Luminant

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TXX-15121

Ref. # 10CFR50.55a(g)(5)(iii)

August 3, 2015

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

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NO. 50-446
RELIEF REQUEST C-4 FOR UNIT 2 SECOND TEN YEAR INSERVICE INSPECTION INTERVAL FROM 10CFR50.55a INSPECTION REQUIREMENTS DUE TO PHYSICAL INTERFERENCES
(1998 EDITION OF ASME CODE, SECTION XI, 2000 ADDENDA SECOND INTERVAL START DATE: AUGUST 3, 2004 SECOND INTERVAL END DATE: AUGUST 2, 2014)

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a(g)(5)(iii), Luminant Generation Company, LLC (Luminant Power) is submitting Relief Request C-4 (see attachment) for Comanche Peak Unit 2 for the second ten year inservice inspection interval. Luminant Power has determined that certain inspection requirements of ASME Section XI are impractical due to physical interferences.

The geometry of Residual Heat Removal (RHR) Heat Exchanger weld locations makes the Code required examination coverage requirements impractical (See Attachment 1 and 2). Ultrasonic Testing (UT) of the subject weld was performed during the second interval to the maximum extent practical based on design configuration restrictions. Pressure test VT-2 visual examinations were also performed with no evidence of leakage identified for the subject component. No undue risk to the public health and safety is presented by this request.

This communication contains no new licensing basis commitments regarding Comanche Peak Unit 2.

A047
NRR

Should you have any questions, please contact Mr. Jack Hicks at (254) 897-6725.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: Fred W. Madden
Fred W. Madden
Director, External Affairs

Attachment 1– Relief Request C-4 for Unit 2 Second Ten Year ISI Interval from 10CFR50.55a Inspection Requirements due to Physical Interferences

Attachment 2 – Examination Data Sheets and Sketches (22 pages)

c - Marc L. Dapas, Region IV
Balwant K. Singal, NRR
Resident Inspectors, Comanche Peak
Rob D. Troutt, TDLR
Jack Ballard, ANII, Comanche Peak

COMANCHE PEAK NUCLEAR POWER PLANT UNIT 2
Relief Request Number C-4 for Unit 2 Second 10 Year ISI Interval
From 10CFR50.55a Inspection Requirements due to Physical Interferences
(Second 10-Year ISI Interval Start Date: August 3, 2004; End Date: August 2, 2014)

1. **ASME Code Component Affected:**

Class 2 Residual Heat Removal (RHR) Heat Exchanger (TCX-2-1120)

Code Cat.	Item No.	Description	Component/Weld No.
C-A	C1.20	RHR Heat Exchanger Head-to-Shell weld	TCX-2-1120-1-1
C-A	C1.10	RHR Heat Exchanger Shell-to-Flange weld	TCX-2-1120-1-2
C-B	C2.21	RHR Heat Exchanger Inlet Nozzle-to-Shell weld	TCX-2-1120-1-3
C-B	C2.21	RHR Heat Exchanger Outlet Nozzle-to-Shell weld	TCX-2-1120-1-4

2. **Applicable Code Edition and Addenda:**

The applicable ASME Boiler and Pressure Vessel Code (hereafter referred to as the "Code") edition and addenda is ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1998 Edition through 2000 Addenda.

3. **Applicable Code Requirement:**

ASME Section XI, Figure IWC-2500-1 (a) 1998 Edition through 2000 Addenda, requires a minimum volumetric examination of the weld volume extending 1/2 inch into the base metal on the vessel and flange sides for the circumferential weld.

The Comanche Peak Nuclear Power Plant (CPNPP) second ten-year interval Inspection Program Plan also implements Code Case N-460, which is endorsed by the NRC in revision 17 of Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability ASME Section XI, Division 1." Code Case N-460 states, in part, when the entire examination volume or area cannot be examined due to interference by another component or part geometry, a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted, provided the reduction coverage for that weld is less than 10 percent.

NRC Information Notice (IN) 98-42, "Implementation of 10 CFR 50.55a (g) Inservice Inspection Requirements," termed a reduction in coverage of less than 10 percent to be "essentially 100 percent." IN 98-42 states, in part, "The NRC has adopted and further refined the definition of "essentially 100 percent" to mean "greater than 90 percent" ... has been applied to all examinations of welds or other areas required by ASME Section XI."

4. **Impracticality of Compliance:**

The examination of the subject component weld is limited by the configuration of welded supports, bolt flange, and the vessel. As shown on Attachment 2, the proximity of the welded supports, the vessel, and the flange configuration limit the parallel scans (circumferential). Perpendicular (axial) scans are limited. See Table C-4 below for limitation for welds. The examinations were conducted in accordance with procedure TX-ISI-214, "Ultrasonic Examination Procedure for Welds in Piping Systems and Vessels."

COMANCHE PEAK NUCLEAR POWER PLANT UNIT 2
Relief Request Number C-4 for Unit 2 Second 10 Year ISI Interval
From 10CFR50.55a Inspection Requirements due to Physical Interferences
(Second 10-Year ISI Interval Start Date: August 3, 2004; End Date: August 2, 2014)

Table C-4 Limitations		
Component/Weld No.	Limitation	Achieved Coverage
TCX-2-1120-1-1	Weld supports	75%
TCX-2-1120-1-2	Bolt flange and weld supports	63%
TCX-2-1120-1-3	One sided exam due to vessel	75%
TCX-2-1120-1-4	One sided exam due to vessel	75%

5. **Burden caused by Compliance:**

The design configuration restrictions of the subject components make the Code required examination coverage requirements for the weld volume impractical, as shown in Table C-4 above and Attachment 2. Plant modifications or replacements of components designed to allow for complete coverage would be needed to meet the Code requirements. This would cause considerable burden to CPNPP.

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

Proposed Alternative:

The following alternatives are proposed in lieu of the required examination coverage of essentially 100 percent:

1. Ultrasonic testing (UT) of the subject component weld was performed to the maximum extent practical during the second ten-year interval.

2. Liquid penetrant, and pressure test VT-2 visual examinations were performed, as required by Code Category C-H, during the second ten-year interval. No indication or evidence of leakage was identified for this component.

Basis for use:

The basis for use of this alternative is that it provides the best examination coverage practical within the limitations of the current configuration. Based on the percentage of the examination volume completed and the lack of any indications identified, there is a high level of confidence in the continued structural integrity of the weld. CPNPP believes that there is no undue risk to the public health and safety presented by this request.

7. ***Duration of Proposed Alternative:***

The second ten-year ISI interval for Unit 2 began on August 3, 2004 and ended on August 2, 2014.

