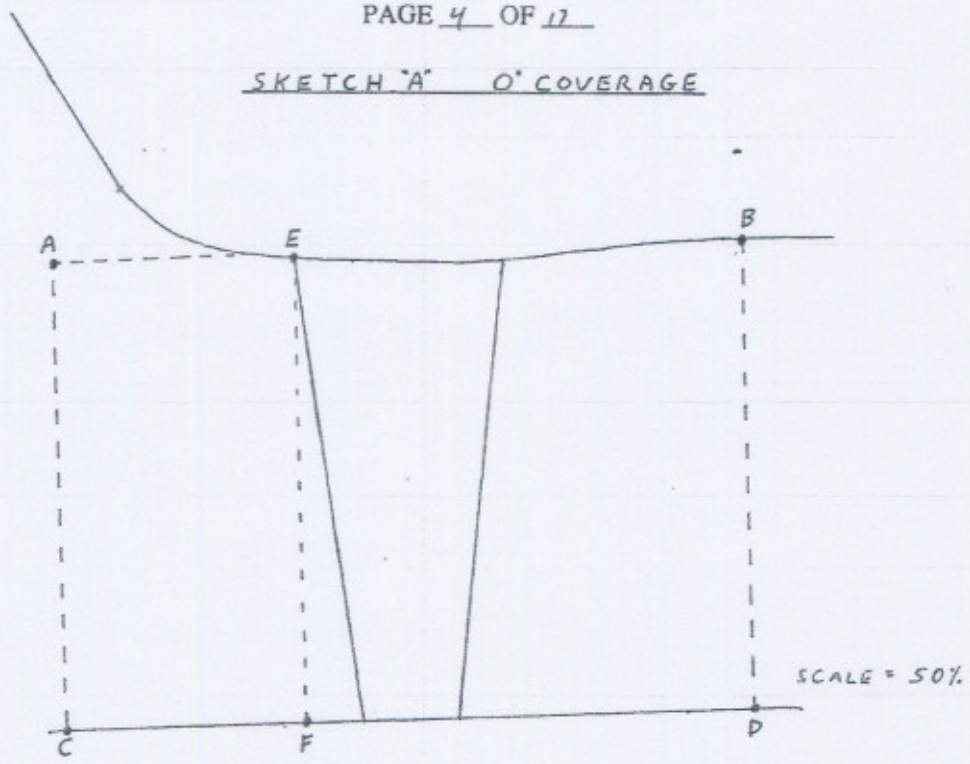
Data sheet 210T-00-002

SUPPLEMENTAL ULTRASONIC SHEET

FTHW-RV-18FA,B,C.

PAGE 4 OF 12

SKETCH "A" 0° COVERAGE



EXAM AREA
- (A B C D) = 7" x 10" = 70 in²

0° EXAM
- (E B F D) = 7" X 6.5" = 45.5 in²
- 45.5 / 70 = 65%

EXAMINER Simon Crother LEVEL II DATE 4/21/00
EXAMINER Michael Potts LEVEL II DATE 4/21/00

Dale Murdock 4/24/00

Sketch or Photo: Y:\Shared\Iddeal\HNP_Data\Outage Scans\RO-15\UT-09-034B.JPG

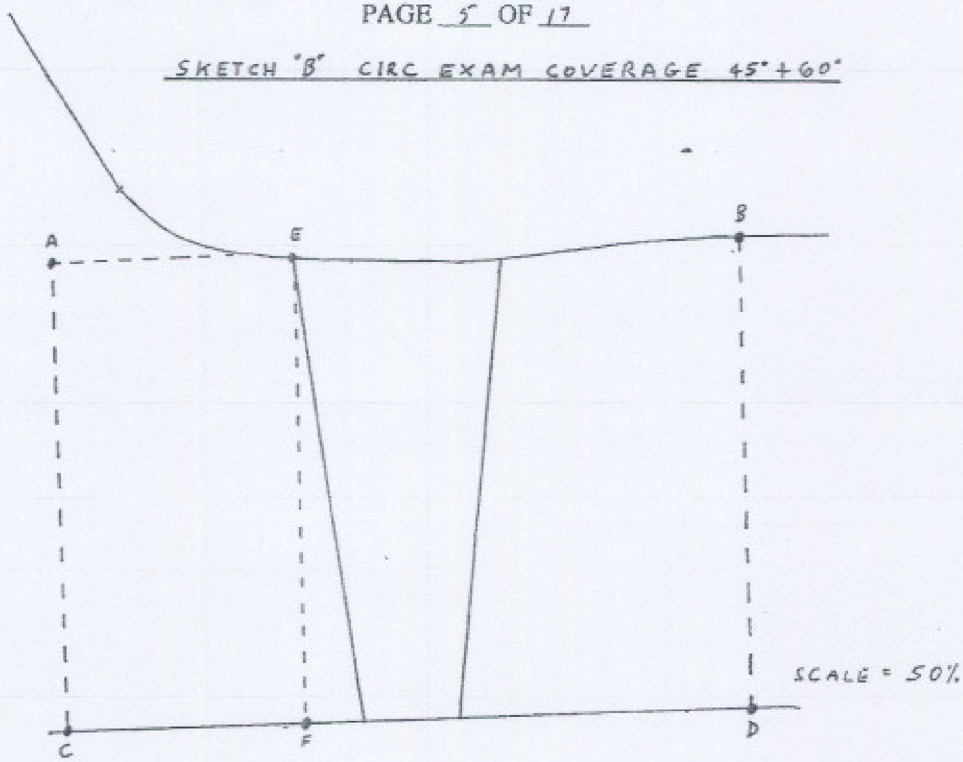
Data sheet 2-10T-00-002

SUPPLEMENTAL ULTRASONIC SHEET

FTHW-RV-18FA,B,C.

PAGE 5 OF 17

SKETCH "B" CIRC EXAM COVERAGE 45° + 60°



EXAM AREA
- (ABCD) = 7" x 10" = 70 in²

CIRC EXAM
- (EBFD) = 7" x 6.5" = 45.5 in²
- 45.5 / 70 = 65%

EXAMINER [signature] LEVEL II DATE 4/21/00
EXAMINER [signature] LEVEL II DATE 4/21/00
[signature] 4/24/00

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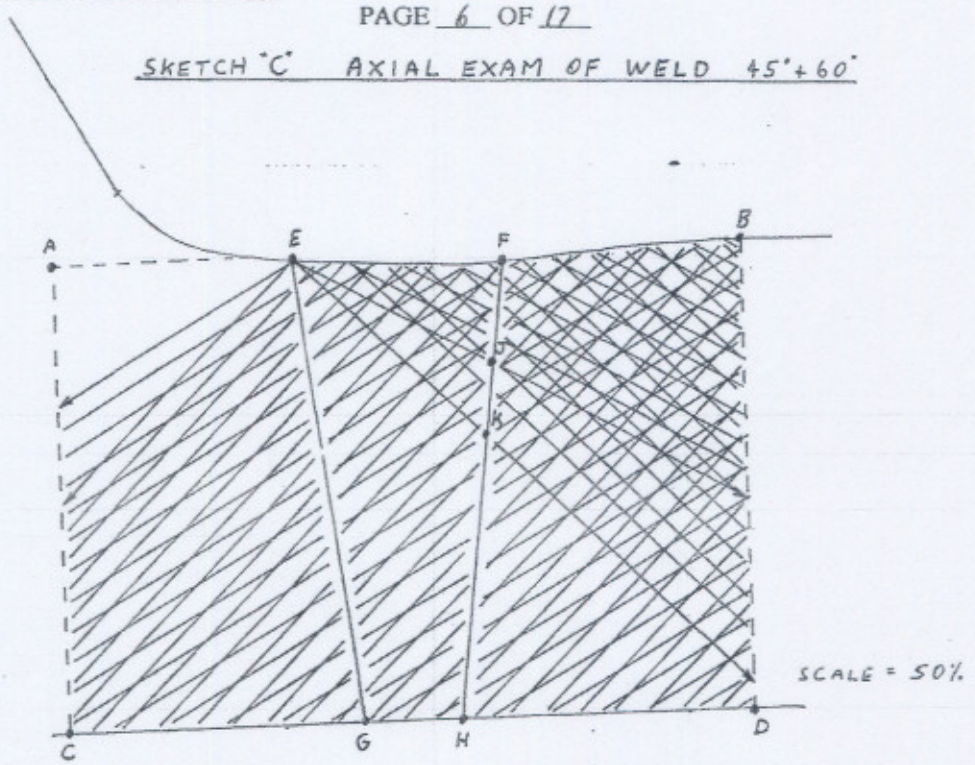
Data sheet 21OT-00-002

SUPPLEMENTAL ULTRASONIC SHEET

FTHW-RV-18FA,B,C.

PAGE 6 OF 17

SKETCH "C" AXIAL EXAM OF WELD 45°+60°



SCALE = 50%

EXAM AREA
- (ABCD) = 7" x 10" = 70 in²

WELD AREA
- (EFGH) = 7[(3"+1.4")/2] = 15.4 in²
- 15.4/70 = 0.22
- WELD AREA = 22% OF EXAM AREA

EXAMINER Simon Crothers LEVEL II DATE 4/21/00
EXAMINER Michael C. Pitt LEVEL II DATE 4/21/00

Joel Murdock 4/24/01

Sketch or Photo: Y:\Shared\Iddeal\HNP_Data\Outage Scans\RO-15\UT-09-034D.JPG

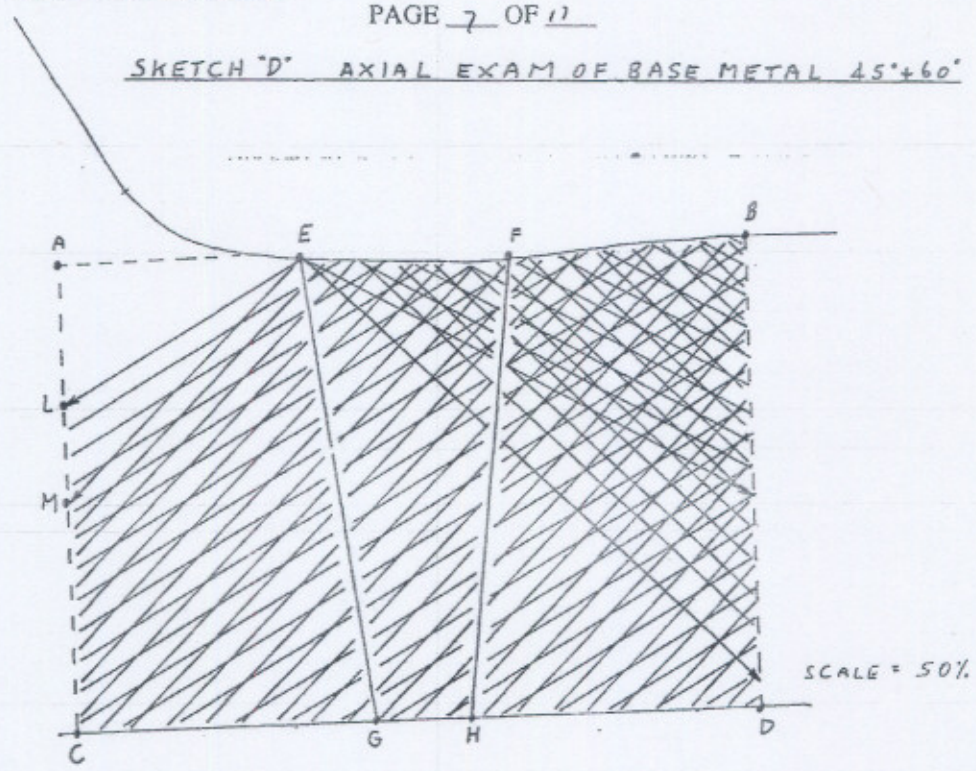
Data Sheet 2107-00-002

SUPPLEMENTAL ULTRASONIC SHEET

FTHW - RV - 18 FA, B, C.

PAGE 7 OF 11

SKETCH "D" AXIAL EXAM OF BASE METAL 45°+60°



EXAM AREA
- (ABCD) = 7" x 10" = 70 in²

BASE METAL AREA
- (AECG) + (FBHD) = 70 in² - WELD AREA = 54.6 in²
- BASE METAL = 78% OF EXAM AREA.

EXAMINER Simon Crothers LEVEL II DATE 4/21/00
EXAMINER Michael C. Pate LEVEL II DATE 4/21/00

Gale Murdock 4/24/00

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Data sheet 210T-00-002

SUPPLEMENTAL ULTRASONIC SHEET

FTHW-RV-18FA,B,C.

PAGE 8 OF 12

AXIAL EXAM COVERAGE CALC.

WELD: REQUIREMENT = 2 ANGLES × 2 DIRECTIONS = 4 BEAMS

EXAM AREA: (SKETCH "C") = 15.4 in²

- 4 BEAMS (E F J) = (3.2" × 1.4")/2 = 2.24 in²
  2.24/15.4 = 15% 15% × 4/4 BEAMS = 15%
- 3 BEAMS (E J K) = (4" × 0.8")/2 = 3.20 in²
  3.20/15.4 = 21% 21% × 3/4 BEAMS = 16%
- 2 BEAMS (E K G H) = 100% − 15% − 21% = 64%
  64% × 2/4 BEAMS = 32%
- TOTAL = 15% + 16% + 32% = 63%

BASE METAL: REQUIREMENT = ANY COMBINATION ANGLES/DIRECTIONS = 2 BEAMS

EXAM AREA: (SKETCH "D") = 54.6 in²

- UNEXAMINED (A E L) = (3.5" × 2")/2 = 3.5 in²
  3.5/54.6 = 6%
- 1 BEAM (L E M) = (5" × 1")/2 = 2.5 in²
  2.5/54.6 = 5% 5% × 1/2 BEAMS = 2.5%
- 2 BEAMS = (H E C G) + (F B H D) = 100% − 6% − 5% = 89%
- TOTAL = 2.5% + 89% = 91.5%

EXAMINER Simon Crother LEVEL II DATE 4/21/00
EXAMINER Michael C. Pate LEVEL II DATE 4/21/00
Neil Murdock 4/24/00

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Data sheet 210T-00-002

SUPPLEMENTAL ULTRASONIC SHEET

FTHW-RV-18FA, B, C.

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COVERAGE SUMMARY

0° (SKETCH "A") = 65%

CIRC EXAM (SKETCH B) = 65%

AXIAL EXAM

- WELD (SKETCH "C") = 63%
- BASE METAL (SKETCH "D") = 91.5%
- TOTAL = (63% x 22%) + (91.5% x 78%) = 85%

Total Coverage: $\frac{65+65+85}{3}$ = 71.7%

EXAMINER Simon Cuttler LEVEL II DATE 4/21/00

EXAMINER Michael S. Pate LEVEL II DATE 4/21/00

Dale Murdock 4/24/00

UT Calibration/Examination

Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-03872	Procedure Rev.:	4	Report No.:	UT-12-022
Workscope:	ISI	Work Order No.:	2050436	Page:	1 of 6

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-B/B2.40 | Location: Containment 257'

Drawing No.: 1-ISI-SG-2 | Description: Steam Generator "B" Tube Sheet to Head Weld

System ID: RC-3005

Component ID: II-SG-001SGB-TSTHW-06-1 | Size/Length: 428" | Thickness/Diameter: 5.26"

Limitations: SUPPORTS & INLET NOZZLE, SEE SUPPLEMENTAL REPORTS | Start Time: 1245 | Finish Time: 1515

Instrument Settings

Serial No.:	0134L2		
Manufacturer:	Krautkramer Branson		
Model:	USN 58L	Linearity:	L-12-004
Delay:	0.8412 µs	Range:	10.000"
M'tl Cal/Vel:	0.2322"/µs	Energy:	High
Damping:	1000 Ohms	Reject:	0%
PRF Mode:	Auto High	SU Freq.:	2.25 MHz
Disp. Start:	IP	Rectify:	Full Wave
Inst. Freq.:	2.25 MHz		

Ax. Gain (dB): 33 | Circ. Gain (dB): 33

1 Screen Div. = 1 in. of Sound Path

Calibration Block

Cal. Block No.:	UT-063-1		
Thickness:	5.25"	Dia.:	FLAT
Cal. Blk. Temp.:	80°	Temp. Tool:	277569
Comp. Temp.:	91°	Temp. Tool:	277569

Search Unit

Serial No.:	K27132		
Manufacturer:	KB AeroTech		
Size:	0.75"	Model:	Alpha
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	0°	Squint Angle:	N/A
Measured Angle:	0°	Mode:	LONG.
Exit Point:	N/A	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	ROUND	Contour:	FLAT
Wedge Style:	N/A		

Search Unit Cable

Type: RG58 | Length: 12' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 63

CW ☑ CCW ☑ Scan dB: 63

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND FLUSH

Cal. Checks	Time	Date
Initial Cal.	1200	5/4/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1540	5/4/2012

Couplant

Cal. Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	6045-83
Type:	CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80%	1.2	1.200"
1/2 T	70%	2.5	2.506"
3/4 T	39%	3.8	3.812"
*BW	57%	5.4	5.398"
N/A	N/A	N/A	N/A

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
33	FSDH	50%	0.7	0.690"
N/A	N/A	N/A	N/A	N/A

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: **70.1% | Reviewed Previous Data: YES

Comments: *6 dB, **SEE ATTACHED COVERAGE CALCULATIONS FOR MORE DETAIL. SUPPLEMENTAL REPORTS BASED ON PREVIOUS DATA FROM REPORT NO. UT-04-023.

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark	II-PDI	Mark Malia	5/4/2012	George Buck	Level III	George Buck	5/5/2012
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			James Salton			5/5/2012
Other	Level	Signature	Date	ANII Review		Signature	Date
N/A	N/A			Robert Winegarden	ANII		5/7/2012

This Document is a QA Record

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-03872	Procedure Rev.:	4	Report No.:	UT-12-022
Workscope:	ISI	Work Order No.:	2050436	Page:	2 of 6

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-B/B2.40 | Location: Containment 257'

Drawing No.: 1-ISI-SG-2 | Description: Steam Generator "B" Tube Sheet to Head Weld

System ID: RC-3005

Component ID: II-SG-001SGB-TSTHW-06-1 | Size/Length: 428" | Thickness/Diameter: 5.26"

Limitations: SUPPORTS & INLET NOZZLE, SEE SUPPLEMENTAL REPORT | Start Time: 1245 | Finish Time: 1515

Instrument Settings

Serial No.:	021063		
Manufacturer:	General Electric		
Model:	USN 58Lsw	Linearity:	L-12-001
Delay:	17.203 µs	Range:	15.000"
M'tl Cal/Vel:	0.1280"/µs	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220

Ax. Gain (dB): 40 | Circ. Gain (dB): N/A

1 Screen Div. = 1.5 in. of Sound Path

Calibration Block

Cal. Block No.: UT-063-1

Thickness: 5.25" | Dia.: FLAT

Cal. Blk. Temp.: 80° | Temp. Tool: 277510

Comp. Temp.: 91° | Temp. Tool: 277510

Search Unit

Serial No.:	M20228		
Manufacturer:	KB AeroTech		
Size:	0.5" x 1"	Model:	Gamma
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	60°	Squint Angle:	N/A
Measured Angle:	63°	Mode:	SHEAR
Exit Point:	0.65"	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	RECT.	Contour:	N/A

Wedge Style: NON INTEGRAL

Search Unit Cable

Type: RG174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ | Downstream ☑ | Scan dB: 70

CW ☑ | CCW ☑ | Scan dB: 70

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND FLUSH

Cal. Checks	Time	Date
Initial Cal.	1023	5/4/2012
Inter. Cal.	1245	5/4/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1545	5/4/2012

Couplant

Cal. Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Exam Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221

Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80%	1.8	2.65"
1/2 T	48%	3.6	5.38"
3/4 T	25%	5.4	8.15"
ID	10%	7.6	11.4"
5/4 T	16%	9.8	14.7"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
48	FSDH	80%	1.6	1.51"
N/A	N/A	N/A	N/A	N/A

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: **SEE ATTACHED COVERAGE CALCULATIONS FOR MORE DETAIL. SUPPLEMENTAL REPORTS BASED ON PREVIOUS DATA FROM REPORT NO. UT-04-023.

Percent Of Coverage Obtained > 90%: **70.1% | Reviewed Previous Data: YES

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Mahoney, Patrick V.			5/4/2012	George Buck Level III		George Buck	5/5/2012
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				James Salton			5/5/2012
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Robert Winegarden ANII			5/7/2012

This Document is a QA Record

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-03872	Procedure Rev.:	4	Report No.:	UT-12-022
Workscope:	ISI	Work Order No.:	2050436	Page:	3 of 6

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-B/B2.40 | Location: Containment 257'

Drawing No.: 1-ISI-SG-2 | Description: Steam Generator "B" Tube Sheet to Head Weld

System ID: RC-3005

Component ID: II-SG-001SGB-TSTHW-06-1 | Size/Length: 428" | Thickness/Diameter: 5.26"

Limitations: SUPPORTS & INLET NOZZLE, SEE SUPPLEMENTAL REPORTS | Start Time: 1245 | Finish Time: 1515

Instrument Settings

Serial No.:	021063		
Manufacturer:	General Electric		
Model:	USN 58Lsw	Linearity:	L-12-001
Delay:	12.6941 µs	Range:	10.000"
M'tl Cal/Vel:	0.1280"/µs	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220

Ax. Gain (dB): 33 | Circ. Gain (dB): N/A

1 Screen Div. = 1.0 in. of Sound Path

Calibration Block

Cal. Block No.: UT-063-1

Thickness: 5.25" | Dia.: FLAT

Cal. Blk. Temp.: 80° | Temp. Tool: 277510

Comp. Temp.: 91° | Temp. Tool: 277510

Search Unit

Serial No.:	C18133		
Manufacturer:	KB AeroTech		
Size:	0.5" x 1"	Model:	Gamma
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	45°	Squint Angle:	N/A
Measured Angle:	45°	Mode:	SHEAR
Exit Point:	0.65"	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	RECT.	Contour:	N/A

Wedge Style: NON INTEGRAL

Search Unit Cable

Type: RG58 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ | Downstream ☑ | Scan dB: 66

CW ☑ | CCW ☑ | Scan dB: 66

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND FLUSH

Cal. Checks	Time	Date
Initial Cal.	1015	5/4/2012
Inter. Cal.	N/A	
Inter. Cal.	1415	5/4/2012
Inter. Cal.	N/A	
Final Cal.	1540	5/4/2012

Couplant

Cal. Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Exam Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221

Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80%	1.8	1.79"
1/2 T	51%	3.6	3.66"
3/4 T	34%	5.5	5.5"
ID	12%	7.8	7.78"
5/4 T	24%	9.8	9.8"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
39	FSDH	80%	1.0	1.06"
N/A	N/A	N/A	N/A	N/A

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: **SEE ATTACHED COVERAGE CALCULATION FOR MORE DETAIL. SUPPLEMENTAL REPORTS BASED ON PREVIOUS DATA FROM REPORT NO. UT-04-023.

Percent Of Coverage Obtained > 90%: **70.1% | Reviewed Previous Data: YES

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Mahoney, Patrick V.			5/4/2012	George Buck Level III		George Buck	5/5/2012
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				James Salton			5/5/2012
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Robert Winegarden ANII			5/7/2012

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Summary No.: H-03872

Sketch or Photo: Y:\Shared\Iddeal\HNP_Data\DataSheet_Info\UT-12-022-2.jpg

WELD MATERIAL

0 deg Planar

Scan 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for 0 deg

45 deg

Scan 1 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 1

Scan 2 76.600 % Length X 59.540 % volume of length / 100 = 45.608 % total for Scan 2

Scan 3 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 3

Scan 4 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 4

Add totals and divide by # scans = 68.852 % total for 45 deg

Other deg 60

Scan 1 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 1

Scan 2 76.600 % Length X 38.730 % volume of length / 100 = 29.667 % total for Scan 2

Scan 3 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 3

Scan 4 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 4

Add totals and divide by # scans = 64.867 % total for 60 deg

Percent complete coverage

Add totals for each angle and scan required and divide by # of angles to determine;

70.106 % Total for complete exam

Note:

Supplemental coverage may be achieved by use of other angles / methods. When used, the coverage for volume not obtained with angles as noted above shall be calculated and added to the total to provide the percent total for the complete examination.

Site Field Supervisor: Edmund Donovan Date: 5/4/2012

This Document is a QA Record

Summary No.: H-03872

Sketch or Photo: Y:\Shared\Iddeal\HNP_Data\DataSheet_Info\UT-12-022-3.jpg

BASE METAL

0 deg Planar

Scan 76.600 % Length X 94.960 % volume of length / 100 = 72.739 % total for 0 deg

45 deg

Scan 1 76.600 % Length X 99.130 % volume of length / 100 = 75.934 % total for Scan 1

Scan 2 _____ % Length X _____ % volume of length / 100 = _____ % total for Scan 2

Scan 3 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 3

Scan 4 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 4

Add totals and divide by # scans = 76.378 **% total for 45 deg**

Other deg 60

Scan 1 76.600 % Length X 99.540 % volume of length / 100 = 76.248 % total for Scan 1

Scan 2 _____ % Length X _____ % volume of length / 100 = _____ % total for Scan 2

Scan 3 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 3

Scan 4 76.600 % Length X 100.000 % volume of length / 100 = 76.600 % total for Scan 4

Add totals and divide by # scans = 76.483 **% total for** 60 **deg**

Percent complete coverage

Add totals for each angle and scan required and divide by # of angles to determine;

75.200 **% Total for complete exam**

Note:

Supplemental coverage may be achieved by use of other angles / methods. When used, the coverage for volume not obtained with angles as noted above shall be calculated and added to the total to provide the percent total for the complete examination.

Site Field Supervisor: Edmund Donovan Date: 5/4/2012

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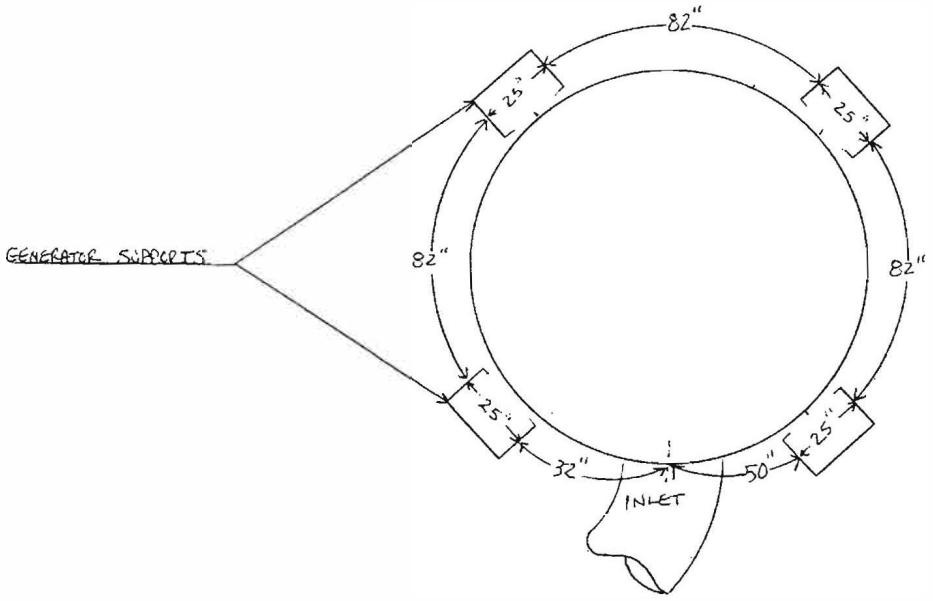
Limitation Record

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-03872	Procedure Rev.:	4	Report No.:	UT-12-022
Workscope:	ISI	Work Order No.:	2050436	Page:	6 of 6

Description of Limitation:

STEAM GENERATOR SUPPORTS AND INLET NOZZLE.



TOTAL CIRCUMFERENCE - 428" - 100%
TOTAL OBSTRUCTION (4)x25" - 100" - 23.4%
TOTAL SCANNABLE CIRC 328" - 76.6%

UT Calibration Examination

Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-15
Summary No.: H-02997 | Procedure Rev.: 3 TR-A | Report No.: UT-09-038
Workscope: ISI | Work Order No.: 1313525 | Page: 1 of 13

Code: 2001 Ed 2003 Add | Cat./Item: B-D/B3.110 | Location: CTMT 302'
Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head
System ID: RC-2050
Component ID: II-PZR-01NTHW-10 | Size/Length: 3.15" / 47.1" | Thickness/Diameter: 3.35" / 15.0"
Limitations: NOZZLE TO HEAD CONFIGURATION | Start Time: 1400 | Finish Time: 1545

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	1.3306	Range:	5.0"
M'tl Cal/Vel:	0.2358	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	LOGITUDINAL
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	29	Circ. Gain (dB):	29

10 Screen Div. = 5 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-050-1
Thickness: 3.50 | Dia.: Flat
Cal. Blk. Temp. 78° | Temp. Tool: 68951
Comp. Temp.: 88° | Temp. Tool: 68951

Search Unit

Serial No.: C29344
Manufacturer: KB AeroTech
Size: 0.75 | Shape: Round
Freq.: 2.25 MHz | Style: Gamma
Exam Angle: 0° | # of Elements: 1
Mode: Longitudinal
Measured Angle: N/A
Wedge Style: N/A

Search Unit Cable

Type: RG-158
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 41
CW ☐ CCW ☐ Scan dB: N/A
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1030	4/25/2009
Inter. Cal.	1400	4/25/2009
Inter. Cal.	1545	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221
Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	66	1.6	0.790
1/2 T	82	3.2	1.670
3/4 T	58	5.1	2.554
ID	>100%	7.2	3.562

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
29	SDH	52	0.7	0.727

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: *Verified previously recorded limitations and coverage calculations from report #210-98-02 (See Extracted Pages Attached). Examination was in a Radiation area.

Percent Of Coverage Obtained > 90%: *67.14% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Michael W. Blew		M W Blew	4/29/2009
Other	Level	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P	III-PDI		4/28/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie-Slaughter	5/5/09

This Document is a QA Record

UT Calibration Examination

Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-15
Summary No.: H-02997 | Procedure Rev.: 3 TR-A | Report No.: UT-09-038
Workscope: ISI | Work Order No.: 1313525 | Page: 2 of 13

Code: 2001 Ed 2003 Add | Cat./Item: B-D/B3.110 | Location: CTMT 302'
Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head
System ID: RC-2050
Component ID: II-PZR-01NTHW-10 | Size/Length: 3.15" / 47.1" | Thickness/Diameter: 3.35" / 15.0"
Limitations: NOZZLE TO HEAD CONFIGURATION | Start Time: 1400 | Finish Time: 1545

Instrument Settings

Serial No.: 0134D2
Manufacturer: Krautkramer Branson
Model: USN-58L
Delay: 12.1922 | Range: 10
M'tl Cal/Vel: 0.1270 | Pulser: SINGLE
Damping: 1KΩ | Reject: 0%
Rep. Rate: HIGH | Freq.: 2.25 MHZ
Filter: N/A | Mode: SHEARWAVE
Voltage: N/A | Other: FULLWAVE
Ax. Gain (dB): 42 | Circ. Gain (dB): N/A
10 Screen Div. = 10 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-050-1
Thickness: 3.50 | Dia.: Flat
Cal. Blk. Temp. 78° | Temp. Tool: 68951
Comp. Temp.: 88° | Temp. Tool: 68951

Search Unit

Serial No.: C18133
Manufacturer: KB AeroTech
Size: .5" x 1" | Shape: Rect.
Freq.: 2.25 MHz | Style: Gamma
Exam Angle: 45° | # of Elements: 1
Mode: Shear
Measured Angle: 45°
Wedge Style: SWS

Search Unit Cable

Type: RG-58
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 62
CW ☑ CCW ☑ Scan dB: 62
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1035	4/25/2009
Inter. Cal.	1415	4/25/2009
Inter. Cal.	1600	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221
Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	85	1.2	1.159
1/2 T	62	2.4	2.383
3/4 T	40	3.6	3.649
ID NOTCH	13	5.2	5.146
5/4 T	10	6.1	6.00

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
42	SDH	45	1.0	1.024

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: VERIFIED PREVIOUSLY RECORDED LIMITATIONS. SEE REPORT #210-98-02 FOR COVERAGE CALCULATION. Db DIFFERENCE FOR 3/4T TO 5/4T = 14dB.

Percent Of Coverage Obtained > 90%: 67.14% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Michael W. Blew		M W Blew	4/29/2009
Other	Level	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P	III-PDI	Mich P Dugan	4/29/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie Slaughter	5/5/09

This Document is a QA Record

UT Calibration Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-15
Summary No.:	H-02997	Procedure Rev.:	3 TR-A	Report No.:	UT-09-038
Workscope:	ISI	Work Order No.:	1313525	Page:	3 of 13

Code:	2001 Ed 2003 Add	Cat./Item:	B-D/B3.110	Location:	CTMT 302'
Drawing No.:	1-ISI-PZR-1	Description:	Nozzle to Head		
System ID:	RC-2050				
Component ID:	II-PZR-01NTHW-10	Size/Length:	3.15" / 47.1"	Thickness/Diameter:	3.35" / 15.0"
Limitations:	NOZZLE TO HEAD CONFIGURATION	Start Time:	1400	Finish Time:	1545

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	15.2428	Range:	10"
M'tl Cal/Vel:	0.1270	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	SHEARWAVE
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	49/63*	Circ. Gain (dB):	49/63*

10 Screen Div. = 10 in. of Sound Path

Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.:	UT-050-1		
Thickness:	3.50	Dia.:	Flat
Cal. Blk. Temp.	78°	Temp. Tool:	68951
Comp. Temp.:	80°	Temp. Tool:	68951

Search Unit

Serial No.:	C18130		
Manufacturer:	KBA		
Size:	.50"x1.0"	Shape:	Rect.
Freq.:	2.25 MHz	Style:	GAMMA
Exam Angle:	60°	# of Elements:	1
Mode:	Shear		
Measured Angle:	61°		
Wedge Style:	SWS		

Search Unit Cable

Type:	RG-58		
Length:	6'	No. Conn.:	0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 69

CW ☑ CCW ☑ Scan dB: 69

Exam Surface: OD

Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1040	4/25/2009
Inter. Cal.	1430	4/25/2009
Inter. Cal.	1615	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch:	05225
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05225
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	792221
Type:	CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	83	1.8	1.823
1/2 T	49	3.6	3.598
3/4 T	31	5.4	5.38
ID NOTCH	11	7.3	7.298
5/4 T	10	9.4	9.40

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
49	SDH	21	1.6	1.557

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 67.14% Reviewed Previous Data: Yes

Comments: VERIFIED PREVIOUSLY RECORDED LIMITATIONS. SEE REPORT #210-98-02 FOR COVERAGE CALCULATION. Db DIFFERENCE FOR 3/4T TO 5/4T = 14dB.

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Michael W. Blew		M W Blew	4/29/2009
Other	Level	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P	III-PDI	Michael P Dugan	4/29/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie Slaughter	5/5/09

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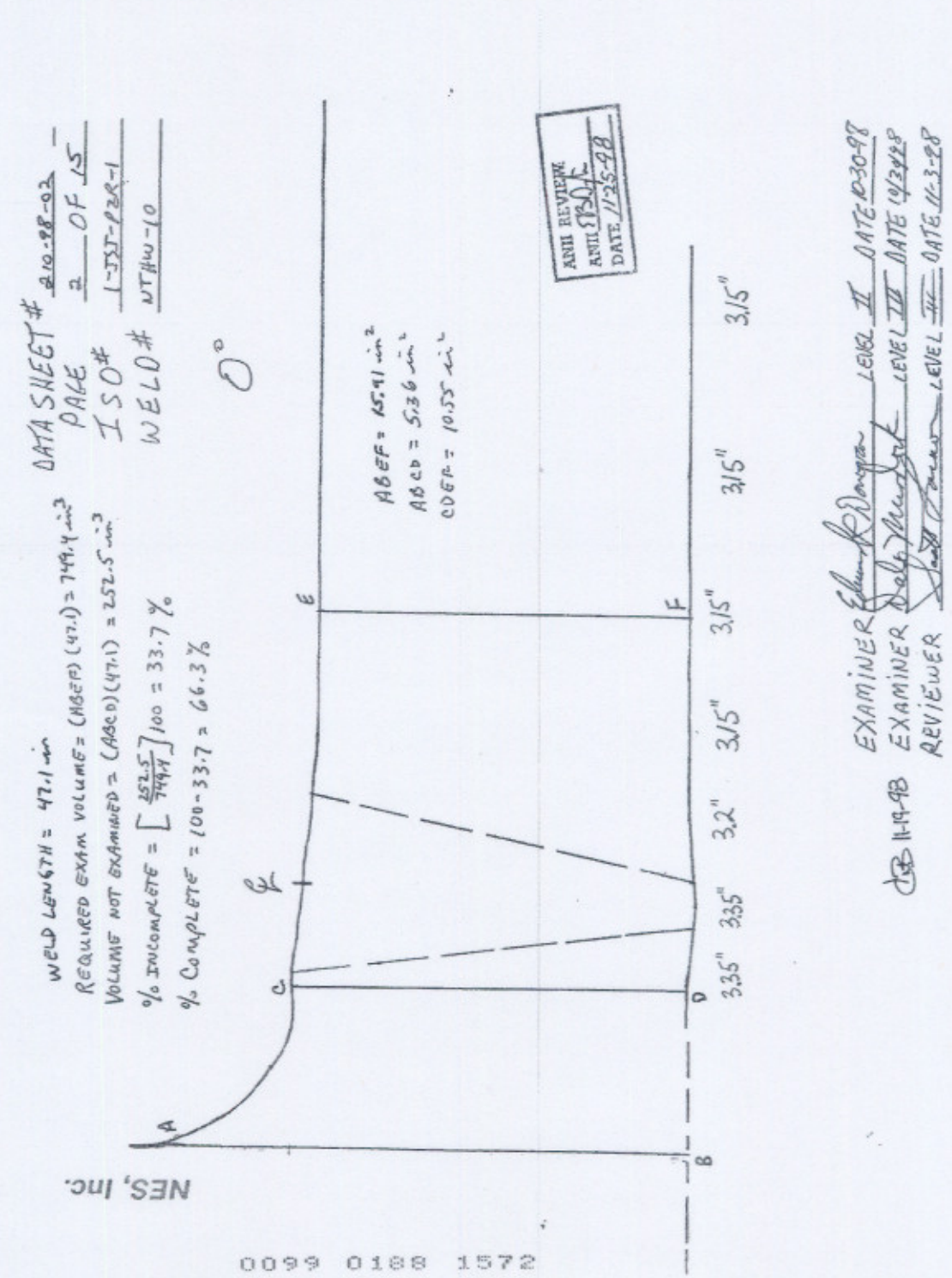

NES, Inc.

