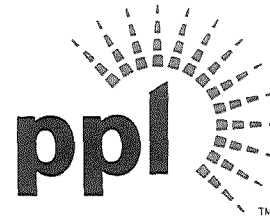


Faber A. Kearney
Site Vice President

PPL Susquehanna, LLC
769 Salem Boulevard
Berwick, PA 18603
Tel. 570.542.2904 Fax 570.542.1504
fakearney@pplweb.com

FEB 08 2012



U.S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Mail Stop OP1-17
Washington, DC 20555

**SUSQUEHANNA STEAM ELECTRIC STATION
RESPONSE TO REQUEST FOR ADDITIONAL
INFORMATION ON PROPOSED RELIEF
REQUEST NO. 3RR-18 TO THE THIRD 10-YEAR
INSERVICE INSPECTION PROGRAM
FOR SUSQUEHANNA SES UNIT 2
PLA-6810**

Docket No. 50-388

The purpose of this letter is to formally document the response to the NRC's Request for Additional Information (RAI) on PPL Susquehanna, LLC's (PPL) proposed Relief Request No. 3RR-18. The RAI was received in an email on January 5, 2012. A phone call was held on January 5, 2012 between NRC Staff and PPL in which the NRC Staff requested additional information. The response to the RAI and additional information was provided to the NRC Staff in an email dated January 10, 2012.

NRC RAI:

Provide a complete description of the subject weld (inspection category and item no.), the materials of construction, and its location in the system.

PPL Response:

The AF weld is classified as an ASME Section XI Category/Item B-A/B1.30 weld. One third of this weld is volumetrically examined every inspection period. This weld connects Shell Course 5 (external reactor vessel) to the Shell Closure Flange. The weld is located at elevation 791', 115" (59'-7 19/32" from vessel zero). Per PPL Susquehanna FSAR, Rev 62, Table 5.2-4, the Shell Closure Flange is a Forge Ring made of Low Alloy Steel, SFA-508, Cl.2. The weld also consists of low alloy steel, SFA-5.5.

Per conversations between the NRC and PPL held on Thursday, January 5, 2012 an additional request for a copy of the most recent volumetric examination record of the AF weld from the U2-15RIO was made. The examination is contained in Attachment 5.

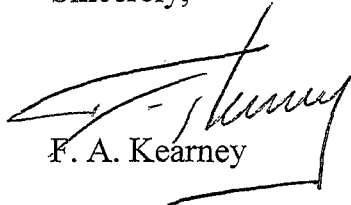
The following items are provided as attachments:

- 1) Table 5.2-4, Page 1 of 2, Reactor Coolant Pressure Boundary Materials from the PPL FSAR Rev. 62.
- 2) Layout drawing, Reactor Vessel Shell Unit 1 and 2.
- 3) PPL Drawing C-205719, annotated to show AF Weld 120-240 degrees.
- 4) Simplified Reactor Vessel drawing, annotated to show AF weld location.
- 5) ISI UT examination report for the AF Weld (0-120 degrees): UT-11-015.

This letter contains no new commitments.

Should you have any questions, please contact C. T. Coddington at (610) 774-4019.

Sincerely,



F. A. Kearney

Attachments:

- | | |
|--------------|--|
| Attachment 1 | Table 5.2-4, Page 1 of 2, Reactor Coolant Pressure Boundary Materials from the PPL FSAR Rev. 62. |
| Attachment 2 | Layout drawing, Reactor Vessel Shell Unit 1 and 2. |
| Attachment 3 | PPL Drawing C-205719, annotated to show AF Weld 120-240 degrees. |
| Attachment 4 | Simplified Reactor Vessel drawing, annotated to show AF weld location. |
| Attachment 5 | ISI UT examination report for the AF Weld (0-120 degrees): UT-11-015. |

Copy: NRC Region I
Mr. P. W. Finney, NRC Sr. Resident Inspector
Mr. R. R. Janati, DEP/BRP
Mr. B. K. Vaidya, NRC Project Manager