8. **Precedents:**

None

UT Calibration/Examination

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Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	095600	Procedure Rev.:	5	Report No.:	UT-2014-004
Workscope:	ISI	Work Order No.:	4517003	Page:	1 - of 2

Code:	ASME Sec. XI 1998 Ed./2000 Add.	Cat./Item:	C-A/C1.20	Location:	2-069, SG, 790
Drawing No.:	TCX-2-1120	Description:	RHR HX1 HEAD TO SHELL WELD		
System ID:	RHR				
Component ID:	TCX-2-1120-1-1	Size/Length:	45.25" / 142.08"	Thickness/Diameter:	1" / 45.25"
Limitations:	WELD SUPPORTS	Start Time:	1251	Finish Time:	1335

Instrument Settings

Serial No.:	106856		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-010
Delay:	6.1800	Range:	5.0"
M'tl Cal/Vel:	0.1219	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): 22.3 Circ. Gain (dB): N/A

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

Calibration Block

Cal. Block No.: TBX-30

Thickness: 1.0 Dia.: 0

Cal. Blk. Temp.: 72 Temp. Tool: TU2063

Comp. Temp.: 69 Temp. Tool: TU2063

Search Unit

Serial No.:	00M5JH		
Manufacturer:	KBA		
Size:	0.5" Dia.	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	2.20 MHz
Exam Angle:	45	Squint Angle:	N/A
Measured Angle:	45	Mode:	Shear
Exit Point	0.35"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A
Wedge Style:	Non-integral		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 32.3

CW ☑ CCW ☑ Scan dB: 32.3

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0900	3/19/2014
Inter. Cal.		
Inter. Cal.	1250	3/19/2014
Inter. Cal.		
Final Cal.	1530	3/19/2014

Couplant

Cal. Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Exam Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	2.9	1.420
2T NOTCH	58	5.7	2.800
3T NOTCH	28	8.4	4.175
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
24.5	FSDH	18	2.1	1.037
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

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

Comments: 75% Code coverage. Welded support limits the 2, 5, 7 & 8 scans on weld #1. T & C's taken from previous Report #27UT04.

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Davis, Philip			3/19/2014	Sabo, Steve		3/31/2014
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				ISI Engineer		4/5/14
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Ballard, Jack ANII	Jack Ballard	4/15/2014

Attachment to TXX-15121

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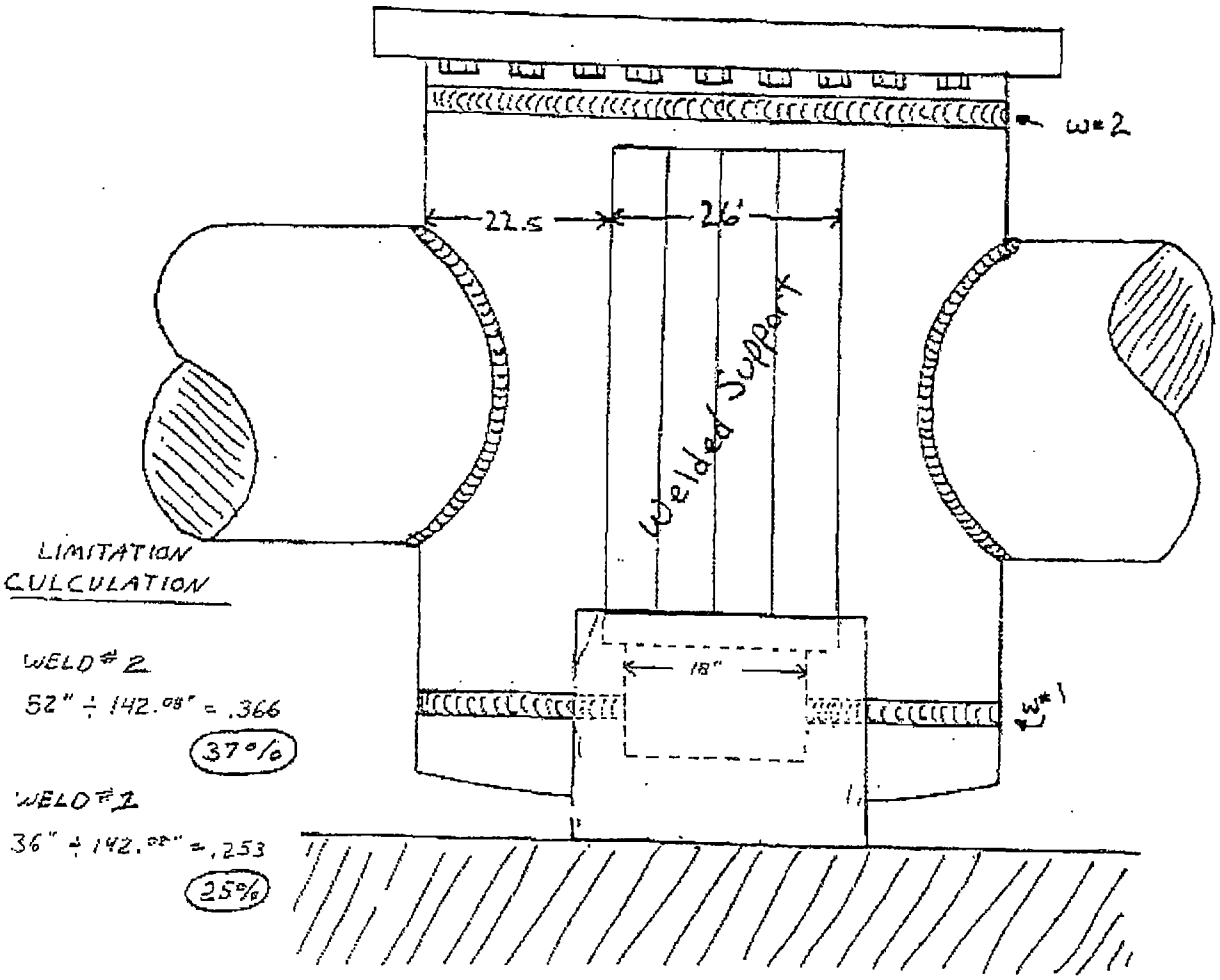
Supplemental Report

Report No.: UT-2014-004

Page: 2 of 2

Summary No.: 095600

Sketch or Photo: O:\ISI\2rRF14\TCX-2-1120-1-1.jpg



Attachment to TXX-15121

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Liquid Penetrant Examination

Site/Unit: CPNPP / 2 Procedure: TX-ISI-11 Outage No.: 2RF14

Summary No.: 096200 Procedure Rev.: 13 Report No.: PT-2014-008

Workscope: ISI Work Order No.: 4517003 Page: 1 of 2

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-C/C3.10 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 WELDED SUPPORT

System ID: RHR

Component ID: TCX-2-1120-1-1WS-WA Mat./Thickness: 1.0"

Limitations: Yes

Light Meter Mfg.: AEMC Serial No.: TU6359 Illumination: > 50fc

Temp. Tool Mfg.: Fluke Serial No.: TU2082 Surface Temp.: 69 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: N/A

Lo/Wo Location: N/A Surface Condition: Ground

	Cleaner	Penetrant (Visible ☑ / Fluorescent ☐)	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP2	SKC-S	SKD-S2
Batch No.	12L07K	12J26K	12L07K	12H20K
Time	Evap. 5	Dwell 10	Evap. 5	Develop 10