0099 0188 1572

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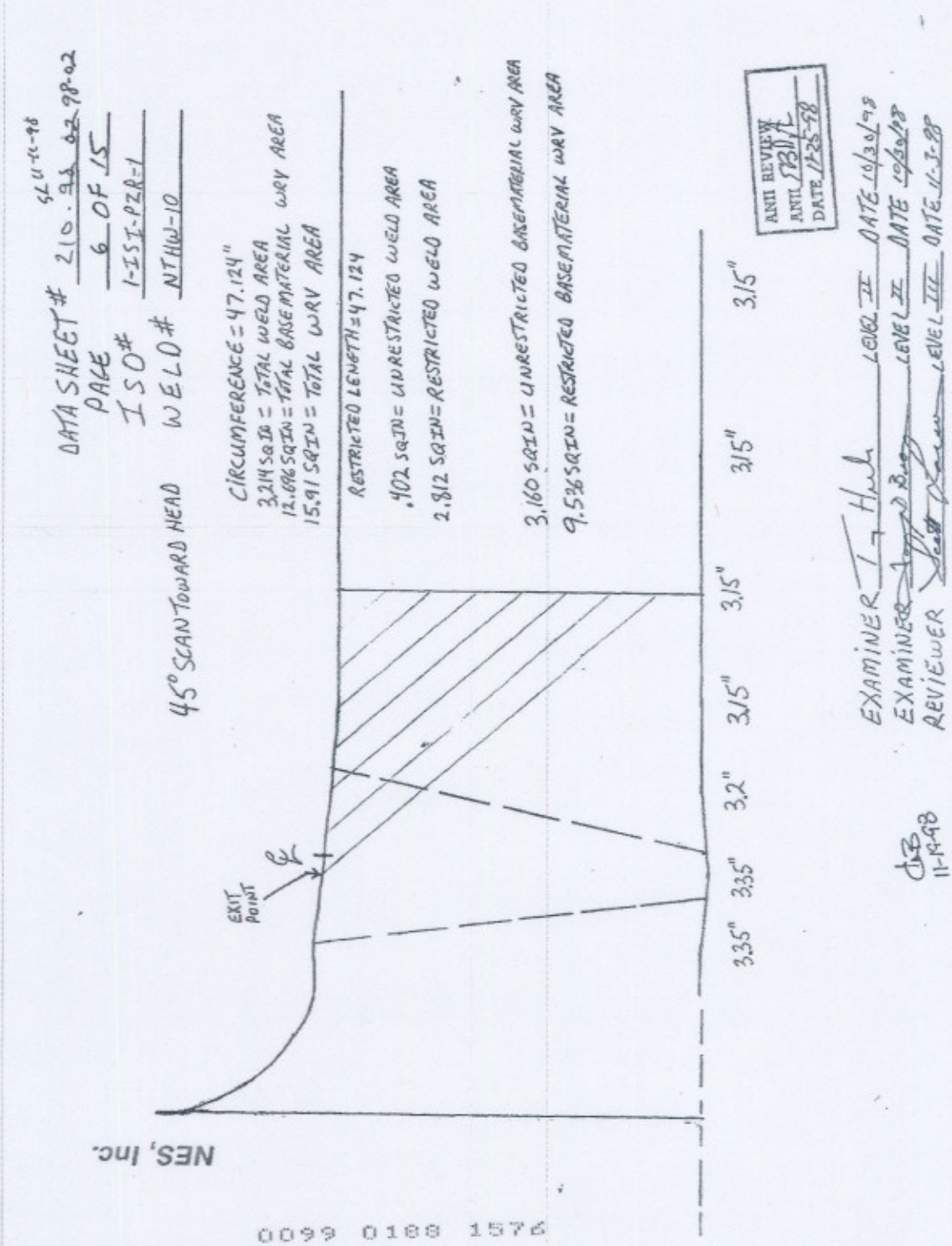

NES, Inc.

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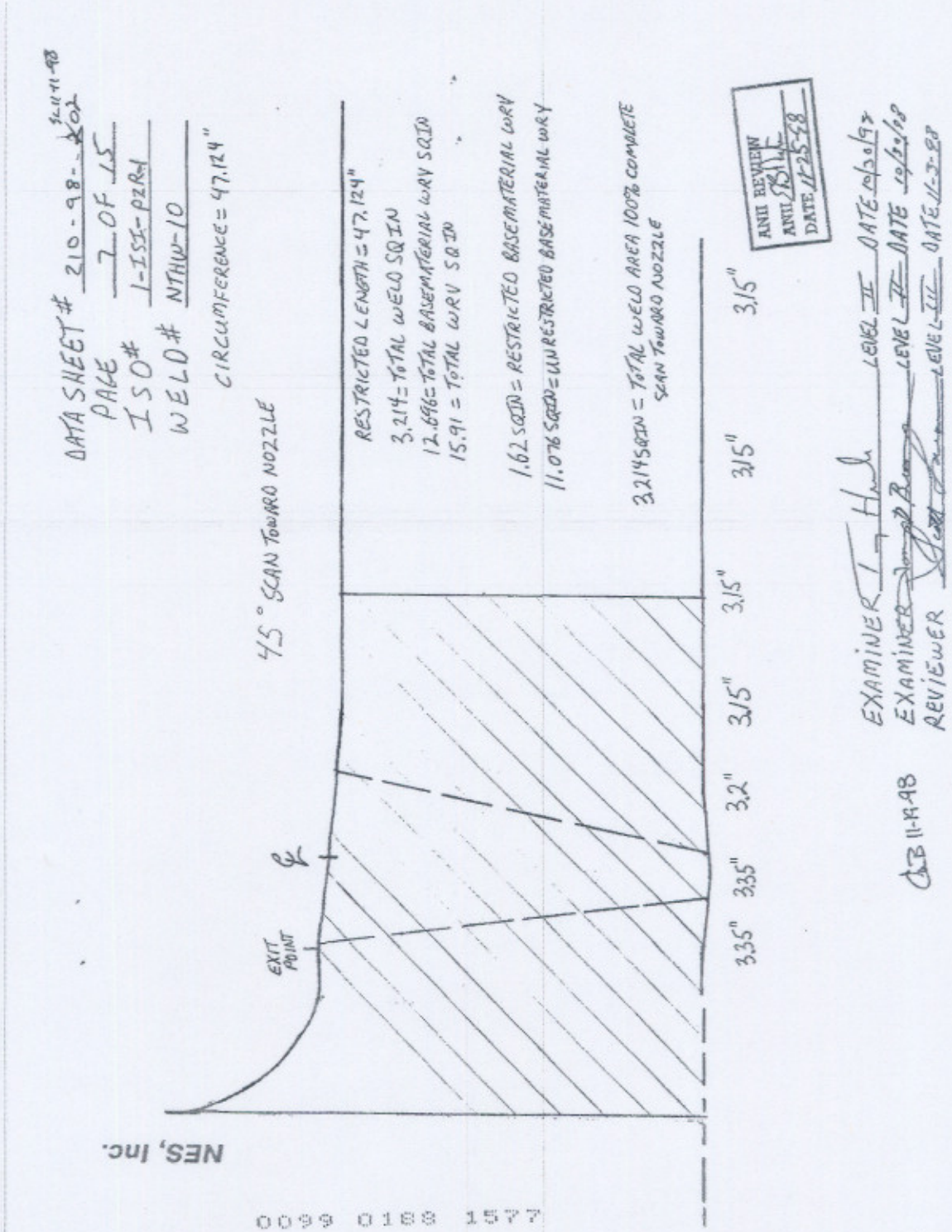

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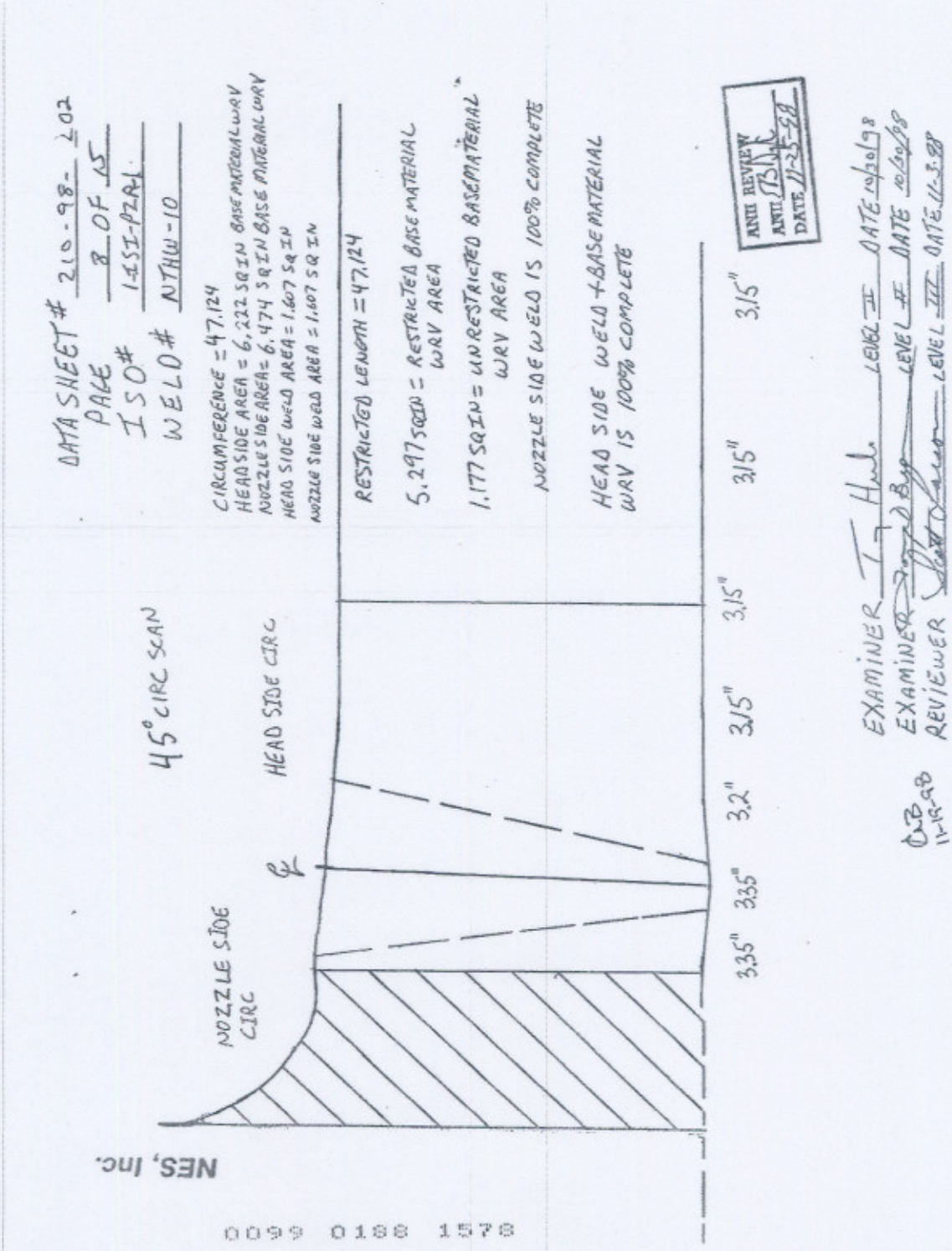

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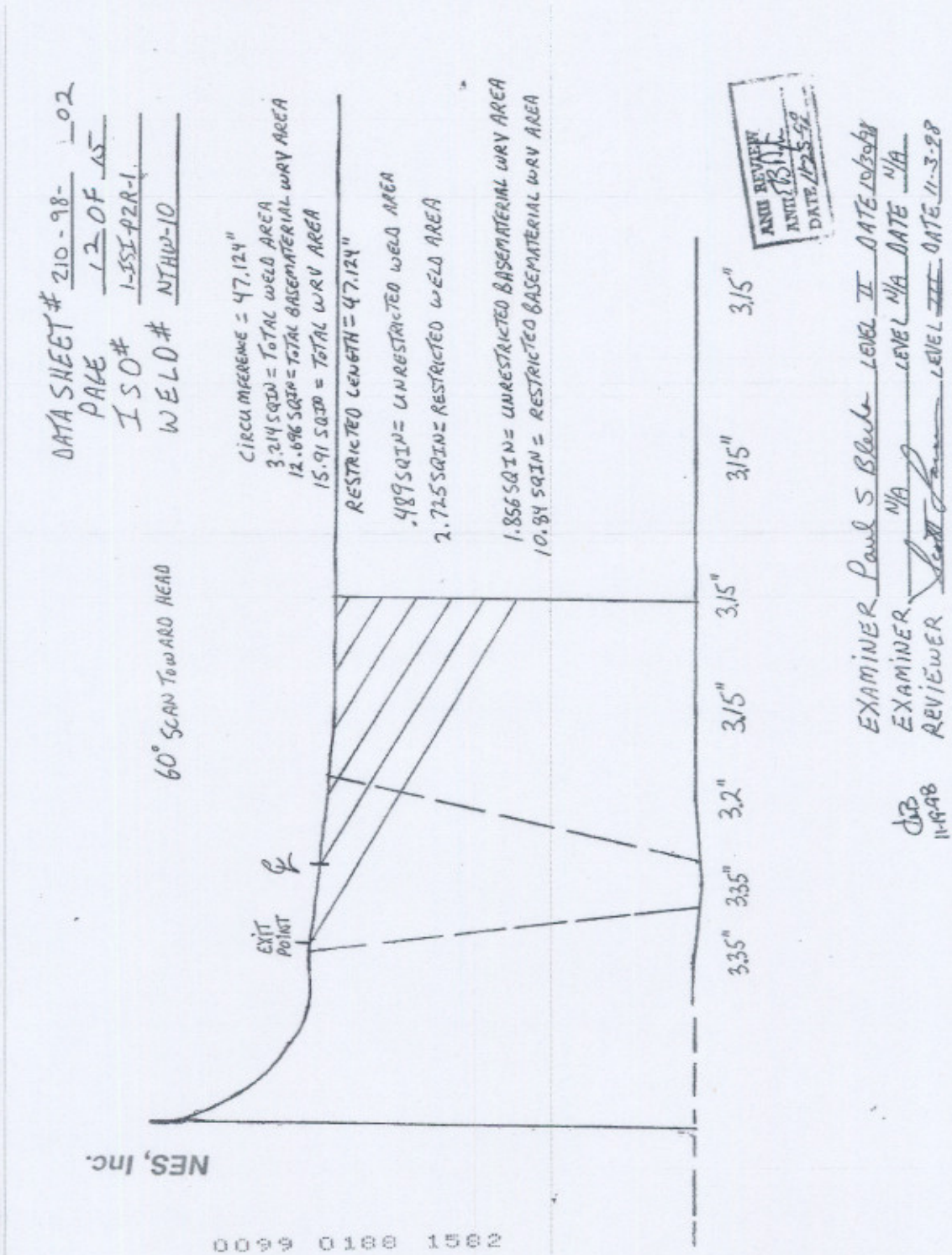

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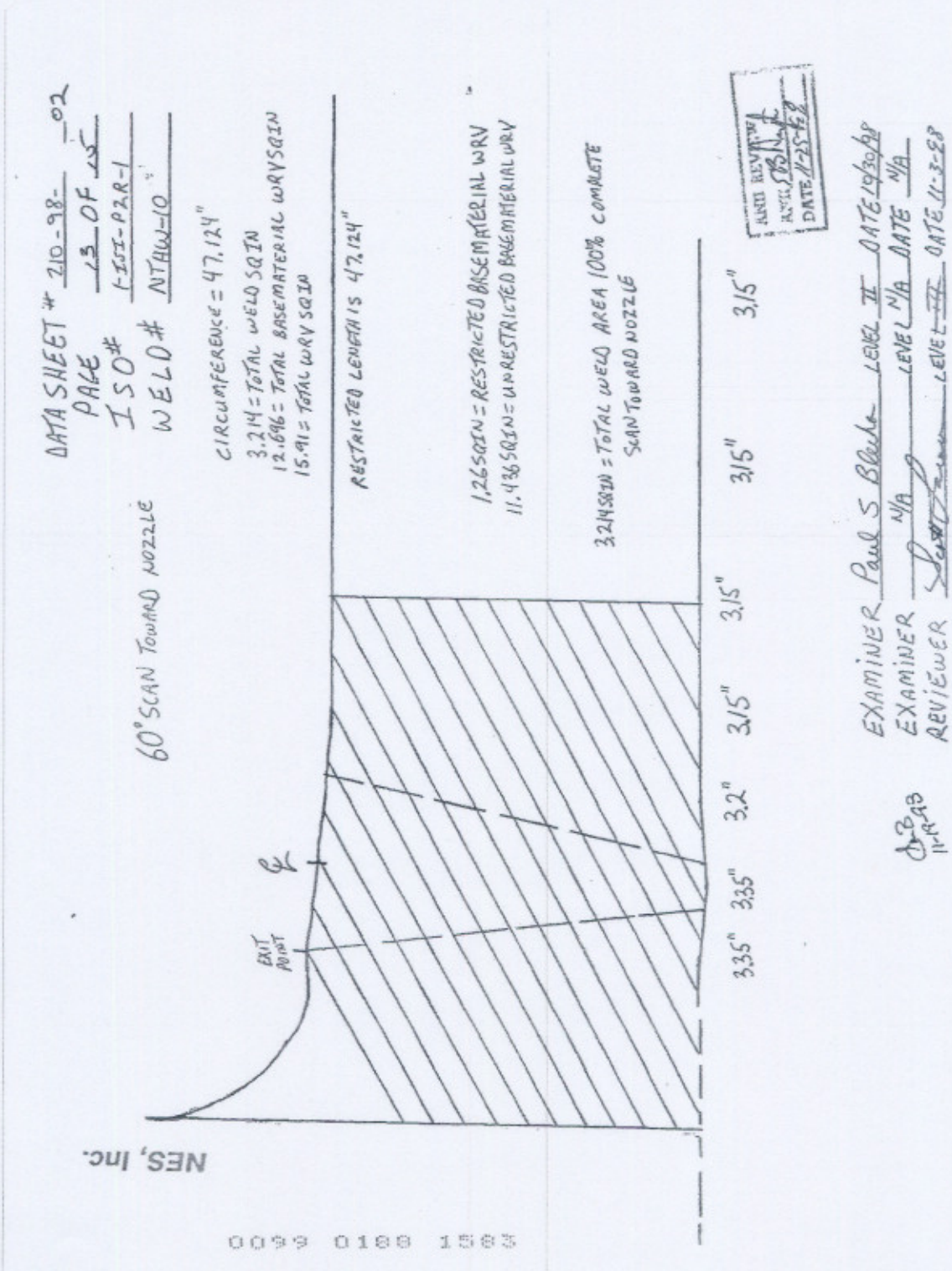

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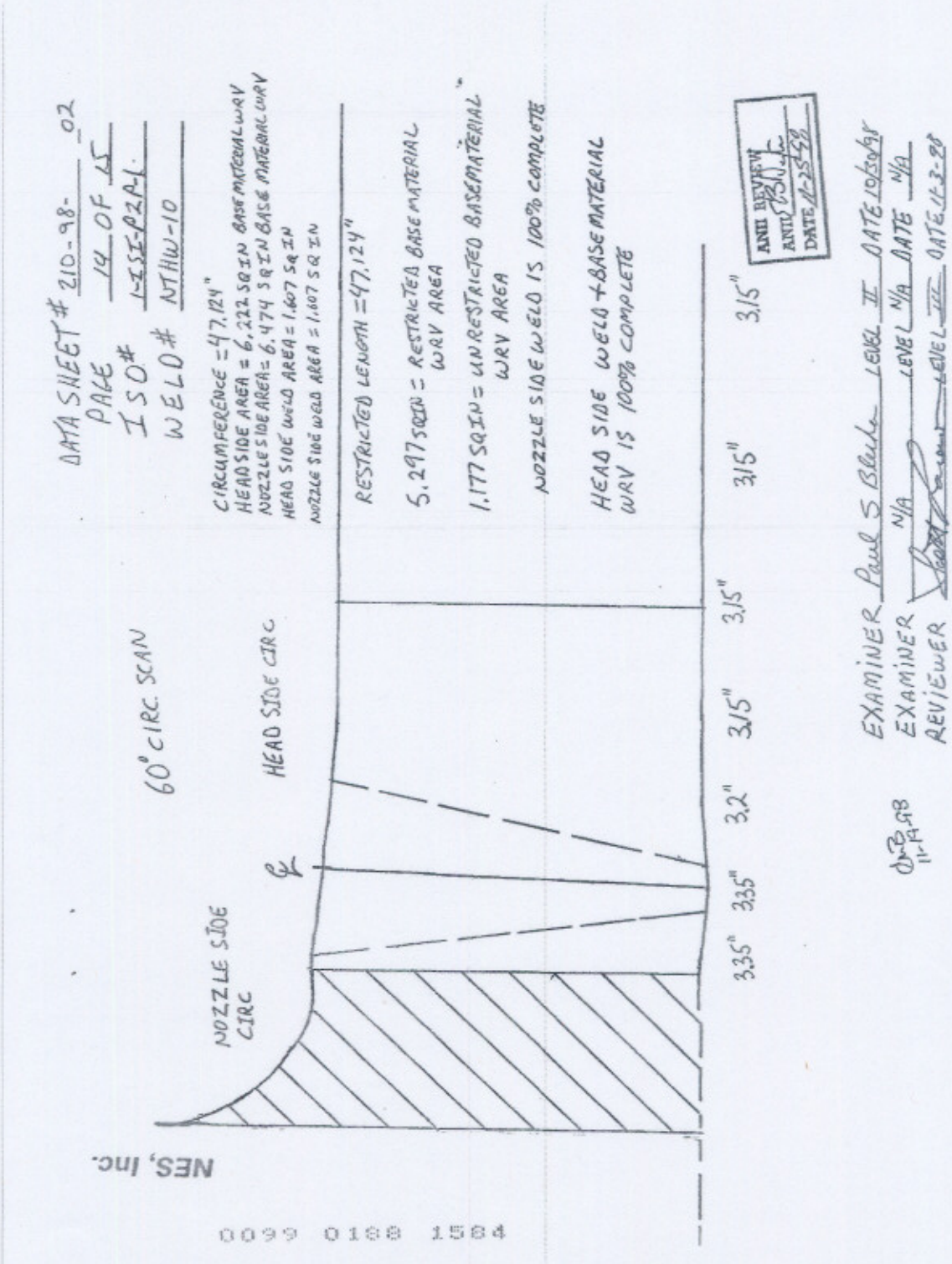

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COVERAGE CALCULATION SHEET

P 3 of 15

ISO 1-ISI-PZR-1

DATA SHT# 210-98-02

WELD NO.:NTHW-10							0 DEGREE ONLY						
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
HEAD SIDE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	15.91	10.55	66.31%	0	0.00%	66.31%	0.00%	66.31%

Edwin Black, CPL III, 11-19-98

ANII REVIEW
ANII EB Date
DATE 11-25-98

COVERAGE CALCULATION SHEET

P9 of 15

ISO # 1-ISI-PZR-1

DATA SHT # 210-98-02

WELD NO.:NTHW-10		45 DEGREE											
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
TOWARD HEAD BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	3.16	24.89%	0	0.00%	24.89%	0.00%	24.89%
TOWARD HEAD WELD AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	3.214	0.402	12.51%	0	0.00%	12.51%	0.00%	12.51%
TOWARD NOZZLE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	11.076	87.24%	0	0.00%	87.24%	0.00%	87.24%
TOWARD NOZZLE WELD AXIAL COVERAGE	47.12	0	0.00%	47.12	100.00%	3.214	0	0.00%	3.214	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE BASEMATERIAL	47.12	0	0.00%	47.12	100.00%	6.222	0	0.00%	6.222	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
NOZZ SIDE CIRC COVERAGE BASEMATERIAL	47.12	47.12	100.00%	0	0.00%	6.474	1.177	18.18%	0	0.00%	18.18%	0.00%	18.18%
TOTAL WELD VOLUME COVERAGE													67.85%

Edward E Black CPL III, 11-19-98

ANII REVIEW
ANII [illegible] Date [illegible]

COVERAGE CALCULATION SHEET

P15 of 15

ISO# 1-ISI-PZR-1

DATA SHT# 210-98-02

WELD NO.:NTHW-10		60 DEGREE											
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
TOWARD HEAD BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	1.856	14.62%	0	0.00%	14.62%	0.00%	14.62%
TOWARD HEAD WELD AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	3.214	0.489	15.21%	0	0.00%	15.21%	0.00%	15.21%
TOWARD NOZZLE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	11.436	90.08%	0	0.00%	90.08%	0.00%	90.08%
TOWARD NOZZLE WELD AXIAL COVERAGE	47.12	0	0.00%	47.12	100.00%	3.214	0	0.00%	3.214	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE BASEMATERIAL	47.12	0	0.00%	47.12	100.00%	6.222	0	0.00%	6.222	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE BASEMATERIAL	47.12	47.12	100.00%	0	0.00%	6.474	1.177	18.18%	0	0.00%	18.18%	0.00%	18.18%
TOTAL WELD VOLUME COVERAGE													67.26%

Edwin Block, CPL III, 11-19-98

UT Calibration Examination

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-15
Summary No.: H-02998 | Procedure Rev.: 3 TR-A | Report No.: UT-09-039
Workscope: ISI | Work Order No.: 1313525 | Page: 1 of 13

Code: 2001 Ed 2003 Add | Cat./Item: B-D/B3.110 | Location: CTMT 302'
Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head
System ID: RC-2050
Component ID: II-PZR-01NTHW-11 | Size/Length: 3.15" / 47.1" | Thickness/Diameter: 3.35" / 15.0"
Limitations: NOZZLE TO HEAD CONFIGURATION | Start Time: 1400 | Finish Time: 1545

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	1.3306	Range:	5.0"
M'tl Cal/Vel:	0.2358	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	LOGITUDINAL
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	29	Circ. Gain (dB):	29

10 Screen Div. = 5 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-050-1
Thickness: 3.50 | Dia.: FLAT
Cal. Blk. Temp. 78° | Temp. Tool: 68951
Comp. Temp.: 88° | Temp. Tool: 68951

Search Unit

Serial No.:	C29344		
Manufacturer:	KB AeroTech 5-4-09 QR		
Size:	0.75	Shape:	~~Rect.~~ Round
Freq.:	2.25 MHz	Style:	Gamma
Exam Angle:	0°	# of Elements:	1
Mode:	Longitudinal		
Measured Angle:	N/A		
Wedge Style:	N/A		

Search Unit Cable

Type: RG-58 A/U
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 41
CW ☐ CCW ☐ Scan dB: N/A
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: *67.14% | Reviewed Previous Data: Yes

Cal. Checks	Time	Date
Initial Cal.	1030	4/25/2009
Inter. Cal.	1400	4/25/2009
Inter. Cal.	1545	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221
Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	66	1.6	0.790
1/2 T	82	3.2	1.670
3/4 T	58	5.1	2.554
ID	>100%	7.2	3.562

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
29	SDH	52	0.7	0.727

Comments: *Verified previously recorded limitations and coverage calculations from report #210-98-03 (See Extracted Pages Attached). Examination was in a Radiation area.

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III		4/29/2009
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Scott Larson Level III		4/29/2009
Other	Level	Signature	Date	ANII Review	Signature	Date
Dugan, Michael P	III-PDI		4/29/2009	Nancy Ritchie-Slaughter	Nancy C Ritchie Slaughter	5/5/09

This Document is a QA Record

UT Calibration Examination

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-15
Summary No.: H-02998 | Procedure Rev.: 3 TR-A | Report No.: UT-09-039
Workscope: ISI | Work Order No.: 1313525 | Page: 2 of 13

Code: 2001 Ed 2003 Add | Cat./Item: B-D/B3.110 | Location: CTMT 302'
Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head
System ID: RC-2050
Component ID: II-PZR-01NTHW-11 | Size/Length: 3.15" / 47.1" | Thickness/Diameter: 3.35" / 15.0"
Limitations: NOZZLE TO HEAD CONFIGURATION | Start Time: 1400 | Finish Time: 1545

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	12.1922	Range:	10
M'tl Cal/Vel:	0.1270	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	SHEARWAVE
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	42/56	Circ. Gain (dB):	42/56

10 Screen Div. = 10 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-050-1
Thickness: 3.50 | Dia.: FLAT
Cal. Blk. Temp. 78° | Temp. Tool: 68951
Comp. Temp.: 88 | Temp. Tool: 68951

Search Unit

Serial No.:	C18133		
Manufacturer:	KB AeroTech		
Size:	.5" x 1"	Shape:	Rect.
Freq.:	2.25 MHz	Style:	Gamma
Exam Angle:	45°	# of Elements:	1
Mode:	SHEARWAVE		
Measured Angle:	45°		
Wedge Style:	SWS		

Search Unit Cable

Type: RG-58 A/U
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 62
CW ☑ CCW ☑ Scan dB: 62
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1035	4/25/2009
Inter. Cal.	1415	4/25/2009
Inter. Cal.	1600	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221
Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	85	1.2	1.159
1/2 T	62	2.4	2.383
3/4 T	40	3.6	3.649
ID NOTCH	13	5.2	5.146
5/4 T	10	6.1	6.00

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
42	SDH	45	1.0	1.024

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: VERIFIED PREVIOUSLY RECORDED LIMITATIONS. SEE REPORT #210-98-03 FOR COVERAGE CALCULATION.
dB difference for 3/4 T to 5/4 T = 14dB 4-30-09

Percent Of Coverage Obtained > 90%: 67.14% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III		4/29/2009
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Scott Larson Level III		4/29/2009
Other	Level	Signature	Date	ANII Review	Signature	Date
Dugan, Michael P	III-PDI		4/29/2009	Nancy Ritchie-Slaughter	Nancy C Ritchie Slaughter	5/5/09

This Document is a QA Record

UT Calibration Examination

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-15
Summary No.: H-02998 | Procedure Rev.: 3 TR-A | Report No.: UT-09-039
Workscope: ISI | Work Order No.: 1313525 | Page: 3 of 13

Code: 2001 Ed 2003 Add | Cat./Item: B-D/B3.110 | Location: CTMT 302'
Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head
System ID: RC-2050
Component ID: II-PZR-01NTHW-11 | Size/Length: 3.15" / 47.1" | Thickness/Diameter: 3.35" / 15.0"
Limitations: NOZZLE TO HEAD CONFIGURATION | Start Time: 1400 | Finish Time: 1545

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	15.2428	Range:	10"
M'tl Cal/Vel:	0.1270	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	SHEARWAVE
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	49/63*	Circ. Gain (dB):	49/63*

10 Screen Div. = 10 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-050-1
Thickness: 3.50 | Dia.: FLAT
Cal. Blk. Temp. 78° | Temp. Tool: 68951
Comp. Temp.: 88° | Temp. Tool: 68951

Search Unit

Serial No.: C18130
Manufacturer: KBA
Size: .50"x1.0" | Shape: Rect.
Freq.: 2.25 MHz | Style: GAMMA
Exam Angle: 60° | # of Elements: 1
Mode: SHEARWAVE
Measured Angle: 61°
Wedge Style: SWS

Search Unit Cable

Type: RG-58
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 69
CW ☑ CCW ☑ Scan dB: 69
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1040	4/25/2009
Inter. Cal.	1430	4/25/2009
Inter. Cal.	1615	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221
Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	83	1.8	1.823
1/2 T	49	3.6	3.598
3/4 T	31	5.4	5.38
ID NOTCH	11	7.3	7.298
5/4 T	10	9.4	9.04

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
49	SDH	21	1.6	1.557

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: VERIFIED PREVIOUSLY RECORDED INDICATIONS. SEE REPORT # 210-98-03 FOR COVERAGE CALCULATIONS. dB difference for 3/4 T to 5/4 T = 14 dB.