ATTACHMENT 1 TO PLA-6810

**Table 5.2-4, Page 1 of 2, Reactor Coolant
Pressure Boundary Materials from the PPL
FSAR Rev. 62**

SSS-FSAR

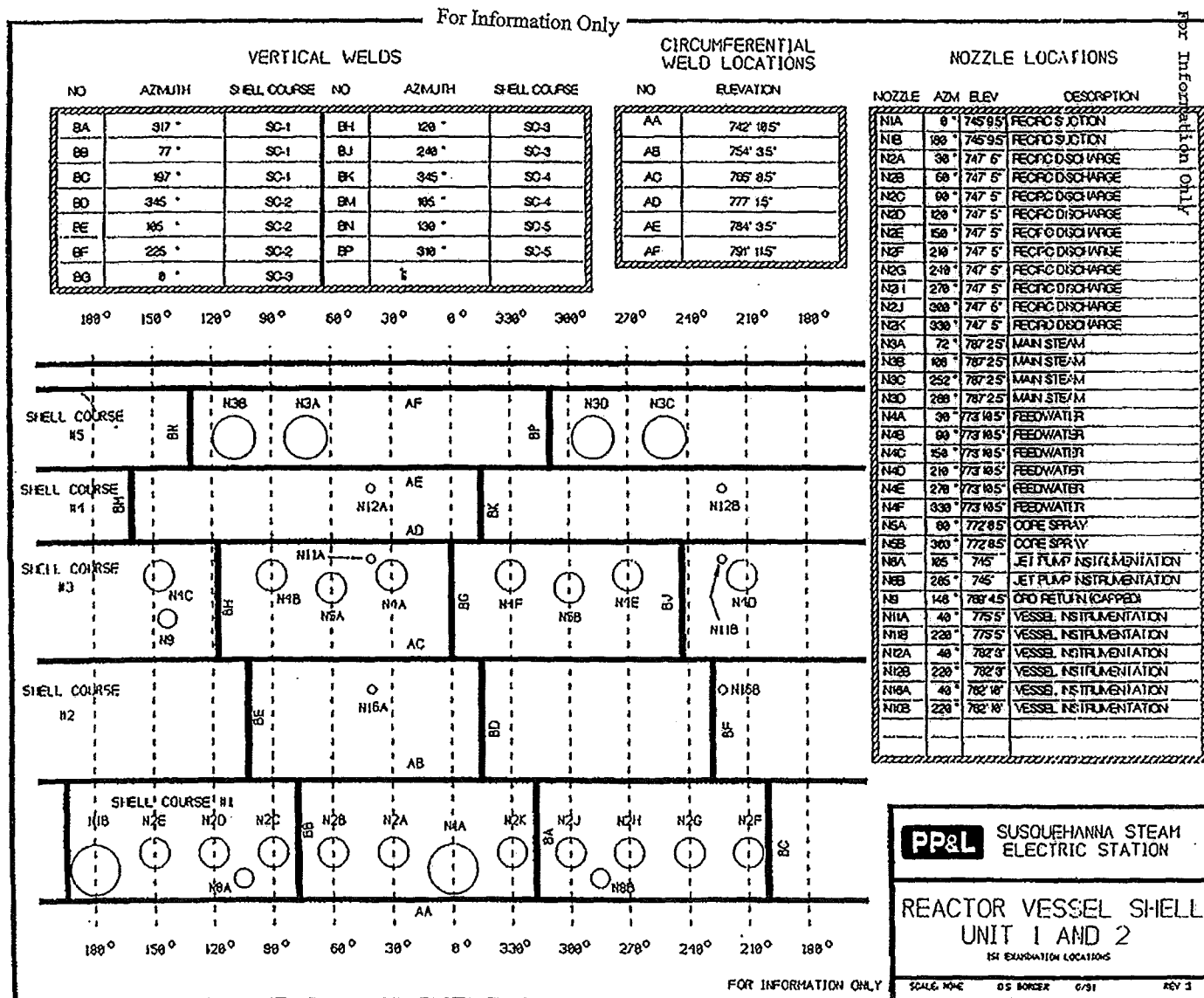
For Information Only

Table Rev. 56

TABLE 5.2-4 REACTOR COOLANT PRESSURE BOUNDARY MATERIALS			
Component	Form	Material	Specification (ASTM/ASME)
Reactor Vessel Heads, Shells	Rolled Plate	Low Alloy Steel	SA-533 Gr. B
	Welds	Low Alloy Steel	SFA-5.5
RPV Top Head and Shell Closure Flange	Forged Ring	Low Alloy Steel	SA-508 Cl.2
	Welds	Low Alloy Steel	SFA-5.5
RPV Closure Flange Studs	Bar	Alloy Steel	SA-540 Grade B24
RPV Closure Flange Nuts and Washers	Smis Tubing	Alloy Steel	SA-540 Grade B23
RPV Nozzles (N1 through N9, N15)	Forged Shapes	Low Alloy Steel	SA-508 Cl.2
(N10, N11, N12, N13, N16)	Forgings	Ni-Cr-Fe Alloy	SB-166
	Welds	Low Alloy Steel	SFA-5.5
RPV Nozzle Safe Ends (N1, N2, N5 Safe End Ext., N8, N10)	Forgings or Plate	Stainless Steel	SA-182, F 316L SA-336, F8 SA-240, 304 or 316
	Welds	Stainless Steel	SFA-5.9 TP.308L or 316L SFA-5.4 TP.308L or 316L
RPV Nozzle Safe Ends/Cap (N5, N9 Cap)	Forgings	Ni-Cr-Fe	SB-166
	Welds	Ni-Cr-Fe	SFA-5.14 TP. ERNiCr-3 or SFA-5.11 TP. ENiCrFe-3
RPV Nozzle Safe Ends (N3, N4, N11, N12, N16)	Forgings	Carbon Steel	SA-105 Gr. 2, SA-106 Gr. B or SA-508 Cl.1
	Welds	Carbon Steel	SA-508 Cl. 1 w/309, 308L overlay SFA-5.1, SFA-5.18 Gr. A,
RPV Cladding	Weld Overlay	Austenitic Stainless Steel	SFA-5.9 or SFA-5.4
Control Rod Drive Housings	Pipe	Austenitic Stainless Steel	SA-312, Type 304
	Welds	Austenitic Stainless Steel	SFA-5.9 or SFA-5.4
	Forgings	Stainless Steel	SA-182, F304
In-Core Housings	Tube	Austenitic Stainless Steel Ni-Cr-Fe	SA-213, Type 304 SB-167
	Welds	Inconel	SFA-5.11, Type ENiCrFe-3 or SFA-5.14, Type ERNiCr-3
		Austenitic Stainless Steel	SFA-5.9 or SFA-5.4
	Forgings	Stainless Steel	SA-182, F304