Time Exam Started: 0845 Time Exam Completed: 0950

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NI						

Comments:
SEE ATTACHED LIMITATION SHEET

Results: Accept ☑ Reject ☐ Info ☐ 94% EXAMINATION COVERAGE

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

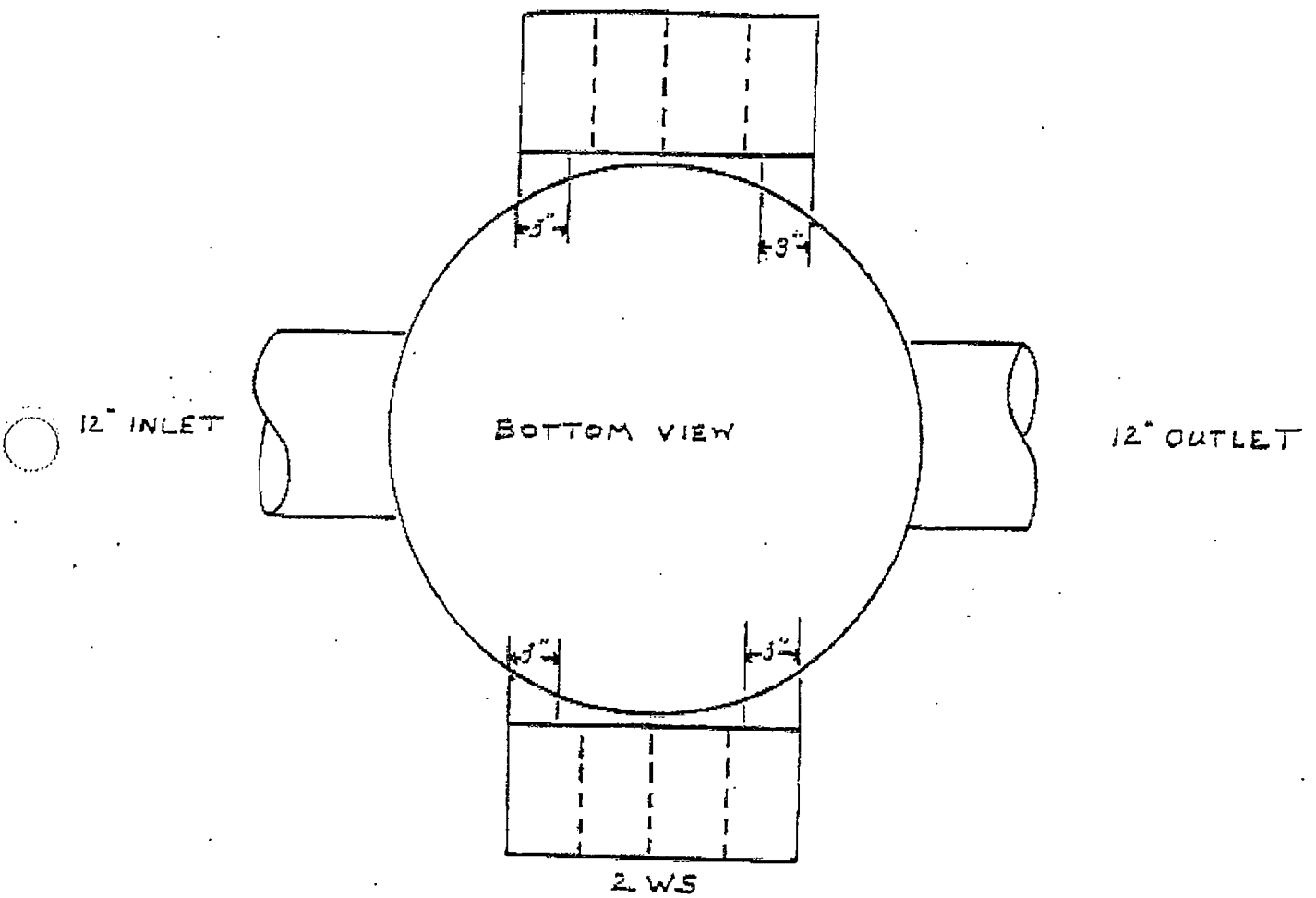
Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Parker, James		James Parker	3/19/2014	Sabo, Steve			3/25/2014
Examiner	Level II	Signature	Date	Site Review		Signature	Date
Davis, Philip			3/19/2014	ISI Engineer			4/11/14
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Ballard, Jack ANII		Jack Ballard	4/12/14

Luminant

Report No.: **PT-2014-008**

Summary No.: **096200**

Sketch or Photo: O:\ISI\2rRF14\TCX-2-1120-1-1WS AND 2WS.jpg



VESSEL TO WELDED SUPPORT CONFIGURATION LIMITS PENETRANT EXAMINATION TO 3" ON EACH SIDE AT BOTTOM WELD OF WELDED SUPPORT APPROXIMATELY 94% TOTAL COVERAGE.

UT Calibration Examination

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Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	095700	Procedure Rev.:	5	Report No.:	UT-2014-005
Workscope:	ISI	Work Order No.:	4517003	Page:	1 of 4

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-A/C1.10 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 SHELL TO FLANGE WELD

System ID: RHR

Component ID: TCX-2-1120-1-2 Size/Length: 45.25" / 142.08" Thickness/Diameter: 1" / 45.25"

Limitations: ONE-SIDED EXAM DUE TO BOLT FLANGE AND WELDED SUPPORTS Start Time: 1336 Finish Time: 1400

Instrument Settings

Serial No.:	106856		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-010
Delay:	6.1800	Range:	5.000"
M'tl Cal/Vel:	0.1219	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): 22.3 Circ. Gain (dB): N/A

1 Screen Div. = 0.5 in. of Sound Path

Calibration Block

Cal. Block No. TBX-30

Thickness 1.0" Dia.: 0

Cal. Blk. Temp. 72 Temp. Tool: TU2063

Comp. Temp. 69 Temp. Tool: TU2063

Search Unit

Serial No.:	00M5JH		
Manufacturer:	KBA		
Size:	0.5" Dia.	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	2.20 MHz
Exam Angle:	45	Squint Angle:	N/A
Measured Angle:	45	Mode:	Shear
Exit Point	0.35"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A
Wedge Style:	Non-integral		

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 32.3

CW ☑ CCW ☑ Scan dB: 32.3

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0900	3/19/2014
Inter. Cal.		
Inter. Cal.	1250	3/19/2014
Inter. Cal.		
Final Cal.	1530	3/19/2014

Couplant

Cal. Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace
Exam Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	2.9	1.420
2T NOTCH	58	5.7	2.800
3T NOTCH	28	8.4	4.175
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
24.5	FSDH	18	2.1	1.037
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

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

Comments: 63% Code coverage achieved. Welded support limits the 2 scan. T & C's taken from previous report #27UT04.

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Davis, Philip			3/19/2014	Sabo, Steve		3/31/2014
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				ISI Engineer		4/5/14
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Ballard, Jack ANII	Jack Ballard	4/16/2014

4/16/2014

Attachment to TXX-15121

UT Calibration Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	095700	Procedure Rev.:	5	Report No.:	UT-2014-005
Workscope:	ISI	Work Order No.:	4517003	Page:	2 of 4

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-A/C1.10 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 SHELL TO FLANGE WELD

System ID: RHR

Component ID: TCX-2-1120-1-2 Size/Length: 45.25" / 142.08" Thickness/Diameter: 1" / 45.25"

Limitations: ONE-SIDED EXAM DUE TO BOLT FLANGE AND WELDED SUPPORTS Start Time: 1434 Finish Time: 1448

Instrument Settings

Serial No.:	105204		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-006
Delay:	8.7481	Range:	6.000"
M'tl Cal/Vel:	0.1219	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): 39.2 Circ. Gain (dB): N/A

10 Screen Div. = 6.0 in. of Sound Path

Calibration Block

Cal. Block No. TBX-30

Thickness 1.0 Dia.: 0

Cal. Blk. Temp. 72 Temp. Tool: TU2063

Comp. Temp. 69 Temp. Tool: TU2063

Recordable Indication(s): Yes ☐ No ☑

Results: Accept ☑ Reject ☐ Info ☐

Search Unit

Serial No.:	00M5LK		
Manufacturer:	KBA		
Size:	0.5" Dia.	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	2.32 MHz
Exam Angle:	60	Squint Angle:	N/A
Measured Angle:	60	Mode:	Shear
Exit Point	0.47"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A
Wedge Style:	Non-integral		

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 49.4

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

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

Cal. Checks	Time	Date
Initial Cal.	0920	3/19/2014
Inter. Cal.	1433	3/19/2014
Inter. Cal.		
Inter. Cal.		
Final Cal.	1600	3/19/2014

Couplant

Cal. Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Exam Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	3.0	1.824
2T NOTCH	35	6.3	3.812
3T NOTCH	15	9.7	5.822
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
39.2	NSDH	82	1.1	0.651
N/A				
N/A				

Comments: 63% Code coverage achieved. Welded support limits the 2 scan on weld #2. T & C's taken from previous report #27UT04.