Percent Of Coverage Obtained > 90%: 67.14% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III		4/29/2009 4-30-09
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Scott Larson Level III		4/29/2009
Other	Level	Signature	Date	ANII Review	Signature	Date
Dugan, Michael P	III-PDI		4/29/2009	Nancy Ritchie-Slaughter	Nancy C Ritchie Slaughter	5/5/09

This Document is a QA Record

mmary No.: H-02998

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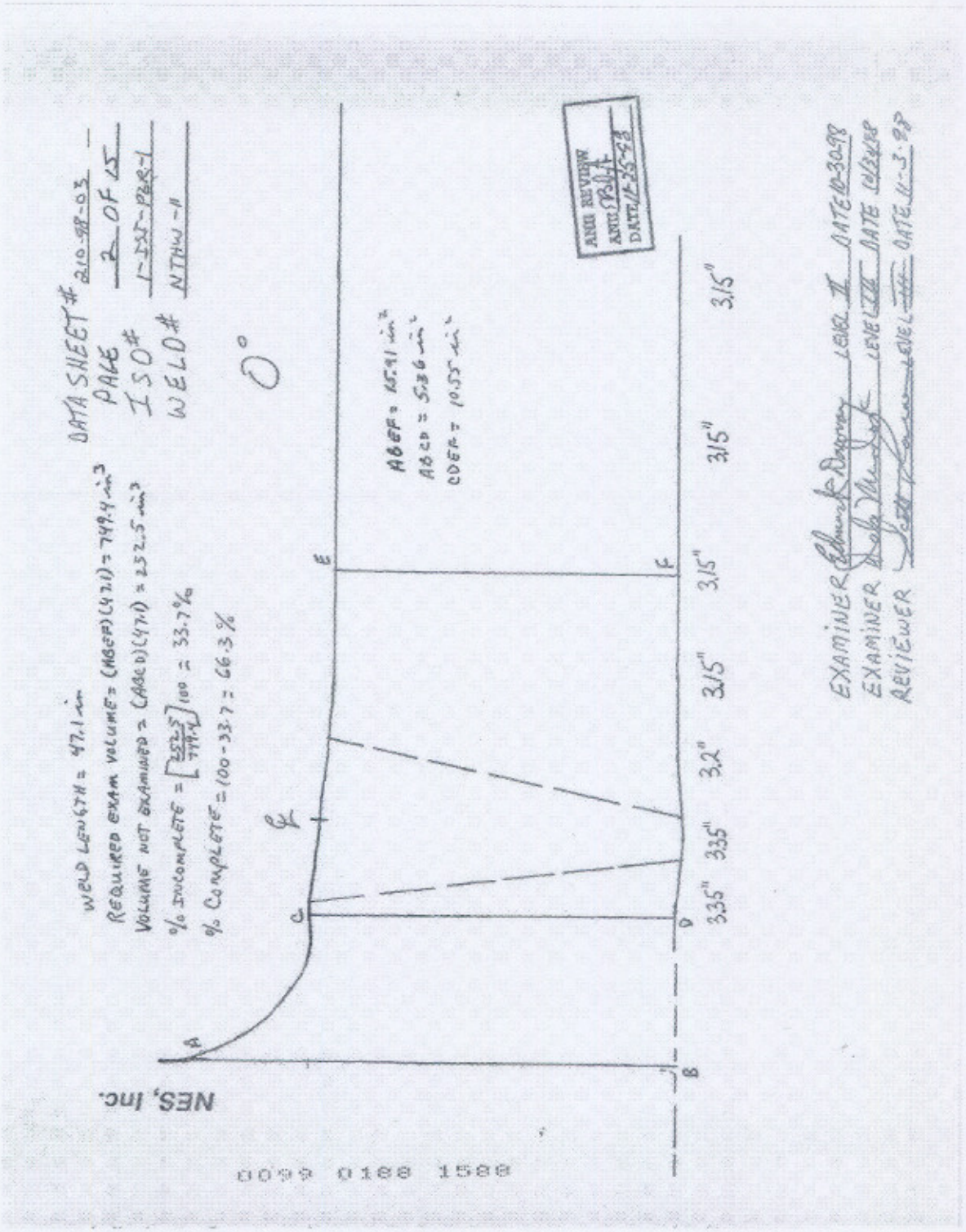

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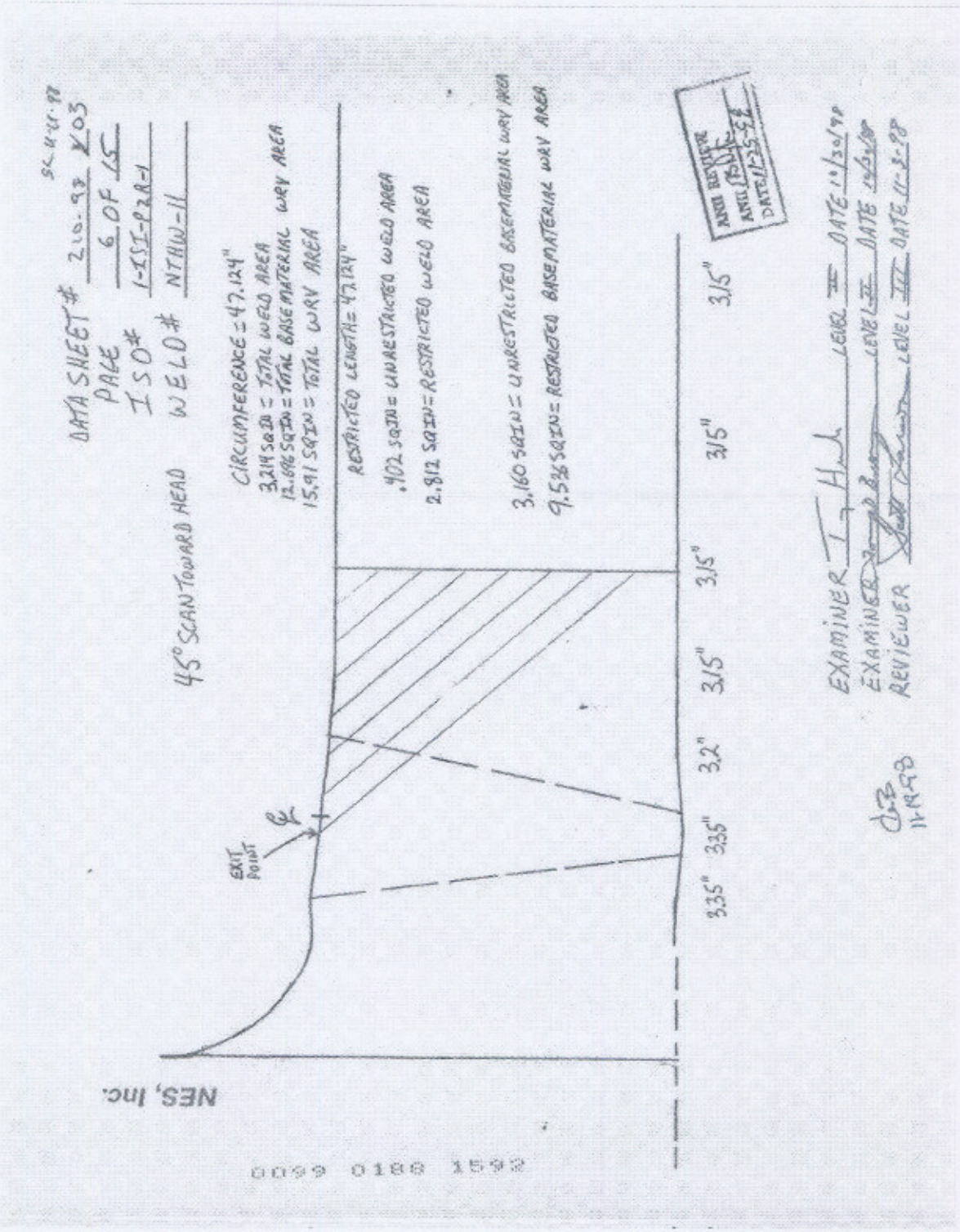

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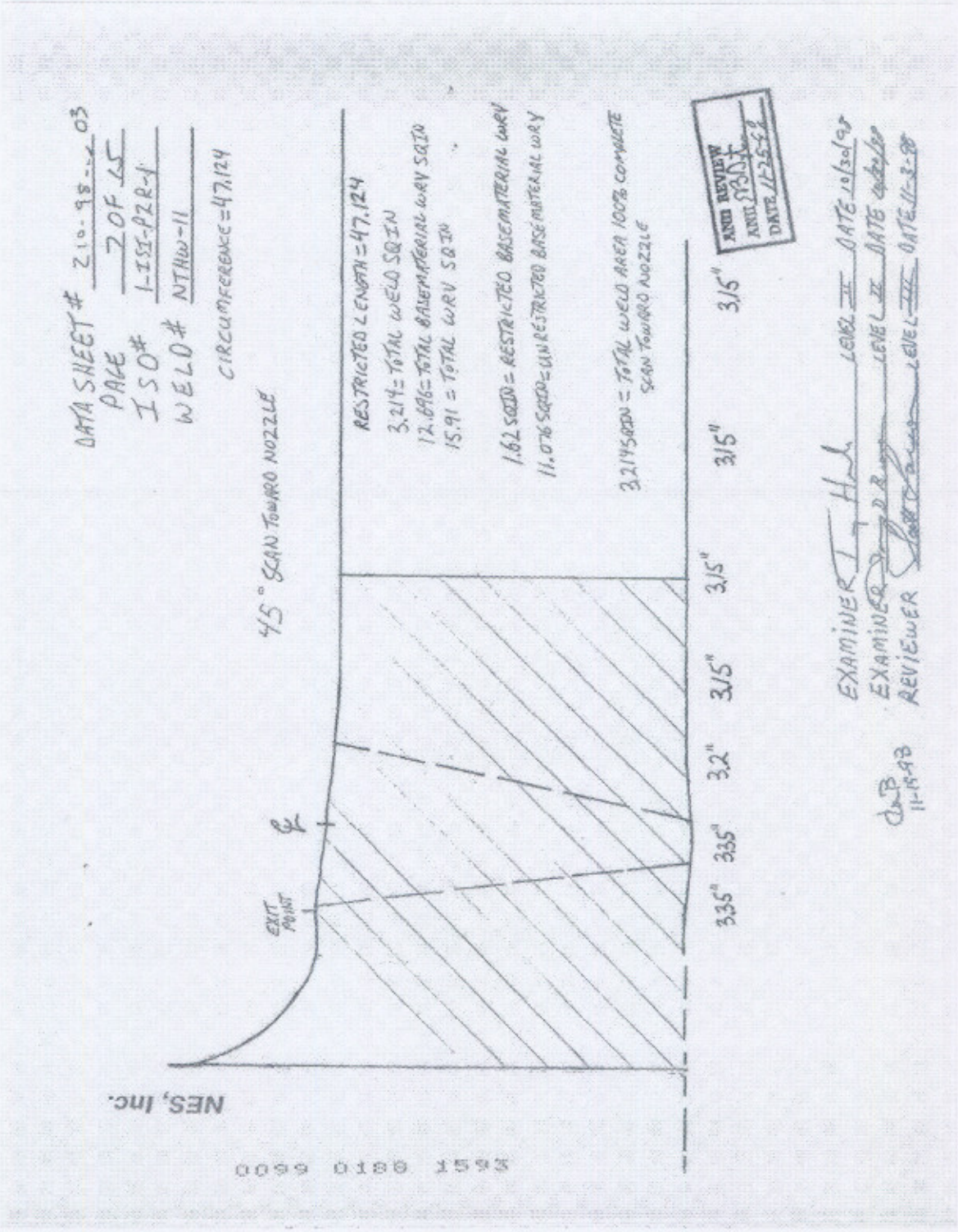

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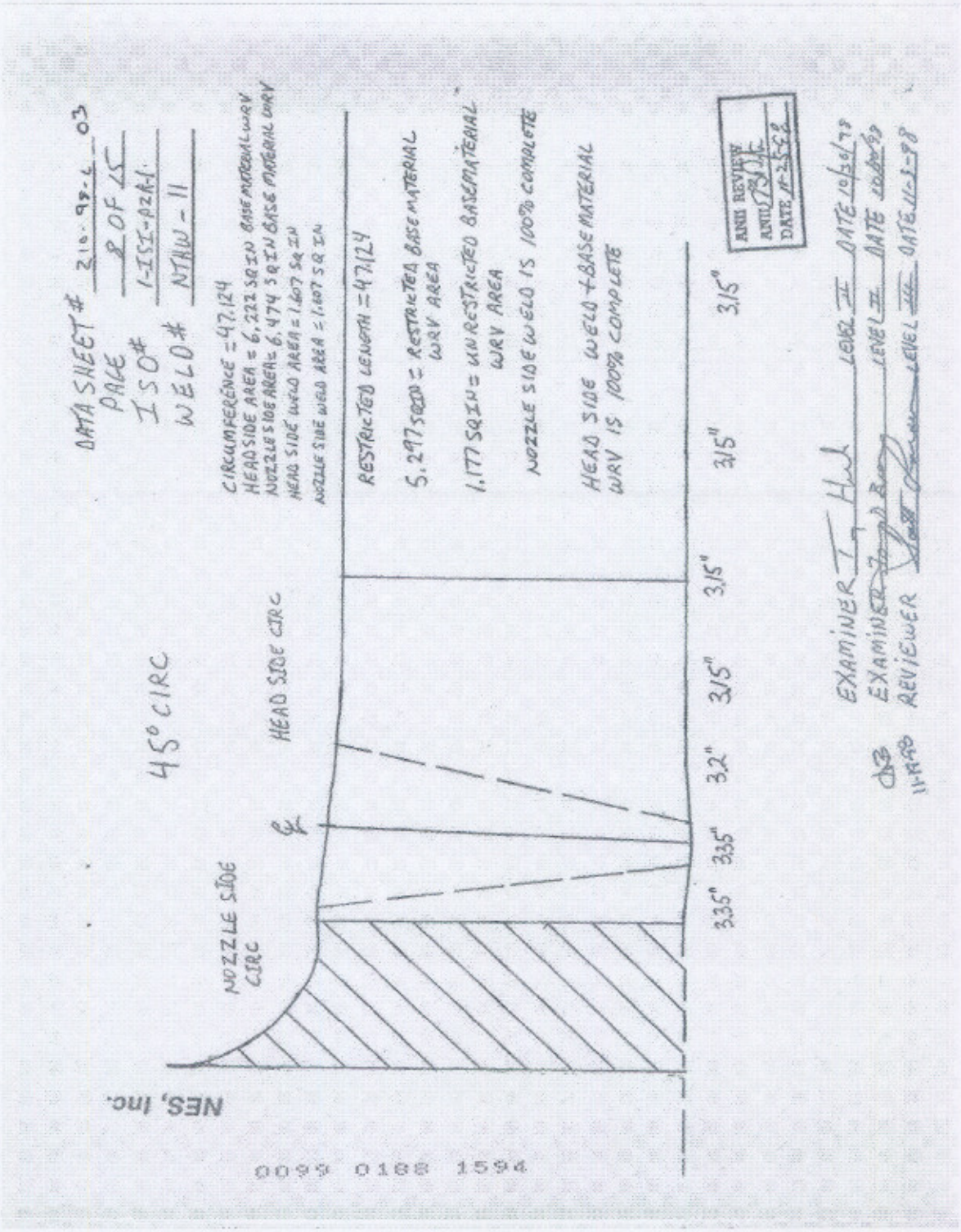

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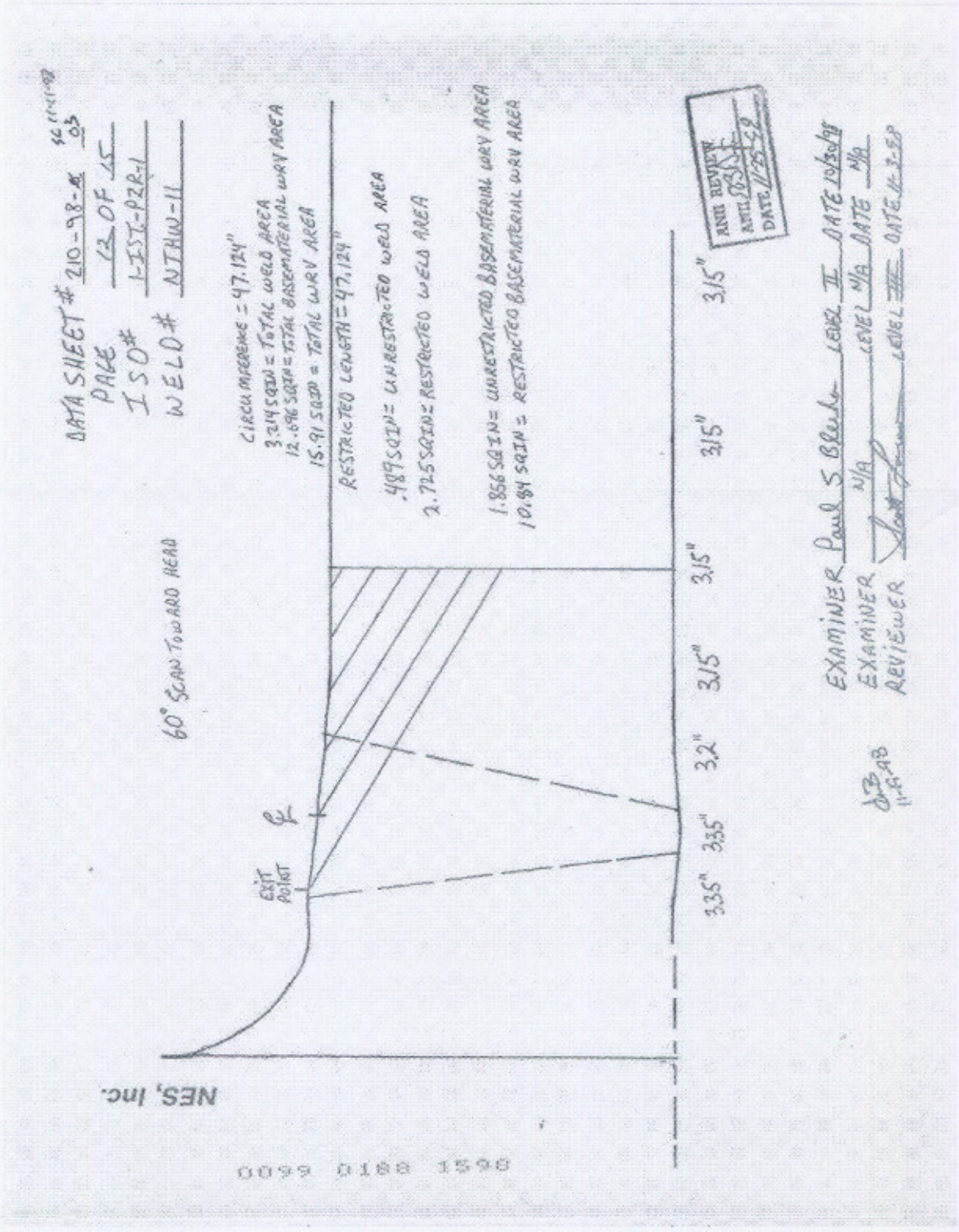

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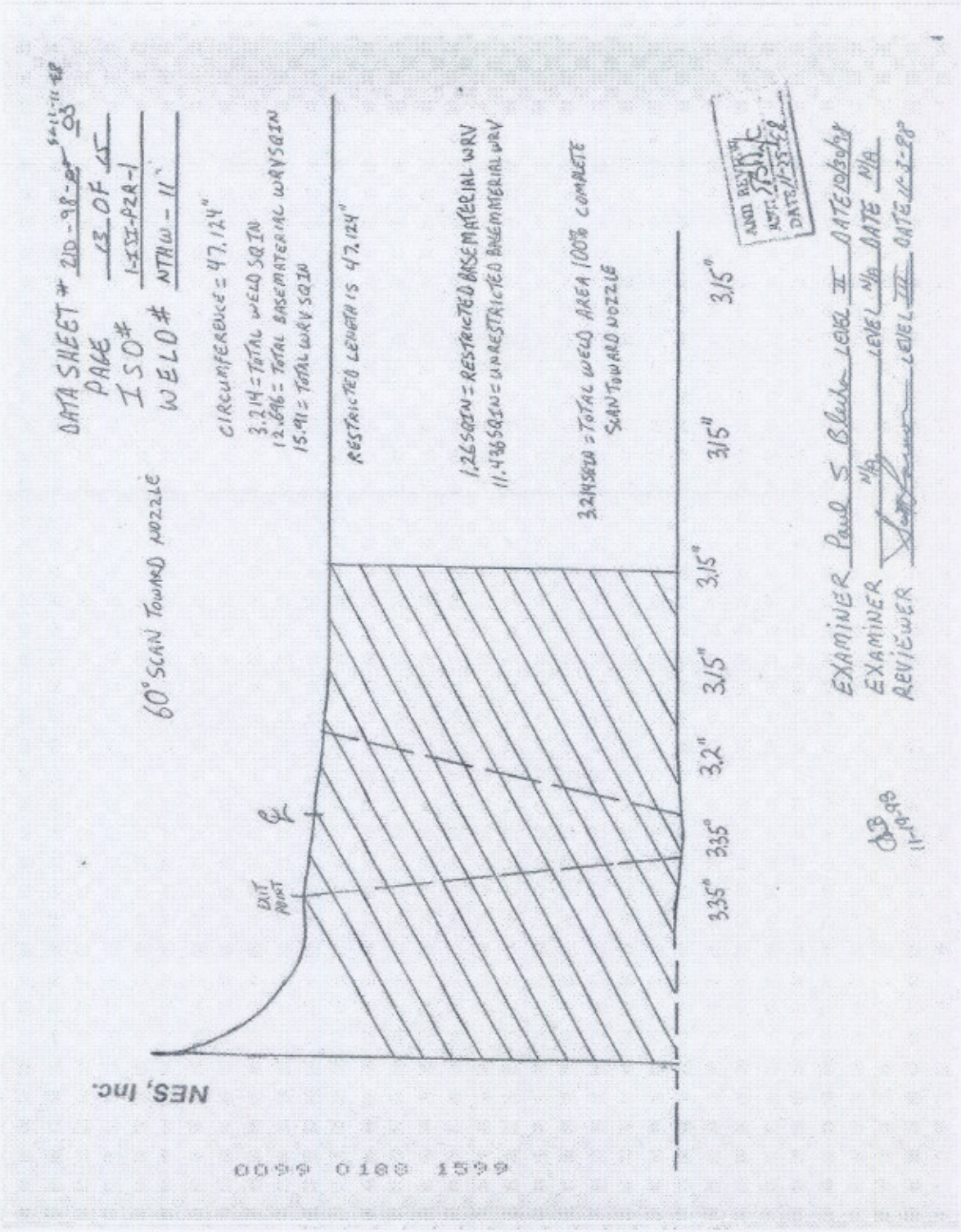

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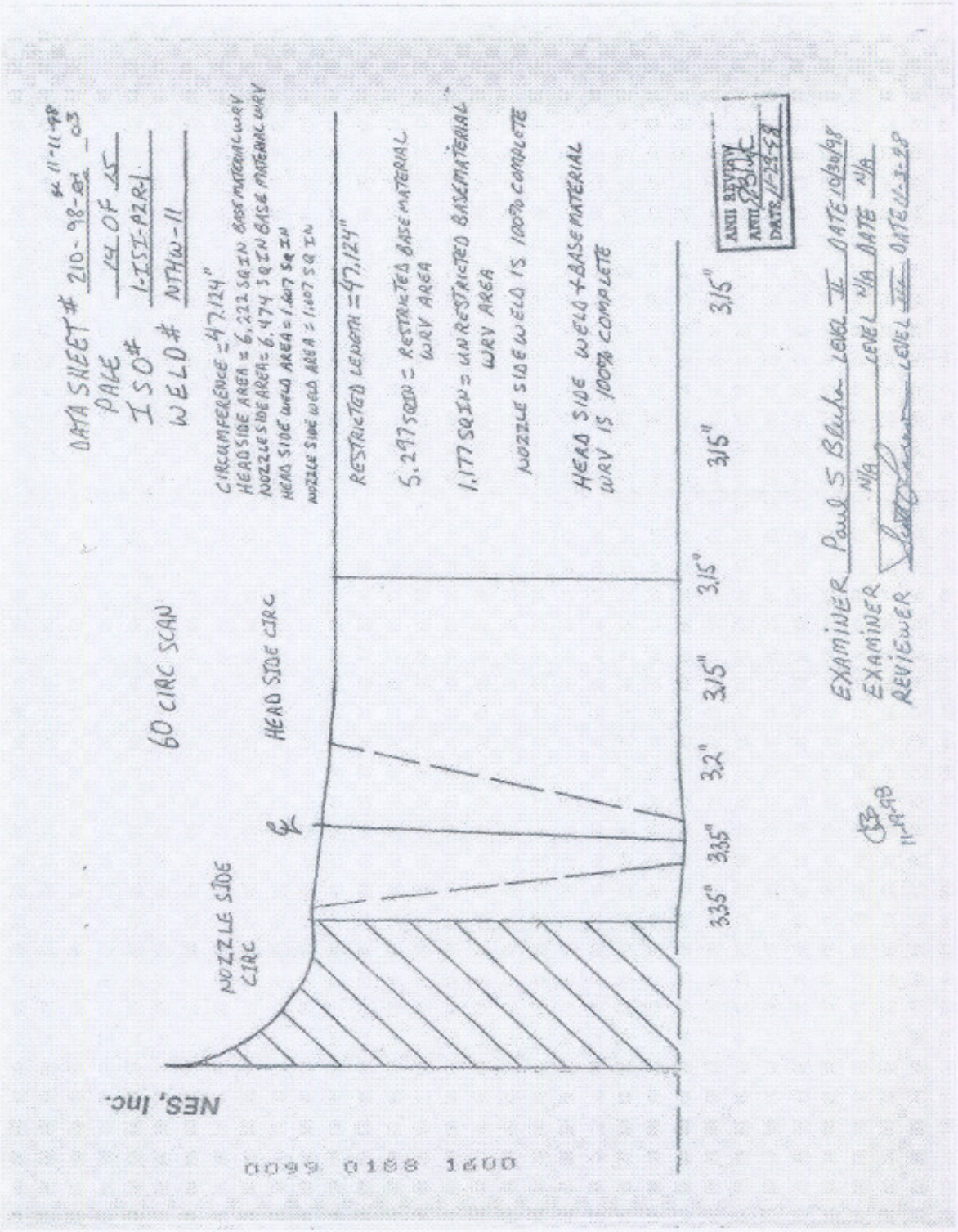

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COVERAGE CALCULATION SHEET

P3 of 15

ISO# 1-ISI-PZR-1

DATA SHT # 210-98-05

WELD NO.:NTHW-11							0 DEGREE ONLY						
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
HEAD SIDE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	15.91	10.55	66.31%	0	0.00%	66.31%	0.00%	66.31%

Johnnie Black CPL III, 11-19-98

ANII REVIEW
ANII [signature]
DATE 11-25-98

COVERAGE CALCULATION SHEET

P9 of 15

ISO# 1-ISI-PZR-1

DATA SHT# 210-98-03

WELD NO.:NTHW-11		45 DEGREE											
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
TOWARD HEAD BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	3.16	24.89%	0	0.00%	24.89%	0.00%	24.89%
TOWARD HEAD WELD AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	3.214	0.402	12.51%	0	0.00%	12.51%	0.00%	12.51%
TOWARD NOZZLE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	11.076	87.24%	0	0.00%	87.24%	0.00%	87.24%
TOWARD NOZZLE WELD AXIAL COVERAGE	47.12	0	0.00%	47.12	100.00%	3.214	0	0.00%	3.214	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE BASEMATERIAL	47.12	0	0.00%	47.12	100.00%	6.222	0	0.00%	6.222	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
NOZZ SIDE CIRC COVERAGE BASEMATERIAL	47.12	47.12	100.00%	0	0.00%	6.474	1.177	18.18%	0	0.00%	18.18%	0.00%	18.18%
TOTAL WELD VOLUME COVERAGE													67.85%

Edwin Black, CPL LIII, 11-19-98

ANII REVIEW

COVERAGE CALCULATION SHEET

P15 of 15
ISO# 1-ISI-PZR-1
DATA SHT# 210-98-03

WELD NO.:NTHW-11		60 DEGREE											
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
TOWARD HEAD BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	1.856	14.62%	0	0.00%	14.62%	0.00%	14.62%
TOWARD HEAD WELD AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	3.214	0.489	15.21%	0	0.00%	15.21%	0.00%	15.21%
TOWARD NOZZLE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	11.436	90.08%	0	0.00%	90.08%	0.00%	90.08%
TOWARD NOZZLE WELD AXIAL COVERAGE	47.12	0	0.00%	47.12	100.00%	3.214	0	0.00%	3.214	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE BASEMATERIAL	47.12	0	0.00%	47.12	100.00%	6.222	0	0.00%	6.222	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE BASEMATERIAL	47.12	47.12	100.00%	0	0.00%	6.474	1.177	18.18%	0	0.00%	18.18%	0.00%	18.18%
TOTAL WELD VOLUME COVERAGE													67.26%

Edwin M Block, CPL III, 11-19-98

ANI REVIEW

UT Calibration Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-15
Summary No.:	H-02999	Procedure Rev.:	3 TR-A	Report No.:	UT-09-040
Workscope:	ISI	Work Order No.:	1313525	Page:	1 of 13

Code: 2001 Ed 2003 Add | Cat./Item: B-D/B3.110 | Location: CTMT 302'

Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head

System ID: RC-2050

Component ID: II-PZR-01NTHW-12 | Size/Length: 3.15" / 47.1" | Thickness/Diameter: 3.35" / 15.0"

Limitations: NOZZLE TO HEAD CONFIGURATION | Start Time: 1545 | Finish Time: 1630

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	1.3306	Range:	5.0"
M'tl Cal/Vel:	0.2358	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	LOGITUDINAL
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	29	Circ. Gain (dB):	29

10 Screen Div. = 5 in. of Sound Path

Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-050-1

Thickness: 3.50 | Dia.: FLAT

Cal. Blk. Temp. 78° | Temp. Tool: 68951

Comp. Temp.: 88 | Temp. Tool: 68951

Search Unit

Serial No.:	C29344		
Manufacturer:	KB AeroTech		
Size:	0.75	Shape:	Round
Freq.:	2.25 MHz	Style:	Gamma
Exam Angle:	0°	# of Elements:	1
Mode:	Longitudinal		
Measured Angle:	N/A		
Wedge Style:	N/A		

Search Unit Cable

Type: RG-58 U

Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 41

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1030	4/25/2009
Inter. Cal.	1400	4/25/2009
Inter. Cal.	1545	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch: 05225

Type: Ultragel II

Mfg.: Sonotech, Inc.

Exam Batch: 05225

Type: Ultragel II

Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221

Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	66	1.6	0.790
1/2 T	82	3.2	1.670
3/4 T	58	5.1	2.554
ID	>100%	7.2	3.562

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
29	SDH	52	0.7	0.727

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: *67.14% | Reviewed Previous Data: Yes

Comments: *Verified previously recorded limitations and coverage calculations from report #210-98-04 (See Extracted Pages Attached). Examination was in a Radiation area.

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Michael W. Blew		M W Blew	4/29/2009
Other	Level	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P	III-PDI	Shf Dugan	4/29/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie Slaughter	5/5/09

This Document is a QA Record

UT Calibration Examination

Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-15
Summary No.: H-02999 | Procedure Rev.: 3 TR-A | Report No.: UT-09-040
Workscope: ISI | Work Order No.: 1313525 | Page: 2 of 13

Code: 2001 Ed 2003 Add | Cat./Item: B-D/B3.110 | Location: CTMT 302'
Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head
System ID: RC-2050
Component ID: II-PZR-01NTHW-12 | Size/Length: 3.15" / 47.1" | Thickness/Diameter: 3.35" / 15.0"
Limitations: NOZZLE TO HEAD CONFIGURATION | Start Time: 1545 | Finish Time: 1630

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	12.1922	Range:	10
M'tl Cal/Vel:	0.1270	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	SHEARWAVE
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	42/56	Circ. Gain (dB):	42/56

10 Screen Div. = 10 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-050-1
Thickness: 3.50 | Dia.: FLAT
Cal. Blk. Temp. 78° | Temp. Tool: 68951
Comp. Temp.: 88° | Temp. Tool: 68951

Search Unit

Serial No.:	C18133		
Manufacturer:	KB AeroTech		
Size:	.5" x 1"	Shape:	Rect.
Freq.:	2.25 MHz	Style:	Gamma
Exam Angle:	45°	# of Elements:	1
Mode:	SHEARWAVE		
Measured Angle:	45°		
Wedge Style:	SWS		

Search Unit Cable

Type: RG-58 U
Length: 6' | No. Conn.:

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 62
CW ☑ CCW ☑ Scan dB: 62
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 67.14% | Reviewed Previous Data: Yes

Cal. Checks	Time	Date
Initial Cal.	1035	4/25/2009
Inter. Cal.	1415	4/25/2009
Inter. Cal.	1600	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221
Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	85	1.2	1.159
1/2 T	62	2.4	2.383
3/4 T	40	3.6	3.649
ID NOTCH	13	5.2	5.146
5/4 T*	10%	6.1	6.00

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
42	SDH	45	1.0	1.024

Comments: VERIFIED PREVIOUSLY RECORDED LIMITATIONS. SEE REPORT #210-98-04 FOR COVERAGE CALCULATION.
Db difference for 3/4 T to 5/4 T = 14dB 4-30-09

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III		4/29/2009
N/A	N/A			Michael W. Blew	M W Blew	4/29/2009
Dugan, Michael P	III-PDI		4/29/2009	Nancy Ritchie-Slaughter	Nancy C Ritchie Slaughter 5/5/09	

This Document is a QA Record

UT Calibration Examination

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-15
Summary No.: H-02999 | Procedure Rev.: 3 TR-A | Report No.: UT-09-040
Workscope: ISI | Work Order No.: 1313525 | Page: 3 of 13

Code: 2001 Ed 2003 Add | Cat./Item: B-D/B3.110 | Location: CTMT 302'
Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head
System ID: RC-2050
Component ID: II-PZR-01NTHW-12 | Size/Length: 3.15" / 47.1" | Thickness/Diameter: 3.35" / 15.0"
Limitations: NOZZLE TO HEAD CONFIGURATION | Start Time: 1545 | Finish Time: 1630

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	15.2428	Range:	10"
M'tl Cal/Vel:	0.1270	Pulser:	SINGLE
Damping:	1KΩ	Reject:	0%
Rep. Rate:	HIGH	Freq.:	2.25 MHZ
Filter:	N/A	Mode:	SHEARWAVE
Voltage:	N/A	Other:	FULLWAVE
Ax. Gain (dB):	49/63*	Circ. Gain (dB):	49/63*

10 Screen Div. = 10 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: UT-050-1
Thickness: 3.50 | Dia.: FLAT
Cal. Blk. Temp. 78° | Temp. Tool: 68951
Comp. Temp.: 88° | Temp. Tool: 68951

Search Unit

Serial No.:	C18130		
Manufacturer:	KBA		
Size:	.50"x1.0"	Shape:	Rect.
Freq.:	2.25 MHz	Style:	GAMMA
Exam Angle:	60°	# of Elements:	1
Mode:	SHEARWAVE		
Measured Angle:	61°		
Wedge Style:	SWS		

Search Unit Cable

Type: RG-58
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 69
CW ☑ CCW ☑ Scan dB: 69
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1040	4/25/2009
Inter. Cal.	1430	4/25/2009
Inter. Cal.	1615	4/25/2009
Inter. Cal.		
Final Cal.	1730	4/25/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221
Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	83	1.8	1.823
1/2 T	49	3.6	3.598
3/4 T	31	5.4	5.38
ID NOTCH	11	7.3	7.298
5/4 T*	10	9.4	9.04

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
49	SDH	21	1.6	1.557

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: VERIFIED PREVIOUSLY RECORDED LIMITATIONS. SEE REPORT #210-98-04 FOR COVERAGE CALCULATION.
Db difference for 3/4 T to 5/4 T = 14 dB 4-30-09

Percent Of Coverage Obtained > 90%: 67.14% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/25/2009	Damon Priestley PGN Lv III		4/29/2009
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Michael W. Blew	MW Blew	4/29/2009
Other	Level	Signature	Date	ANII Review	Signature	Date
Dugan, Michael P	III-PDI		4/29/2009	Nancy Ritchie-Slaughter	Nancy C Ritchie Slaughter	5/5/09

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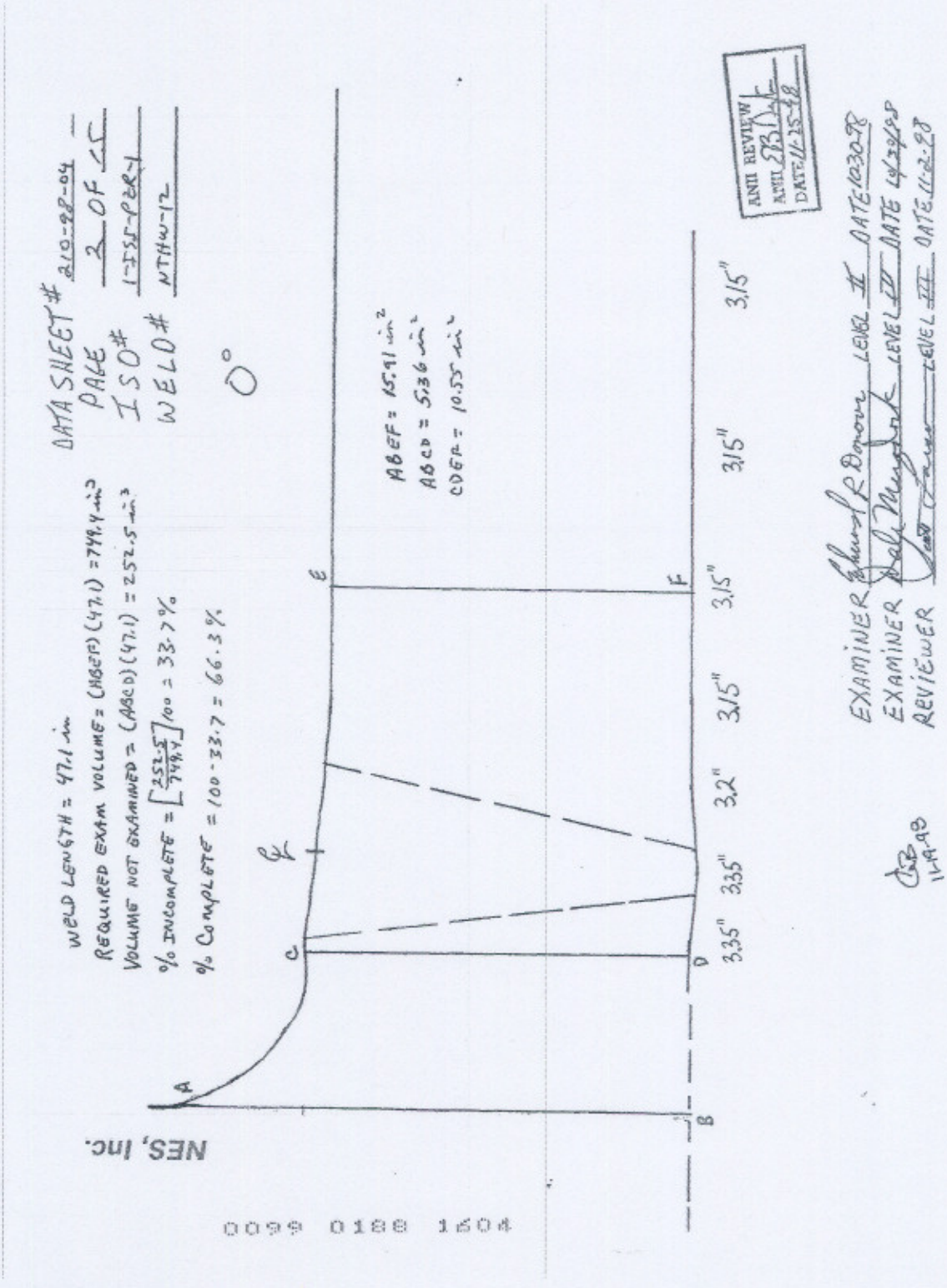