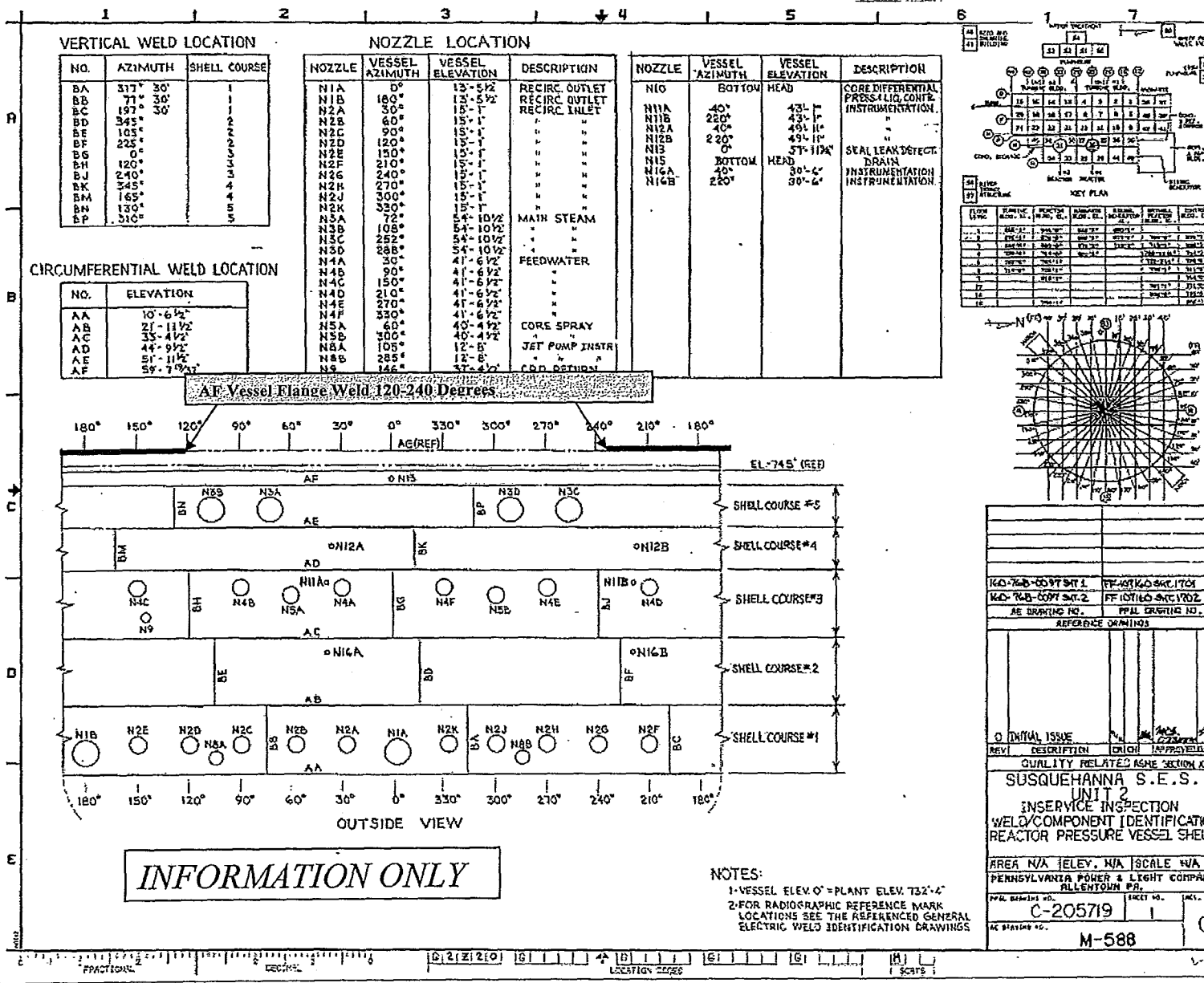
ATTACHMENT 2 TO PLA-6810

**Layout drawing, Reactor Vessel Shell
Unit 1 and 2**



ATTACHMENT 3 TO PLA-6810

**PPL Drawing C-205719, annotated to show
AF Weld 120-240 degrees**

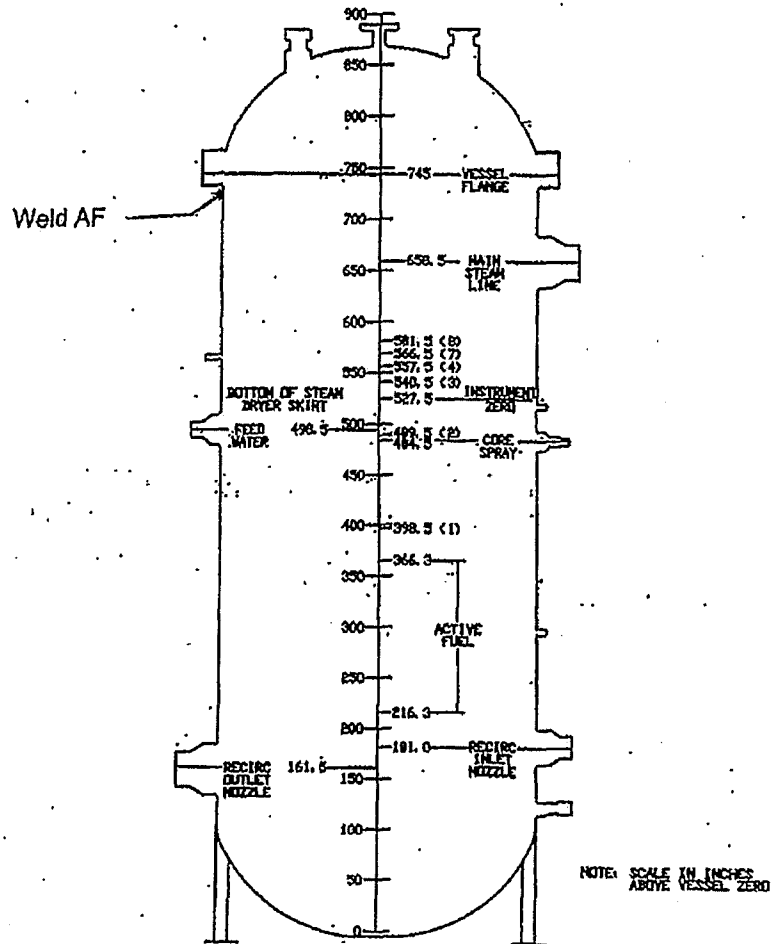


ATTACHMENT 4 TO PLA-6810

**Simplified Reactor Vessel drawing, annotated to
show AF weld location**

For Information Only

For Information Only



Location of Welds

ATTACHMENT 5 TO PLA-6810

**ISI UT examination report for the AF Weld
(0-120 degrees): UT-11-015**



UT Calibration/Examination

For Information Only

For Information Only

Site/Unit:	SSES / 2	Procedure:	NDE-UT-042	Outage No.:	U2-15R10
Summary No.:	2-B1.30.0002	Procedure Rev.:	3	Report No.:	UT-11-015
Workscope:	ISI	Work Order No.:	1304554	Page:	1 of 4
Code:	ASME 1998 E4/2000 Add	Cal/Item:	B-A/B1.30	Location:	R-616
Drawing No.:	C-198824	Description:	SCS-VFLG(0-120)		
System ID:	RPV-E				
Component ID:	AF (0-120) Shell	Size/Length:	0" TO 60"	Thickness/Diameter:	6.5"
Limitations:	SINGLE SIDED ACCESS	Start Time:	1515	Finish Time:	1645