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

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Jennings, Jason				3/19/2014	Sabo, Steve		3/31/2014
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A					ISI Engineer		4/5/14
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					Ballard, Jack ANII	Jack Ballard	04/16/2014

Attachment to TXX-15121

UT Calibration/Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	095700	Procedure Rev.:	5	Report No.:	UT-2014-005
Workscope:	ISI	Work Order No.:	4517003	Page:	3 of 4

Code:	ASME Sec. XI 1998 Ed./2000 Add.	Cat./Item:	C-A/C1.10	Location:	2-069, SG, 790
Drawing No.:	TCX-2-1120	Description:	RHR HX1 SHELL TO FLANGE WELD		
System ID:	RHR				
Component ID:	TCX-2-1120-1-2	Size/Length:	45.25" / 142.08"	Thickness/Diameter:	1" / 45.25"
Limitations:	ONE-SIDED EXAM DUE TO BOLT FLANGE AND WELDED SUPPORTS	Start Time:	1450	Finish Time:	1505

Instrument Settings

Serial No.:	105204		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-006
Delay:	10.0372	Range:	2.500"
M'tl Cal/Vel:	0.2320	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):	55.1	Circ. Gain (dB):	N/A

10 Screen Div. = 2.5 in. of Sound Path

Calibration Block

Cal. Block No.	TBX-30		
Thickness	1.0	Dia.:	0
Cal. Blk. Temp.	72	Temp. Tool:	TU2063
Comp. Temp.	69	Temp. Tool:	TU2063

Recordable Indication(s): Yes ☐ No ☑

Results: Accept ☑ Reject ☐ Info ☐

Search Unit

Serial No.:	01-1195		
Manufacturer:	RTD		
Size:	2(10 X 18)mm	Model:	TRLA
Freq.:	2.0 MHz	Center Freq.:	2.09 Mhz
Exam Angle:	60	Squint Angle:	12°
Measured Angle:	60	Mode:	Longitudinal
Exit Point	0.45"	# of Elements:	2
Config.:	Side by Side	Focus:	FS-25
Shape:	Rect.	Contour:	N/A
Wedge Style:	Integral		

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 55.1

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

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

Cal. Checks	Time	Date
Initial Cal.	0930	3/19/2014
Inter. Cal.	1449	3/19/2014
Inter. Cal.		
Inter. Cal.		
Final Cal.	1605	3/19/2014

Couplant

Cal. Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace
Exam Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace

Reference Block

Serial No.:	102363
Type:	Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	8.0	2.010
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
55.1	NSDH	100	2.6	0.657
N/A				
N/A				

Comments: 63% Code coverage. Welded support limits the 2 scan on weld #2. T & C's taken from previous report #27UT04.

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

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Jennings, Jason	II-PDI		3/19/2014	Sabo, Steve		3/31/2014
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			ISI Engineer		4/5/14
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			Ballard, Jack ANII	Jack Ballard	4/16/2014

Attachment to TXX-15121

Luminant

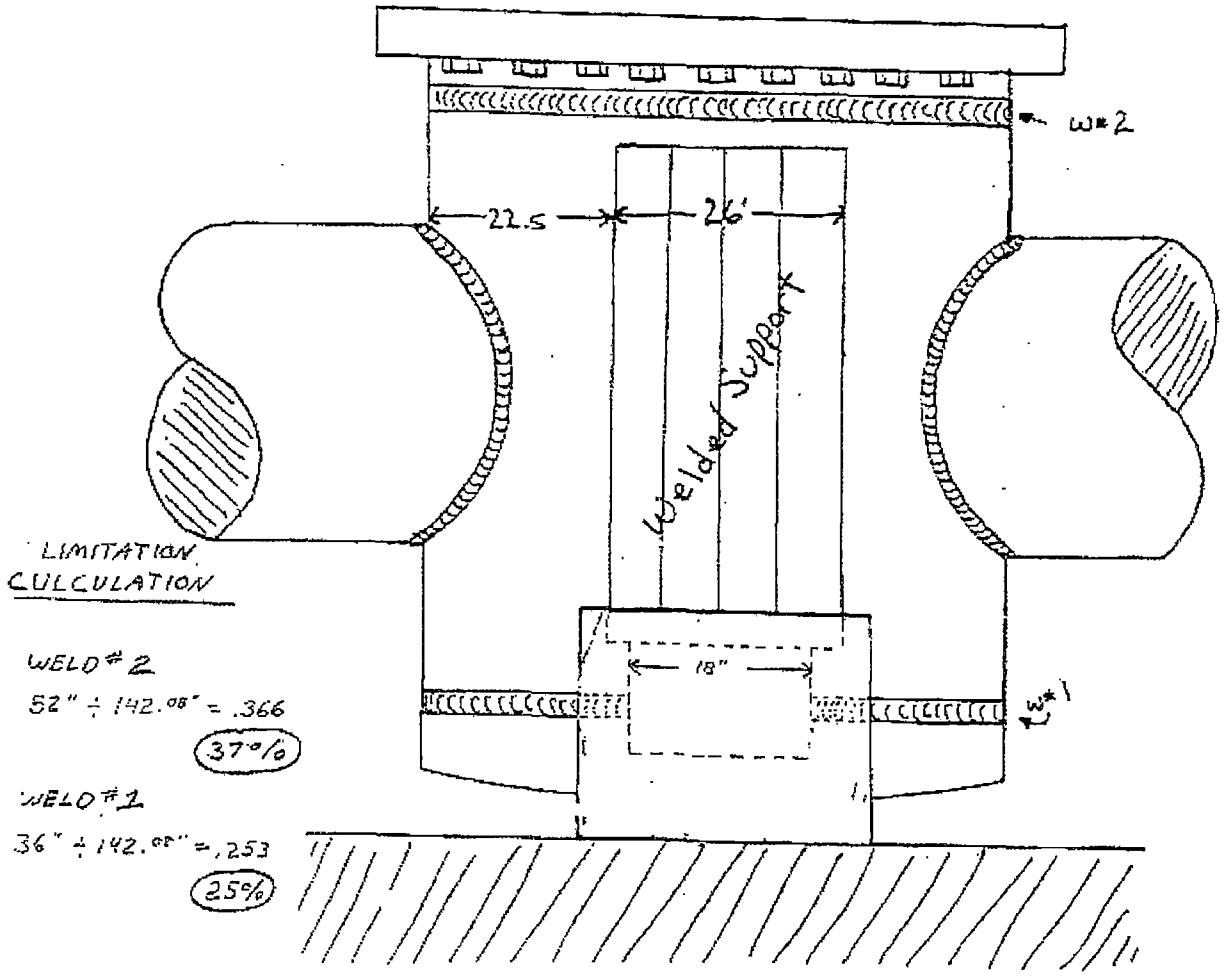
Supplemental Report

Report No.: UT-2014-005

Page: 4 of 4

Summary No.: 095700

Sketch or Photo: O:\ISI\2rRF14\TCX-2-1120-1-1.jpg



Attachment to TXX-15121

Liquid Penetrant Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-11	Outage No.:	2RF14
Summary No.:	096300	Procedure Rev.:	13	Report No.:	PT-2014-009
Workscope:	ISI	Work Order No.:	4517003	Page:	1 of 2