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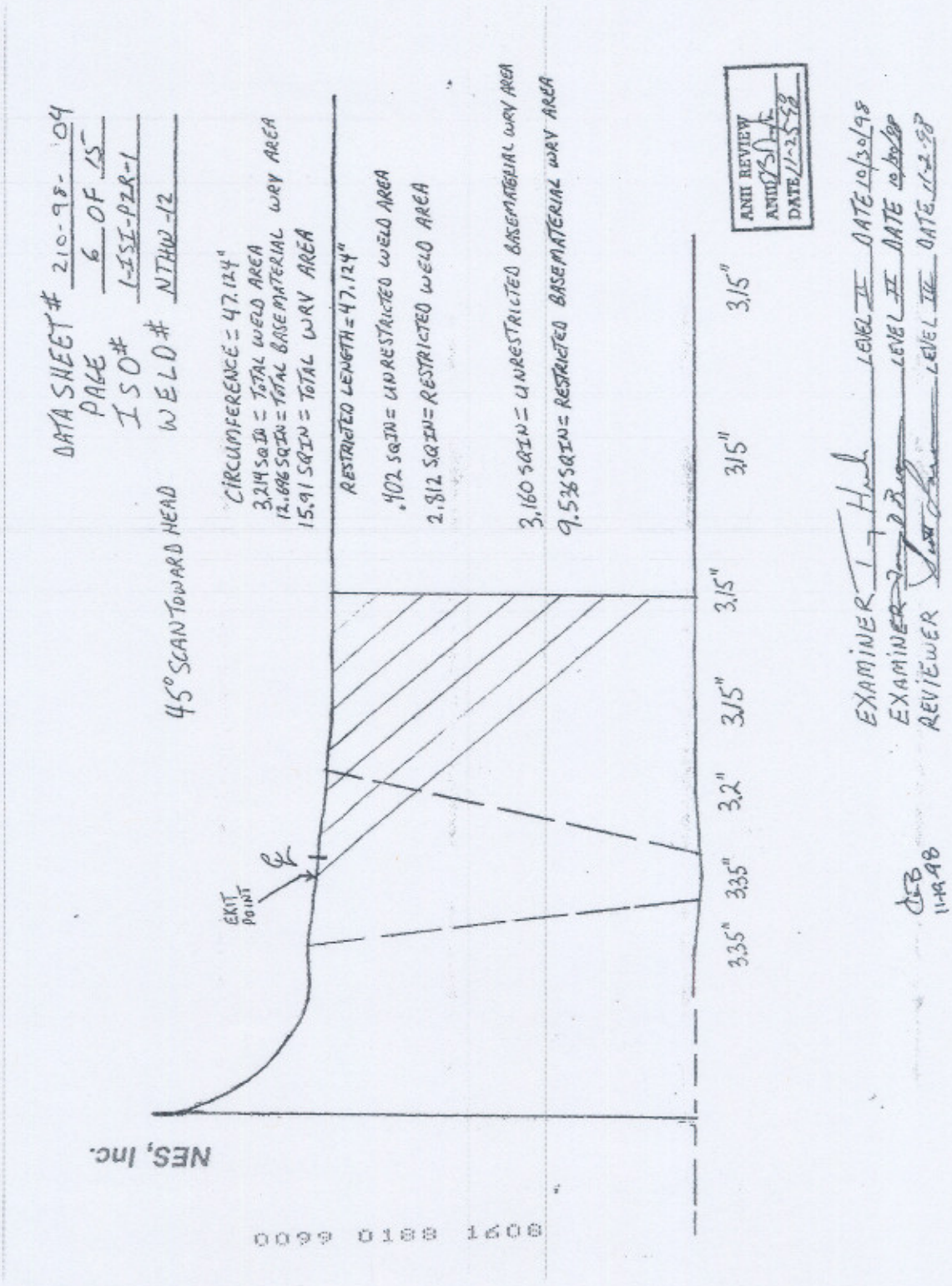

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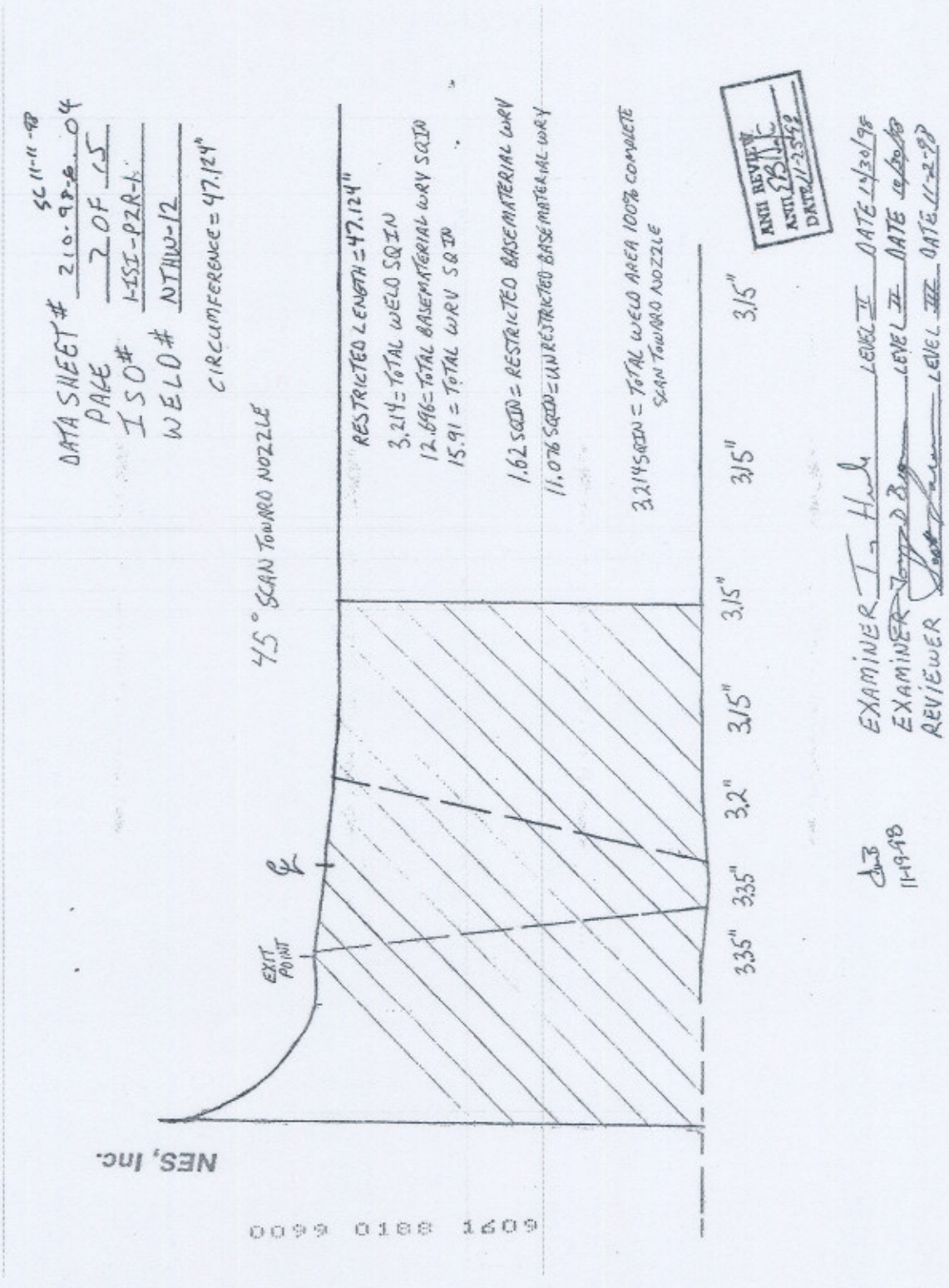

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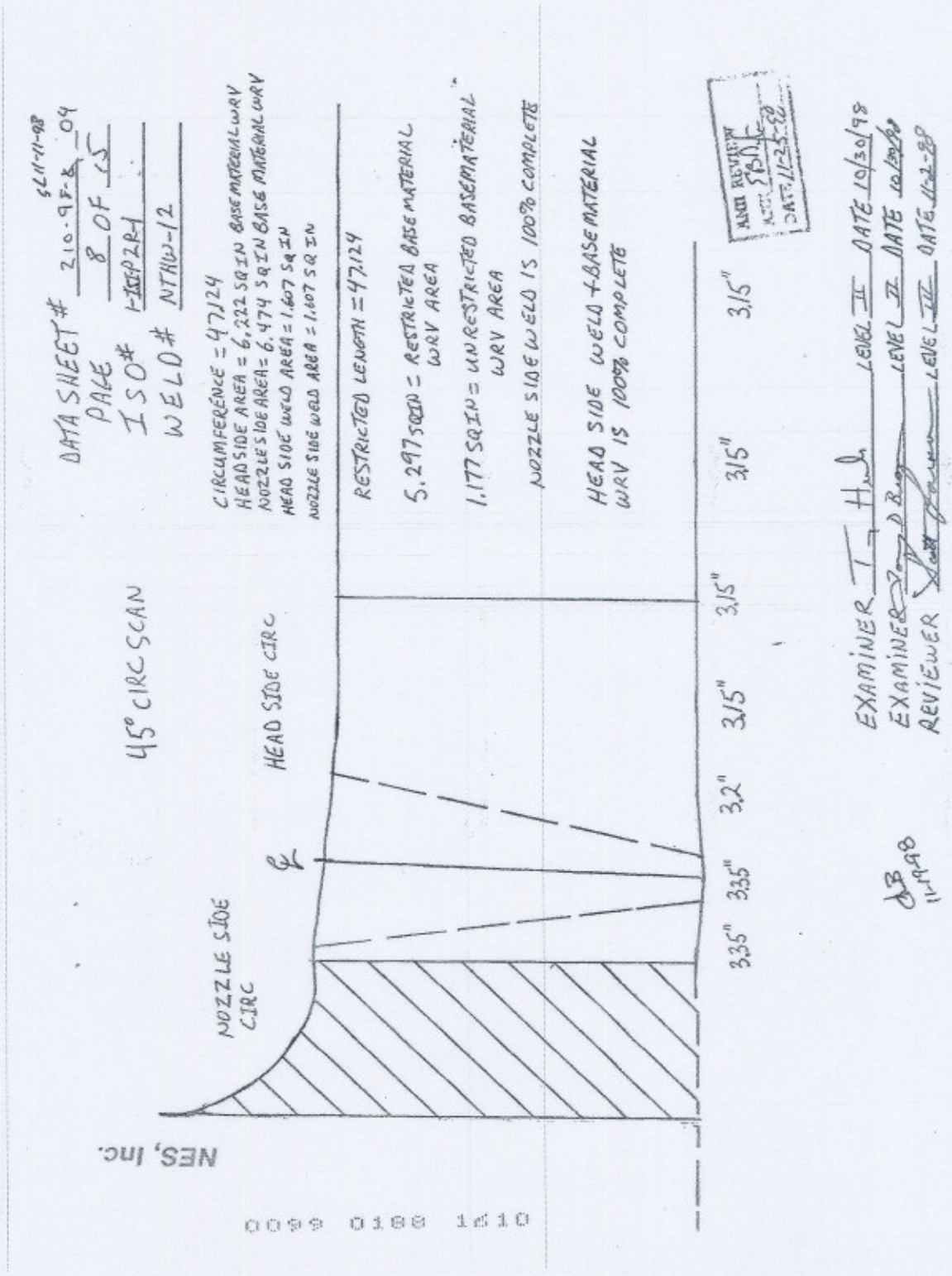

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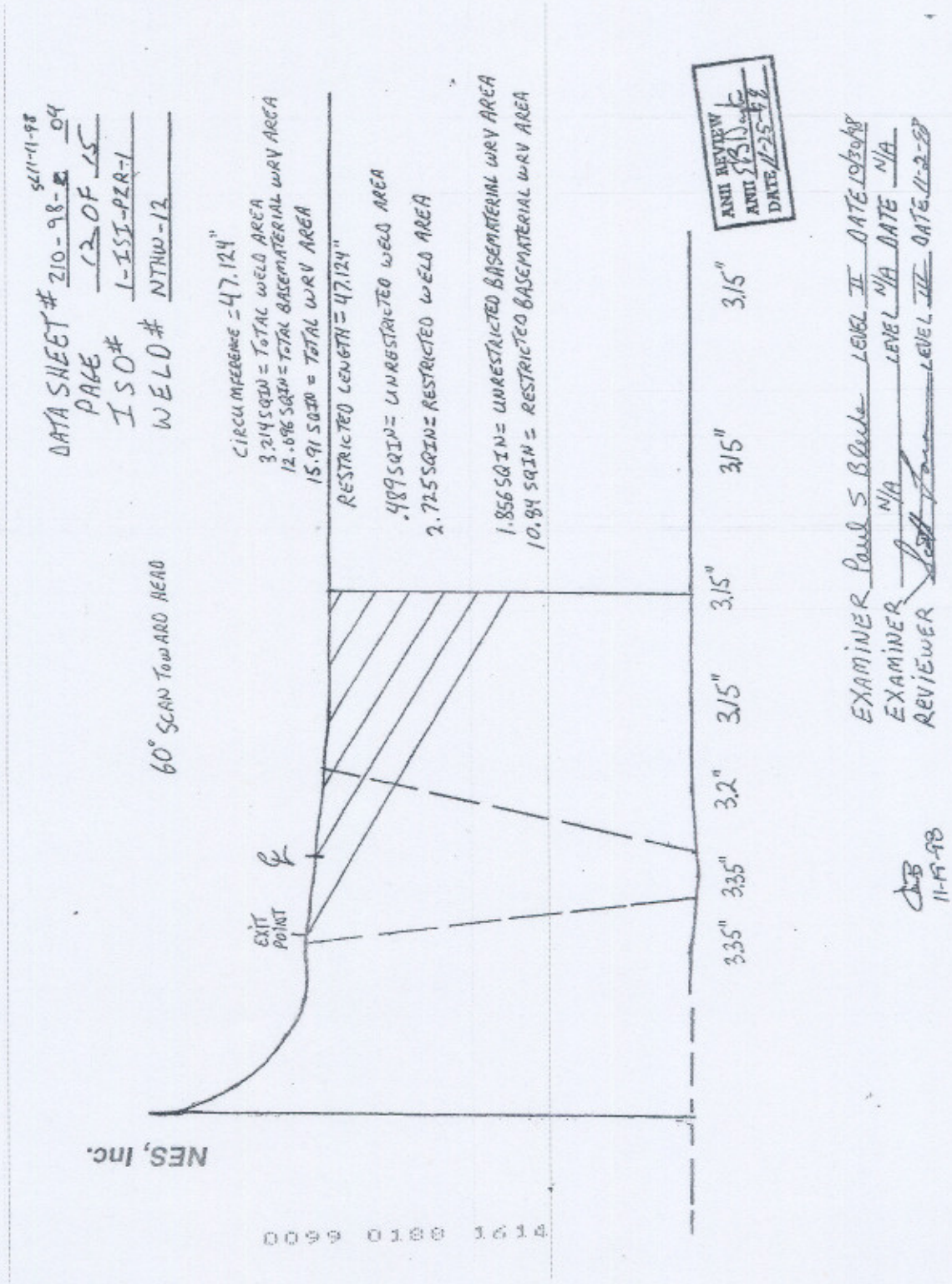

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Supplemental Report

Nuclear Generation Group

Report No.: UT-09-040

Page: 9 of 13

Summary No.: H-02999

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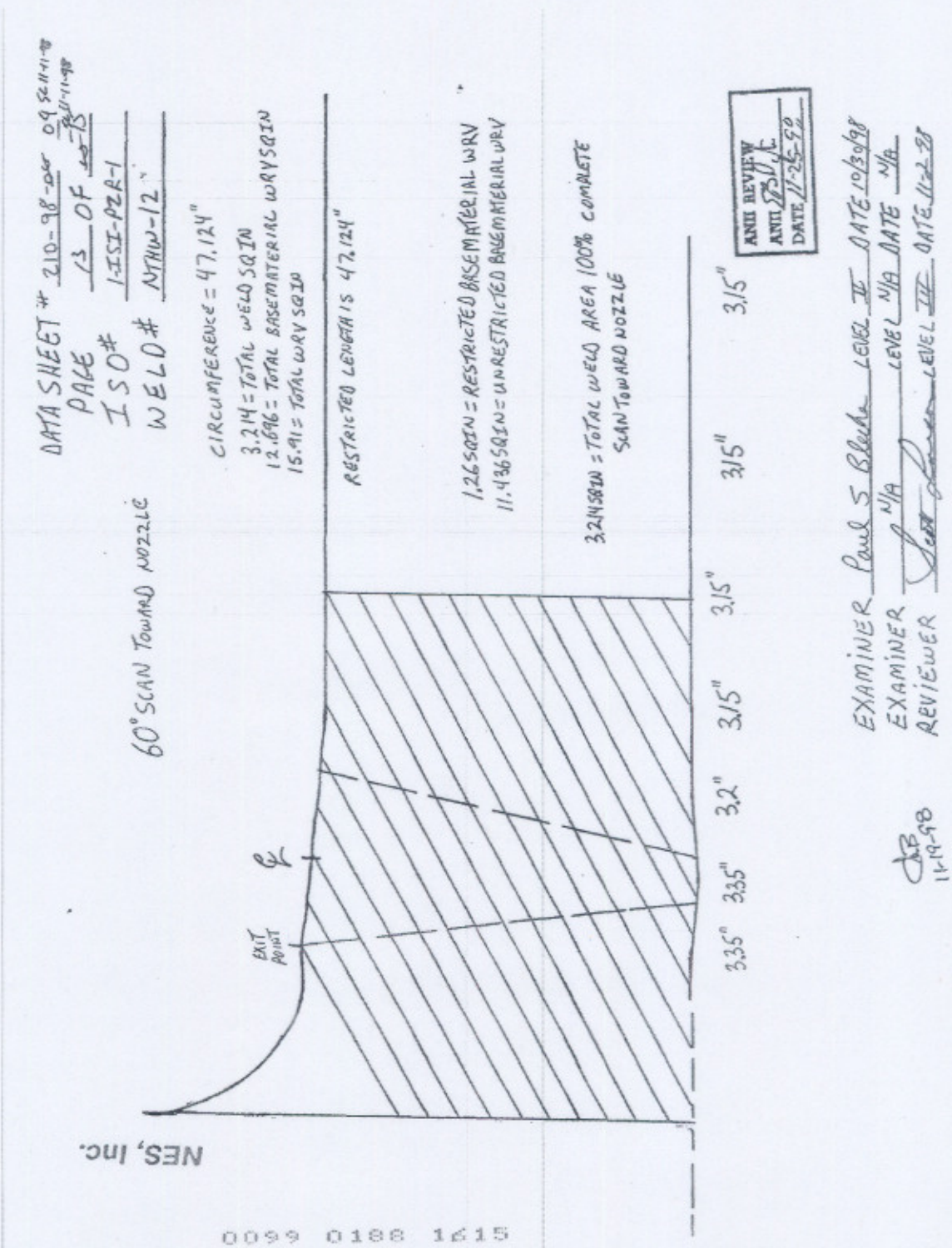

Supplemental Report

Nuclear Generation Group

Report No.: UT-09-040

Page: 10 of 13

mary No.: H-02999

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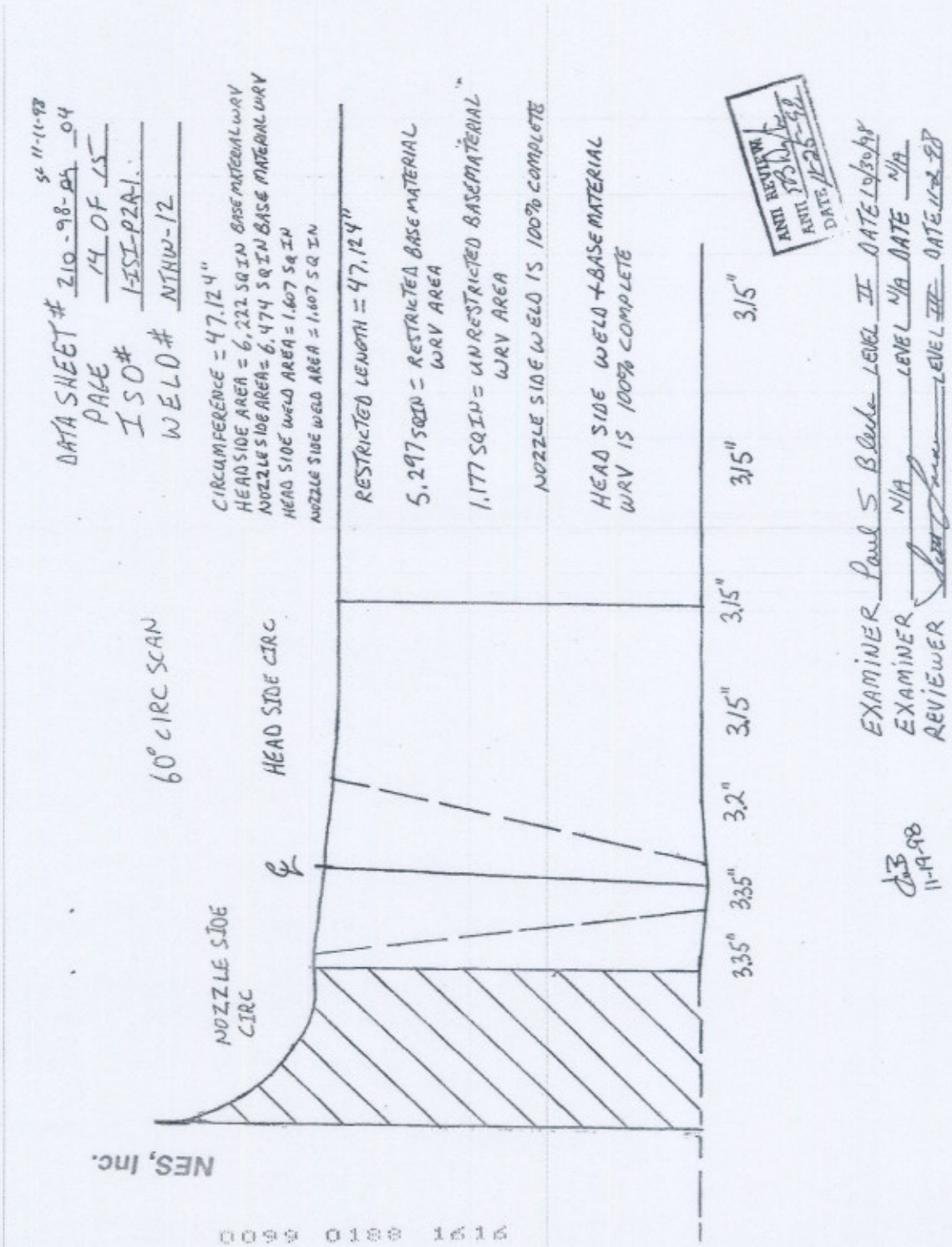

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COVERAGE CALCULATION SHEET

P 3 of 15

ISO# 1-ISI-PZR-1

DATA SHT# 210-98-04

WELD NO.:NTHW-12							0 DEGREE ONLY						
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
HEAD SIDE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	15.91	10.55	66.31%	0	0.00%	66.31%	0.00%	66.31%

Johnnie Block, CPL III, 11-19-98

ANII REVIEW
ANII EB Daylo
DATE 11-25-98

COVERAGE CALCULATION SHEET

P 9 of 15

ISO # 1-ISI-PZR-1

DATA SHT # 210-98-04

WELD NO.:NTHW-12		45 DEGREE												
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
TOWARD HEAD BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	3.16	24.89%	0	0.00%	24.89%	0.00%	24.89%
TOWARD HEAD WELD AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	3.214	0.402	12.51%	0	0.00%	12.51%	0.00%	12.51%
TOWARD NOZZLE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	11.076	87.24%	0	0.00%	87.24%	0.00%	87.24%
TOWARD NOZZLE WELD AXIAL COVERAGE	47.12	0	0.00%	47.12	100.00%	3.214	0	0.00%	3.214	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE BASEMATERIAL	47.12	0	0.00%	47.12	100.00%	6.222	0	0.00%	6.222	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
NOZZ SIDE CIRC COVERAGE BASEMATERIAL	47.12	47.12	100.00%	0	0.00%	6.474	1.177	18.18%	0	0.00%	18.18%	0.00%	18.18%
TOTAL WELD VOLUME COVERAGE													67.85%

Edwin Block, CPL III, 11-19-98

COVERAGE CALCULATION SHEET

P15 of 15

ISO# 1-ISI-PZR-1

DATA SHT# 210-98-04

WELD NO.:NTHW-12		60 DEGREE											
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
TOWARD HEAD BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	1.856	14.62%	0	0.00%	14.62%	0.00%	14.62%
TOWARD HEAD WELD AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	3.214	0.489	15.21%	0	0.00%	15.21%	0.00%	15.21%
TOWARD NOZZLE BASE MATERIAL AXIAL COVERAGE	47.12	47.12	100.00%	0	0.00%	12.696	11.436	90.08%	0	0.00%	90.08%	0.00%	90.08%
TOWARD NOZZLE WELD AXIAL COVERAGE	47.12	0	0.00%	47.12	100.00%	3.214	0	0.00%	3.214	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE BASEMATERIAL	47.12	0	0.00%	47.12	100.00%	6.222	0	0.00%	6.222	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE WELD	47.12	0	0.00%	47.12	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE BASEMATERIAL	47.12	47.12	100.00%	0	0.00%	6.474	1.177	18.18%	0	0.00%	18.18%	0.00%	18.18%
TOTAL WELD VOLUME COVERAGE													67.26%

Edwin K Black, CPL LEVEL III, 11-19-98

UT Calibration/Examination

Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-02996	Procedure Rev.:	4	Report No.:	UT-12-010
Workscope:	ISI	Work Order No.:	2050436	Page:	1 of 4

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-D/B3.110 | Location: Containment 302'

Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head

System ID: RC-2050

Component ID: II-PZR-01NTHW-09 | Size/Length: | Thickness/Diameter: 3.50"

Limitations: EXAM LIMITED TO HEAD SIDE ONLY, SEE PREVIOUS DATA 210-98-01 | Start Time: 1515 | Finish Time: 1730

Instrument Settings

Serial No.:	0134L2		
Manufacturer:	Krautkramer Branson		
Model:	USN 58L	Linearity:	L-12-004
Delay:	1.2000 µs	Range:	5.000"
M'tl Cal/Vel:	0.2334"/µs	Energy:	High
Damping:	1000 Ohms	Reject:	0%
PRF Mode:	Auto High	SU Freq.:	2.25 MHz
Disp. Start:	IP	Rectify:	Full Wave
Inst. Freq.:	2.25 MHz		

Ax. Gain (dB): 36 | Circ. Gain (dB): 36

1 Screen Div. = 0.5" in. of Sound Path

Calibration Block

Cal. Block No.:	UT-050-1		
Thickness:	3.50"	Dia.:	FLAT
Cal. Blk. Temp.:	80°	Temp. Tool:	277634
Comp. Temp.:	89°	Temp. Tool:	277634

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 66.31% | Reviewed Previous Data: YES

Search Unit

Serial No.:	A29045		
Manufacturer:	KB AeroTech		
Size:	0.75"	Model:	GAMMA HP
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	0°	Squint Angle:	N/A
Measured Angle:	N/A	Mode:	LONG.
Exit Point:	N/A	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	Round	Contour:	N/A
Wedge Style:	N/A		

Search Unit Cable

Type: RG58U | Length: 12' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 48

CW ☑ CCW ☑ Scan dB: 48

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1415	4/30/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1815	4/30/2012

Couplant

Cal. Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	6045-83
Type:	SS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T SDH	82%	1.6	0.795"
1/2 T SDH	70%	3.3	1.668"
3/4 T SDH	54%	5.1	2.541"
*B.W.	62%	7.1	3.536"
N/A	N/A	N/A	N/A

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
36	FSDH	45%	1.4	0.718"
N/A	N/A	N/A	N/A	N/A

Comments: SWEEP & VELOCITY CALIBRATION WAS ACHIEVED ON IIW 2 BLOCK S/N 788805. *B.W. @ -6dB. REFERENCE PREVIOUS REPORT (210-98-01) FOR COVERAGE PLOTS.

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Malia, Mark	II-PDI	Mark Malia	4/30/2012	George Buck Level III	George Buck	5/4/2012
Examiner	Level	Signature	Date	Site Review	Signature	Date
Perry, Robert	IIL		4/30/2012	James Salton		5/5/2012
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			Robert Winegarden ANII		5/7/2012

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-02996	Procedure Rev.:	4	Report No.:	UT-12-010
Workscope:	ISI	Work Order No.:	2050436	Page:	2 of 4

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-D/B3.110 | Location: Containment 302'

Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head

System ID: RC-2050

Component ID: II-PZR-01NTHW-09 | Size/Length: | Thickness/Diameter: 3.50"

Limitations: EXAM LIMITED TO HEAD SIDE ONLY, SEE PREVIOUS DATA 210-98-01 | Start Time: 1515 | Finish Time: 1730

Instrument Settings

Serial No.:	0134L2		
Manufacturer:	Krautkramer Branson		
Model:	USN 58L	Linearity:	L-12-004
Delay:	12.3353 µs	Range:	7.000"
M'tl Cal/Vel:	0.1267"/ µs	Energy:	High
Damping:	1000 Ohms	Reject:	0%
PRF Mode:	Auto High	SU Freq.:	2.25 MHz
Disp. Start:	IP	Rectify:	Full Wave
Inst. Freq.:	2.25 MHz		

Ax. Gain (dB): 42 | Circ. Gain (dB): 42

1 Screen Div. = 0.7 in. of Sound Path

Calibration Block

Cal. Block No.:	UT-050-1		
Thickness:	3.50"	Dia.:	FLAT
Cal. Blk. Temp.:	80°	Temp. Tool:	277634
Comp. Temp.:	89°	Temp. Tool:	277634

Recordable Indication(s): Yes ☐ No ☑

Results: Sat ☑ Unsat ☐ Eval ☐

Search Unit

Serial No.:	L07926		
Manufacturer:	KB AeroTech		
Size:	0.5"x1.0"	Model:	GAMMA
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	45°	Squint Angle:	N/A
Measured Angle:	45°	Mode:	Shear
Exit Point:	0.65"	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	Rect.	Contour:	FLAT
Wedge Style:	NON INTEGRAL		

Search Unit Cable

Type: RG54U Length: 12' No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 54

CW ☑ CCW ☑ Scan dB: 54

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND SMOOTH

(If Yes, Ref. Attached Ultrasonic Indication Report.)

Cal. Checks	Time	Date
Initial Cal.	1415	4/30/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1815	4/30/2012

Couplant

Cal. Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	6045-83
Type:	SS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T SDH	82%	1.7	1.194"
1/2 T SDH	53%	3.4	2.397"
3/4 T SDH	34%	5.3	3.727"
ID NOTCH	6%	6.6	4.609"
5/4 T SDH	16%	8.7	6.090"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
48	FSDH	62%	2.4	0.726"
N/A	N/A	N/A	N/A	N/A

Comments: SWEEP & VELOCITY CALIBRATION WAS ACHIEVED ON IIW 2 BLOCK S/N 78880. dB change 3/4 to 5/4 from clad side = 6.5dB.

Percent Of Coverage Obtained > 90%: 67.86% | Reviewed Previous Data: YES

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark	II-PDI	Mark Malia	4/30/2012	George Buck Level III		George Buck	5/4/2012
Examiner	Level	Signature	Date	Site Review		Signature	Date
Perry, Robert	III		4/30/2012	James Salton			5/5/2012
Other	Level	Signature	Date	ANII Review		Signature	Date
N/A	N/A			Robert Winegarden ANII			5/7/2012

This Document is a QA Record

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-02996	Procedure Rev.:	4	Report No.:	UT-12-010
Workscope:	ISI	Work Order No.:	2050436	Page:	3 of 4

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-D/B3.110 | Location: Containment 302'

Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head

System ID: RC-2050

Component ID: II-PZR-01NTHW-09 | Size/Length: | Thickness/Diameter: 3.50"

Limitations: EXAM LIMITED TO HEAD SIDE ONLY, SEE PREVIOUS DATA 210-98-01 | Start Time: 1515 | Finish Time: 1730

Instrument Settings

Serial No.:	0134L2		
Manufacturer:	Krautkramer Branson		
Model:	USN 58L	Linearity:	L-12-004
Delay:	15.3406 µs	Range:	10.00"
M'tl Cal/Vel:	0.1271"/ µs	Energy:	High
Damping:	1000 Ohms	Reject:	0%
PRF Mode:	Auto High	SU Freq.:	2.25 MHz
Disp. Start:	IP	Rectify:	Full Wave
Inst. Freq.:	2.25 MHz		

Ax. Gain (dB): 50 | Circ. Gain (dB): 50

1 Screen Div. = 1.0 in. of Sound Path

Calibration Block

Cal. Block No.:	UT-050-1		
Thickness:	3.50"	Dia.:	FLAT
Cal. Blk. Temp.:	80°	Temp. Tool:	277634
Comp. Temp.:	89°	Temp. Tool:	277634

Recordable Indication(s): Yes ☐ No ☑

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 67.25% | Reviewed Previous Data: YES

Search Unit

Serial No.:	L19954		
Manufacturer:	KB AeroTech		
Size:	0.5"x1.0"	Model:	GAMMA
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	60°	Squint Angle:	N/A
Measured Angle:	62°	Mode:	SHEAR
Exit Point:	0.65"	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	RECT.	Contour:	FLAT
Wedge Style:	NON INTEGRAL		

Search Unit Cable

Type: RG58U Length: 12' No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 62

CW ☑ CCW ☑ Scan dB: 62

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUNDS SMOOTH

(If Yes, Ref. Attached Ultrasonic Indication Report.)

Cal. Checks	Time	Date
Initial Cal.	1415	4/30/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1815	4/30/2012

Couplant

Cal. Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	6045-83
Type:	SS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T SDH	80%	1.8	1.786"
1/2 T SDH	45%	3.6	3.532"
3/4 T SDH	31%	5.5	5.488"
*ID NOTCH	30%	7.1	7.148"
5/4 T SDH	15%	8.3	8.324"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
50	NSDH	69%	0.7	0.705"
N/A	N/A	N/A	N/A	N/A

Comments: SWEEP & VELOCITY CALIBRATION WAS ACHIEVED ON IIW 2 BLOCK S/N 78880. dB change 3/4 to 5/4 from clad side = 6dB. *ID NOTCH = +12dB.

Examiner	Level	Signature	Date
Malia, Mark	II-PDI	Mark Malia	4/30/2012
Perry, Robert	IIL		4/30/2012
N/A	N/A		

Reviewer	Signature	Date
George Buck Level III	George Buck	5/4/2012
James Salton		5/5/2012
Robert Winegarden ANII		5/7/2012

This Document is a QA Record

Determination of Percent Coverage for UT Examinations - Vessels

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-02996	Procedure Rev.:	4	Report No.:	UT-12-010
Workscope:	ISI	Work Order No.:	2050436	Page:	4 of 4

0 deg Planar

Scan 66.310 % Length X 100.000 % volume of length / 100 = 66.310 % total for 0 deg

45 deg

Scan 1 18.700 % Length X 100.000 % volume of length / 100 = 18.700 % total for Scan 1

Scan 2 93.620 % Length X 100.000 % volume of length / 100 = 93.620 % total for Scan 2

Scan 3 79.550 % Length X 100.000 % volume of length / 100 = 79.550 % total for Scan 3

Scan 4 79.550 % Length X 100.000 % volume of length / 100 = 79.550 % total for Scan 4

Add totals and divide by # scans = 67.855 **% total for 45 deg**

Other deg 60

Scan 1 14.870 % Length X 100.000 % volume of length / 100 = 14.870 % total for Scan 1

Scan 2 95.040 % Length X 100.000 % volume of length / 100 = 95.040 % total for Scan 2

Scan 3 79.550 % Length X 100.000 % volume of length / 100 = 79.550 % total for Scan 3

Scan 4 79.550 % Length X 100.000 % volume of length / 100 = 79.550 % total for Scan 4

Add totals and divide by # scans = 67.253 **% total for** 60 **deg**

Percent complete coverage

Add totals for each angle and scan required and divide by # of angles to determine;

67.139 **% Total for complete exam**

Note:

Supplemental coverage may be achieved by use of other angles / methods. When used, the coverage for volume not obtained with angles as noted above shall be calculated and added to the total to provide the percent total for the complete examination.

Site Field Supervisor: **Edmund Donovan** Date: **4/30/2012**

This Document is a QA Record

CAROLINA POWER & LIGHT COMPANY NDE REPORT/SUMMARY	Report No. ______ Page 1 Of 1

Plant/Unit HNP	Component(s) or Item(s) Examined II-PZR-01, NTHW-09

Procedure(s) ISI-210T

Per the ISI Program Plan, Interval 2, Period 1, Outage 1 (RFO-8), an ultrasonic examination (UT) was performed on the subject nozzle to head weld. This examination meets the requirements of ASME Section XI, 1989 Ed. and is acceptable to the evaluation criteria of IWA-3000.