Instrument Settings Serial No.: 051484409 Manufacturer: Panametrics Model: EPOCH 4 Delay: 8.48 Range: 4" Mtl Cal/Vel: .2272 Pulsar: SQUARE Damping: 400 Ω Reject: OFF Rep. Rate: AUTO Freq.: 3.03 Filter: 8-3.0 MHz Mode: DUAL Voltage: MEDIUM Other: N/A Ax. Gain (dB): 59.3 Circ. Gain (dB): N/A 10 Screen Div. = 2 In. of Depth Linearity Report No.: L-11-016		Search Unit Serial No.: 22BC-09005 Manufacturer: Sigma Size: 2(1.1"x.62") Shape: Rect. Freq.: 3.0 MHz Style: SDC3 60L-F10 Exam Angle: 60° RL # of Elements: 2 Mode: Longitudinal Measured Angle: 60° Wedge Style: INTEGRAL Search Unit Cable Type: RG-174 Length: 12' No. Conn.: 0 Scan Coverage Upstream ☒ Downstream ☒ Scan dB: 73.3 CW ☒ CCW ☒ Scan dB: 73.3 Exam Surface: OD Surface Condition: AS FOUND		Cal. Checks <table border="1"> <thead> <tr> <th>Time</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Initial Cal.</td> <td>1355 4/14/2011</td> </tr> <tr> <td>Inter. Cal.</td> <td></td> </tr> <tr> <td>Inter. Cal.</td> <td></td> </tr> <tr> <td>Inter. Cal.</td> <td></td> </tr> <tr> <td>Final Cal.</td> <td>1717 4/14/2011</td> </tr> </tbody> </table>		Time	Date	Initial Cal.	1355 4/14/2011	Inter. Cal.		Inter. Cal.		Inter. Cal.		Final Cal.	1717 4/14/2011	Axial Orientated Search Unit <table border="1"> <thead> <tr> <th>Calibration Reflector</th> <th>Signal Amplitude %</th> <th>Sweep Division</th> <th>Depth</th> </tr> </thead> <tbody> <tr> <td>SDH</td> <td>80%</td> <td>3.1</td> <td>.6</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Calibration Reflector	Signal Amplitude %	Sweep Division	Depth	SDH	80%	3.1	.6																
Time	Date																																										
Initial Cal.	1355 4/14/2011																																										
Inter. Cal.																																											
Inter. Cal.																																											
Inter. Cal.																																											
Final Cal.	1717 4/14/2011																																										
Calibration Reflector	Signal Amplitude %	Sweep Division	Depth																																								
SDH	80%	3.1	.6																																								
		Couplant Cal. Batch: 08125 Type: Ultragel II Mfg.: Sonotach Exam Batch: 08125 Type: Ultragel II Mfg.: Sonotach		Circumferential Orientated Search Unit <table border="1"> <thead> <tr> <th>Calibration Reflector</th> <th>Signal Amplitude %</th> <th>Sweep Division</th> <th>Depth</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Calibration Reflector	Signal Amplitude %	Sweep Division	Depth	N/A	N/A	N/A	N/A																														
Calibration Reflector	Signal Amplitude %	Sweep Division	Depth																																								
N/A	N/A	N/A	N/A																																								
Calibration Block Cal. Block No.: CAL-IIW2-045 Thickness 4 inch Dia.: 0 Cal. Blk. Temp. 76° Temp. Tool: 272793 Comp. Temp. 94° Temp. Tool: 272793 Recordable Indication(s): Yes ☐ No ☒ (If Yes, Ref. Attached Ultrasonic Indication Report)		Reference Block Serial No.: CAL-IIW2-045 Type: IIW Type 2		Reference/Simulator Block <table border="1"> <thead> <tr> <th>Gain dB</th> <th>Reflector</th> <th>Signal Amplitude %</th> <th>Sweep Division</th> <th>Depth</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth	N/A	N/A	N/A	N/A	N/A																												
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth																																							
N/A	N/A	N/A	N/A	N/A																																							

Results: Accept ☒ Reject ☐ Info ☐ Comments: Scanned from 0° to 60°, calibration for near surface

Percent Of Coverage Obtained > 90%: 72.7% 59.1% 70.8% 4.20-11 Reviewed Previous Data: Yes

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Gullota, Jonathan		<i>Jonathan Gullota</i>	4/14/2011	Setzer, James / Level III	<i>James Setzer</i>	04-20-2011
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				Linden, Randy T. / Level III	<i>Randy Linden</i>	4-20-11
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Young, Charles	<i>Charles Young</i>	4-22-11



UT Calibration/Examination

For Information Only

For Information Only

Site/Unit: <u>SSES / 2</u>		Procedure: <u>NDE-UT-042</u>		Outage No.: <u>U2-15RIO</u>	
Summary No.: <u>2-B1.30.0002</u>		Procedure Rev.: <u>3</u>		Report No.: <u>UT-11-015</u>	
Workscope: <u>ISI</u>		Work Order No.: <u>1304554</u>		Page: <u>2</u> of <u>4</u>	
Code: <u>ASME 1988 Ed/2000 Add</u>		Cat./Item: <u>B-A/B1.30</u>		Location: <u>R-516</u>	
Drawing No.: <u>C-198624</u>		Description: <u>SCS-VFLG(0-120)</u>			
System ID: <u>RPV-E</u>					
Component ID: <u>AF (0-120) Shell</u>		Size/Length: <u>0° TO 60°</u>		Thickness/Diameter: <u>6.5"</u>	
Limitations: <u>SINGLE SIDED ACCESS</u>		Start Time: <u>1515</u>		Finish Time: <u>1646</u>	