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-C/C3.10 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 WELDED SUPPORT

System ID: RHR

Component ID: TCX-2-1120-1-2WS-WA Mat./Thickness: 1.0"

Limitations: Yes

Light Meter Mfg.: AEMC Serial No.: TU6359 Illumination: > 50fc

Temp. Tool Mfg.: Fluke Serial No.: TU2082 Surface Temp.: 69 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: N/A

Lo/Wo Location: N/A Surface Condition: Ground

	Cleaner	Penetrant (Visible ☑ / Fluorescent ☐)	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP2	SKC-S	SKD-S2
Batch No.	12L07K	12J26K	12L07K	12H20K
Time	Evap. 5	Dwell 10	Evap. 5	Develop 10

Time Exam Started: 0845 Time Exam Completed: 0950

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NI						

Comments:
SEE ATTACHED LIMITATION SHEET

Results: Accept ☑ Reject ☐ Info ☐ 94% EXAMINATION COVERAGE

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

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Parker, James		James Parker	3/19/2014	Sabo, Steve		S Sabo	3/25/2014
Examiner	Level II	Signature	Date	Site Review		Signature	Date
Davis, Philip		P Davis	3/19/2014	ISI Engineer		J Hall	4/11/14
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Ballard, Jack ANII		Jack Ballard	4/12/14

Luminant

Report No.: PT-2014-009

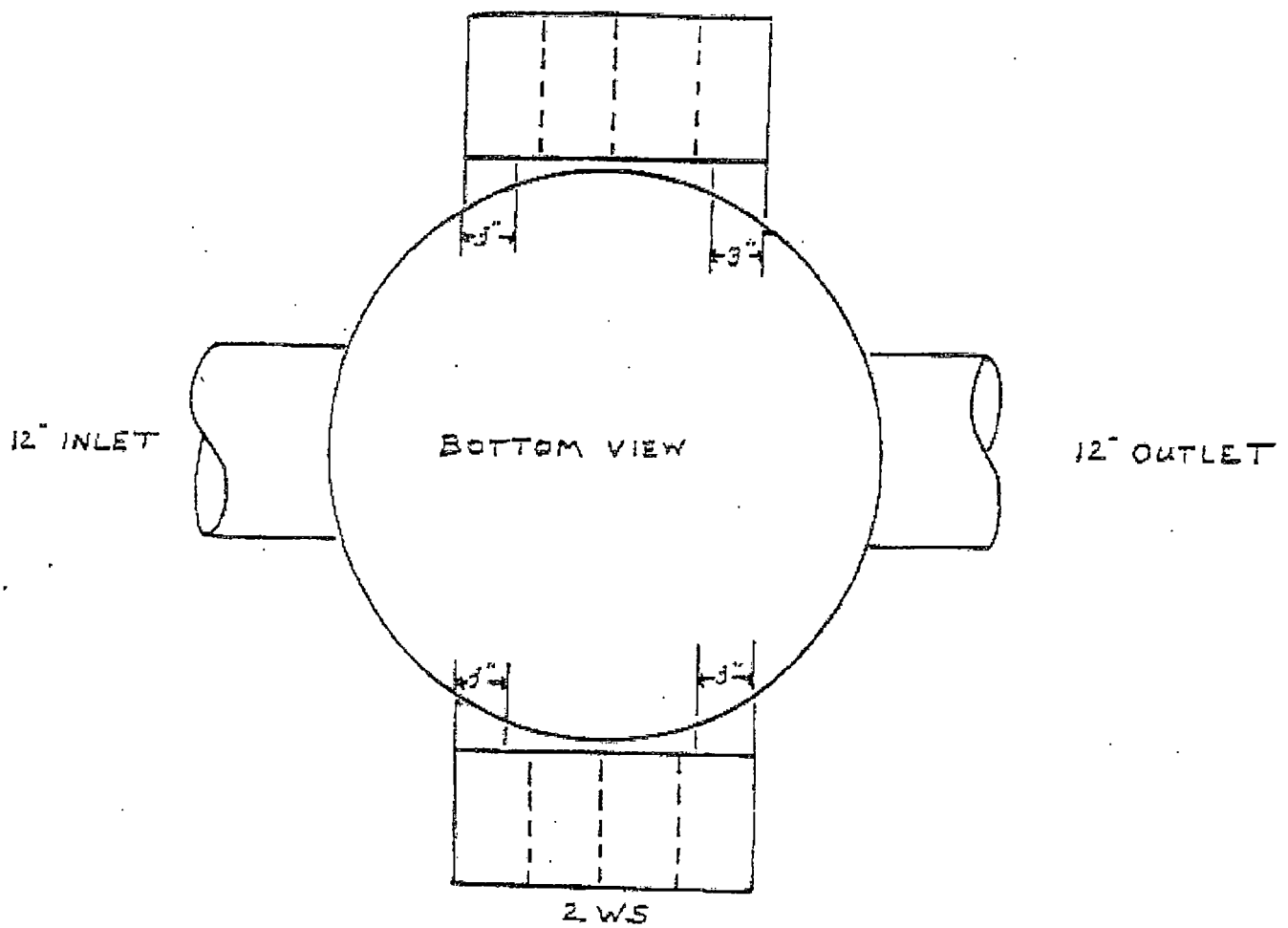
Page: 2 of 2

Summary No.: 096300

Examiner:	Parker, James	Level:	II	Reviewer:	Sabo, Steve	Date:	3/25/2014
Examiner:	Davis, Philip	Level:	II	Site Review:	ISI Engineer	Date:	
Other:	N/A	Level:	N/A	ANII Review:	Ballard, Jack ANII	Date:	

Comments:

Sketch or Photo: O:\ISI\2rRF14\Scans\TCX-2-1120-1-1WS AND 2WS.jpg



VESSEL TO WELDED SUPPORT CONFIGURATION LIMITS PENETRANT EXAMINATION TO 3" ON EACH SIDE AT BOTTOM WELD OF WELDED SUPPORT APPROXIMATELY 94% TOTAL COVERAGE.