The UT exam was performed using 0°, 45°, and 60° shear wave techniques from the head side of the PZR. Due to the nozzle to head configuration access is limited. Per cent of weld volume complete is as follows:

0° = 66.31%
45° = 67.85%
60° = ~~65.55%~~
67.26% CWB 11-19-98

Average of the 3 scans equals ~~66.57%~~ 67.14% CWB 11-19-98

Reported By: Scott Larson	Level III	Date 11-10-98
Reviewed By [signature]	Title CPL LvIII	Date 11-19-98

0099 0188 1554

Exam Item: NTHW-09
ISO/Drawing 1-ISI-PZR-1

ULTRASONIC CALIBRATION DATA SHEET

DATA SHEET NO. 210-98-01
PAGE 1 OF 15
PROC. NO. ISI-210T
REV. 0
CHANGE NO. N/A

INSTRUMENT

Make Staveley
Model Sonic-136
Serial No. 10101
Daily Linearity yes
VEL. 0.233 in/µs Delay 0.004 in
Range 5.0 in Rep. Rate 4K
Pulser/Damping 222ns/500-Ω
Freq. 2.25 MHz Filter 2
Mode P-E Reject OFF
Ref. Sensitivity: 33.6 dB
Dynamic Cal. Verified Yes
Remarks: N/A

SEARCH UNIT

Make AeroTech
Serial No. L12580
Size 1.0" Ø
Frequency 2.25 MHz
Mode Long °
Nom. Angle 0 °
Measured Angle N/A
Cable Type RG-58 A/U
Cable Length 6'
Wedge N/A
Remarks: N/A

COUPLANT

Brand Ultragel II
Batch No. 95225

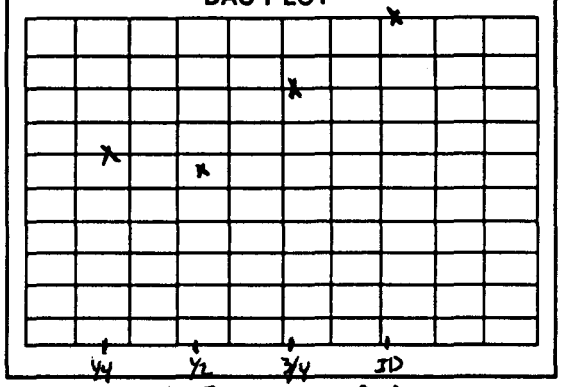
CALIBRATION BLOCK

No. 4T-50-1
"T" 3.5 Dia. N/A
Temperature 70 °F
Thermometer S/N 29424

CALIBRATION

0° [X] Axial [N/A] Circ. [N/A]
Metal Path [N/A] Depth [X]
Each Major Screen Div.= 0.5"
Remarks N/A

DAC PLOT



Remarks: ¼T 1.6 @ 60% 33.8dB
½T 3.3 @ 55% 33.8 dB
¾T 5.1 @ 80% 33.8 dB
ID 7.1 @ 100% 33.8 dB

SCAN dB 45.8				COMP. TEMP	EXAMINATION COMPLETE		GEOMETRIC INDICATIONS		RECORDABLE INDICATIONS		EVALUATION	
0°	⊥	=	N/A	88 °F	YES	NO	YES	NO	YES	NO	ACC.	REJ.
X	N/A	N/A	N/A	S/N 29424	N/A	X	N/A	X	N/A	X	X	N/A

REMARKS: INCOMPLETE HEAD TO NOZZLE SEE ATTACHED DRAWING FOR INCOMPLETE AREA

SCAN dB ____				COMP. TEMP	EXAMINATION COMPLETE		GEOMETRIC INDICATIONS		RECORDABLE INDICATIONS		EVALUATION	
0°	⊥	=		°F	YES	NO	YES	NO	YES	NO	ACC.	REJ.
				S/N	N/A							

REMARKS:

CAL. CHECKS	TIME
INITIAL CAL.	0700
INTERMEDIATE	N/A
INTERMEDIATE	N/A
INTERMEDIATE	N/A
FINAL CAL.	1340

ADDITIONAL COMMENTS

ANII REVIEW
ANII [signature]
DATE 11-25-98

EXAMINERS:
1. [signature] LEVEL II DATE 10-30-98
2. [signature] LEVEL III DATE 10/30/98

REVIEWERS:
1. [signature] LEVEL III DATE 11-3-98
2. ____ LEVEL ____ DATE ____
3. [signature] LEVEL III DATE 11-19-98

NES, Inc.

WELD LENGTH = 40.05 in

REQUIRED EXAM VOLUME = (ABEF)(40.05) = 637.2 in^3

VOLUME NOT EXAMINED = (ABCD)(40.05) = 214.7 in^3

% INCOMPLETE = $\left[\frac{214.7}{637.2}\right]$ 100 = 33.7%

% COMPLETE = 100 - 33.7 = 66.3

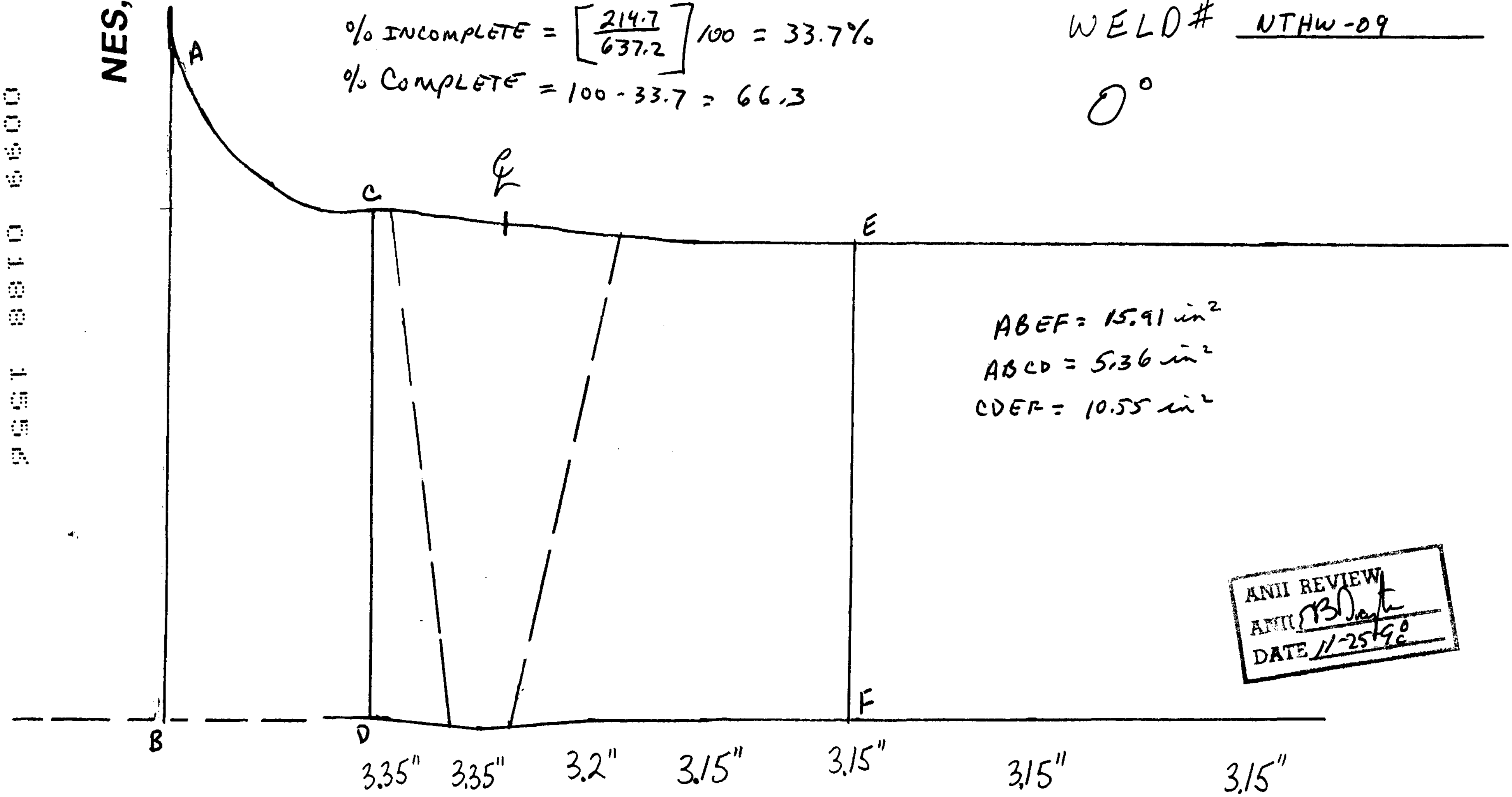
DATA SHEET # 210-98-01

PAGE 2 OF 15

ISO # 1-ISI-PZR-1

WELD # NTHW-09

0°



ABEF = 15.91 in^2

ABCD = 5.36 in^2

CDEF = 10.55 in^2

ANII REVIEW
ANII [signature]
DATE 11-25-98

[initials] 11-19-98

EXAMINER [signature] LEVEL II DATE 10-30-98

EXAMINER [signature] LEVEL III DATE 10/3/98

REVIEWER [signature] LEVEL III DATE 11-3-98

P 3 of 15
ISO# 1-ISI-PZR-1
DATA SHT # 210-98-01

WELD NO.:NTHW-09							0 DEGREE ONLY						
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
HEAD SIDE BASE MATERIAL AXIAL COVERAGE	40.05	40.05	100.00%	0	0.00%	15.91	10.55	66.31%	0	0.00%	66.31%	0.00%	66.31%

Edward M Block, CPL LIII, 11-19-98

ANII REVIEW
ANII EBlock
DATE 11-25-98

Exam Itc NTHW-09
ISO/Drawing 1-ISI-PZR-1

ULTRASONIC C. IBRATION DATA SHEET

DATA SHEET NO 210-98-01
PAGE 4 OF 15
PROC. NO. ISI-210
REV. 0
CHANGE NO. N/A

INSTRUMENT

Make STAVELEY
Model SONIC 136
Serial No. 10081
Daily Linearity YES
VEL. .124 in/μs Delay .653 in
Range 7.0 in Rep. Rate 4KHz
Pulser/Damping 222NS/500Ω
Freq. 2.25 MHz Filter 1
Mode P/E Reject OFF
Ref. Sensitivity: 45.4 dB
Dynamic Cal. Verified YES
Remarks: N/A

SEARCH UNIT

Make KBA
Serial No. G10188
Size .50"X1.00"
Frequency 2.25 MHz
Mode SHEAR °
Nom. Angle 45° °
Measured Angle 45°
Cable Type RG58A
Cable Length 12'
Wedge NONINTEGAL
Remarks: N/A

CALIBRATION BLOCK

No. UT-50-1
"T" 3.5" Dia. N/A
Temperature 70° °F
Thermometer S/N 29684

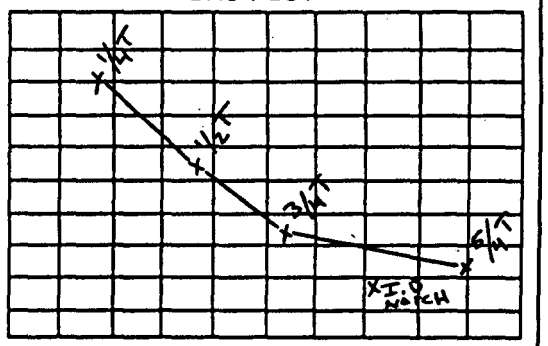
CALIBRATION

0° [N/A] Axial [X] Circ. [X]
Metal Path [X] Depth [N/A]
Each Major Screen Div.= .7"
Remarks N/A

COUPLANT

Brand ULTRAGEL II
Batch No. 95225

DAC PLOT



Remarks: N/A

CAL. CHECKS	TIME
INITIAL CAL.	0947
INTERMEDIATE	N/A
INTERMEDIATE	N/A
INTERMEDIATE	N/A
FINAL CAL.	1604

SCAN dB 57.4				COMP. TEMP	EXAMINATION COMPLETE		GEOMETRIC INDICATIONS		RECORDABLE INDICATIONS		EVALUATION	
0°	⊥	=	N/	88 °F	YES	NO	YES	NO	YES	NO	ACC.	REJ.
N/A	X	N/A	/A	S/N 29684	N/A	X	N/A	X	N/A	X	X	N/A

REMARKS: NOZZLE TO HEAD WELD. SCANNED BOTH DIRECTIONS FROM HEAD SIDE ONLY. EXAM INCOMPLETE DUE TO CONFIGURATION. SEE ATTACHED DRAWING FOR EXAM VOLUME LIMITATIONS.

SCAN dB 57.4				COMP. TEMP	EXAMINATION COMPLETE		GEOMETRIC INDICATIONS		RECORDABLE INDICATIONS		EVALUATION	
0°	⊥	=	N/	88 °F	YES	NO	YES	NO	YES	NO	ACC.	REJ.
N/A	N/A	X	/A	S/N 29684	N/A	X	N/A	X	N/A	X	X	N/A

REMARKS: NOZZLE TO HEAD WELD. SCANNED BOTH DIRECTIONS FROM HEAD SIDE ONLY. EXAM INCOMPLETE DUE TO CONFIGURATION. SEE ATTACHED DRAWING FOR EXAM VOLUME LIMITATIONS.

ADDITIONAL COMMENTS

N/A

ANII REVIEW
ANII
DATE 11-25-98

EXAMINERS:
1. [signature] LEVEL II DATE 10/30/98
2. [signature] LEVEL II DATE 10/30/98

REVIEWERS:
1. [signature] LEVEL III DATE 11-11-98
2. _____ LEVEL ____ DATE ____
3. [signature] LEVEL III DATE 11-19-98

TRANSDUCER BEAM SPREAD MEASUREMENT

Data Sheet No. 210-98-01
Page 5 of 15

INSTRUMENT		DATA MEASUREMENTS		
MFG: STAVELEY	MODEL: SONIC-136	POSITION	Distance from sound exit point to scribe line	HOLE DEPTH
		¼ "T" HOLE		
		Forward 20% DAC	0.57"	0.88"
SERIAL NO: 1011L		Forward 50% DAC	0.75"	0.88"
		Maximum Signal	0.88"	0.88"
		Backward 50% DAC	1.03"	0.88"
SEARCH UNIT		Backward 20% DAC	1.12"	0.88"
MFG: KB AEROTECH		½ "T" HOLE		
		Forward 20% DAC	1.45"	1.76"
SERIAL NO: G10188	SIZE: 0.5"X1.0"	Forward 50% DAC	1.55"	176"
		Maximum Signal	1.72"	1.76"
FREQUENCY: 2.25 MHZ	NOMINAL ANGLE: 45°	Backward 50% DAC	1.98"	1.76"
		Backward 20% DAC	2.18"	1.76"
WEDGE NO: O-6		¾ "T" HOLE		
		Forward 20% DAC	2.35"	2.64"
CALIBRATION BLOCK I.D. NO: UT-50-1		Forward 50% DAC	2.45"	2.64"
		Maximum Signal	2.68"	2.64"
		Backward 50% DAC	2.95"	2.64"
		Backward 20% DAC	3.15"	2.64"

Examiner [signature] Level II Date 10-27-98

Reviewer [signature] Level III Date 11-11-98

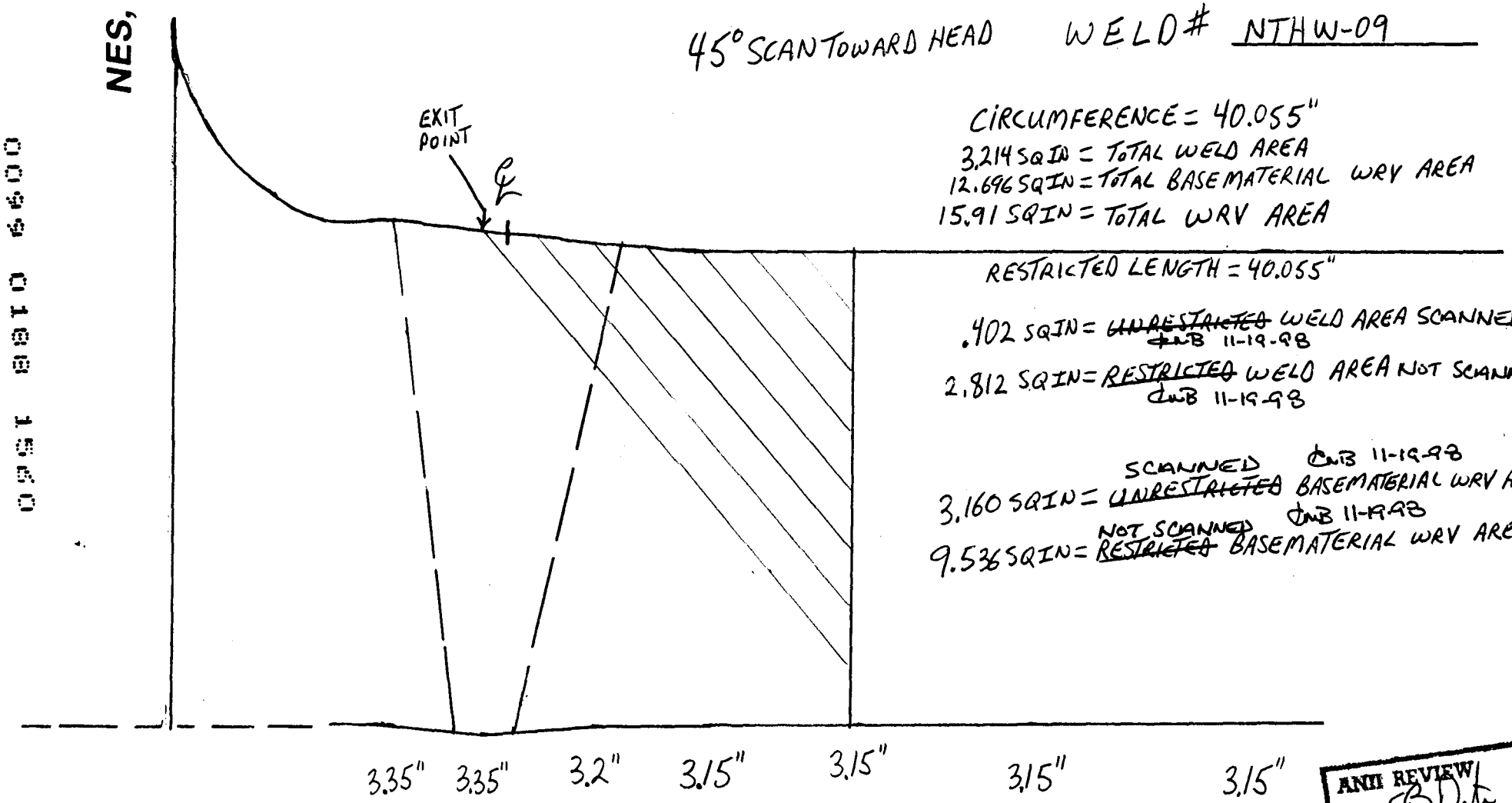
CMB 11-19-98

ANII REVIEW
ANII [signature]
DATE 11-25-98

NES, Inc.

DATA SHEET # 210-98 01
PAGE 6 OF 15 Rev 11-1-98
ISO # 1-ISI-PZR-1
WELD # NTHW-09

45° SCAN TOWARD HEAD



CIRCUMFERENCE = 40.055"
3.214 SQ IN = TOTAL WELD AREA
12.696 SQIN = TOTAL BASE MATERIAL WRV AREA
15.91 SQIN = TOTAL WRV AREA

RESTRICTED LENGTH = 40.055"

.402 SQIN = ~~UNRESTRICTED~~ WELD AREA SCANNED DMB 11-19-98
2.812 SQIN = ~~RESTRICTED~~ WELD AREA NOT SCANNED DMB 11-19-98

3.160 SQIN = ~~UNRESTRICTED~~ SCANNED DMB 11-19-98 BASE MATERIAL WRV AREA
9.536 SQIN = ~~RESTRICTED~~ NOT SCANNED DMB 11-19-98 BASE MATERIAL WRV AREA

ANII REVIEW
ANII [signature]
DATE 11-25-98

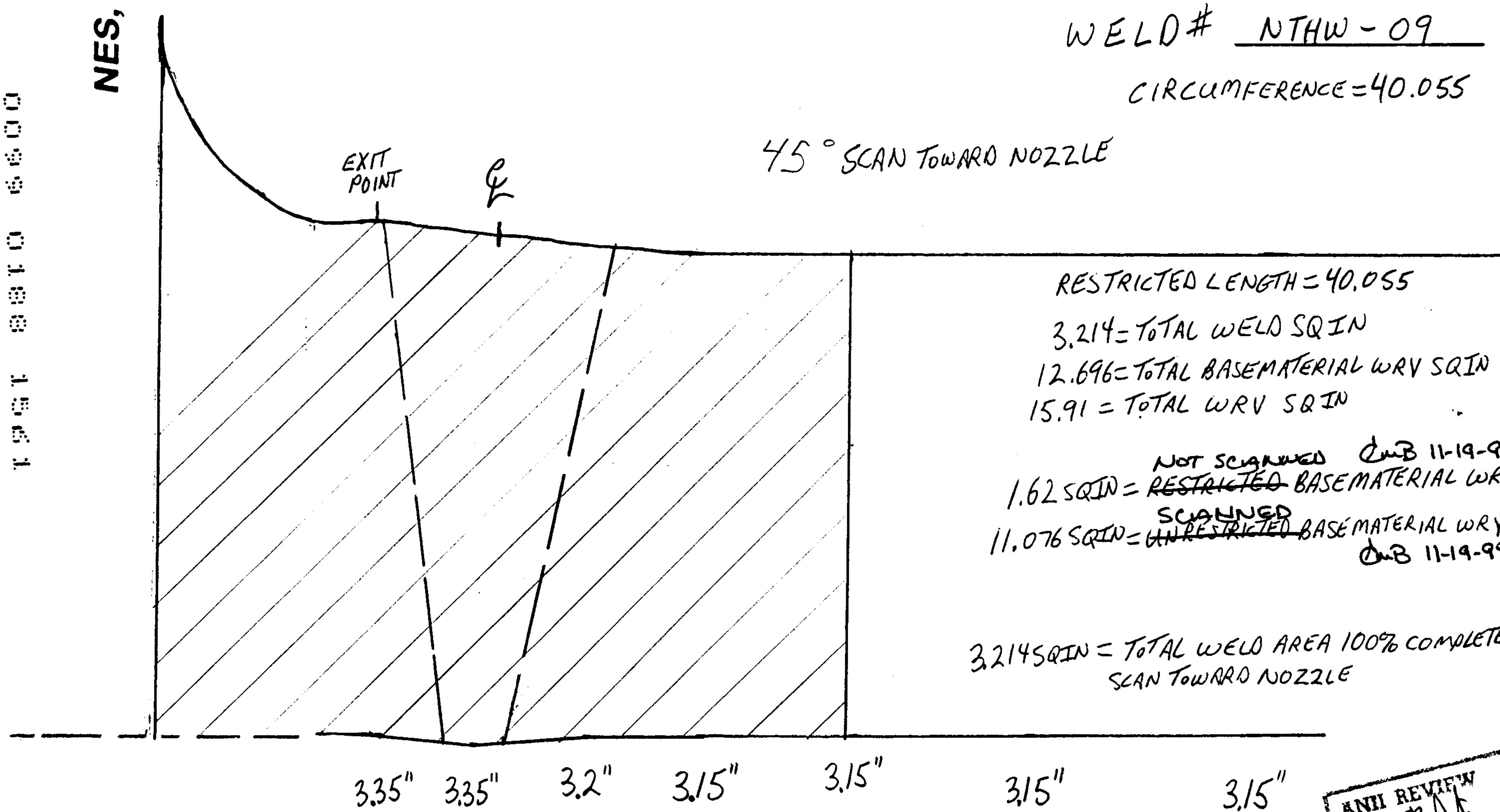
EXAMINER T. Hunt LEVEL II DATE 10/30/98
EXAMINER [signature] LEVEL II DATE 10/30/98
REVIEWER [signature] LEVEL III DATE 11-3-98

NES, Inc.

1561 8810 9900

DATA SHEET # 210-98-~~1~~01 [initialed] 11-11-98
PAGE 7 OF 15
ISO# 1-ISI-P2R-1
WELD# NTHW-09

CIRCUMFERENCE = 40.055



RESTRICTED LENGTH = 40.055

3.214 = TOTAL WELD SQ IN
12.696 = TOTAL BASEMATERIAL WRV SQIN
15.91 = TOTAL WRV SQ IN

1.62 SQIN = ~~RESTRICTED~~ NOT SCANNED BASEMATERIAL WRV [initials] 11-19-98
11.076 SQIN = ~~UNRESTRICTED~~ SCANNED BASEMATERIAL WRV [initials] 11-19-98

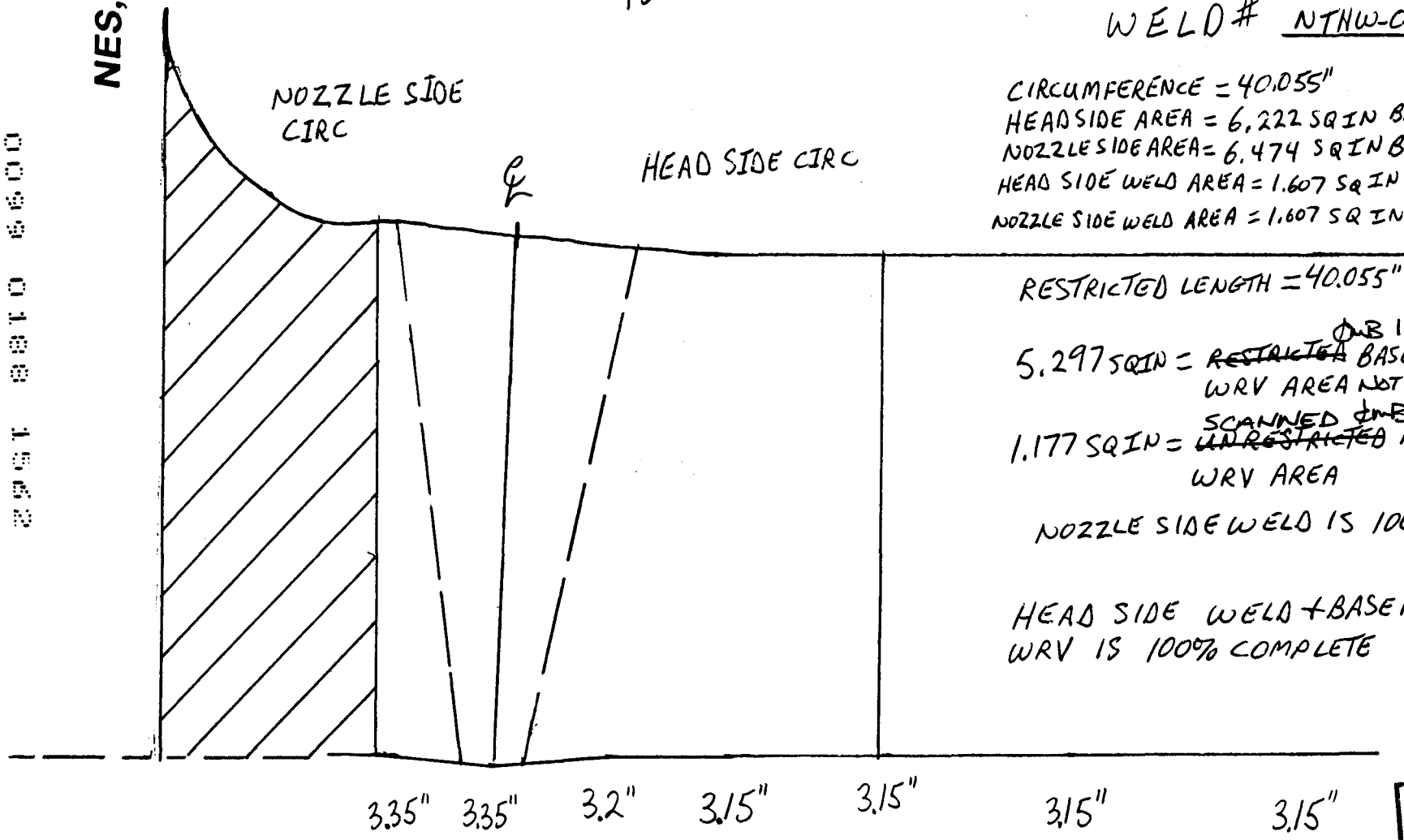
3.214 SQIN = TOTAL WELD AREA 100% COMPLETE SCAN TOWARD NOZZLE

ANII REVIEW
ANII [signature]
DATE 11-25-98

EXAMINER [signature] LEVEL II DATE 10/30/98
EXAMINER [signature] LEVEL II DATE 10/30/98
REVIEWER [signature] LEVEL III DATE 11-3-98

NES, Inc.

DATA SHEET # 210-98-6 _01
PAGE 8 OF 15
ISO # HSI-PZR-1
WELD # NTNW-09



CIRCUMFERENCE = 40.055"
HEAD SIDE AREA = 6.222 SQ IN BASE MATERIAL WRV
NOZZLE SIDE AREA = 6.474 SQ IN BASE MATERIAL WRV
HEAD SIDE WELD AREA = 1.607 SQ IN
NOZZLE SIDE WELD AREA = 1.607 SQ IN

RESTRICTED LENGTH = 40.055"

5.297 SQ IN = ~~RESTRICTED~~ BASE MATERIAL WRV AREA NOT SCANNED ΦMB 11-19-98

1.177 SQ IN = ~~UNRESTRICTED~~ SCANNED BASE MATERIAL WRV AREA ΦMB 11-19-98

NOZZLE SIDE WELD IS 100% COMPLETE

HEAD SIDE WELD + BASE MATERIAL WRV IS 100% COMPLETE

ANII REVIEW
ANII RBJ
DATE 11-25-98

EXAMINER T. Hunt LEVEL II DATE 10/30/98
EXAMINER D Bu LEVEL II DATE 10/30/98
REVIEWER Scott Larson LEVEL ~~III~~ DATE 11-3-98

P.9 of 15
ISO# 1-ISI-PZR-1
DATA SHT # Z10-98-01

WELD NO.:NTHW-09		45 DEGREE											
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
TOWARD HEAD BASE MATERIAL AXIAL COVERAGE	40.055	40.055	100.00%	0	0.00%	12.696	3.16	24.89%	0	0.00%	24.89%	0.00%	24.89%
TOWARD HEAD WELD AXIAL COVERAGE	40.055	40.055	100.00%	0	0.00%	3.214	0.402	12.51%	0	0.00%	12.51%	0.00%	12.51%
TOWARD NOZZLE BASE MATERIAL AXIAL COVERAGE	40.055	40.055	100.00%	0	0.00%	12.696	11.076	87.24%	0	0.00%	87.24%	0.00%	87.24%
TOWARD NOZZLE WELD AXIAL COVERAGE	40.055	0	0.00%	40.055	100.00%	3.214	0	0.00%	3.214	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE WELD	40.055	0	0.00%	40.055	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE BASEMATERIAL	40.055	0	0.00%	40.055	100.00%	6.222	0	0.00%	6.222	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE WELD	40.055	0	0.00%	40.055	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
NOZZ SIDE CIRC COVERAGE BASEMATERIAL	40.055	40.055	100.00%	0	0.00%	6.474	1.177	18.18%	0	0.00%	18.18%	0.00%	18.18%
TOTAL WELD VOLUME COVERAGE													67.85%

Edwin M Block CPL LIII, 11-19-98

ANII REVIEW
ANII [signature]
DATE 11-25-98

Exam Item: NTHW-9
ISO/Drawing 1-ISI-PZR-1

ULTRASONIC CALIBRATION DATA SHEET

DATA SHEET NO. 210-98-01
PAGE 10 OF 15
PROC. NO. ISI-210T
REV. 0
CHANGE NO. N/A

INSTRUMENT

Make STAVELEY
Model SONIC 136
Serial No. 1339
Daily Linearity YES
VEL. .126 in/μs Delay .961 in
Range 10 in Rep. Rate 4K
Pulser/Damping 222NS / 500 OHMS
Freq. 2.25 MHz Filter 1
Mode P/E Reject OFF
Ref. Sensitivity: 48.4 dB
Dynamic Cal. Verified YES
Remarks: NONE

SEARCH UNIT

Make KB-AEROTECH
Serial No. L03117
Size .5" X 1.0"
Frequency 2.25 MHz
Mode SHEAR °
Nom. Angle 60 °
Measured Angle 61
Cable Type RG58A/U
Cable Length 12'
Wedge NON-INTEGRAL
Remarks: LUCITE WEDGE MATERIAL

COUPLANT

Brand ULTRAGEL II
Batch No. 95225

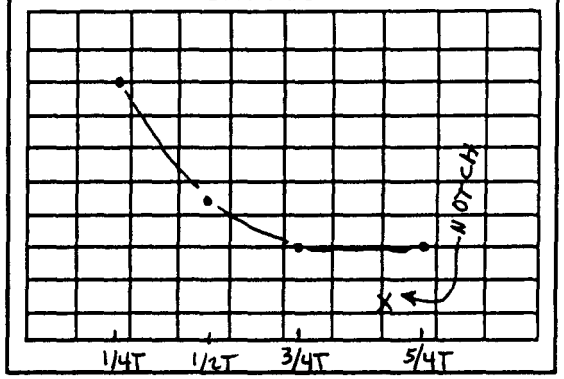
CALIBRATION BLOCK

No. UT 50-1
"T" 3.5" Dia. N/A
Temperature 71 °F
Thermometer S/N 29684

CALIBRATION

0° N/A Axial X Circ. X
Metal Path X Depth N/A
Each Major Screen Div.= 1"
Remarks NONE

DAC PLOT



Remarks: NONE

SCAN dB 60.4				COMP. TEMP	EXAMINATION COMPLETE		GEOMETRIC INDICATIONS		RECORDABLE INDICATIONS		EVALUATION	
0°	⊥	=	N/A	88 °F	YES	NO	YES	NO	YES	NO	ACC.	REJ.
N/A	X	N/A	A	S/N29684	N/A	X	N/A	X	N/A	X	X	N/A

REMARKS: NOZZLE TO HEAD WELD. SCANNED BOTH DIRECTIONS FROM HEAD ONLY. EXAM INCOMPLETE DUE TO CONFIGURATION. SEE ATTACHED DRAWING FOR EXAM VOLUMN LIMITATIONS.

SCAN dB 60.4				COMP. TEMP	EXAMINATION COMPLETE		GEOMETRIC INDICATIONS		RECORDABLE INDICATIONS		EVALUATION	
0°	⊥	=	N/A	88 °F	YES	NO	YES	NO	YES	NO	ACC.	REJ.
N/A	N/A	X	A	S/N29684	N/A	X	N/A	X	N/A	X	X	N/A

REMARKS: NOZZLE TO HEAD WELD. SCANNED BOTH DIRECTIONS FROM HEAD ONLY. EXAM INCOMPLETE DUE TO CONFIGURATION. SEE ATTACHED DRAWING FOR EXAM VOLUMN LIMITATIONS.

CAL. CHECKS	TIME
INITIAL CAL.	1054
INTERMEDIATE	
INTERMEDIATE	
INTERMEDIATE	
FINAL CAL.	1728

ADDITIONAL COMMENTS

ANII REVIEW
ANII [signature]
DATE 11-25-98

EXAMINERS:
1. Paul S Bleck LEVEL II DATE 10/30/98
2. N/A LEVEL N/A DATE N/A

REVIEWERS:
1. [signature] LEVEL III DATE 11-3-98
2. _____ LEVEL _____ DATE _____
3. [signature] LEVEL III DATE 11-19-98

TRANSDUCER BEAM SPREAD MEASUREMENT

Data Sheet No. 210-98-01
Page 11 of 15

INSTRUMENT		DATA MEASUREMENTS		
MFG: STAVELEY	MODEL SONIC 136	POSITION	Distance from sound exit point to scribe line	HOLE DEPTH
		¼ "T" HOLE		
		Forward 20% DAC	1.25"	0.88"
SERIAL NO: 10101		Forward 50% DAC	1.37"	0.88"
		Maximum Signal	1.67"	0.88"
		Backward 50% DAC	2.0"	0.88"
SEARCH UNIT		Backward 20% DAC	2.13"	0.88"
MFG: KB-AEROTECH		½ "T" HOLE		
		Forward 20% DAC	2.62"	1.76"
SERIAL NO: L03117	SIZE: .5"X1.0"	Forward 50% DAC	2.75"	1.76"
		Maximum Signal	3.15"	1.76"
FREQUENCY: 2.25	NOMINAL ANGLE: 60°	Backward 50% DAC	3.47"	1.76"
		Backward 20% DAC	3.63"	1.76"
WEDGE NO: 05		¾ "T" HOLE		
		Forward 20% DAC	3.85"	2.64"
CALIBRATION BLOCK I.D. NO: UT-50-1		Forward 50% DAC	4.13"	2.64"
		Maximum Signal	4.80"	2.64"
		Backward 50% DAC	5.65"	2.64"
		Backward 20% DAC	6.10"	2.64"

Examiner Edwyn R Donovan Level II Date 10-27-98

Reviewer Dave Lawson Level III Date 11-11-98

DLB 11-19-98

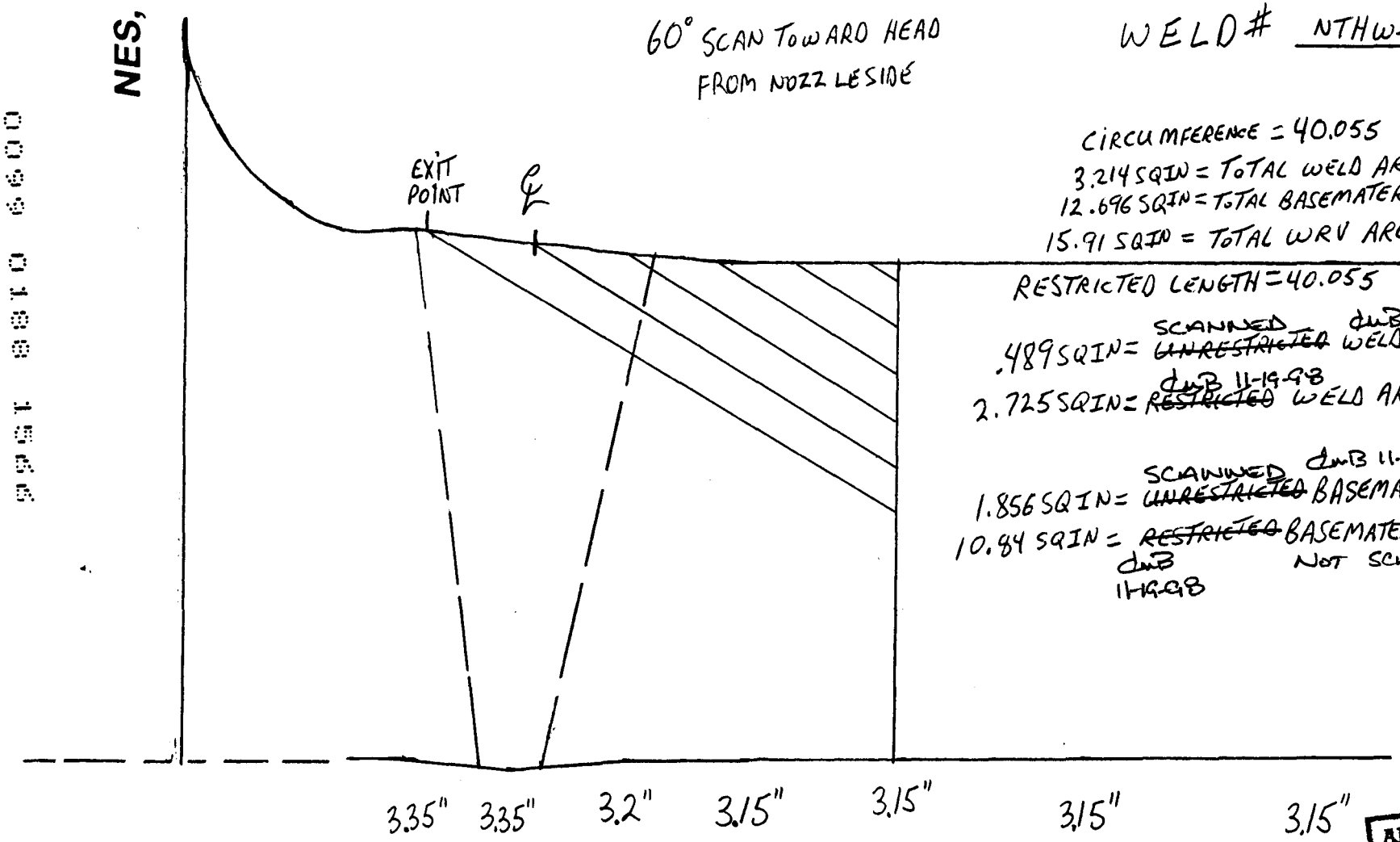
ANII REVIEW
ANII SBH
DATE 11-25-98

nes

SL 11-11-98

DATA SHEET # 210-98-Ø 01
PAGE 12 OF 15
ISO # 1-ISI-PZR-1
WELD # NTHW-09

NES, Inc.