Instrument Settings				Search Unit				Cal. Checks			Axial Orientated Search Unit				
Serial No.: <u>081484409</u>	Manufacturer: <u>Panametrics</u>			Serial No.: <u>22BC-09005</u>	Manufacturer: <u>Sigma</u>			Initial Cal.	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Depth	
Model: <u>EPOCH 4</u>	Delay: <u>8.48</u> Range: <u>20.0</u>			Size: <u>2(1.1"x.62")</u>	Shape: <u>Rect.</u>			Inter. Cal.			NOTCH	80%	6.6	6.6	
Mil Cal/Vol: <u>.2272</u>	Pulser: <u>SQUARE</u>			Freq.: <u>3.0 MHz</u>	Style: <u>SDC3 60L-F10</u>			Inter. Cal.							
Damping: <u>400 Ω</u>	Reject: <u>0%</u>			Exam Angle: <u>60° RL</u>	# of Elements: <u>2</u>			Inter. Cal.							
Rep. Rate: <u>AUTO</u>	Freq.: <u>3.03</u>			Mode: <u>Longitudinal</u>				Final Cal.	<u>1715</u>	<u>4/14/2011</u>					
Filter: <u>.8-3.0 MHz</u>	Mode: <u>DUAL</u>			Measured Angle: <u>60°</u>				Couplant							
Voltage: <u>MEDIUM</u>	Other: <u>N/A</u>			Wedge Style: <u>INTEGRAL</u>				Cal. Batch: <u>08125</u>							
Ax. Gain (dB): <u>69.3</u>	Circ. Gain (dB): <u>N/A</u>			Search Unit Cable				Type: <u>Ultrage II</u>							
10 Screen Div. = <u>10</u>	In. of Depth			Type: <u>RG-174</u>					Mfg.: <u>Sonotach</u>						
Linearity Report No.: <u>L-11-018</u>				Length: <u>12'</u>	No. Conn.: <u>0</u>				Exam Batch: <u>08125</u>						
Calibration Block				Scan Coverage				Type: <u>Ultrage II</u>							
Cal. Block No.: <u>V-01</u>	Upstream ☒ Downstream ☒ Scan dB: <u>71</u>			CW ☒ CCW ☒ Scan dB: <u>71</u>				Mfg.: <u>Sonotach</u>							
Thickness: <u>6.52</u>	Dia.: <u>PLATE</u>			Exam Surface: <u>OD</u>				Reference Block							
Cal. Blk. Temp. <u>76°</u>	Temp. Tool: <u>272793</u>			Surface Condition: <u>AS FOUND</u>				Serial No.: <u>CAL-IIW2-048</u>							
Comp. Temp. <u>84°</u>	Temp. Tool: <u>272793</u>							Type: <u>IIW Type 2</u>							
Recordable Indication(s): Yes ☐ No ☒ (If Yes, Ref. Attached Ultrasonic Indication Report.)															
Results: Accept ☒ Reject ☐ Info ☐															
Percent Of Coverage Obtained > 90%: <u>72% 56</u> Reviewed Previous Data: <u>Yes</u>															

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Gullfote, Jonathan	II	<i>Jonathan Gullfote</i>	4/14/2011	Setzer, James / Level III	<i>James Setzer</i>	04-20-2011
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Linden, Randy T. / Level III	<i>Randy Linden</i>	4-20-11
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			Young, Charles	<i>Charles Young</i>	4-22-11



UT Calibration/Examination

For Information Only

For Information Only

Site/Unit:	SSES / 2	Procedure:	NDE-UT-042	Outage No.:	U2-15R10
Summary No.:	2-B1.30.0002	Procedure Rev.:	3	Report No.:	UT-11-015
Workscope:	ISI	Work Order No.:	1304554	Page:	3 of 4
Code:	ASME 1998 Ed/2000 Add	Cat./Item:	B-A/B1.30	Location:	R-516
Drawing No.:	C-198624	Description:	SC5-VFLG(0-120)		
System ID:	RPV-E				
Component ID:	AF (0-120) Shell	Size/Length:	60" TO 120"	Thickness/Diameter:	6.5"
Limitations:	SINGLE SIDED ACCESS	Start Time:	1515	Finish Time:	1645

Instrument Settings				Search Unit				Cal. Checks			Axial Orientated Search Unit			
Serial No.:	031533905	Serial No.:	22BC-09005	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Depth				
Manufacturer:	Panometrics	Manufacturer:	Sigma	Initial Cal.	1410	4/14/2011	NOTCH	80%	3.0	.6"				
Model:	Epoch 4	Size:	2(1.1"x.62")	Inter. Cal.										
Delay:	10.38	Range:	4.0"	Inter. Cal.										
MPI Cal/Vol:	.2380	Pulse:	SQUARE	Inter. Cal.										
Damping:	400 Ω	Reject:	OFF	Final Cal.	1716	4/14/2011								
Rep. Rate:	AUTO	Freq.:	3.03 MHz	Mode:	Longitudinal									
Filter:	0.8-3.0 MHz	Mode:	DUAL	Measured Angle:	60°									
Voltage:	MEDIUM	Other:	N/A	Wedge Style:	Integral									
Ax. Gain (dB):	60.0	Circ. Gain (dB):	N/A	Search Unit Cable										
10 Screen Div. =	2	In. of	Depth	Type:	RG-174									
Linearity Report No.:	L-11-017	Length:	12'	No. Conn.:	0									

Calibration Block				Scan Coverage				Reference Block			
Cal. Block No.:	CAL-IIW2-045	Upstream ☒	Downstream ☒	Scan dB:	74.0	Serial No.:	CAL-IIW2-045				
Thickness	4 inch	Dia.:	0	CW ☒	CCW ☒	Scan dB:	74.0				
Cal. Bk. Temp.	76°	Temp. Tool:	272793	Exam Surface:	OD	Type:	IIW Type 2				
Comp. Temp.	94°	Temp. Tool:	272793	Surface Condition:	AS FOUND						

Reference/Simulator Block			
Gain dB	Reflector	Signal Amplitude %	Sweep Division
N/A	N/A	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%: 72.2% 80 Reviewed Previous Data: Yes

Comments: Scanned from 60°-120° az
Calibration for near surface

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Johnson, Jimmy		<i>Jimmy Johnson</i>	4/14/2011	Setzer, James / Level III	<i>James Setzer</i>	04-20-2011
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				Linden, Randy T. / Level III	<i>Randy Linden</i>	4-20-11
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Young, Charles	<i>Charles Young</i>	4-22-11