Liquid Penetrant Examination

Luminant

Site/Unit: CPNPP / 2 Procedure: TX-ISI-11 Outage No.: 2RF14

Summary No.: 095800 Procedure Rev.: 13 Report No.: PT-2014-006

Workscope: ISI Work Order No.: 4517003 Page: 1 of 1

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 INLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-3 Mat./Thickness: 0.50"

Limitations: NONE

Light Meter Mfg.: AEMC Serial No.: TU6359 Illumination: > 50fc

Temp. Tool Mfg.: Fluke Serial No.: TU2082 Surface Temp.: 69 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: N/A

Lo/Wo Location: N/A Surface Condition: Ground

	Cleaner	Penetrant (Visible ☑ / Fluorescent ☐)	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP2	SKC-S	SKD-S2
Batch No.	12L07K	12J26K	12L07K	12H20K
Time	Evap. 5	Dwell 10	Evap. 5	Develop 10

Time Exam Started: 0845 Time Exam Completed: 0950

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NI						

Comments:
NONE

Results: Accept ☑ Reject ☐ Info ☐

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

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Parker, James		James Park	3/19/2014	Sabo, Steve		S Sabo	3/24/2014
Examiner	Level II	Signature	Date	Site Review		Signature	Date
Davis, Philip		P Davis	3/19/2014	ISI Engineer		J Hoffe	4/11/14
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Ballard, Jack ANII		Jack Ballard	4/12/14

UT Calibration Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	095800	Procedure Rev.:	5	Report No.:	UT-2014-006
Workscope:	ISI	Work Order No.:	4517003	Page:	1 of 5

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 INLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-3 Size/Length: Comments (1), (2) Thickness/Diameter: Comments (1),(2)

Limitations: ONE-SIDED EXAM DUE TO VESSEL Start Time: 1401 Finish Time: 1418

Instrument Settings

Serial No.:	106856		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-010
Delay:	6.1800	Range:	5.0"
M'tl Cal/Vel:	0.1219	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): 22.3 Circ. Gain (dB): N/A

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

Calibration Block

Cal. Block No. TBX-30

Thickness 1.00 Dia.: 0

Cal. Blk. Temp. 72 Temp. Tool: TU2063

Comp. Temp. 69 Temp. Tool: TU2063

Search Unit

Serial No.:	00M5JH		
Manufacturer:	KBA		
Size:	0.5" Dia.	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	N/A
Exam Angle:	45	Squint Angle:	N/A
Measured Angle:	45	Mode:	Shear
Exit Point	0.35"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A
Wedge Style:	Non-integral		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 32.3

CW ☑ CCW ☑ Scan dB: 32.3

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0900	3/19/2014
Inter. Cal.		
Inter. Cal.	1250	3/19/2014
Inter. Cal.		
Final Cal.	1530	3/19/2014

Couplant

Cal. Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Exam Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	2.9	1.420
2T NOTCH	58	5.7	2.800
3T NOTCH	28	8.4	4.175
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
24.5	FSDH	18	2.1	1.037
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

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

Comments: 75% Code coverage. Scanned from vessel side. T & C's from previous report #27UT01.
(1) Size/Length: 45.25"/142.08".

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Davis, Philip			3/19/2014	Sabo, Steve		4/3/2014
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				ISI Engineer		4/7/14
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Ballard, Jack ANII	Jack Ballard	4/16/2014

Attachment to TXX-15121

UT Calibration Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	095800	Procedure Rev.:	5	Report No.:	UT-2014-006
Workscope:	ISI	Work Order No.:	4517003	Page:	2 of 5

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 INLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-3 Size/Length: Comments (1), (2) Thickness/Diameter: Comments (1),(2)

Limitations: ONE-SIDED EXAM DUE TO VESSEL Start Time: 1251 Finish Time: 1311

Instrument Settings

Serial No.:	105204		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-006
Delay:	5.4553	Range:	2.500"
M'tl Cal/Vel:	0.1219	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):	31.8	Circ. Gain (dB):	N/A

10 Screen Div. = 2.5 in. of Sound Path

Calibration Block

Cal. Block No.	TBX-51		
Thickness	0.5	Dia.:	12.0
Cal. Blk. Temp.	72	Temp. Tool:	TU2063
Comp. Temp.	69	Temp. Tool:	TU2063

Recordable Indication(s): Yes ☐ No ☑

Results: Accept ☑ Reject ☐ Info ☐

Search Unit

Serial No.:	01576X		
Manufacturer:	KBA		
Size:	0.375" Dia	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	2.26 MHz
Exam Angle:	45	Squint Angle:	N/A
Measured Angle:	45	Mode:	Shear
Exit Point	0.30"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A
Wedge Style:	Non-integral		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 42.6

CW ☑ CCW ☑ Scan dB: 42.6

Exam Surface: OD

Surface Condition: Ground

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

Cal. Checks	Time	Date
Initial Cal.	0855	3/19/2014
Inter. Cal.	1250	3/19/2014
Inter. Cal.		
Inter. Cal.		
Final Cal.	1535	3/19/2014

Couplant

Cal. Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace
Exam Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	2.8	0.711
2T NOTCH	48	5.4	1.343
3T NOTCH	24	8.2	2.052
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
38.1	FSDH	44	4.2	1.059
N/A				
N/A				

Comments: (2) Sz/Lngth: 12.0"/37.68". Thickness/Diam:0.5"/12.0". 75% Code Coverage.

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Jennings, Jason			3/19/2014	Sabo, Steve		4/3/2014
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				ISI Engineer		4/7/14
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Ballard, Jack ANII	Jack Ballard	4/16/2014

Attachment to TXX-15121

UT Calibration Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	095800	Procedure Rev.:	5	Report No.:	UT-2014-006
Workscope:	ISI	Work Order No.:	4517003	Page:	3 of 5

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 INLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-3 Size/Length: Comments (1), (2) Thickness/Diameter: Comments (1),(2)

Limitations: ONE-SIDED EXAM DUE TO VESSEL Start Time: 1403 Finish Time: 1415

Instrument Settings

Serial No.:	105204		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-006
Delay:	4.4425	Range:	1.250"
M'tl Cal/Vel:	0.2274	Pulser Type:	Square
Damping:	500 Ohms	Reject:	0%
PRF:	Auto High	SU Freq.:	4.0 MHz
Frequency:	4.0 MHz	Rectify:	Fullwave
Voltage:	450	Pulse Width:	130

Ax. Gain (dB): 68.6 Circ. Gain (dB): N/A

10 Screen Div. = 1.25 in. of Sound Path

Calibration Block

Cal. Block No. TBX-51

Thickness 0.5" Dia.: 12.0

Cal. Blk. Temp. 72 Temp. Tool: TU2063

Comp. Temp. 69 Temp. Tool: TU2063

Search Unit

Serial No.:	S0612		
Manufacturer:	Megasonics		
Size:	2(0.14 X 0.30)	Model:	CGD
Freq.:	4.0 MHz	Center Freq.:	4.053 MHz
Exam Angle:	60	Squint Angle:	N/A
Measured Angle:	60	Mode:	Longitudinal
Exit Point	0.20"	# of Elements:	2
Config.:	Side by Side	Focus:	FD-0.280
Shape:	Rectangular	Contour:	N/A

Wedge Style: Integral

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 68.6

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0915	3/19/2014
Inter. Cal.	1402	3/19/2014
Inter. Cal.		
Inter. Cal.		
Final Cal.	1555	3/19/2014

Couplant

Cal. Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace
Exam Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	7.2	0.897
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
62.6	NSDH	65	5.2	0.656
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

Comments:

(2) Sz/Lngth: 12.0"/37.68", Thickness/Diam: 0.5" / 12.0"
75% Code coverage achieved

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Jennings, Jason			3/19/2014	Sabo, Steve		4/3/2014
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				ISI Engineer		4/7/14
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Ballard, Jack ANII	Jack Ballard	4/16/2014