CIRCUMFERENCE = 40.055
3.214 SQIN = TOTAL WELD AREA
12.696 SQIN = TOTAL BASEMATERIAL WRV AREA
15.91 SQIN = TOTAL WRV AREA

RESTRICTED LENGTH = 40.055

.489 SQIN = ~~UNRESTRICTED~~ SCANNED WELD AREA dwb 11-19-98
2.725 SQIN = ~~RESTRICTED~~ dwb 11-19-98 WELD AREA NOT SCANNED

1.856 SQIN = ~~UNRESTRICTED~~ SCANNED BASEMATERIAL WRV AREA dwb 11-19-98
10.84 SQIN = ~~RESTRICTED~~ BASEMATERIAL WRV AREA NOT SCANNED dwb 11-19-98

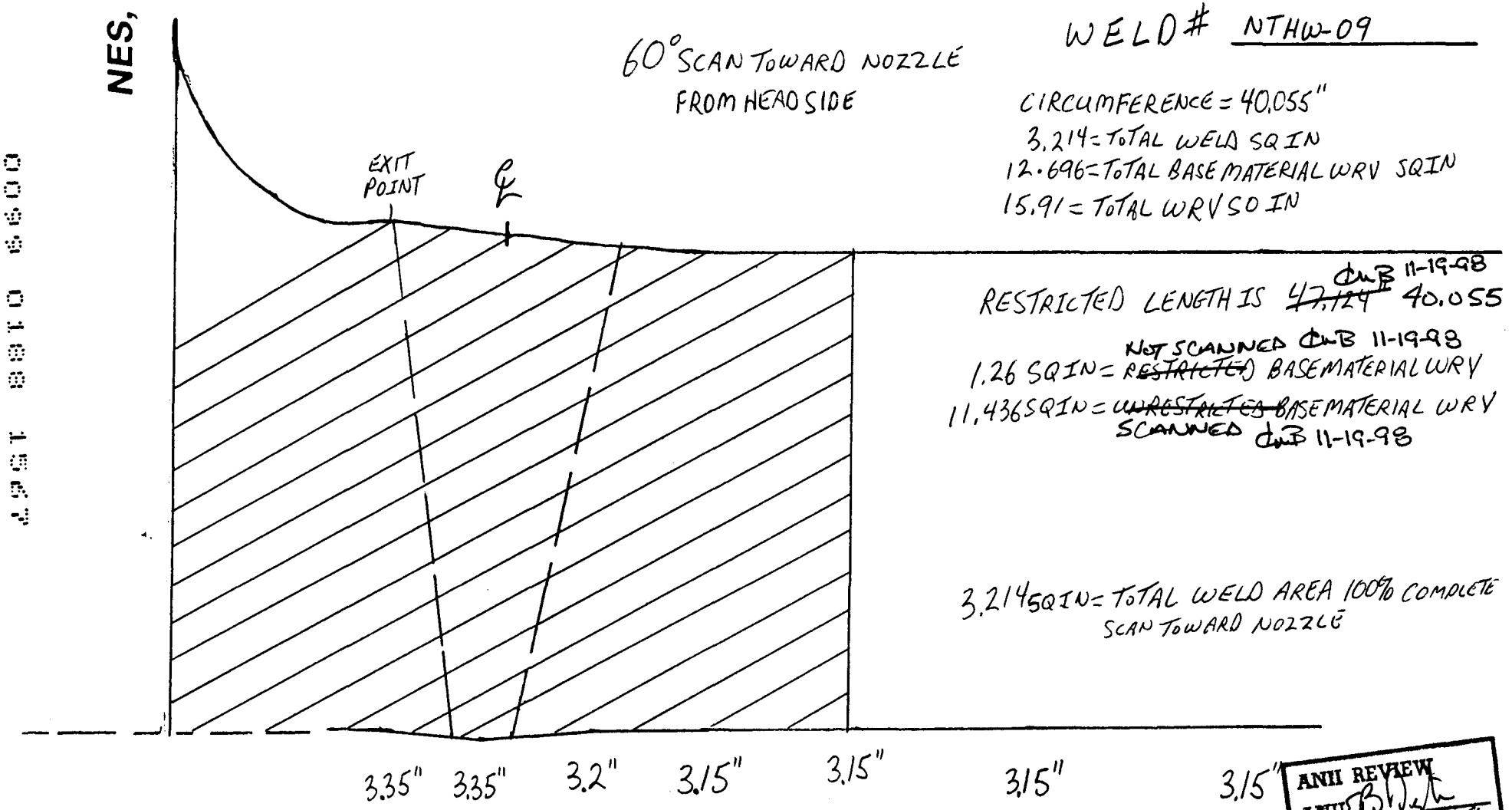
ANII REVIEW
ANII SBH
DATE 11-25-98

EXAMINER Paul S Bleeker LEVEL II DATE 10/30/98
EXAMINER N/A LEVEL N/A DATE N/A
REVIEWER Scott Larson LEVEL III DATE 11-3-98

dwb 11-19-98

NES, Inc.

DATA SHEET # 210-98-01
PAGE 13 OF 15
ISO # 1-ISI-P2R-1
WELD # NTHW-09



CIRCUMFERENCE = 40.055"
3.214 = TOTAL WELD SQ IN
12.696 = TOTAL BASE MATERIAL WRV SQIN
15.91 = TOTAL WRV SQ IN

RESTRICTED LENGTH IS ~~47.124~~ CwB 11-19-98 40.055"

1.26 SQIN = ~~RESTRICTED~~ NOT SCANNED CwB 11-19-98 BASE MATERIAL WRV

11.436 SQIN = ~~UNRESTRICTED~~ BASE MATERIAL WRV SCANNED CwB 11-19-98

3.214 SQIN = TOTAL WELD AREA 100% COMPLETE SCAN TOWARD NOZZLE

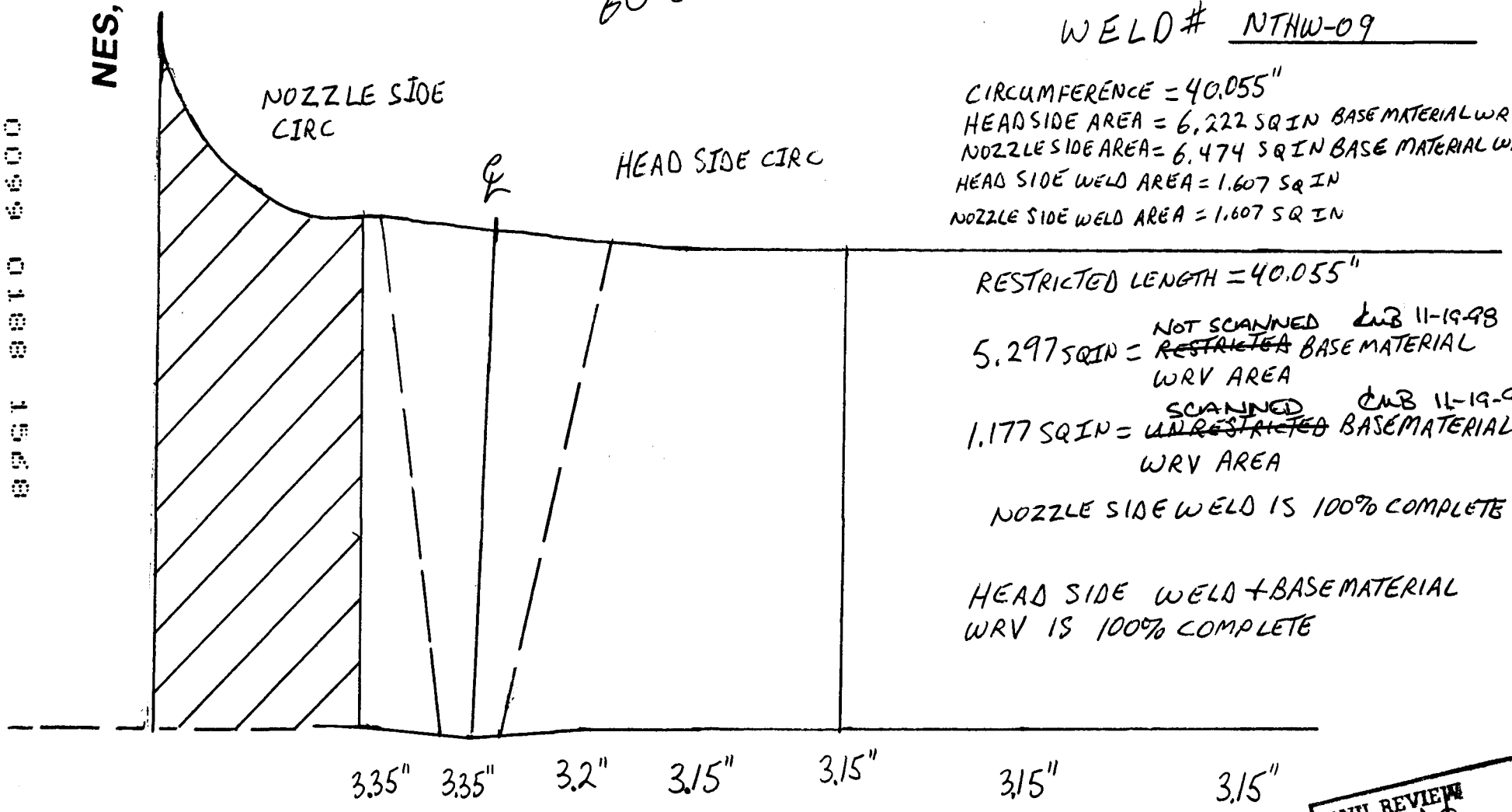
ANII REVIEW
ANII BWJ
DATE 11-25-98

CwB
11-19-98

EXAMINER Paul S Bleche LEVEL II DATE 10/30/98
EXAMINER N/A LEVEL N/A DATE N/A
REVIEWER Scott Sumner LEVEL III DATE 11-3-98

NES, Inc.

DATA SHEET # 210-98-01
PAGE 14 OF 15
ISO # 1-ISI-PZR-1
WELD # NTHW-09



CIRCUMFERENCE = 40.055"
HEADSIDE AREA = 6.222 SQ IN BASE MATERIAL WRV
NOZZLE SIDE AREA = 6.474 SQ IN BASE MATERIAL WRV
HEAD SIDE WELD AREA = 1.607 SQ IN
NOZZLE SIDE WELD AREA = 1.607 SQ IN

RESTRICTED LENGTH = 40.055"

5.297 SQ IN = ~~RESTRICTED~~ NOT SCANNED BASE MATERIAL WRV AREA — CMB 11-19-98

1.177 SQ IN = ~~UNRESTRICTED~~ SCANNED BASEMATERIAL WRV AREA — CMB 11-19-98

NOZZLE SIDE WELD IS 100% COMPLETE

HEAD SIDE WELD + BASEMATERIAL WRV IS 100% COMPLETE

ANII REVIEW
ANII EBN
DATE 11-25-98

CMB
11-19-98

EXAMINER Paul S Blecha LEVEL II DATE 10/30/98
EXAMINER N/A LEVEL N/A DATE N/A
REVIEWER [signature] LEVEL ~~III~~ DATE 11-3-98

dmB 11-19-98

Pg 15 of 15

ISI# 1-ISI-PZR-1

DATA SHT # 210-98-01

WELD NO.:NTHW-09		60 DEGREE											
	TOTAL WELD LENGTH (INCHES)	WELD LENGTH EXAMINED RESTRICTED (INCHES)	LENGTH EXAMINED RESTRICTED %	WELD LENGTH EXAMINED UNRESTRICTED (INCHES)	WELD LENGTH EXAMINED UNRESTRICTED %	CROSS SECTION AREA (SQ. INCHES)	RESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION RESTRICTED COVERAGE %	UNRESTRICTED CROSS SECTION AREA EXAMINED (SQ. INCHES)	TOTAL CROSS SECTION UNRESTRICTED COVERAGE %	TOTAL RESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL UNRESTRICTED COVERAGE (LENGTH X CROSS SECTION) %	TOTAL COVERAGE (RESTRICTED + UNRESTRICTED) %
TOWARD HEAD BASE MATERIAL AXIAL COVERAGE	40.055	40.055	100.00%	0	0.00%	12.696	1.856	14.62%	0	0.00%	14.62%	0.00%	14.62%
TOWARD HEAD WELD AXIAL COVERAGE	40.055	40.055	100.00%	0	0.00%	3.214	0.489	15.21%	0	0.00%	15.21%	0.00%	15.21%
TOWARD NOZZLE BASE MATERIAL AXIAL COVERAGE	40.055	40.055	100.00%	0	0.00%	12.696	11.438	90.08%	0	0.00%	90.08%	0.00%	90.08%
TOWARD NOZZLE WELD AXIAL COVERAGE	40.055	0	0.00%	40.055	100.00%	3.214	0	0.00%	3.214	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE WELD	40.055	0	0.00%	40.055	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
HEAD SIDE CIRC COVERAGE BASEMATERIAL	40.055	0	0.00%	40.055	100.00%	6.222	0	0.00%	6.222	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE WELD	40.055	0	0.00%	40.055	100.00%	1.607	0	0.00%	1.607	100.00%	0.00%	100.00%	100.00%
NOZZLE SIDE CIRC COVERAGE BASEMATERIAL	40.055	40.055	100.00%	0	0.00%	6.474	1.177	18.18%	0	0.00%	18.18%	0.00%	18.18%
TOTAL WELD VOLUME COVERAGE													67.26%

Johnnie Block, CPL III, 11-19-98

ANII REVIEW
ANII EB Dyte
DATE 11-25-98

11/19/98

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-03000	Procedure Rev.:	4	Report No.:	UT-12-014
Workscope:	ISI	Work Order No.:	2050436	Page:	1 of 5

Code:	2001 Edition, 2003 Addenda	Cat./Item:	B-D/B3.110	Location:	Containment 302'
Drawing No.:	1-ISI-PZR-1	Description:	Nozzle to Head		
System ID:	RC-2050				
Component ID:	II-PZR-01NTHW-13	Size/Length:	N/A	Thickness/Diameter:	N/A
Limitations:	CONFIGURATION (SEE SKETCH)	Start Time:	1302	Finish Time:	1520

Instrument Settings

Serial No.:	021063		
Manufacturer:	General Electric		
Model:	USN 58Lsw	Linearity:	L-12-001
Delay:	1.15 µs	Range:	5.000"
M'tl Cal/Vel:	0.2330"/µs	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220
Ax. Gain (dB):	17	Circ. Gain (dB):	N/A
1 Screen Div. =	0.5	in. of	Depth

Calibration Block

Cal. Block No.:	UT-050-1		
Thickness:	3.50"	Dia.:	FLAT
Cal. Blk. Temp.:	85°	Temp. Tool:	277510
Comp. Temp.:	90°	Temp. Tool:	277510

Search Unit

Serial No.:	C29344		
Manufacturer:	KB AeroTech		
Size:	0.75"	Model:	Gamma
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	0°	Squint Angle:	N/A
Measured Angle:	0°	Mode:	LONG.
Exit Point:	N/A	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	ROUND	Contour:	N/A
Wedge Style:	INTEGRAL		

Search Unit Cable

Type:	RG58	Length:	6'	No. Conn.:	0

Scan Coverage

Upstream	☑	Downstream	☑	Scan dB:	40
CW	☑	CCW	☑	Scan dB:	40
Exam Surface:	OUTSIDE DIAMETER				
Surface Condition:	GROUND FLUSH				

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 69.26% Reviewed Previous Data: YES

Cal. Checks	Time	Date
Initial Cal.	1130	5/3/2012
Inter. Cal.	1302	5/3/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1540	5/3/2012

Couplant

Cal. Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	792221
Type:	CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
1/4 T	82%	1.6	0.81"
1/2 T	82%	3.4	1.676"
3/4 T	56%	5.1	2.54"
N/A	N/A	N/A	N/A

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth
9	1" BW	81%	2.0	1.01"
N/A	N/A	N/A	N/A	N/A

Comments: NO RECORDABLE INDICATIONS.

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Mahoney, Patrick V.			5/3/2012	George Buck Level III		George Buck	5/4/2012
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				James Salton			5/5/2012
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Robert Winegarden ANII			5/7/2012

This Document is a QA Record

UT Calibration/Examination

Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-03000	Procedure Rev.:	4	Report No.:	UT-12-014
Workscope:	ISI	Work Order No.:	2050436	Page:	2 of 5

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-D/B3.110 | Location: Containment 302'

Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head

System ID: RC-2050

Component ID: II-PZR-01NTHW-13 | Size/Length: N/A | Thickness/Diameter: N/A

Limitations: CONFIGURATION (SEE SKETCH) | Start Time: 1302 | Finish Time: 1520

Instrument Settings

Serial No.:	021063		
Manufacturer:	General Electric		
Model:	USN 58Lsw	Linearity:	L-12-001
Delay:	12.6941 µs	Range:	6.400"
M'tl Cal/Vel:	0.1280"/µs	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220

Ax. Gain (dB): 32.5 | Circ. Gain (dB): N/A

1 Screen Div. = 0.640 in. of Sound Path

Calibration Block

Cal. Block No.: UT-050-1

Thickness: 3.50" | Dia.: FLAT

Cal. Blk. Temp.: 85° | Temp. Tool: 277510

Comp. Temp.: 90° | Temp. Tool: 277510

Search Unit

Serial No.:	C18133		
Manufacturer:	KB AeroTech		
Size:	0.5" x 1.0"	Model:	Gamma
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	45°	Squint Angle:	N/A
Measured Angle:	45°	Mode:	SHEAR
Exit Point:	0.65"	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	RECT.	Contour:	N/A
Wedge Style:	NON INTEGRAL		

Search Unit Cable

Type: RG58 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 44

CW ☑ CCW ☑ Scan dB: 44

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND FLUSH

Cal. Checks	Time	Date
Initial Cal.	1133	5/3/2012
Inter. Cal.	1302	5/3/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1543	5/3/2012

Couplant

Cal. Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Exam Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221

Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80%	1.8	1.18"
1/2 T	58%	3.7	2.4"
3/4 T	40%	5.7	3.70"
ID	22%	8.0	5.11"
5/4 T	30%	10.0	6.38"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
55	FSDH	52%	1.6	1.06"
N/A	N/A	N/A	N/A	N/A

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: NO RECORDABLE INDICATIONS.

Percent Of Coverage Obtained > 90%: 69.26% | Reviewed Previous Data: YES

	Level	Signature	Date		Signature	Date
Examiner: Mahoney, Patrick V.	II		5/2/2012	Reviewer: George Buck Level III	George Buck	5/4/2012
Examiner: N/A	N/A			Site Review: James Salton		5/5/2012
Other: N/A	N/A			ANII Review: Robert Winegarden ANII		5/7/2012

This Document is a QA Record

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-03000	Procedure Rev.:	4	Report No.:	UT-12-014
Workscope:	ISI	Work Order No.:	2050436	Page:	3 of 5

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-D/B3.110 | Location: Containment 302'

Drawing No.: 1-ISI-PZR-1 | Description: Nozzle to Head

System ID: RC-2050

Component ID: II-PZR-01NTHW-13 | Size/Length: N/A | Thickness/Diameter: N/A

Limitations: CONFIGURATION (SEE SKETCH) | Start Time: 1302 | Finish Time: 1520

Instrument Settings

Serial No.:	021063		
Manufacturer:	General Electric		
Model:	USN 58Lsw	Linearity:	L-12-001
Delay:	17.2038 µs	Range:	9.281"
M'tl Cal/Vel:	0.1280"/µs	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220

Ax. Gain (dB): 40 | Circ. Gain (dB): N/A

1 Screen Div. = 0.928 in. of Sound Path

Calibration Block

Cal. Block No.: UT-050-1

Thickness: 3.50" | Dia.: FLAT

Cal. Blk. Temp.: 85° | Temp. Tool: 277510

Comp. Temp.: 90° | Temp. Tool: 277510

Search Unit

Serial No.:	M20228		
Manufacturer:	KB AeroTech		
Size:	0.5" x 1"	Model:	Gamma
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	60°	Squint Angle:	N/A
Measured Angle:	63°	Mode:	SHEAR
Exit Point:	0.65"	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	RECT.	Contour:	N/A
Wedge Style:	NON INTEGRAL		

Search Unit Cable

Type: RG58 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ | Downstream ☑ | Scan dB: 52

CW ☑ | CCW ☑ | Scan dB: 52

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND FLUSH

Cal. Checks	Time	Date
Initial Cal.	1138	5/3/2012
Inter. Cal.	1302	5/3/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1540	5/3/2012

Couplant

Cal. Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.: 792221

Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80%	1.98	1.75"
1/2 T	41%	3.86	3.56"
3/4 T	32%	5.87	5.49
ID	11%	8.0	7.38"
5/4 T	17%	10.0	9.28"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
41	FSDH	44%	1.6	1.51"
N/A	N/A	N/A	N/A	N/A

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: NO RECORDABLE INDICATIONS.

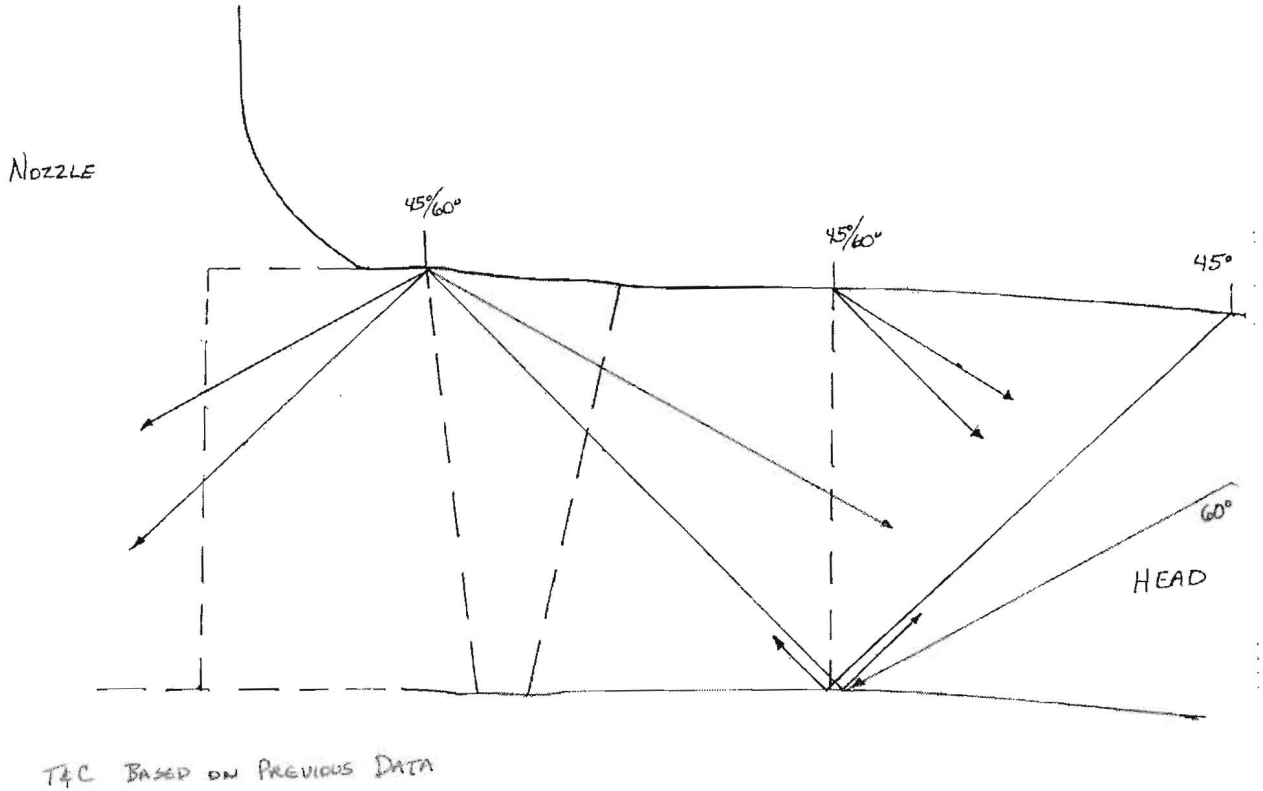
Percent Of Coverage Obtained > 90%: 69.26% | Reviewed Previous Data: YES

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Mahoney, Patrick V.			5/2/2012	George Buck Level III		George Buck	5/4/2012
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				James Salton			5/5/2012
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Robert Winegarden ANII			5/7/2012

This Document is a QA Record

Summary No.: H-03000

Sketch or Photo: Y:\Shared\Iddeal\HNP_Data\DataSheet_Info\UT-12-014.jpg



T&C BASED ON PREVIOUS DATA

Determination of Percent Coverage for UT Examinations - Vessels

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-03000	Procedure Rev.:	4	Report No.:	UT-12-014
Workscope:	ISI	Work Order No.:	2050436	Page:	5 of 5

0 deg Planar

Scan 100.000 % Length X 74.700 % volume of length / 100 = 74.700 % total for 0 deg

45 deg

Scan 1 100.000 % Length X 90.900 % volume of length / 100 = 90.900 % total for Scan 1

Scan 2 100.000 % Length X 31.300 % volume of length / 100 = 31.300 % total for Scan 2

Scan 3 100.000 % Length X 74.700 % volume of length / 100 = 74.700 % total for Scan 3

Scan 4 100.000 % Length X 74.700 % volume of length / 100 = 74.700 % total for Scan 4

Add totals and divide by # scans = 67.900 **% total for 45 deg**

Other deg 60

Scan 1 100.000 % Length X 94.600 % volume of length / 100 = 94.600 % total for Scan 1

Scan 2 100.000 % Length X 16.700 % volume of length / 100 = 16.700 % total for Scan 2

Scan 3 100.000 % Length X 74.700 % volume of length / 100 = 74.700 % total for Scan 3

Scan 4 100.000 % Length X 74.700 % volume of length / 100 = 74.700 % total for Scan 4

Add totals and divide by # scans = 65.175 **% total for** 60 **deg**

Percent complete coverage

Add totals for each angle and scan required and divide by # of angles to determine;

69.258 **% Total for complete exam**

Note:

Supplemental coverage may be achieved by use of other angles / methods. When used, the coverage for volume not obtained with angles as noted above shall be calculated and added to the total to provide the percent total for the complete examination.

Site Field Supervisor: Edmund Donovan Date: 5/3/2012

This Document is a QA Record

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-02995	Procedure Rev.:	4	Report No.:	UT-12-015
Workscope:	ISI	Work Order No.:	2050436	Page:	1 of 5

Code:	2001 Edition, 2003 Addenda	Cat./Item:	B-D/B3.110	Location:	Containment 260'
Drawing No.:	1-ISI-PZR-1	Description:	Surge Nozzle to Vessel Weld		
System ID:	RC-2050				
Component ID:	II-PZR-01NTHW-08	Size/Length:	N/A	Thickness/Diameter:	N/A
Limitations:	CONFIGURATION (SEE SKETCH)	Start Time:	1020	Finish Time:	1130

Instrument Settings

Serial No.:	021063		
Manufacturer:	General Electric		
Model:	USN 58Lsw	Linearity:	L-12-001
Delay:	1.15 µs	Range:	5.000"
M'tl Cal/Vel:	0.2330"/µs	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220
Ax. Gain (dB):	17	Circ. Gain (dB):	N/A
1 Screen Div. =	0.5	in. of	Depth

Calibration Block

Cal. Block No.:	UT-050-1		
Thickness:	3.50"	Dia.:	FLAT
Cal. Blk. Temp.:	85°	Temp. Tool:	277510
Comp. Temp.:	91°	Temp. Tool:	277510

Search Unit

Serial No.:	C29344		
Manufacturer:	KB AeroTech		
Size:	0.75"	Model:	Gamma
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	0°	Squint Angle:	N/A
Measured Angle:	0°	Mode:	LONG.
Exit Point:	N/A	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	ROUND	Contour:	N/A
Wedge Style:	INTEGRAL		

Search Unit Cable

Type:	RG58	Length:	6'	No. Conn.:	0

Scan Coverage

Upstream	☑	Downstream	☑	Scan dB:	40
CW	☑	CCW	☑	Scan dB:	40
Exam Surface:	OUTSIDE DIAMETER				
Surface Condition:	GROUND FLUSH				

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 59.1% Reviewed Previous Data: YES

Cal. Checks	Time	Date
Initial Cal.	0816	5/2/2012
Inter. Cal.	1020	5/2/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1155	5/2/2012

Couplant

Cal. Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.
Exam Batch:	05325
Type:	Ultragel II
Mfg.:	Sonotech, Inc.

Reference Block

Serial No.:	792221
Type:	CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
1/4 T	82%	1.6	0.81"
1/2 T	82%	3.4	1.676"
3/4 T	56%	5.1	2.54"
N/A	N/A	N/A	N/A

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth
9	1" BW	81%	2.0	1.01"
N/A	N/A	N/A	N/A	N/A

Comments: WELD DISCONTINUITIES WERE OBSERVED NEAR RT STAMP #1 BELOW RECORDABLE LEVELS. REFLECTORS WERE VERIFIED NOT TO BE ID CONNECTED OR SERVICE INDUCED. GLB

Examiner	Level	II	Signature	Date	Reviewer	Signature	Date
Mahoney, Patrick V.				5/2/2012	George Buck Level III	George Buck	5/4/2012
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A					James Salton		5/5/2012
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					Robert Winegarden ANII		5/7/2012

This Document is a QA Record

UT Calibration/Examination

Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-02995	Procedure Rev.:	4	Report No.:	UT-12-015
Workscope:	ISI	Work Order No.:	2050436	Page:	2 of 5

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-D/B3.110 | Location: Containment 260'

Drawing No.: 1-ISI-PZR-1 | Description: Surge Nozzle to Vessel Weld

System ID: RC-2050

Component ID: II-PZR-01NTHW-08 | Size/Length: N/A | Thickness/Diameter: N/A

Limitations: CONFIGURATION (SEE SKETCH) | Start Time: 1020 | Finish Time: 1130

Instrument Settings

Serial No.:	021063		
Manufacturer:	General Electric		
Model:	USN 58Lsw	Linearity:	L-12-001
Delay:	12.6941 µs	Range:	6.400"
M'tl Cal/Vel:	0.1280"/µs	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220

Ax. Gain (dB): 32.5 | Circ. Gain (dB): N/A

1 Screen Div. = 0.640 in. of Sound Path

Calibration Block

Cal. Block No.: UT-050-1

Thickness: 3.50" | Dia.: FLAT

Cal. Blk. Temp.: 85° | Temp. Tool: 277510

Comp. Temp.: 91° | Temp. Tool: 277510

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Search Unit

Serial No.:	C18133		
Manufacturer:	KB AeroTech		
Size:	0.5" x 1"	Model:	Gamma
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	45°	Squint Angle:	N/A
Measured Angle:	45°	Mode:	SHEAR
Exit Point:	0.65"	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	RECT.	Contour:	N/A
Wedge Style:	NON INTEGRAL		

Search Unit Cable

Type: RG58 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 44

CW ☑ CCW ☑ Scan dB: 44

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND FLUSH

Cal. Checks	Time	Date
Initial Cal.	0802	5/2/2012
Inter. Cal.	1035	5/2/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1157	5/2/2012

Couplant

Cal. Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Exam Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221

Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80%	1.8	1.18"
1/2 T	58%	3.7	2.4"
3/4 T	40%	5.7	3.70"
ID	22%	8.0	5.11"
5/4 T	30%	10.0	6.38"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
55	FSDH	52%	1.6	1.06"
N/A	N/A	N/A	N/A	N/A

Comments: SEE PAGE 1 FOR COMMENTS.

Percent Of Coverage Obtained > 90%: 59.1% | Reviewed Previous Data: YES

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Mahoney, Patrick V.			5/2/2012	George Buck Level III		George Buck	5/4/2012
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				James Salton			5/5/2012
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Robert Winegarden ANII			5/7/2012

This Document is a QA Record

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-02995	Procedure Rev.:	4	Report No.:	UT-12-015
Workscope:	ISI	Work Order No.:	2050436	Page:	3 of 5

Code: 2001 Edition, 2003 Addenda | Cat./Item: B-D/B3.110 | Location: Containment 260'

Drawing No.: 1-ISI-PZR-1 | Description: Surge Nozzle to Vessel Weld

System ID: RC-2050

Component ID: II-PZR-01NTHW-08 | Size/Length: N/A | Thickness/Diameter: N/A

Limitations: CONFIGURATION (SEE SKETCH) | Start Time: 1020 | Finish Time: 1130

Instrument Settings

Serial No.:	021063		
Manufacturer:	General Electric		
Model:	USN 58Lsw	Linearity:	L-12-001
Delay:	17.2038 µs	Range:	9.281"
M'tl Cal/Vel:	0.1280"/µs	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220

Ax. Gain (dB): 40 | Circ. Gain (dB): N/A

1 Screen Div. = 0.928 in. of Sound Path

Calibration Block

Cal. Block No.: UT-050-1

Thickness: 3.50" | Dia.: FLAT

Cal. Blk. Temp.: 85° | Temp. Tool: 277510

Comp. Temp.: 91° | Temp. Tool: 277510

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Search Unit

Serial No.:	M20228		
Manufacturer:	KB AeroTech		
Size:	0.5" x 1"	Model:	Gamma
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	60°	Squint Angle:	N/A
Measured Angle:	63°	Mode:	SHEAR
Exit Point:	0.65"	# of Elements:	1
Config.:	SINGLE	Focus:	N/A
Shape:	RECT.	Contour:	N/A
Wedge Style:	NON INTEGRAL		

Search Unit Cable

Type: RG58 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 50

CW ☑ CCW ☑ Scan dB: 50

Exam Surface: OUTSIDE DIAMETER

Surface Condition: GROUND FLUSH

Cal. Checks	Time	Date
Initial Cal.	0809	5/2/2012
Inter. Cal.	1105	5/2/2012
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1201	5/2/2012

Couplant

Cal. Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Exam Batch: 05325

Type: Ultragel II

Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 792221

Type: CS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80%	1.98	1.75"
1/2 T	41%	3.86	3.56"
3/4 T	32%	5.87	5.49
ID	11%	8.0	7.38"
5/4 T	17%	10.0	9.28"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
41	FSDH	44%	1.6	1.51"
N/A	N/A	N/A	N/A	N/A

Comments: SEE PAGE 1 FOR COMMENTS.