For Information Only

For Information Only



UT Calibration/Examination

Site/Unit:	SSS / 2	Procedure:	NDE-UT-042	Outage No.:	U2-16R10
Summary No.:	2-B1.30.0002	Procedure Rev.:	3	Report No.:	UT-11-015
Workscope:	ISI	Work Order No.:	1304554	Page:	4 of 4
Code:	ASME 1998 Ed/2000 Add	Cat./Item:	B-A/B1.30	Location:	R-516
Drawing No.:	C-198824	Description:	SCS-VFLG(0-120)		
System ID:	RPV-E				
Component ID:	AF (0-120) Shell	Size/Length:	60" TO 120"	Thickness/Diameter:	6.5"
Limitations:	SINGLE SIDED ACCESS	Start Time:	1515	Finish Time:	1645

Instrument Settings Serial No.: 031533905 Manufacturer: Panametrics Model: Epoch 4 Delay: 10.38 Range: 6.52" Mti Cal/Vol: 2380 Pulsar: SQUARE Damping: 400 Ω Reject: OFF Rep. Rate: AUTO Freq.: 3.03 MHz Filter: 0.8-3.0 MHz Mode: DUAL Voltage: MEDIUM Other: N/A Ax. Gain (dB): 70.3 Circ. Gain (dB): N/A 10 Screen Div. = 10 In. of Depth Linearity Report No.: L-11-017		Search Unit Serial No.: 22BC-09005 Manufacturer: Sigma Size: 2(1.1"x.62") Shape: Rect Freq.: 3.0 MHz Style: SDCS 60L-F10 Exam Angle: 60° RL # of Elements: 2 Mode: Longitudinal Measured Angle: 60° Wedge Style: INTETRAL Search Unit Cable Type: RG-174 Length: 12' No. Conn.: 0		<table border="1"> <tr><th>Cal. Checks</th><th>Time</th><th>Date</th></tr> <tr><td>Initial Cal.</td><td>1410</td><td>4/11/2011</td></tr> <tr><td>Inter. Cal.</td><td></td><td></td></tr> <tr><td>Inter. Cal.</td><td></td><td></td></tr> <tr><td>Inter. Cal.</td><td></td><td></td></tr> <tr><td>Final Cal.</td><td>1718</td><td>4/11/2011</td></tr> </table>	Cal. Checks	Time	Date	Initial Cal.	1410	4/11/2011	Inter. Cal.			Inter. Cal.			Inter. Cal.			Final Cal.	1718	4/11/2011	<table border="1"> <tr><th colspan="4">Axial Orientated Search Unit</th></tr> <tr><th>Calibration Reflector</th><th>Signal Amplitude %</th><th>Sweep Division</th><th>Depth</th></tr> <tr><td>NOTCH</td><td>80%</td><td>6.7</td><td>6.7</td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table>	Axial Orientated Search Unit				Calibration Reflector	Signal Amplitude %	Sweep Division	Depth	NOTCH	80%	6.7	6.7																
Cal. Checks	Time	Date																																																	
Initial Cal.	1410	4/11/2011																																																	
Inter. Cal.																																																			
Inter. Cal.																																																			
Inter. Cal.																																																			
Final Cal.	1718	4/11/2011																																																	
Axial Orientated Search Unit																																																			
Calibration Reflector	Signal Amplitude %	Sweep Division	Depth																																																
NOTCH	80%	6.7	6.7																																																
Calibration Block Cal. Block No.: V-01 Thickness: 6.52 Dia.: PLATE Cal. Blk. Temp.: 76° Temp. Tool: 272793 Comp. Temp.: 94° Temp. Tool: 272793		Scan Coverage Upstream ☒ Downstream ☒ Scan dB: 73.3 CW ☒ CCW ☒ Scan dB: 73.3 Exam Surface: OD Surface Condition: AS FOUND		Couplant Cal. Batch: 08125 Type: Ultragel II Mfg.: Sonotech Exam Batch: 08125 Type: Ultragel II Mfg.: Sonotech	<table border="1"> <tr><th colspan="4">Circumferential Orientated Search Unit</th></tr> <tr><th>Calibration Reflector</th><th>Signal Amplitude %</th><th>Sweep Division</th><th>Depth</th></tr> <tr><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td></tr> </table>	Circumferential Orientated Search Unit				Calibration Reflector	Signal Amplitude %	Sweep Division	Depth	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 Block Serial No.: CAL-IW2-045 Type: IW Type 2		<table border="1"> <tr><th colspan="5">Reference/Simulator Block</th></tr> <tr><th>Gain dB</th><th>Reflector</th><th>Signal Amplitude %</th><th>Sweep Division</th><th>Depth</th></tr> <tr><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>			Reference/Simulator Block					Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth	N/A	N/A	N/A	N/A	N/A																																
Reference/Simulator Block																																																			
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth																																															
N/A	N/A	N/A	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%: 72.9% 80% 76.9% 72.9% Reviewed Previous Data: Yes