Attachment to TXX-15121

UT Calibration Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	095800	Procedure Rev.:	5	Report No.:	UT-2014-006
Workscope:	ISI	Work Order No.:	4517003	Page:	4 of 5

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 INLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-3 Size/Length: Comments (1), (2) Thickness/Diameter: Comments (1),(2)

Limitations: ONE-SIDED EXAM DUE TO VESSEL Start Time: 1349 Finish Time: 1401

Instrument Settings

Serial No.:	105204		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-006
Delay:	6.7566	Range:	3.000"
M'tl Cal/Vel:	0.1219	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): 42.6 Circ. Gain (dB): N/A

10 Screen Div. = 3.0 in. of Sound Path

Calibration Block

Cal. Block No. TBX-51

Thickness 0.5" Dia.: 12.0

Cal. Blk. Temp. 72 Temp. Tool: TU2063

Comp. Temp. 69 Temp. Tool: TU2063

Search Unit

Serial No.:	011560		
Manufacturer:	KBA		
Size:	0.375" Dia	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	2.35 MHz
Exam Angle:	60	Squint Angle:	N/A
Measured Angle:	60	Mode:	Shear
Exit Point	0.30"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A

Wedge Style: Non-integral

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 53.0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0905	3/19/2014
Inter. Cal.	1334	3/19/2014
Inter. Cal.		
Inter. Cal.		
Final Cal.	1545	3/19/2014

Couplant

Cal. Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Exam Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	3.0	0.906
2T NOTCH	25	6.3	1.899
3T NOTCH	14	9.6	2.914
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
38.6	NSDH	85	2.2	0.647
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

Comments: (2) Sz/L: 12.0"/37.68", Th/Dia: 0.5" / 12.0"
75% Code coverage achieved

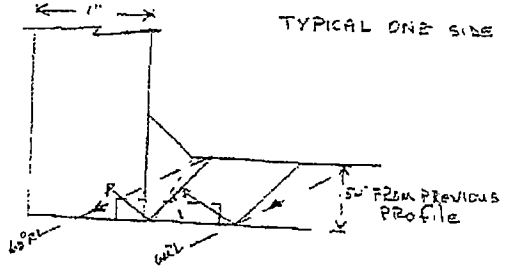
Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

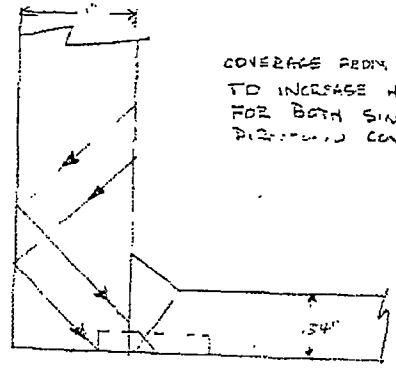
Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Jennings, Jason				3/19/2014	Sabo, Steve		4/3/2014
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A					ISI Engineer		4/7/14
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					Ballard, Jack ANII	Jack Ballard	4/16/2014

Attachment to TXX-15121

Summary No.: 095800

Sketch or Photo: O:\ISI\2rRF14\TCX-2-1120-1-3.jpg





LIMITATION CALCULATION

45° AXIAL SCAN 100%

45° CIRC. SCAN 50%

45° TOTAL COVERAGE 75%

60° AXIAL SCAN 100%

60RL AXIAL SCAN 100%

45° CIRC SCAN

37.60 ÷ 2 = 18.8

18.8 ÷ 37.62 = .500 (50%)

45° AXIAL SCAN (100%)

45° TOTAL SCAN (75%)

Luminant

Liquid Penetrant Examination

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-11	Outage No.:	2RF14
Summary No.:	096000	Procedure Rev.:	13	Report No.:	PT-2014-007
Workscope:	ISI	Work Order No.:	4517003	Page:	1 of 1

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 OUTLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-4 Mat./Thickness: 0.50"

Limitations: NONE

Light Meter Mfg.: AEMC Serial No.: TU6359 Illumination: > 50fc

Temp. Tool Mfg.: Fluke Serial No.: TU2082 Surface Temp.: 69 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: N/A

Lo/Wo Location: N/A Surface Condition: Ground

	Cleaner	Penetrant (Visible ☑ / Fluorescent ☐)	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP2	SKC-S	SKD-S2
Batch No.	12L07K	12J26K	12L07K	12H20K
Time	Evap. 5	Dwell 10	Evap. 5	Develop 10

Time Exam Started: 0845 Time Exam Completed: 0950

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NI						

Comments:
NONE

Results: Accept ☑ Reject ☐ Info ☐

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

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Parker, James		James Parker	3/19/2014	Sabo, Steve			3/24/2014
Examiner	Level II	Signature	Date	Site Review		Signature	Date
Davis, Philip			3/19/2014	ISI Engineer			4/11/14
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Ballard, Jack ANII			4/12/14

UT Calibration Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	096000	Procedure Rev.:	5	Report No.:	UT-2014-007
Workscope:	ISI	Work Order No.:	4517003	Page:	1 of 5

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 OUTLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-4 Size/Length: Comments (1), (2) Thickness/Diameter: Comments (1),(2)

Limitations: ONE-SIDED EXAM DUE TO VESSEL Start Time: 1419 Finish Time: 1425

Instrument Settings

Serial No.:	106856		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-010
Delay:	6.1800	Range:	5.0"
M'tl Cal/Vel:	0.1219	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): 22.3 Circ. Gain (dB): N/A

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

Calibration Block

Cal. Block No. TBX-30

Thickness 1.0" Dia.: 0

Cal. Blk. Temp. 72 Temp. Tool: TU2063

Comp. Temp. 69 Temp. Tool: TU2063

Search Unit

Serial No.:	00M5JH		
Manufacturer:	KBA		
Size:	0.5" Dia.	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	2.20 MHz
Exam Angle:	45	Squint Angle:	N/A
Measured Angle:	45	Mode:	Shear
Exit Point	0.35"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A
Wedge Style:	Non-integral		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 32.3

CW ☑ CCW ☑ Scan dB: 32.3

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0900	3/19/2014
Inter. Cal.		
Inter. Cal.	1250	3/19/2014
Inter. Cal.		
Final Cal.	1530	3/19/2014

Couplant

Cal. Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace
Exam Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	2.9	1.420
2T NOTCH	58	5.7	2.800
3T NOTCH	28	8.4	4.175
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
24.5	FSDH	18	2.1	1.037
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

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

Comments: 75% Code coverage. Scanned from vessel side. T & C's from previous report #27UT01.
(1) Size/Length: 45.25"/142.08"

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature		Date
Davis, Philip			3/19/2014	Sabo, Steve			4/3/2014
Examiner	Level N/A	Signature	Date	Site Review	Signature		Date
N/A				ISI Engineer			4/7/14
Other	Level N/A	Signature	Date	ANII Review	Signature		Date
N/A				Ballard, Jack ANII	Jack Ballard		4/16/2014

Attachment to TXX-15121

UT Calibration Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	096000	Procedure Rev.:	5	Report No.:	UT-2014-007
Workscope:	ISI	Work Order No.:	4517003	Page:	2 of 5

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 OUTLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-4 Size/Length: Comments (1), (2) Thickness/Diameter: Comments (1),(2)