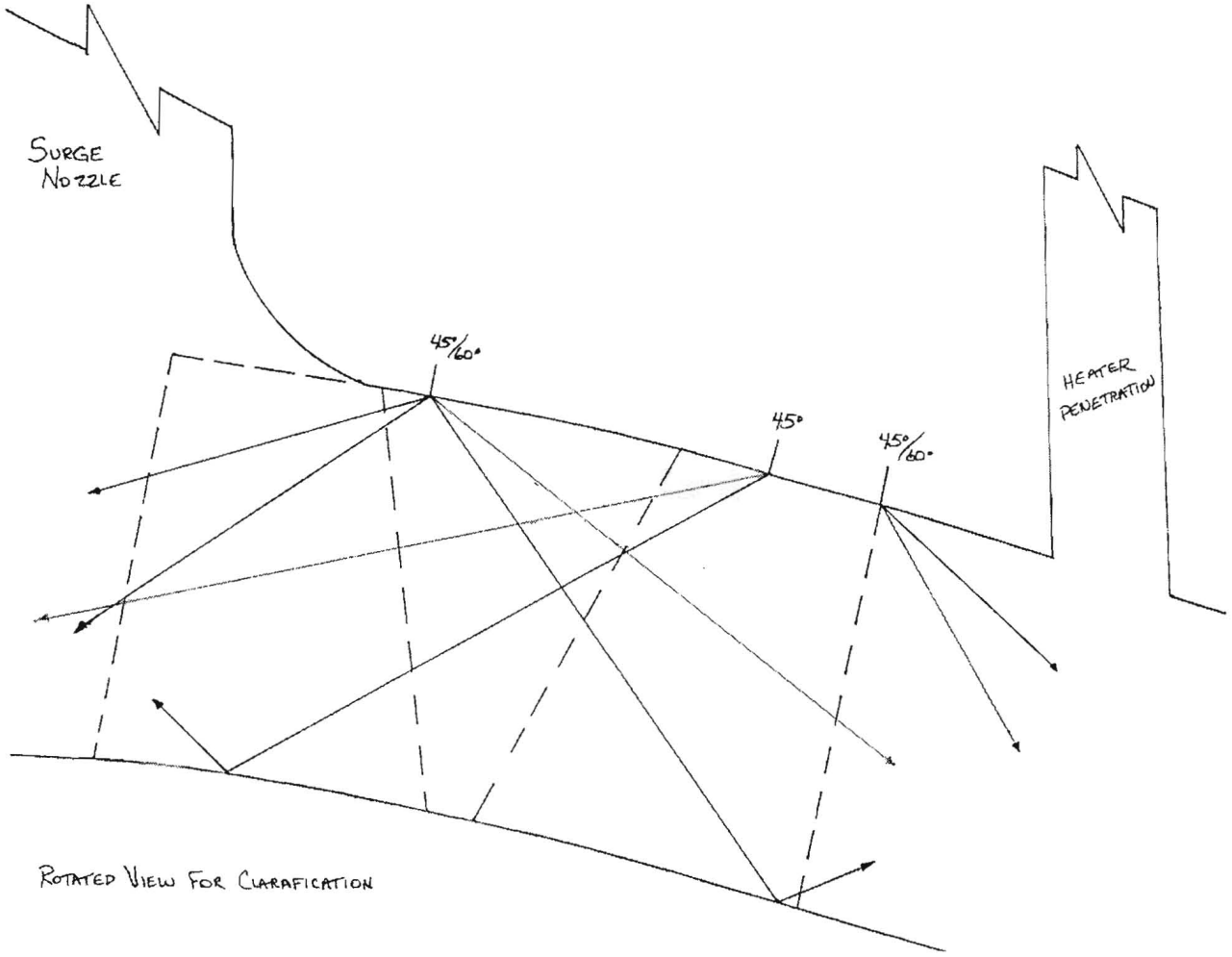
Percent Of Coverage Obtained > 90%: 59.1% | Reviewed Previous Data: YES

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Mahoney, Patrick V.			5/2/2012	George Buck Level III		George Buck	5/4/2012
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				James Salton			5/5/2012
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Robert Winegarden ANII			5/7/2012

This Document is a QA Record

Summary No.: **H-02995**

Sketch or Photo: Y:\Shared\Iddeal\HNP_Data\DataSheet_Info\UT-12-015.jpg



Determination of Percent Coverage for UT Examinations - Vessels

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-17
Summary No.:	H-02995	Procedure Rev.:	4	Report No.:	UT-12-015
Workscope:	ISI	Work Order No.:	2050436	Page:	5 of 5

0 deg Planar

Scan 100.000 % Length X 73.000 % volume of length / 100 = 73.000 % total for 0 deg

45 deg

Scan 1 100.000 % Length X 44.000 % volume of length / 100 = 44.000 % total for Scan 1

Scan 2 100.000 % Length X 43.000 % volume of length / 100 = 43.000 % total for Scan 2

Scan 3 100.000 % Length X 73.000 % volume of length / 100 = 73.000 % total for Scan 3

Scan 4 100.000 % Length X 73.000 % volume of length / 100 = 73.000 % total for Scan 4

Add totals and divide by # scans = 58.250 **% total for 45 deg**

Other deg 60

Scan 1 100.000 % Length X 21.100 % volume of length / 100 = 21.100 % total for Scan 1

Scan 2 100.000 % Length X 16.900 % volume of length / 100 = 16.900 % total for Scan 2

Scan 3 100.000 % Length X 73.000 % volume of length / 100 = 73.000 % total for Scan 3

Scan 4 100.000 % Length X 73.000 % volume of length / 100 = 73.000 % total for Scan 4

Add totals and divide by # scans = 46.000 **% total for** 60 **deg**

Percent complete coverage

Add totals for each angle and scan required and divide by # of angles to determine;

59.083 **% Total for complete exam**

Note:

Supplemental coverage may be achieved by use of other angles / methods. When used, the coverage for volume not obtained with angles as noted above shall be calculated and added to the total to provide the percent total for the complete examination.

Site Field Supervisor: **Edmund Donovan** Date: **5/2/2012**

This Document is a QA Record

UT Calibration Examination

NGG Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0448 | Outage No.: RFO-15
Summary No.: H-03713 | Procedure Rev.: 3 | Report No.: UT-09-016
Workscope: ISI | Work Order No.: 1313525 | Page: 1 of 4

Code: 2001 Ed 2003 Add | Cat./Item: C-A/C1.10 | Location: RAB 236'
Drawing No.: 1-ISI-RHR-1 | Description: Circumferential Shell Weld
System ID: RH-2085
Component ID: II-RHR-01RHRA-CSW-02A,B,C | Size/Length: 123.25" | Thickness/Diameter: .800"/39.2"
Limitations: None | Start Time: 1315 | Finish Time: 1545

Instrument Settings

Serial No.:	0134D2		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	6.1419	Range:	5"
M'tl Cal/Vel:	0.1237	Pulser:	Single
Damping:	1000 Ω	Reject:	0%
Rep. Rate:	High	Freq.:	2.25 MHz
Filter:	N/A	Mode:	Shear Wave
Voltage:	N/A	Other:	Full Wave
Ax. Gain (dB):	31.7	Circ. Gain (dB):	31.7

10 Screen Div. = 5 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: CPL-77
Thickness: 1.00" | Dia.: Flat
Cal. Blk. Temp. 74° | Temp. Tool: 68951
Comp. Temp.: 72° | Temp. Tool: 68951

Search Unit

Serial No.: 00WMYL
Manufacturer: KBA
Size: 0.5 | Shape: Round
Freq.: 2.25 MHz | Style: Composite
Exam Angle: 45° | # of Elements: Single
Mode: Shear Wave
Measured Angle: 46°
Wedge Style: MSWQC

Search Unit Cable

Type: RG-174
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☐ Scan dB: N/A
CW ☑ CCW ☑ Scan dB: 37.7
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1315	4/6/2009
Inter. Cal.		
Inter. Cal.		
Inter. Cal.		
Final Cal.	1545	4/6/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 86-3248
Type: SS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" ID Notch	82%	3	1.47"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" ID Notch	82%	3	1.47"

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
44.7	SDH	85%	2.2	1.1"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 75% | Reviewed Previous Data: Yes

Comments: Also scanned 12" of weld # 3.Calibration Block conforms to ASME XI, Appx I, Supp 3(b)(3); Appx III Fig. III-3230-1, Note 2; III-3410; III-3430; III, Supp 1(b)(3); and NDEP-0448

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.	II-PDI	Mark E Malia	4/6/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Scott Larson Level III			4/29/2009
Other	Level	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P	III-PDI		4/14/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie Slaughter	5/14/09

This Document is a QA Record

UT Calibration Examination

Site/Unit: HNP / 1 | Procedure: NDEP-0448 | Outage No.: RFO-15
Summary No.: H-03713 | Procedure Rev.: 3 | Report No.: UT-09-016
Workscope: ISI | Work Order No.: 1313525 | Page: 2 of 4

Code: 2001 Ed 2003 Add | Cat./Item: C-A/C1.10 | Location: RAB 236'
Drawing No.: 1-ISI-RHR-1 | Description: Circumferential Shell Weld
System ID: RH-2085
Component ID: II-RHR-01RHRA-CSW-02A,B,C | Size/Length: 123.25" | Thickness/Diameter: .800"/39.2"
Limitations: Axial scan limited to shell side only. | Start Time: 1300 | Finish Time: 1530

Instrument Settings

Serial No.: 0134D2
Manufacturer: Krautkramer Branson
Model: USN-58L
Delay: 6.1419 | Range: 5"
M'tl Cal/Vel: 0.1237 | Pulser: Single
Damping: 1000 Ω | Reject: 0%
Rep. Rate: High | Freq.: 2.25 MHz
Filter: N/A | Mode: Shear Wave
Voltage: N/A | Other: Full Wave
Ax. Gain (dB): 47 | Circ. Gain (dB): 47
10 Screen Div. = 5 in. of Sound Path
Linearity Report No.: L-09-001

Calibration Block

Cal. Block No.: CPL-77
Thickness: 1.0" | Dia.: Flat
Cal. Blk. Temp. 74 | Temp. Tool: 68951
Comp. Temp.: 72 | Temp. Tool: 68951

Search Unit

Serial No.: 00WPMD
Manufacturer: KBA
Size: .5" | Shape: Round
Freq.: 2.25 MHz | Style: Comp-G
Exam Angle: 60 | # of Elements: 1
Mode: Shear Wave
Measured Angle: 60
Wedge Style: MSWQC

Search Unit Cable

Type: RG-174
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ | Downstream ☐ | Scan dB: 59
CW ☐ | CCW ☐ | Scan dB:
Exam Surface: OD
Surface Condition: GROUND SMOOTH

Cal. Checks	Time	Date
Initial Cal.	1300	4/6/2009
Inter. Cal.		
Inter. Cal.		
Inter. Cal.		
Final Cal.	1530	4/6/2009

Couplant

Cal. Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.
Exam Batch: 05225
Type: Ultragel II
Mfg.: Sonotech, Inc.

Reference Block

Serial No.: 86-3248
Type: SS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	82%	3.8	1.873"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
41	SDH	70%	3.1	1.547

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 75% | Reviewed Previous Data: Yes

Comments: Also scanned 12" of weld # 3.Calibration Block conforms to ASME XI, Appx I, Supp 3(b)(3); Appx III Fig. III-3230-1, Note 2; III-3410; III-3430; III, Supp 1(b)(3); and NDEP-0448

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Malia, Mark E.		Mark E Malia	4/6/2009	Damon Priestley PGN Lv III			4/29/2009
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				Scott Larson Level III			4/29/2009
Other	Level III-PDI	Signature	Date	ANII Review		Signature	Date
Dugan, Michael P			4/29/2009	Nancy Ritchie-Slaughter		Nancy C Ritchie-Slaughter	5/4/09

This Document is a QA Record

UT Calibration Examination

Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0448	Outage No.:	RFO-15
Summary No.:	H-03713	Procedure Rev.:	3	Report No.:	UT-09-016
Workscope:	ISI	Work Order No.:	1313525	Page:	3 of 4

Code: 2001 Ed 2003 Add | Cat./Item: C-A/C1.10 | Location: RAB 236'

Drawing No.: 1-ISI-RHR-1 | Description: Circumferential Shell Weld

System ID: RH-2085

Component ID: II-RHR-01RHRA-CSW-02A,B,C | Size/Length: 123.25" | Thickness/Diameter: .800"/39.2"

Limitations: Single Sided- Shell Side Only | Start Time: 0830 | Finish Time: 1140

Instrument Settings

Serial No.:	0134L4		
Manufacturer:	Krautkramer Branson		
Model:	USN-58L		
Delay:	9.5431	Range:	5.00"
M'tl Cal/Vel:	.2390	Pulser:	Auto High
Damping:	500 Ω	Reject:	0%
Rep. Rate:	255 MHz	Freq.:	2
Filter:	N/A	Mode:	Dual
Voltage:	N/A	Other:	Full Wave
Ax. Gain (dB):	70.8	Circ. Gain (dB):	N/A

10 Screen Div. = 5 In. of Sound Path

Linearity Report No.: L-09-002

Calibration Block

Cal. Block No.:	CPL-77		
Thickness:	1.00"	Dia.:	Flat
Cal. Blk. Temp.	72°	Temp. Tool:	68951
Comp. Temp.:	70°	Temp. Tool:	68951

Search Unit

Serial No.:	90-575		
Manufacturer:	RTD		
Size:	2-8 x 14mm	Shape:	Rect.
Freq.:	2.0 MHz	Style:	TRL2-Aust
Exam Angle:	70°	# of Elements:	Dual
Mode:	Long.		
Measured Angle:	70°		
Wedge Style:	Integral		

Search Unit Cable

Type:	RG-174		
Length:	6' x 2	No. Conn.:	0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 70.8

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface:	OD
Surface Condition:	GROUND

Cal. Checks	Time	Date
Initial Cal.	0830	4/7/2009
Inter. Cal.		
Inter. Cal.		
Inter. Cal.		
Final Cal.	1140	4/7/2009

Couplant

Cal. Batch:	01125
Type:	Ultragel II
Mfg.:	Sonotech
Exam Batch:	01125
Type:	Ultragel II
Mfg.:	Sonotech

Reference Block

Serial No.:	86-3248
Type:	SS Rompas

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" ID Notch	80%	5.8	2.944"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A	N/A

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: **Supplemental 70° RL. Far side of austenitic weld examined IAW NDEP-0425 Rev 8. However, code coverage is not claimed beyond weld centerline.**

Percent Of Coverage Obtained > 90%: 75% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Dugan, Michael P	III-PDI		4/7/2009	Damon Priestley PGN Lv III		4/29/2009
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Scott Larson Level III		4/29/2009
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			Nancy Ritchie-Slaughter		5/4/09

This Document is a QA Record

Summary No.: H-03713

Examiner:	Malia, Mark E.	Level:	II-PDI	Reviewer:	Damon Priestley PGN Lv III	Date:	4/29/2009
Examiner:	N/A	Level:	N/A	Site Review:	Scott Larson Level III	Date:	4/29/2009
Other:	Dugan, Michael P	Level:	III-PDI	ANII Review:	Nancy Ritchie-Slaughter	Date:	5/4/09

Comments:

Determination of Percent Coverage for UT Examination

Angle: 45°
Circumferential CW: 100% of length X 100% of volume = 100% of scan complete
Circumferential CCW: 100% of length X 100% of volume = 100% of scan complete

Angle: 60°
Axial US: 100% of length X 100% of volume = 100% of scan complete
Axial DS: 0% of length X 0% of volume = 0% of scan complete

100% Circumferential CW + 100% Circumferential CCW + 100% Axial US + 0% Axial DS = 300
300 / 4 = 75% Total Coverage

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-20
Summary No.:	H-01354	Procedure Rev.:	5	Report No.:	UT-16-001
Workscope:	ISI	Work Order No.:	13540520	Page:	1 of 12

Code:	2001 Ed 2003 Add	Cat./Item:	C-B/C2.21	Location:	RAB 216'
Drawing No.:	1-ISI-BIT-1	Description:	Inlet Nozzle to Head Weld		
System ID:	SI-2080				
Component ID:	II-BIT-01NTHW-04	Size/Length:	N/A	Thickness/Diameter:	SS / 2.0"
Limitations:	Yes - Due to nozzle configuration	Start Time:	1108	Finish Time:	1131

Instrument Settings

Serial No.:	15A024PE		
Manufacturer:	GE		
Model:	USN60sw	Linearity:	L-16-011
Delay:	8.7403	Range:	5.0"
M'tl Cal/Vel:	0.1230	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	1.5 MHz
Frequency:	2.0 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	330

Ax. Gain (dB): 27.4 Circ. Gain (dB): 27.4

1 Screen Div. = .5 in. of Sound Path

Calibration Block

Cal. Block No.:	16C-087		
Thickness:	3.04	Dia.:	Flat
Cal. Blk. Temp.:	74	Temp. Tool:	G502480
Comp. Temp.:	79	Temp. Tool:	G502480

Search Unit

Serial No.:	011CXD		
Manufacturer:	KBA		
Size:	0.375"	Model:	Comp - G
Freq.:	1.5 MHz	Center Freq.:	N/A
Exam Angle:	45	Squint Angle:	N/A
Measured Angle:	45	Mode:	Shear
Exit Point:	0.4"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	Flat
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG174 Length: 6' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 33.4

CW ☑ CCW ☑ Scan dB: 33.4

Exam Surface: O.D.

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0820	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1107	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1359	10/4/2016

Couplant

Cal. Batch:	15B080
Type:	Ultragel II
Mfg.:	Magnaflux
Exam Batch:	15B080
Type:	Ultragel II
Mfg.:	Magnaflux

Reference Block

Serial No.:	15-2377
Type:	ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T SDH	80	2.0	0.968"
1/2T SDH	40	4.0	2.0"
3/4T SDH	20	6.0	2.97"
5/4T SDH	12	10.0	4.96"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
See Axial			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
27.4	FSDH	20	2.0	1.0"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐ NCR # 02067721

Comments: N/A

Percent Of Coverage Obtained > 90%: No - 76.5% Reviewed Previous Data: No

Examiner	Level II-N	Signature	Date	Reviewer	Signature	Date
Schmalz, Matthew W.			10/4/2016	D.B. King, UT Level III		10/20/16
Examiner	Level II-N	Signature	Date	Site Review	Signature	Date
Rush, J. Scott			10/4/2016	Angela Stoller	Angela Stoller	10/21/16
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Nancy Ritchie-Slaughter		10/23/16

This Document is a QA Record

NANCY RITCHIE-SLAUGHTER

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-20
Summary No.:	H-01354	Procedure Rev.:	5	Report No.:	UT-16-001
Workscope:	ISI	Work Order No.:	13540520	Page:	2 of 12

Code: 2001 Ed 2003 Add | Cat./Item: C-B/C2.21 | Location: RAB 216'

Drawing No.: 1-ISI-BIT-1 | Description: Inlet Nozzle to Head Weld

System ID: SI-2080

Component ID: II-BIT-01NTHW-04 | Size/Length: N/A | Thickness/Diameter: SS / 2.0"

Limitations: Yes - Due to nozzle configuration | Start Time: 1148 | Finish Time: 1154

Instrument Settings

Serial No.:	15A024PE		
Manufacturer:	GE		
Model:	USN60sw	Linearity:	L-16-011
Delay:	9.7821	Range:	5.0"
M'tl Cal/Vel:	0.2280	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.0 MHZ
Frequency:	2.0 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	250

Ax. Gain (dB): 39.6 | Circ. Gain (dB): N/A

1 Screen Div. = .5 in. of Sound Path

Calibration Block

Cal. Block No.: 16C-087

Thickness: 3.04" | Dia.: Flat

Cal. Blk. Temp.: 74 | Temp. Tool: G502480

Comp. Temp.: 79 | Temp. Tool: G502480

Recordable Indication(s): Yes ☐ No ☑

Results: Sat ☑ Unsat ☐ Eval ☐

Search Unit

Serial No.:	03-780		
Manufacturer:	RTD		
Size:	2(15x25)	Model:	TRL2
Freq.:	2.0 MHZ	Center Freq.:	N/A
Exam Angle:	45	Squint Angle:	10
Measured Angle:	45	Mode:	Long.
Exit Point:	0.6"	# of Elements:	2
Config.:	Dual	Focus:	FS~55
Shape:	Rect.	Contour:	Flat
Wedge Style:	Integral		

Search Unit Cable

Type: RG174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 45.6

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D.

Surface Condition: Ground Smooth

(If Yes, Ref. Attached Ultrasonic Indication Report.)

Cal. Checks	Time	Date
Initial Cal.	0840	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1147	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1409	10/4/2016

Couplant

Cal. Batch: 15B080

Type: Ultragel II

Mfg.: Magnaflux

Exam Batch: 15B080

Type: Ultragel II

Mfg.: Magnaflux

Reference Block

Serial No.: 15-2377

Type: ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
ID Notch	80	8.4	4.19"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
24.2	2" Radius	80	4.0	2.0"

Comments: L-wave verified in accordance with AD-NE-ALL-1103.

Percent Of Coverage Obtained > 90%: No - 78.6% | Reviewed Previous Data: No

Examiner: Schmalz, Matthew W.	Level: II-N	Signature:	Date: 10/4/2016	Reviewer: O.B. King, UT Level III	Signature:	Date: 10/20/16
Examiner: Rush, J. Scott	Level: II-N	Signature:	Date: 10/4/2016	Site Review: Angela Stalter	Signature: Angela Stalter	Date: 10/21/16
Other: N/A	Level: N/A	Signature:	Date:	ANII Review: Nancy Ritchie-Slaughter	Signature:	Date: 10/23/16

This Document is a QA Record

NANCY RITCHIE-SLAUGHTER

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-20
Summary No.:	H-01354	Procedure Rev.:	5	Report No.:	UT-16-001
Workscope:	ISI	Work Order No.:	13540520	Page:	3 of 12

Code:	2001 Ed 2003 Add	Cat./Item:	C-B/C2.21	Location:	RAB 216'
Drawing No.:	1-ISI-BIT-1	Description:	Inlet Nozzle to Head Weld		
System ID:	SI-2080				
Component ID:	II-BIT-01NTHW-04	Size/Length:	N/A	Thickness/Diameter:	SS / 2.0"
Limitations:	Yes - Due to nozzle configuration	Start Time:	1158	Finish Time:	1204

Instrument Settings

Serial No.:	15A024PE		
Manufacturer:	GE		
Model:	USN60sw	Linearity:	L-16-011
Delay:	12.1762	Range:	10.0"
M'tl Cal/Vel:	0.228	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.0 MHZ
Frequency:	2.0 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	250

Ax. Gain (dB): 51.2 Circ. Gain (dB): N/A

1 Screen Div. = 1.0 in. of Sound Path

Calibration Block

Cal. Block No.:	16C-087		
Thickness:	3.04"	Dia.:	Flat
Cal. Blk. Temp.:	74	Temp. Tool:	G502480
Comp. Temp.:	79	Temp. Tool:	G502480

Recordable Indication(s): Yes ☐ No ☑

Results: Sat ☑ Unsat ☐ Eval ☐

Search Unit

Serial No.:	03-794		
Manufacturer:	RTD		
Size:	2(20x34)	Model:	TRL2
Freq.:	2.0 MHZ	Center Freq.:	N/A
Exam Angle:	60	Squint Angle:	3
Measured Angle:	60	Mode:	Long.
Exit Point:	0.7"	# of Elements:	2
Config.:	Dual	Focus:	FS~105
Shape:	Rect.	Contour:	Flat
Wedge Style:	Integral		

Search Unit Cable

Type: RG174 Length: 6' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 57.2

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D.

Surface Condition: Ground Smooth

(If Yes, Ref. Attached Ultrasonic Indication Report.)

Cal. Checks	Time	Date
Initial Cal.	0846	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1157	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1413	10/4/2016

Couplant

Cal. Batch:	15B080
Type:	Ultragel II
Mfg.:	Magnaflux
Exam Batch:	15B080
Type:	Ultragel II
Mfg.:	Magnaflux

Reference Block

Serial No.:	15-2377
Type:	ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
ID Notch	80	5.8	5.85"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
51.2	FSDH	58	1.4	1.41"

Comments: L-wave verified in accordance with AD-NE-ALL-1103. Accoustic interface noted 360° intermittently.

Percent Of Coverage Obtained > 90%: No - 78.6% Reviewed Previous Data: No

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Schmalz, Matthew W.	II-N		10/4/2016	D.B. King, UT Level III			10/20/16
Examiner	Level	Signature	Date	Site Review		Signature	Date
Rush, J. Scott	II-N		10/4/2016	Angela Stoller		Angela Stoller	10/21/16
Other	Level	Signature	Date	ANII Review		Signature	Date
N/A	N/A			Nancy Ritchie-Slaughter			10/23/16

This Document is a QA Record

NANCY RITCHIE-SLAUGHTER

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-20
Summary No.:	H-01354	Procedure Rev.:	5	Report No.:	UT-16-001
Workscope:	ISI	Work Order No.:	13540520	Page:	4 of 12

Code:	2001 Ed 2003 Add	Cat./Item:	C-B/C2.21	Location:	RAB 216'
Drawing No.:	1-ISI-BIT-1	Description:	Inlet Nozzle to Head Weld		
System ID:	SI-2080				
Component ID:	II-BIT-01NTHW-04	Size/Length:	N/A	Thickness/Diameter:	SS / 2.0"
Limitations:	Yes - Due to nozzle configuration	Start Time:	1135	Finish Time:	1144

Instrument Settings

Serial No.:	15A024PE		
Manufacturer:	GE		
Model:	USN60sw	Linearity:	L-16-011
Delay:	10.1525	Range:	6.0"
M'tl Cal/Vel:	0.1228	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	2.25 MHz
Frequency:	2.25 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	220
Ax. Gain (dB):	50.0	Circ. Gain (dB):	N/A

1 Screen Div. = .6 in. of Sound Path

Calibration Block

Cal. Block No.:	16C-087		
Thickness:	3.04"	Dia.:	Flat
Cal. Blk. Temp.:	74	Temp. Tool:	G502480
Comp. Temp.:	79	Temp. Tool:	G502480

Search Unit

Serial No.:	01F62L		
Manufacturer:	KBA		
Size:	0.375"	Model:	Comp - G
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	60	Squint Angle:	N/A
Measured Angle:	60	Mode:	Shear
Exit Point:	0.45"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	Flat
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG174 Length: 6' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 56.0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D.

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0835	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1134	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1404	10/4/2016

Couplant

Cal. Batch:	15B080
Type:	Ultragel II
Mfg.:	Magnaflux
Exam Batch:	15B080
Type:	Ultragel II
Mfg.:	Magnaflux

Reference Block

Serial No.:	15-2377
Type:	ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T SDH	100	2.2	1.36"
1/2T SDH	60	4.9	2.93"
3/4T SDH	30	7.8	4.68"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
50	FSDH	60	2.4	1.409"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Comments: Accoustic interface seen intermittently 360°.

Percent Of Coverage Obtained > 90%: No - 78.6% Reviewed Previous Data: No

Examiner	Level II-N	Signature	Date	Reviewer		Signature	Date
Schmalz, Matthew W.			10/4/2016	D.B. King, UT Level III			10/20/16
Examiner	Level II-N	Signature	Date	Site Review		Signature	Date
Rush, J. Scott			10/4/2016	Angela Staller		Angela Staller	10/21/16
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Nancy Ritchie-Slaughter			10/23/16

This Document is a QA Record

NANCY RITCHIE-SLAUGHTER

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0408	Outage No.:	RFO-20
Summary No.:	H-01354	Procedure Rev.:	14	Report No.:	UT-16-001
Workscope:	ISI	Work Order No.:	13540520	Page:	5 of 12

Code: 2001 Ed 2003 Add | Cat./Item: C-B/C2.21 | Location: RAB 216'

Drawing No.: 1-ISI-BIT-1 | Description: Inlet Nozzle to Head Weld

System ID: SI-2080

Component ID: II-BIT-01NTHW-04 | Size/Length: N/A | Thickness/Diameter: SS / 2.0"

Limitations: None | Start Time: 1046 | Finish Time: 1102

Instrument Settings

Serial No.:	15A024PE		
Manufacturer:	GE		
Model:	USN60sw	Linearity:	L-16-011
Delay:	2.0450	Range:	8.0"
M'tl Cal/Vel:	0.2237	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	1.0 MHz
Frequency:	1.0 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	500

Ax. Gain (dB): 10.6 | Circ. Gain (dB): 10.6

1 Screen Div. = 0.8 in. of Depth

Calibration Block

Cal. Block No.:	A06311		
Thickness:	4.0"	Dia.:	Flat
Cal. Blk. Temp.:	74	Temp. Tool:	G502480
Comp. Temp.:	79	Temp. Tool:	G502480

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐

Search Unit

Serial No.:	001WVY		
Manufacturer:	KBA		
Size:	0.50"	Model:	Gamma
Freq.:	1.0 MHz	Center Freq.:	N/A
Exam Angle:	0	Squint Angle:	N/A
Measured Angle:	N/A	Mode:	Long.
Exit Point:	N/A	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	Flat
Wedge Style:	Integral		

Search Unit Cable

Type: RG174 Length: 6' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 13.6

CW ☑ CCW ☑ Scan dB: 13.6

Exam Surface: O.D.

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0805	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1045	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1355	10/4/2016

Couplant

Cal. Batch:	15B080
Type:	Ultragel II
Mfg.:	Magnaflux
Exam Batch:	15B080
Type:	Ultragel II
Mfg.:	Magnaflux

Reference Block

Serial No.:	15-2377
Type:	ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
1.0" Side	80	1.25	1.0"
4.0" Side	80	5.0	4.0"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
See Axial			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth
2.3	1" Side	80	1.25	1.0"

Comments: Utilized for T & C only. Lamination scans performed in prior examination. Data not availabe.

Percent Of Coverage Obtained > 90%: N/A | Reviewed Previous Data: No

Examiner	Level	Signature	Date
Schmalz, Matthew W.	II-N		10/4/2016
Rush, J. Scott	II-N		10/4/2016
N/A	N/A		

Reviewer	Signature	Date
D.B. King, UT Level III		10/20/16
Site Review: Angela Staller	Angela Staller	10/21/16
ANII Review: Nancy Ritchie-Slaughter	Nancy Ritchie-Slaughter	10/23/16

This Document is a QA Record

NANCY RITCHIE-SLAUGHTER

Supplemental Report

Report No.: UT-16-001

Summary No.: H-01354

Examiner: Schmalz, Matthew W. Level: II-N Reviewer: D.B. King, UT Level III Date: 10/10/16

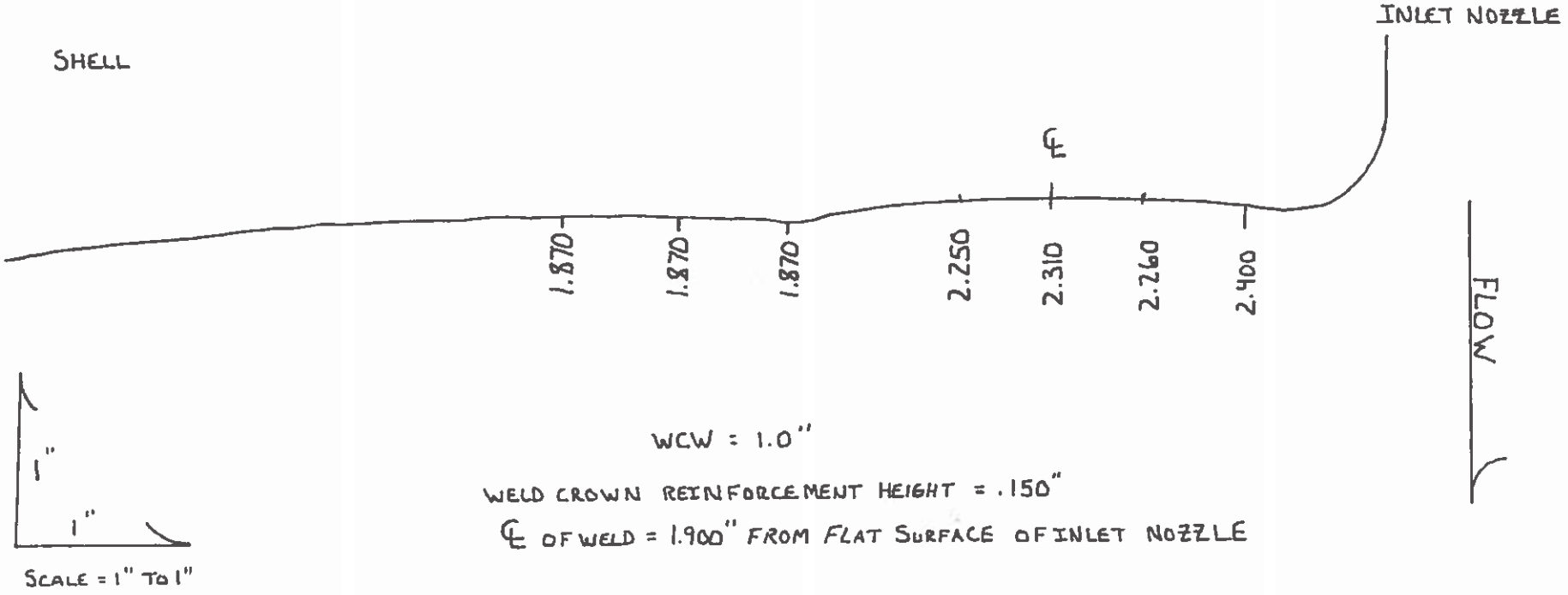
Examiner: Rush, J. Scott Level: II-N Site Review: Angela Staller Date: 10/21/16

Other: N/A Level: N/A ANII Review: Nancy Ritchie-Slaughter Date: 10/23/16

NANCY RITCHIE-SLAUGHTER

Comments: T & C - Inlet connection
T & C - Taken at 0° RT marker on head.