Comments: Scanned from 60°-120° az
Calibration for full volume

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Johnson, Jimmy		<i>Jimmy Johnson</i>	4/14/2011	Setzer, James / Level III	<i>James Setzer</i>	04.20.2011
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				Linden, Randy T. / Level III	<i>Randy Linden</i>	4/20/11
Other	Level N/A	Signature	Date	ANR Review	Signature	Date
N/A				Young, Charles	<i>Charles Young</i>	4-22-11



Ultrasonic Instrument Linearity

For Information Only

For Information Only

Site: SSES
Procedure: NDE-UT-001

Procedure Rev.: 9
Report No.: L-11-016

Instrument:		Transducer:		Angle Beam:	
Manufacturer:	<u>Panametrics</u>	Size:	<u>.375 IN</u>	Size:	<u>N/A</u>
Model:	<u>EPOCH 4</u>	Frequency:	<u>2.25 MHz</u>	Frequency:	<u>N/A</u>
Serial No.:	<u>081484409</u>	Serial No.:	<u>01JP64</u>	Serial No.:	<u>N/A</u>
Couplant:		Calibration Standard:			
Type:	<u>Ultragel II</u>	Serial No.: <u>CAL-IIW2-045</u>			
Batch No.:	<u>08125</u>				

Horizontal Linearity		
BR	Screen Location	Actual Location
1	1	1
2	2	N/A
3	3	N/A
4	4	N/A
5	5	N/A
6	6	N/A
7	7	N/A
8	8	N/A
9	9	N/A
10	10	10

*Acceptable limits are +/- 5% full screen.

Screen Height Linearity Signal Amplitude in % FSH				
No.	Actual Higher	1/2 of Higher	* Acceptable Limits	Actual Lower
1	100%	50%	55% to 45%	50
2	90%	45%	50% to 40%	45
3	80%	40%	SetPoint	40
4	70%	35%	40% to 30%	35
5	60%	30%	35% to 25%	30
6	50%	25%	30% to 20%	25
7	40%	20%	25% to 15%	20
8	30%	15%	20% to 10%	15
9	20%	10%	15% to 5%	10

*Acceptable limits are 1/2 of the higher signal +/- 5% FSH.

Amplitude Control Linearity			
Initial Amplitude	dB Change	Acceptable Limits	Results
80% FSH	-6dB	32% to 48%	40
80% FSH	-12dB	16% to 24%	20
40% FSH	+6dB	64% to 96%	80
20% FSH	+12dB	64% to 96%	80
Results:			
☒ Sat ☐ Unsat			

Comments: NONE

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Gullote, Jonathan		<i>Jonathan Gullote</i>	4/14/2011	Setzer, James / Level III	<i>James Setzer</i>	4-20-2011
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				Linden, Randy T. / Level III	<i>Randy Linden</i>	4-20-11
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Young, Charles	<i>Charles Young</i>	4-22-11



Ultrasonic Instrument Linearity

For Information Only

For Information Only

Site:	SSES		Procedure Rev.:	9	
Procedure:	NDE-UT-001		Report No.:	L-11-017	
Instrument:		Transducer:		Angle Beam:	
Manufacturer	Panametrics	Size:	.375 IN	Size:	N/A
Model:	Epoch 4	Frequency:	2.25 MHz	Frequency:	N/A
Serial No.:	031533905	Serial No.:	01JP84	Serial No.:	N/A
Couplant:		Calibration Standard:			
Type:	Ultragel II	Serial No.:		CAL-IIW2-045	
Batch No.:	08125				

Horizontal Linearity		
BR	Screen Location	Actual Location
1	1	1
2	2	N/A
3	3	N/A
4	4	N/A
5	5	N/A
6	6	N/A
7	7	N/A
8	8	N/A
9	9	N/A
10	10	10

*Acceptable limits are +/- 5% full screen.

Screen Height Linearity Signal Amplitude In % FSH				
No.	Actual Higher	1/2 of Higher	* Acceptable Limits	Actual Lower
1	100%	50%	55% to 45%	50
2	90%	45%	50% to 40%	45
3	80%	40%	SetPoint	40
4	70%	35%	40% to 30%	35
5	60%	30%	35% to 25%	30
6	50%	25%	30% to 20%	25
7	40%	20%	25% to 15%	20
8	30%	15%	20% to 10%	15
9	20%	10%	15% to 5%	10

*Acceptable limits are 1/2 of the higher signal +/- 5% FSH.

Amplitude Control Linearity			
Initial Amplitude	dB Change	Acceptable Limits	Results
80% FSH	-6dB	32% to 48%	40
80% FSH	-12dB	16% to 24%	20
40% FSH	+6dB	64% to 96%	80
20% FSH	+12dB	64% to 96%	80
Results:			
☒ Sat ☐ Unsat			

Comments: NONE

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Johnson, Jimmy		<i>Jimmy Johnson</i>	4/14/2011	Setzer, James / Level III	<i>James Setzer</i>	04-20-2011
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				Linden, Randy T. / Level III	<i>Randy Linden</i>	4/20/11
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Young, Charles	<i>Charles Young</i>	4-22-11