Limitations: ONE-SIDED EXAM DUE TO VESSEL Start Time: 1313 Finish Time: 1333

Instrument Settings

Serial No.:	105204		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-006
Delay:	5.4553	Range:	2.500"
M'tl Cal/Vel:	0.1219	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): 31.8 Circ. Gain (dB): N/A

10 Screen Div. = 2.5 in. of Sound Path

Calibration Block

Cal. Block No. TBX-51

Thickness 0.5" Dia.: 12

Cal. Blk. Temp. 72 Temp. Tool: TU2063

Comp. Temp. 69 Temp. Tool: TU2063

Search Unit

Serial No.:	01576X		
Manufacturer:	KBA		
Size:	0.375" Dia	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	2.26 MHz
Exam Angle:	45	Squint Angle:	N/A
Measured Angle:	45	Mode:	Shear
Exit Point	0.30"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A

Wedge Style: Non-integral

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 42.6

CW ☑ CCW ☑ Scan dB: 42.6

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0855	3/19/2014
Inter. Cal.	1250	3/19/2014
Inter. Cal.		
Inter. Cal.		
Final Cal.	1535	3/19/2014

Couplant

Cal. Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace
Exam Batch:	11425
Type:	Ultragel II
Mfg.:	Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	2.8	0.711
2T NOTCH	48	5.4	1.343
3T NOTCH	24	8.2	2.052
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
38.1	FSDH	44	4.2	1.059
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

Comments: (2) Sz/Length: 12.0"/37.68", Th/Dia: 0.5" / 12.0". 75% Code coverage.

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Jennings, Jason			3/19/2014	Sabo, Steve		4/3/2014
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				ISI Engineer		4/7/14
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Ballard, Jack ANII		4/7/2014

Attachment to TXX-15121

UT Calibration Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	096000	Procedure Rev.:	5	Report No.:	UT-2014-007
Workscope:	ISI	Work Order No.:	4517003	Page:	3 of 5

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 OUTLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-4 Size/Length: Comments (1), (2) Thickness/Diameter: Comments (1),(2)

Limitations: ONE-SIDED EXAM DUE TO VESSEL Start Time: 1336 Finish Time: 1347

Instrument Settings

Serial No.:	105204		
Manufacturer:	GEIT		
Model:	USN 60 SW	Linearity:	L-2014-006
Delay:	6.7566	Range:	3.000"
M'tl Cal/Vel:	0.1219	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): 42.6 Circ. Gain (dB): N/A

10 Screen Div. = 3.0 in. of Sound Path

Calibration Block

Cal. Block No.: TBX-51

Thickness: 0.5" Dia.: 12

Cal. Blk. Temp.: 72 Temp. Tool: TU2063

Comp. Temp.: 69 Temp. Tool: TU2063

Search Unit

Serial No.:	011560		
Manufacturer:	KBA		
Size:	0.375" Dia	Model:	Comp-G
Freq.:	2.25 MHz	Center Freq.:	2.35 MHz
Exam Angle:	60	Squint Angle:	N/A
Measured Angle:	60	Mode:	Shear
Exit Point	0.30"	# of Elements:	1
Config.:	Single	Focus:	N/A
Shape:	Round	Contour:	N/A

Wedge Style: Non-integral

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 53.0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0905	3/19/2014
Inter. Cal.	1334	3/19/2014
Inter. Cal.		
Inter. Cal.		
Final Cal.	1545	3/19/2014

Couplant

Cal. Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Exam Batch: 11425

Type: Ultragel II

Mfg.: Sonotrace

Reference Block

Serial No.: 102363

Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	3.0	0.906
2T NOTCH	25	6.3	1.899
3T NOTCH	14	9.6	2.914
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
38.6	NSDH	85	2.2	0.647
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

Comments: (2) Sz/Lngth: 12.0""/27.68",Th/Dia: 0.5" / 12.0". 75% Code coverage achieved.

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Jennings, Jason			3/19/2014	Sabo, Steve		4/3/2014
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				ISI Engineer		4/7/14
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Ballard, Jack ANII	Jack Ballard	4/7/2014

Attachment to TXX-15121

UT Calibration/Examination

Luminant

Site/Unit:	CPNPP / 2	Procedure:	TX-ISI-214	Outage No.:	2RF14
Summary No.:	096000	Procedure Rev.:	5	Report No.:	UT-2014-007
Workscope:	ISI	Work Order No.:	4517003	Page:	4 of 5

Code: ASME Sec. XI 1998 Ed./2000 Add. Cat./Item: C-B/C2.21 Location: 2-069, SG, 790

Drawing No.: TCX-2-1120 Description: RHR HX1 OUTLET NOZZLE TO SHELL WELD

System ID: RHR

Component ID: TCX-2-1120-1-4 Size/Length: Comments (1), (2) Thickness/Diameter: Comments (1),(2)

Limitations: ONE-SIDED EXAM DUE TO VESSEL Start Time: 1417 Finish Time: 1429

Instrument Settings

Serial No.: 105204
Manufacturer: GEIT
Model: USN 60 SW Linearity: L-2014-006
Delay: 4.4425 Range: 1.250"
M'tl Cal/Vel: 0.2274 Pulser Type: Square
Damping: 500 Ohms Reject: 0%
PRF: Auto High SU Freq.: 4.0 MHz
Frequency: 4.0 MHz Rectify: Fullwave
Voltage: 450 Pulse Width: 130

Ax. Gain (dB): 68.6 Circ. Gain (dB): N/A
10 Screen Div. = 1.25 in. of Sound Path

Calibration Block

Cal. Block No. TBX-51
Thickness 0.5" Dia.: 12.0
Cal. Blk. Temp. 72 Temp. Tool: TU2063
Comp. Temp. 69 Temp. Tool: TU2063

Search Unit

Serial No.: S0612
Manufacturer: Megasonics
Size: 2(0.14 X 0.30) Model: CGD
Freq.: 4.0 MHz Center Freq.: 4.053 MHz
Exam Angle: 60 Squint Angle: N/A
Measured Angle: 60 Mode: Longitudinal
Exit Point 0.20" # of Elements: 2
Config.: Side by Side Focus: FD-0.280
Shape: Rectangular Contour: N/A
Wedge Style: Integral

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 68.6
CW ☐ CCW ☐ Scan dB: N/A
Exam Surface: OD
Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0915	3/19/2014
Inter. Cal.	1402	3/19/2014
Inter. Cal.		
Inter. Cal.		
Final Cal.	1555	3/19/2014

Couplant

Cal. Batch: 11425
Type: Ultragel II
Mfg.: Sonotrace
Exam Batch: 11425
Type: Ultragel II
Mfg.: Sonotrace

Reference Block

Serial No.: 102363
Type: Rompas Block S/S

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1T NOTCH	80	7.2	0.897
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
62.6	NSDH	65	5.2	0.656
N/A				
N/A				

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

Results: Accept ☑ Reject ☐ Info ☐

Comments:
(2) Sz/Lngth: 12.0"/37.68",Th/Dia: 0.5" / 12.0".
75% Code coverage achieved.

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

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Jennings, Jason	II-PDI		3/19/2014	Sabo, Steve		4/3/2014
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			ISI Engineer		4/7/14
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			Ballard, Jack ANII		

Attachment to TXX-15121

Summary No.: 096000

Sketch or Photo: O:\ISI\2rRF14\TCX-2-1120-1-4.jpg