Sketch or Photo: Z:\UT\OUTAGES\Harris\Contours and Profiles\II-BIT-01NTHW-04_Page_1.bmp



Supplemental Report

Report No.: UT-16-001

Page: 7 of 12

Summary No.: H-01354

Examiner: Schmalz, Matthew W. Level: II-N Reviewer: D.B. King, UT Level III Date: 10/10/16

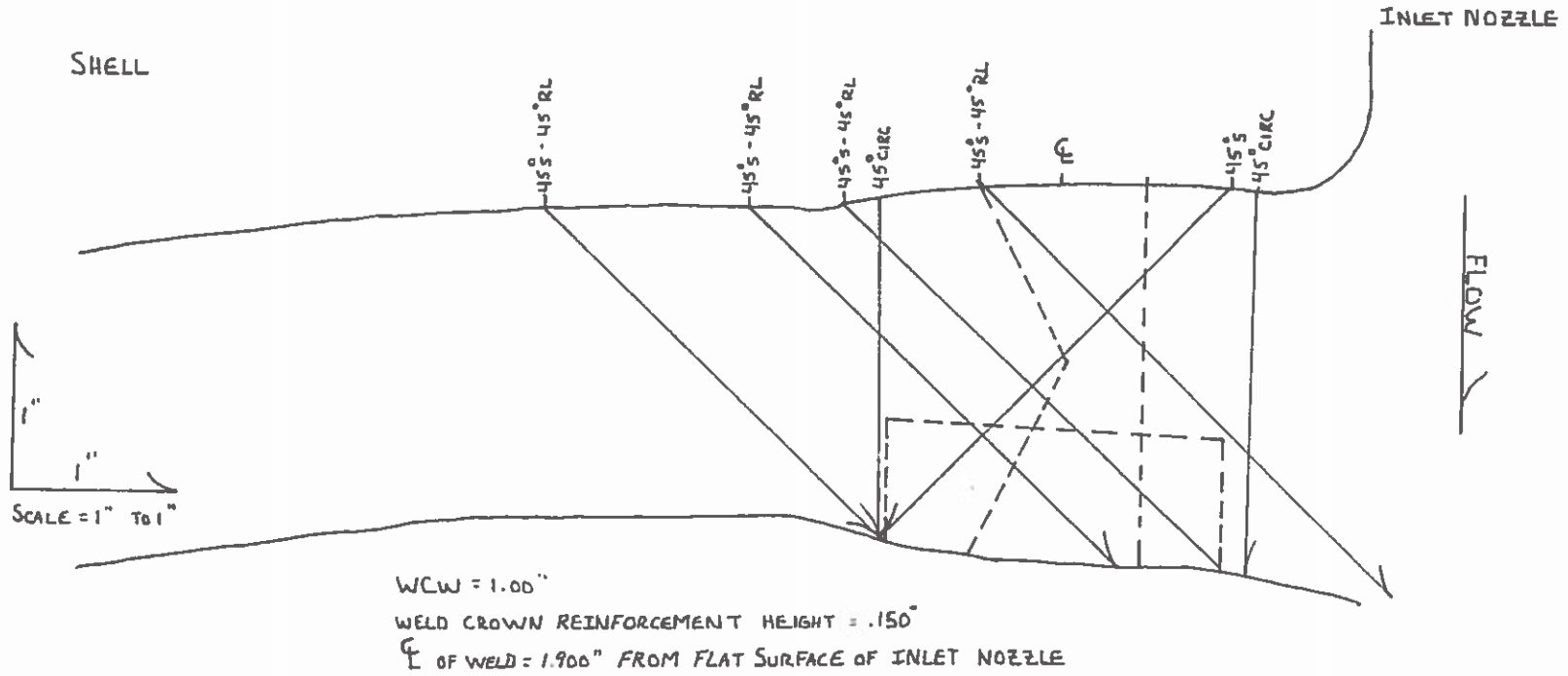
Examiner: Rush, J. Scott Level: II-N Site Review: Angela Staller Date: 10/12/16

Other: N/A Level: N/A ANII Review: Nancy Ritchie Slaughter Date: 10/23/16

NANCY RITCHIE SLAUGHTER

Comments: **45° Coverage Plot**

Sketch or Photo: Z:\UT\OUTAGES\Harris\Contours and Profiles\II-BIT-01NTHW-04_Page_2.bmp



This Document is a QA Record

Supplemental Report

Report No.: UT-16-001

Summary No.: H-01354

Examiner: Schmalz, Matthew W. Level: II-N Reviewer: D.B. King, UT Level III Date: 10/10/16

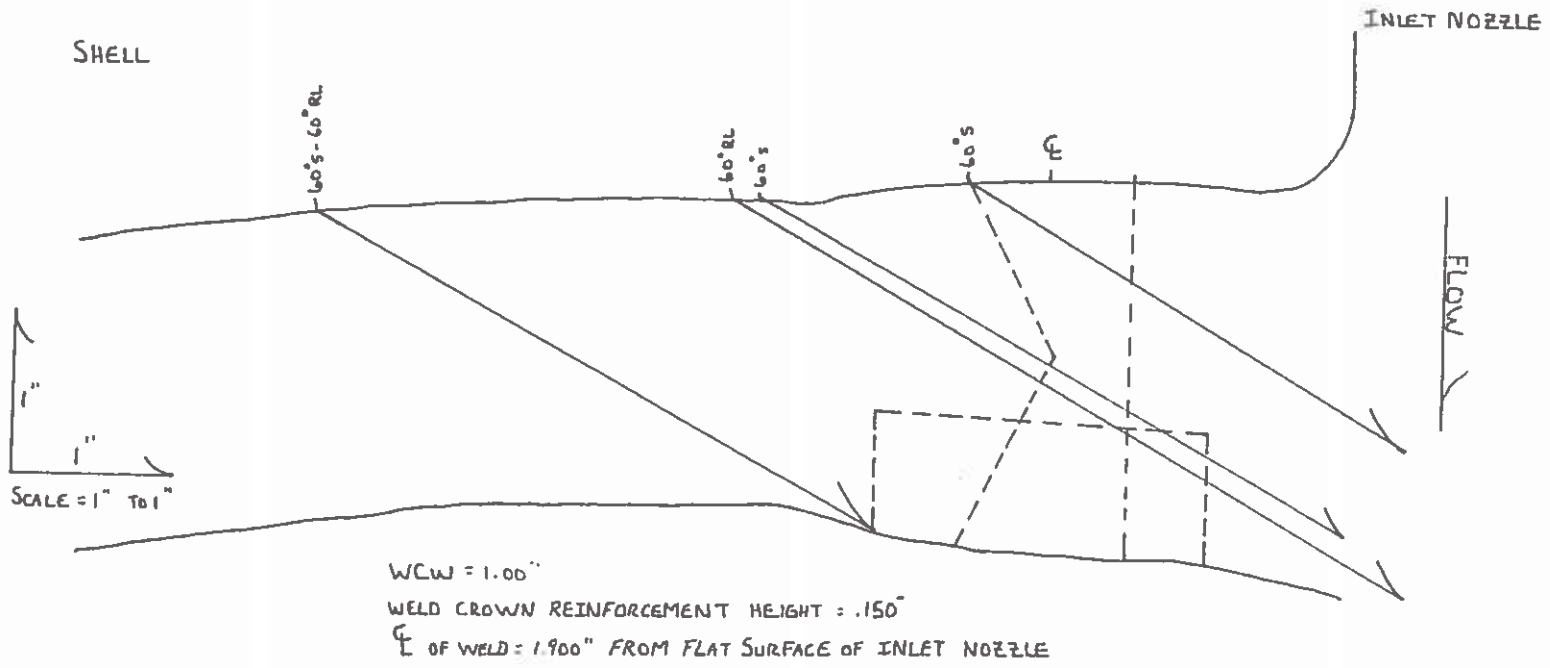
Examiner: Rush, J. Scott Level: II-N Site Review: Angela Staller Date: 10/2/16

Other: N/A Level: N/A ANII Review: Nancy Ritchie-Slaughter Date: 10/23/16

NANCY RITCHIE-SLAUGHTER

Comments: 60° Coverage Plot

Sketch or Photo: Z:\UT\OUTAGES\Harris\Contours and Profiles\II-BIT-01NTHW-04_Page_3.bmp



This Document is a QA Record

Summary No.: H-01354

Examiner: Schmalz, Matthew W. Level: II-N

Examiner: Rush, J. Scott Level: II-N

Other: N/A Level: N/A

JASON POLISENSKY 10/10/2016

Reviewer: D.B. King UT Level III Date: 10/10/16

Site Review: Angela Staller Angela Staller Date: 10/21/16

ANII Review: Nancy Ritchie-Slaughter Date: 10/23/16

NANCY RITCHIE-SLAUGHTER

Comments: Calculation

Sketch or Photo: Z:\UT\OUTAGES\Harris\Contours and Profiles\II-BIT-01NTHW-04_Page_4.bmp

Total Weld Volume: 2.05"(w) x .8"(h) = **1.64"²**

Total AX (away from NOZ) coverage with 45°: .95"(b) x .5"(h) / 2 = **.24"²** .24 / 1.64 = **14.6%**

SCAN COVERAGE:

CW = 100%

CCW = 100%

AX towards NOZ = 100% (using 45° and 60°)

AX away from NOZ = 14.6% (limited due to Noz Configuration)

100 + 100 + 100 + 14.6 = 314.6 / 4 = **78.6% Total Examination Coverage**

Liquid Penetrant Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0201	Outage No.:	RFO-19
Summary No.:	H-01354	Procedure Rev.:	34 TR-A	Report No.:	PT-15-005
Workscope:	ISI	Work Order No.:	13352682	Page:	1 of 1

Code: 2001 Edition 2003 Addenda Cat./Item: C-B/C2.21 Location: RAB 216'

Drawing No.: 1-ISI-BIT-1 Description: Inlet Nozzle to Head Weld

System ID: SI-2080

Component ID: II-BIT-01NTHW-04 Mat./Thickness: SS / SA-204 - 2"

Limitations: None

Light Meter Mfg.: Spectronics Serial No.: MCNDE40183 Illumination: >100fc

Temp. Tool Mfg.: Fluke Serial No.: MCNDE40194 Surface Temp.: 68.4 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: N/A Surface Condition: Smooth

	Cleaner	Penetrant (Visible ☑ / Fluorescent ☐)	Remover	Developer
Brand	Magnaflux	Magnaflux	Magnaflux	Magnaflux
Type	SKC-S	SKL-SP2	SKC-S	SKD-S2
Batch No.	13J09K	12L04K	13J09K	11L05K
Time	Evap. 5 Minutes	Dwell 10 Minutes	Evap. 5 Minutes	Develop 10 Minutes

Time Exam Started: 1100 Time Exam Completed: 1140

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NRI						

Comments:
NONE

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 100 Reviewed Previous Data: None

Examiner	Level II-N	Signature	Date	Reviewer		Signature	Date
Nahory, W. Jason			4/15/2015	Jerry Newgard, Level III			4/24/2015
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				Angela Staller			4/27/2015
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Nancy Ritchie-Slaughter, ANII			4/28/2015

This Document is a QA Record

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit:	HNP / 1	Procedure:	NDEP-0450	Outage No.:	RFO-20
Summary No.:	H-01353	Procedure Rev.:	5	Report No.:	UT-16-002
Workscope:	ISI	Work Order No.:	13540520	Page:	1 of 12

Code: 2001 Ed 2003 Add | Cat./Item: C-B/C2.21 | Location: RAB 226'

Drawing No.: 1-ISI-BIT-1 | Description: Outlet Nozzle to Vessel Weld

System ID: SI-2080

Component ID: II-BIT-01NTHW-03 | Size/Length: N/A | Thickness/Diameter: SS / 2.0"

Limitations: Yes - Due to nozzle configuration | Start Time: 1217 | Finish Time: 1235

Instrument Settings

Serial No.:	15A024PE		
Manufacturer:	GE		
Model:	USN60sw	Linearity:	L-16-011
Delay:	8.7403	Range:	5.0"
M'tl Cal/Vel:	0.1230	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	1.5 MHz
Frequency:	2.0 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	330

Ax. Gain (dB): 27.4 | Circ. Gain (dB): 27.4

1 Screen Div. = .5 in. of Sound Path

Calibration Block

Cal. Block No.: 16C-087

Thickness: 3.04 | Dia.: Flat

Cal. Blk. Temp.: 74 | Temp. Tool: G502480

Comp. Temp.: 79 | Temp. Tool: G502480

Search Unit

Serial No.:	011CXD		
Manufacturer:	KBA		
Size:	0.375"	Model:	Comp - G
Freq.:	1.5 MHz	Center Freq.:	N/A
Exam Angle:	45	Squint Angle:	N/A
Measured Angle:	45	Mode:	Shear
Exit Point:	0.4"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	Flat
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ | Downstream ☑ | Scan dB: 33.4

CW ☑ | CCW ☑ | Scan dB: 33.4

Exam Surface: O.D.

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0820	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1216	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1359	10/4/2016

Couplant

Cal. Batch: 15B080

Type: Ultragel II

Mfg.: Magnaflux

Exam Batch: 15B080

Type: Ultragel II

Mfg.: Magnaflux

Reference Block

Serial No.: 15-2377

Type: ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T SDH	80	2.0	0.968"
1/2T SDH	40	4.0	2.0"
3/4T SDH	20	6.0	2.97"
5/4T SDH	12	10.0	4.96"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
See Axial			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
27.4	FSDH	20	2.0	1.0"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: Sat ☑ Unsat ☐ Eval ☐ NCR # 02067723

Comments: N/A

Percent Of Coverage Obtained > 90%: No - 76.5% | Reviewed Previous Data: No

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Schmalz, Matthew W.	II-N		10/4/2016	D.B. King, UT Level III		10/17/16
Examiner	Level	Signature	Date	Site Review	Signature	Date
Rush, J. Scott	II-N		10/4/2016	Angela Staller	Angela Staller	10/17/16
Other	Level	Signature	Date	Authorized	Signature	Date
N/A	N/A			NANCY RITCHIE-SLAUGHTER	Nancy Ritchie-Slaughter	10/17/16

This Document is a QA Record

UT Calibration/Examination

Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-20
Summary No.: H-01353 | Procedure Rev.: 5 | Report No.: UT-16-002
Workscope: ISI | Work Order No.: 13540520 | Page: 2 of 12

Code: 2001 Ed 2003 Add | Cat./Item: C-B/C2.21 | Location: RAB 226'
Drawing No.: 1-ISI-BIT-1 | Description: Outlet Nozzle to Vessel Weld
System ID: SI-2080
Component ID: II-BIT-01NTHW-03 | Size/Length: N/A | Thickness/Diameter: SS / 2.0"
Limitations: Yes - Due to nozzle configuration | Start Time: 1239 | Finish Time: 1244

Instrument Settings

Serial No.: 15A024PE
Manufacturer: GE
Model: USN60sw | Linearity: L-16-011
Delay: 10.1525 | Range: 6.0"
M'tl Cal/Vel: 0.1228 | Pulser Type: Square
Damping: 500 Ohms | Reject: 0%
PRF: Auto High | SU Freq.: 2.25 MHz
Frequency: 2.25 MHz | Rectify: Fullwave
Voltage: 450 | Pulse Width: 220

Ax. Gain (dB): 50.0 | Circ. Gain (dB): N/A
1 Screen Div. = .6 in. of Sound Path

Calibration Block

Cal. Block No.: 16C-087
Thickness: 3.04" | Dia.: Flat
Cal. Blk. Temp.: 74 | Temp. Tool: G502480
Comp. Temp.: 79 | Temp. Tool: G502480

Search Unit

Serial No.: 01F62L
Manufacturer: KBA
Size: 0.375" | Model: Comp - G
Freq.: 2.25 MHz | Center Freq.: N/A
Exam Angle: 60 | Squint Angle: N/A
Measured Angle: 60 | Mode: Shear
Exit Point: 0.45" | # of Elements: 1
Config.: Single | Focus: N/A
Shape: Round | Contour: Flat
Wedge Style: MSWQC

Search Unit Cable

Type: RG174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ | Downstream ☑ | Scan dB: 56.0
CW ☐ | CCW ☐ | Scan dB: N/A
Exam Surface: O.D.
Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0835	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1238	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1404	10/4/2016

Couplant

Cal. Batch: 15B080
Type: Ultragel II
Mfg.: Magnaflux
Exam Batch: 15B080
Type: Ultragel II
Mfg.: Magnaflux

Reference Block

Serial No.: 15-2377
Type: ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T SDH	100	2.2	1.36"
1/2T SDH	60	4.9	2.93"
3/4T SDH	30	7.8	4.68"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
50	FSDH	60	2.4	1.409"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)
Results: Sat ☑ Unsat ☐ Eval ☐
Comments: Accoustic interface seen intermittently 360°.

Percent Of Coverage Obtained > 90%: No - 76.5% | Reviewed Previous Data: No

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Schmalz, Matthew W.	II-N		10/4/2016	D.B.Kingsley UT Level III		10/17/16
Examiner	Level	Signature	Date	Site Review	Signature	Date
Rush, J. Scott	II-N		10/4/2016	Angela Stalter	Angela Stalter	10/17/16
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			NANCY RITCHIE-SLAUGHTER	Nancy Ritchie-Slaughter	10/17/16

This Document is a QA Record

UT Calibration/Examination

Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-20
Summary No.: H-01353 | Procedure Rev.: 5 | Report No.: UT-16-002
Workscope: ISI | Work Order No.: 13540520 | Page: 3 of 12

Code: 2001 Ed 2003 Add | Cat./Item: C-B/C2.21 | Location: RAB 226'
Drawing No.: 1-ISI-BIT-1 | Description: Outlet Nozzle to Vessel Weld
System ID: SI-2080
Component ID: II-BIT-01NTHW-03 | Size/Length: N/A | Thickness/Diameter: SS / 2.0"
Limitations: Yes - Due to nozzle configuration | Start Time: 1248 | Finish Time: 1255

Instrument Settings

Serial No.: 15A024PE
Manufacturer: GE
Model: USN60sw | Linearity: L-16-011
Delay: 9.7821 | Range: 5.0"
M'tl Cal/Vel: 0.2280 | Pulser Type: Square
Damping: 500 Ohms | Reject: 0%
PRF: Auto High | SU Freq.: 2.0 MHZ
Frequency: 2.0 MHz | Rectify: Fullwave
Voltage: 450 | Pulse Width: 250

Ax. Gain (dB): 39.6 | Circ. Gain (dB): N/A
1 Screen Div. = .5 in. of Sound Path

Calibration Block

Cal. Block No.: 16C-087
Thickness: 3.04" | Dia.: Flat
Cal. Blk. Temp.: 74 | Temp. Tool: G502480
Comp. Temp.: 79 | Temp. Tool: G502480

Search Unit

Serial No.: 03-780
Manufacturer: RTD
Size: 2(15x25) | Model: TRL2
Freq.: 2.0 MHZ | Center Freq.: N/A
Exam Angle: 45 | Squint Angle: 10
Measured Angle: 45 | Mode: Long.
Exit Point: 0.6" | # of Elements: 2
Config.: Dual | Focus: FS~55
Shape: Rect. | Contour: Flat
Wedge Style: Integral

Search Unit Cable

Type: RG174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 45.6
CW ☐ CCW ☐ Scan dB: N/A
Exam Surface: O.D.
Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0840	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1247	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1409	10/4/2016

Couplant

Cal. Batch: 15B080
Type: Ultragel II
Mfg.: Magnaflux
Exam Batch: 15B080
Type: Ultragel II
Mfg.: Magnaflux

Reference Block

Serial No.: 15-2377
Type: ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
ID Notch	80	8.4	4.19"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
24.2	2" Radius	80	4.0	2.0"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)
Results: Sat ☑ Unsat ☐ Eval ☐

Comments: L-wave verified in accordance with AD-NE-ALL-1103.

Percent Of Coverage Obtained > 90%: No - 76.5% | Reviewed Previous Data: No

Examiner	Level	Signature	Date
Schmalz, Matthew W.	II-N		10/4/2016
Rush, J. Scott	II-N		10/4/2016
N/A	N/A		

Reviewer	Signature	Date
D.B. King, UT Level III		10/17/16
Site Review: Angela Stoller	Angela Stoller	10/17/16
ANI Review: NANCY RITCHIE-SLAUGHTER	Nancy Ritchie-Slaughter	10/17/16

This Document is a QA Record

UT Calibration/Examination

NGG Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0450 | Outage No.: RFO-20
Summary No.: H-01353 | Procedure Rev.: 5 | Report No.: UT-16-002
Workscope: ISI | Work Order No.: 13540520 | Page: 4 of 12

Code: 2001 Ed 2003 Add | Cat./Item: C-B/C2.21 | Location: RAB 226'
Drawing No.: 1-ISI-BIT-1 | Description: Outlet Nozzle to Vessel Weld
System ID: SI-2080
Component ID: II-BIT-01NTHW-03 | Size/Length: N/A | Thickness/Diameter: SS / 2.0"
Limitations: Yes - Due to nozzle configuration | Start Time: 1259 | Finish Time: 1304

Instrument Settings

Serial No.: 15A024PE
Manufacturer: GE
Model: USN60sw | Linearity: L-16-011
Delay: 12.1762 | Range: 10.0"
M'tl Cal/Vel: 0.228 | Pulser Type: Square
Damping: 500 Ohms | Reject: 0%
PRF: Auto High | SU Freq.: 2.0 MHZ
Frequency: 2.0 MHz | Rectify: Fullwave
Voltage: 450 | Pulse Width: 250

Ax. Gain (dB): 51.2 | Circ. Gain (dB): N/A
1 Screen Div. = 1.0 in. of Sound Path

Calibration Block

Cal. Block No.: 16C-087
Thickness: 3.04 | Dia.: Flat
Cal. Blk. Temp.: 74 | Temp. Tool: G502480
Comp. Temp.: 79 | Temp. Tool: G502480

Search Unit

Serial No.: 03-794
Manufacturer: RTD
Size: 20x34 | Model: TRL2
Freq.: 2.0 MHZ | Center Freq.: N/A
Exam Angle: 60 | Squint Angle: 3
Measured Angle: 60 | Mode: Long.
Exit Point: 0.7" | # of Elements: 2
Config.: Dual | Focus: FS~105
Shape: Rect. | Contour: Flat
Wedge Style: Integral

Search Unit Cable

Type: RG174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ | Downstream ☑ | Scan dB: 57.2
CW ☐ | CCW ☐ | Scan dB: N/A
Exam Surface: O.D.
Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0846	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1258	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1413	10/4/2016

Couplant

Cal. Batch: 15B080
Type: Ultragel II
Mfg.: Magnaflux
Exam Batch: 15B080
Type: Ultragel II
Mfg.: Magnaflux

Reference Block

Serial No.: 15-2377
Type: ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
ID Notch	80	5.8	5.85"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
51.2	FSDH	58	1.4	1.41"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)
Results: Sat ☑ Unsat ☐ Eval ☐

Comments: L-wave verified in accordance with AD-NE-ALL-1103. Accoustic interface noted 360° intermittently.

Percent Of Coverage Obtained > 90%: No - 76.5% | Reviewed Previous Data: No

Examiner	Level	Signature	Date
Schmalz, Matthew W.	II-N		10/4/2016
Rush, J. Scott	II-N		10/4/2016
N/A	N/A		

Reviewer	Signature	Date
D.B. King, UT Level III		10/17/16
Site Review: Angela Stoller	Angela Stoller	10/17/16
ANII Review: NANCY RITCHIE-SLAUGHTER	Nancy Ritchie-Slaughter	10/17/16

This Document is a QA Record

UT Calibration/Examination

Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0408 | Outage No.: RFO-20
Summary No.: H-01353 | Procedure Rev.: 14 | Report No.: UT-16-002
Workscope: ISI | Work Order No.: 13540520 | Page: 5 of 12

Code: 2001 Ed 2003 Add | Cat./Item: C-B/C2.21 | Location: RAB 226'
Drawing No.: 1-ISI-BIT-1 | Description: Outlet Nozzle to Vessel Weld
System ID: SI-2080
Component ID: II-BIT-01NTHW-03 | Size/Length: N/A | Thickness/Diameter: SS / 2.0"
Limitations: None | Start Time: 1207 | Finish Time: 1214

Instrument Settings

Serial No.: 15A024PE
Manufacturer: GE
Model: USN60sw | Linearity: L-16-011
Delay: 2.0450 | Range: 8.0"
M'tl Cal/Vel: 0.2237 | Pulser Type: Square
Damping: 500 Ohms | Reject: 0%
PRF: Auto High | SU Freq.: 1.0 MHz
Frequency: 1.0 MHz | Rectify: Fullwave
Voltage: 450 | Pulse Width: 500

Ax. Gain (dB): 10.6 | Circ. Gain (dB): 10.6
1 Screen Div. = 0.8 in. of Depth

Calibration Block

Cal. Block No.: A06311
Thickness: 4.0" | Dia.: Flat
Cal. Blk. Temp.: 74 | Temp. Tool: G502480
Comp. Temp.: 79 | Temp. Tool: G502480

Search Unit

Serial No.: 001WVY
Manufacturer: KBA
Size: 0.50" | Model: Gamma
Freq.: 1.0 MHz | Center Freq.: N/A
Exam Angle: 0 | Squint Angle: N/A
Measured Angle: N/A | Mode: Long.
Exit Point: N/A | # of Elements: 1
Config.: Single | Focus: N/A
Shape: Round | Contour: Flat
Wedge Style: Integral

Search Unit Cable

Type: RG174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ | Downstream ☑ | Scan dB: 13.6
CW ☑ | CCW ☑ | Scan dB: 13.6
Exam Surface: O.D.
Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0805	10/4/2016
Inter. Cal.	N/A	
Inter. Cal.	1206	10/4/2016
Inter. Cal.	N/A	
Final Cal.	1355	10/4/2016

Couplant

Cal. Batch: 15B080
Type: Ultragel II
Mfg.: Magnaflux
Exam Batch: 15B080
Type: Ultragel II
Mfg.: Magnaflux

Reference Block

Serial No.: 15-2377
Type: ROMPAS

Axial Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
1.0" Side	80	1.25	1.0"
4.0" Side	80	5.0	4.0"

Circumferential Oriented Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
See Axial			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth
2.3	1" Side	80	1.25	1.0"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)
Results: Sat ☑ Unsat ☐ Eval ☐

Comments: Utilized for T & C only. Lamination scans performed in prior examination. Data not availabe.

Percent Of Coverage Obtained > 90%: N/A | Reviewed Previous Data: No

Examiner	Level	Signature	Date
Schmalz, Matthew W.	II-N		10/4/2016
Rush, J. Scott	II-N		10/4/2016
N/A	N/A		

Reviewer	Signature	Date
D.B. King, UT Level III		10/17/16
Site Review: Angela Stoller	Angela Stoller	10/17/16
ANI Review: NANCY RITCHIE-SLAUGHTER	Nancy Ritchie Slaughter	10/17/16

This Document is a QA Record

NGG Nuclear Generation Group

Supplemental Report

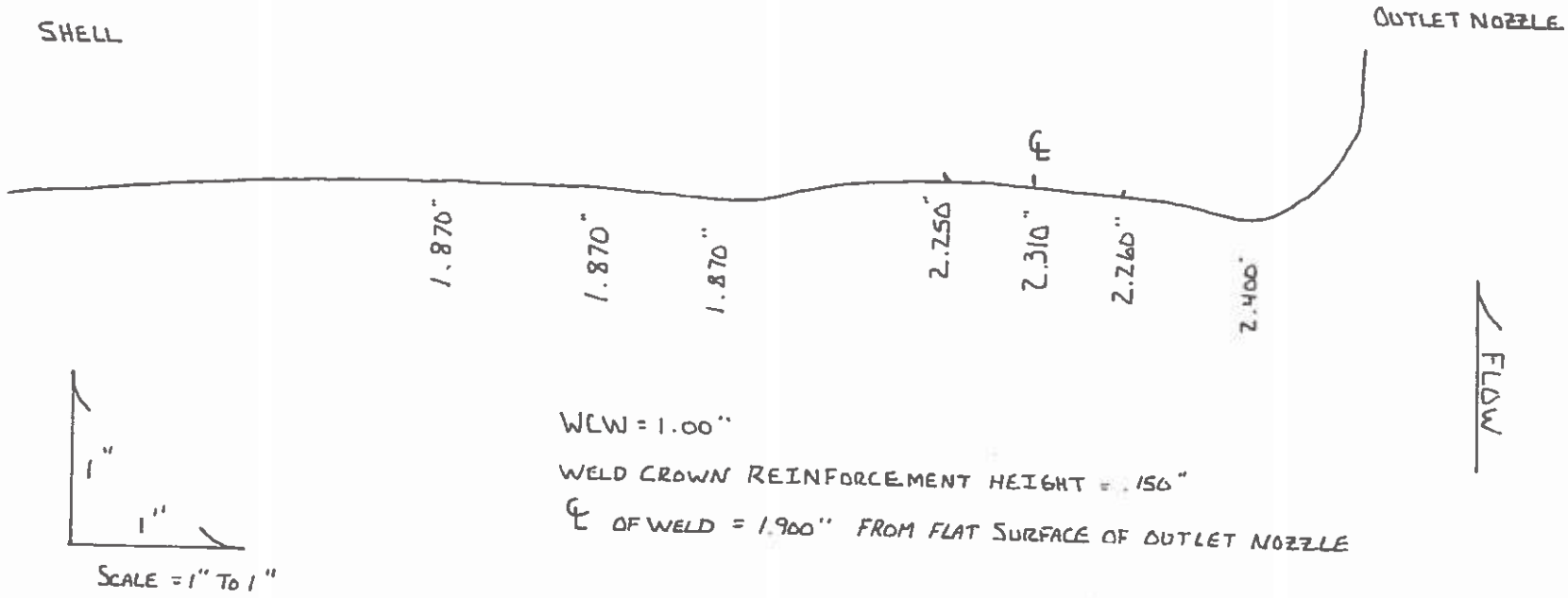
Report No.: UT-16-002

Summary No.: H-01353

Examiner:	Schmalz, Matthew W.	Level: II-N	Reviewer:	D.B. King, UT Level III	Date: 10/17/16
Examiner:	Rush, J. Scott	Level: II-N	Site Review:	Angela Stelter Angela Stelter	Date: 10/17/16
Other:	N/A	Level: N/A	ANII Review:	NANCY RITCHIE-SLAUGHTER Nancy Ritchie-Slaughter	Date: 10/17/16

Comments: **T & C Taken at 0° RT marker on head.**

Sketch or Photo: Z:\UT\OUTAGES\Harris\Contours and Profiles\II-BIT-01NTHW-03_Page 1.bmp



NGG Nuclear Generation Group

Supplemental Report

Report No.: UT-16-002

Page: 7 of 12

Summary No.: H-01353

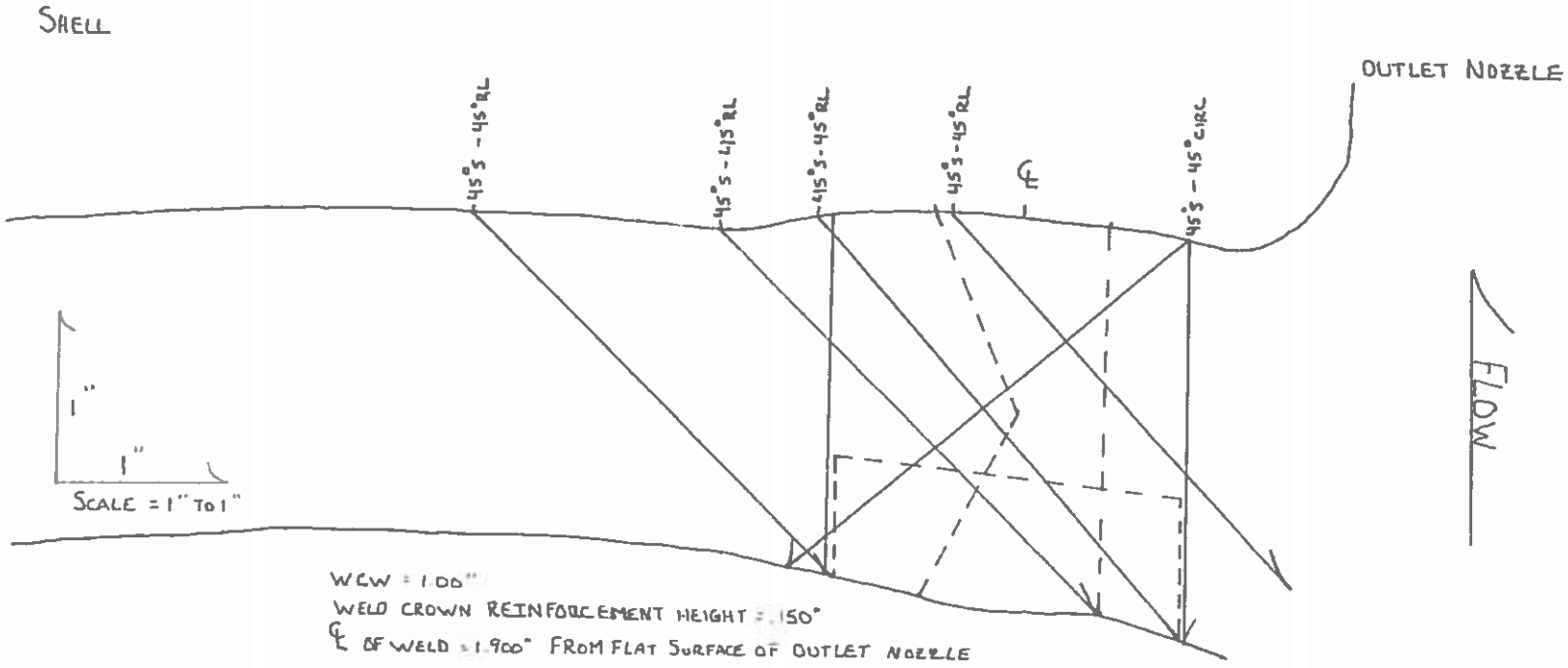
Examiner: Schmalz, Matthew W. Level: II-N Reviewer: D.B. Kim, UT Level III Date: 10/17/16

Examiner: Rush, J. Scott Level: II-N Site Review: Angela Staller, Angela Staller Date: 10/17/16

Other: N/A Level: N/A ANII Review: NANCY RITCHIE-SLAUGHTER Date: 10/17/16

Comments: **45° Coverage Plot**

Sketch or Photo: Z:\UT\OUTAGES\Harris\Contours and Profiles\II-BIT-01NTHW-03_Page 2.bmp



This Document is a QA Record

Supplemental Report

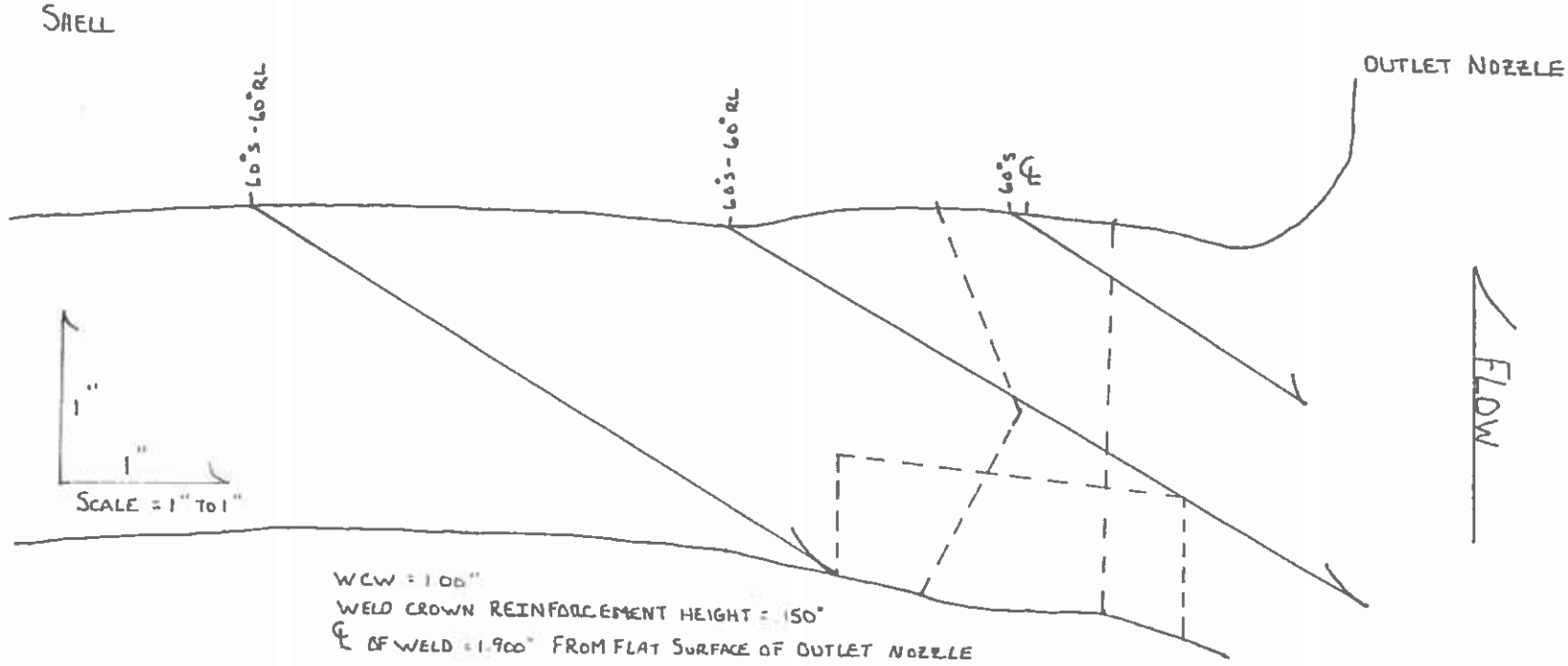
Report No.: UT-16-002

Summary No.: H-01353

Examiner:	Schmalz, Matthew W.	Level: II-N	Reviewer:	D.B. King, UT Level III	Date: 10/7/16
Examiner:	Rush, J. Scott	Level: II-N	Site Review:	Angela Staller	Date: 10/17/16
Other:	N/A	Level: N/A	ANII Review:	NANCY RITCHIE-SLAUGHTER	Date: 10/17/16

Comments: **60° Coverage Plot**

Sketch or Photo: Z:\UT\OUTAGES\Harris\Contours and Profiles\II-BIT-01NTHW-03_Page_3.bmp



Summary No.: H-01353

Examiner: Schmalz, Matthew W. Level: II-N

Examiner: Rush, J. Scott Level: II-N

Other: N/A Level: N/A

JASON POLISENSKY 10/17/2016

Reviewer: D.B. King, UT Level III Date: 10/17/16

Site Review: Angela Stalla Date: 10/17/16

ANII Review: NANCY RITCHIE-SLAUGHTER Date: 10/17/16

Comments: Calculation

Sketch or Photo: Z:\UT\OUTAGES\Harris\Contours and Profiles\II-BIT-01NTHW-03_Page 4.bmp

Total Weld Volume: 2.05"(w) x .8"(h) = **1.64"²**

Total AX (away from NOZ) coverage with 45°: .6"(b) x .33"(h) / 2 = **.1"²** .1 / 1.64 = **6.1%**

SCAN COVERAGE:

CW = 100%

CCW = 100%

AX towards NOZ = 100% (using 45° and 60°)

AX away from NOZ = 6.1% (limited due to Noz Configuration)

100 + 100 + 100 + 6.1 = 306.1 / 4 = **76.5% Total Examination Coverage**

Liquid Penetrant Examination

NGG Nuclear Generation Group

Site/Unit: HNP / 1 | Procedure: NDEP-0201 | Outage No.: RFO-19

Summary No.: H-01353 | Procedure Rev.: 34 TR-A | Report No.: PT-15-004

Workscope: ISI | Work Order No.: 13352682 | Page: 1 of 1

Code: 2001 Edition 2003 Addenda | Cat./Item: C-B/C2.21 | Location: RAB 226'

Drawing No.: 1-ISI-BIT-1 | Description: Outlet Nozzle to Vessel Weld

System ID: SI-2080

Component ID: II-BIT-01NTHW-03 | Mat./Thickness: SS / SA-204 - 2"

Limitations: None

Light Meter Mfg.: Spectronics | Serial No.: MCNDE40183 | Illumination: >100fc

Temp. Tool Mfg.: Fluke | Serial No.: MCNDE40194 | Surface Temp.: 68 °F

Comparator Block Temp.: Side A: N/A °F | Side B: N/A °F | Resolution: Not Used

Lo/Wo Location: N/A | Surface Condition: Smooth

	Cleaner	Penetrant (Visible ☑ / Fluorescent ☐)	Remover	Developer
Brand	Magnaflux	Magnaflux	Magnaflux	Magnaflux
Type	SKC-S	SKL-SP2	SKC-S	SKD-S2
Batch No.	13J09K	12L04K	13J09K	11L05K
Time	Evap. 5 Minutes	Dwell 10 Minutes	Evap. 5 Minutes	Develop 10 Minutes

Time Exam Started: 1330 | Time Exam Completed: 1410

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NRI						

Comments:
NONE

Results: Sat ☑ Unsat ☐ Eval ☐

Percent Of Coverage Obtained > 90%: 100 | Reviewed Previous Data: None

Examiner Level II-N Nahory, W. Jason	Signature	Date 4/16/2015	Reviewer Jerry Newgard, Level III
Examiner Level N/A N/A	Signature	Date	Site Review Angela Staller
Other Level N/A N/A	Signature	Date	ANII Review Nancy Ritchie-Slaughter, ANII

Signature	Date	
Jerry Newgard	4/24/2015	
Angela Staller	4/27/2015	
Nancy Slaughter	4/28/2015	

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