Entergy

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F. G. Burford
Acting Director
Nuclear Safety & Licensing

CNRO-2004-00060

September 21, 2004

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

SUBJECT: Relief Requests ANO1-ISI-001 and ANO1-ISI-003 -
Response to Request for Additional Information (TAC No. MC1490)

Arkansas Nuclear One, Unit 1
Docket No. 50-313
License No. DPR-51

REFERENCE: Entergy Operations, Inc. letter CNRO-2003-00063 to the NRC dated December 2, 2003

Dear Sir or Madam:

In the referenced letter, Entergy Operations, Inc., (Entergy) requested relief from the requirements of ASME Section XI pertaining to volumetric examination of pressure-retaining welds for Arkansas Nuclear One, Unit 1 (ANO-1). In several locations, the required coverage cannot be obtained due to interference or geometry.

In an e-mail to Entergy on January 14, 2004, the NRC staff provided a comment pertaining to these requests. Specifically, the staff asked that Entergy provide data sheets and results of the ultrasonic examination for those welds that showed no indication of degradation. To address the staff's comments, Entergy has revised Requests ANO1-ISI-001 and ANO1-ISI-003, which are contained in Enclosures 1 and 2, respectively, and is providing the requested data sheets in Enclosure 3. These revised requests supercede the originals in their entirety. Changes are denoted by revision bars in the page margins.

In addition to providing revised relief requests ANO1-ISI-001 and ANO1-ISI-003, Entergy is withdrawing ANO1-ISI-002 and ANO1-ISI-004. These requests are no longer needed because of Code actions in process and steam generator replacement plans.

A047

Should you have any questions regarding this letter, please contact Guy Davant at (601) 368-5756.

This letter contains no new commitments.

Very truly yours,

FGB/GHD/ghd
Enclosures:
1. Relief Request ANO1-ISI-001
2. Relief Request ANO1-ISI-003
3. Calibration Data Sheets Supporting Relief Requests ANO1-ISI-001 and ANO1-ISI-003

cc: Mr. W. A. Eaton (ECH)
Mr. J. S. Forbes (ANO)

Dr. Bruce. S. Mallett
Regional Administrator
U. S. Nuclear Regulatory Commission
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NRC Senior Resident Inspector
Arkansas Nuclear One
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ENCLOSURE 1

CNRO-2004-00060

RELIEF REQUEST
ANO1-ISI-001

ENTERGY OPERATIONS, INC.
RELIEF REQUEST
ANO1-ISI-001

I. ASME COMPONENTS

Components/Numbers:	Pressurizer and steam generator nozzles listed in Table 1
ASME Code Class:	1
References:	1. ASME Section XI 1992 Edition, Table IWB-2500-1 2. ASME Section XI 1980 Edition with the Winter 1981 Addenda 3. Letter from the NRC to Entergy Operations, Inc., *Evaluation of Entergy Operations, Inc. Request for Authorization to Update Inservice Inspection Programs to the 1992 and Portions of the 1993 ASME Boiler and Pressure Vessel Code, Section XI for Arkansas Nuclear One, Units 1 and 2, Grand Gulf Nuclear Station, River Bend Station, and Waterford Steam Electric Station, Unit 3 (TAC Nos. M94472, M94471, M94454, M94473, and M94488)*, dated December 12, 1996 4. ASME Code Case N-460 – Alternative Examination Coverage for Class 1 and 2 Welds, Section XI, Division 1
Examination Category:	B-D
Item Numbers:	B3.110, B3.130, B3.140
Unit / Inspection Interval Applicability:	Arkansas Nuclear One Unit 1 – third (3^{rd}) 10-year interval

II. ASME CODE REQUIREMENT(S)

ASME Section XI, Table IWB-2500-1, Examination Category B-D, Item B3.110 requires essentially 100% volumetric examination of the pressurizer nozzle-to-vessel welds.

ASME Section XI, Table IWB-2500-1, Examination Category B-D, Items B3.130 and B3.140 require essentially 100% volumetric examination of the steam generator nozzle-to-vessel welds and inner radius sections.

ASME Code Case N-460 allows a reduction in coverage for Class 1 and 2 welds due to interference or geometry as long as the overall coverage is greater than 90%.

III. RELIEF REQUESTED

Pursuant to 10 CFR 50.55a(g)(6)(i), Entergy Operations, Inc. (Entergy) requests relief from achieving the Code-required coverage when performing volumetric examinations of the components identified in Table 1, below.

Table 1
Limited B-D Examinations

Item #	Item ID	Description	Coverage (%)	Reason for Limitation
B3.110	05-012	Pressurizer relief valve nozzle-to-vessel weld	45	Nozzle Configuration
B3.110	05-013	Pressurizer spray nozzle-to-head weld	38	Nozzle Configuration
B3.130	03-008	Steam generator outlet nozzle-to- head weld (Reactor Coolant Pump C cold leg)	40.4	Nozzle Configuration and Support Skirt
B3.140	03-009	Steam generator outlet nozzle-to-lower head inner radius (Reactor Coolant Pump C cold leg)	90.7	Steam Generator Support Skirt

IV. BASIS FOR RELIEF

During the ultrasonic examination of the pressurizer and steam generator nozzle welds (ID #s 05-012, 05-013, and 03-008) and the inner radius section (ID #03-009) listed in Table 1 above, 100% coverage of the required examination volume could not be obtained due to nozzle configuration. Specifically for the nozzle welds, effective volumetric examination can only be performed from the shell side of the welds. In addition, the steam generator support skirt limits accessibility to the steam generator outlet nozzle inner radius sections. Examination coverage calculation sheets provided in the attachment of this relief request show the nozzle configuration, limitations, and beam plots of the different examination angles used. The weld volume was scanned using 0°, 45°, 60°, and 70° beam angles; no recordable indications (as defined in Reference 2) were located in the volume that was examined. The heat affected zones for ID #s 03-008, 05-012, and 05-013 were captured as shown in the associated examination coverage calculation sheets.

Nozzle inner radius limitations of ID #03-009 are caused by the ratio of the nozzle outside diameter (OD) to the vessel thickness. When the nozzle OD is small in relation to vessel thickness, more coverage can be obtained when scanning from the vessel side. Conducting examinations from the nozzle boss and OD blend is not practical, due to the complex beam angles and skews that must be calculated and then maintained during manual scanning in order to achieve an effective examination. To maximize coverage,

the volume was scanned using 60° and 70° beam angles. During the second inspection interval, the contractor performing the examination claimed 100% coverage. However, when performing this examination during the third interval using current techniques, Entergy was able to obtain only 90.7% coverage. No recordable indications (as defined in Reference 2) were identified in either exam; therefore, Entergy has reasonable assurance that any potential degradation would have been identified in the volume examined.

Radiography is not practical because of the geometry of the components, which prevents proper placement of the film and exposure source. To perform the Code-required examination would require modifying and/or replacing the components. The examinations performed on the subject items, in addition to the examination of other nozzle-to-vessel welds and inner radius sections contained in the program, would detect generic degradation, if it existed, demonstrating an acceptable level of integrity.

V. PROPOSED ALTERNATIVE EXAMINATIONS

Entergy has examined the subject components to the extent practical and will continue to perform pressure testing on the pressurizer and the steam generator as required by the Code.

VI. CONCLUSION

10 CFR 50.55a(g)(6)(i) states:

> The Commission will evaluate determinations under paragraph (g)(5) of this section that code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Due to design configuration, it is impractical to obtain greater than 90% coverage on ID #s 03-008, 05-012, and 05-013 and 100% of the inner radius section of ID #03-009. To obtain the required coverage would necessitate modifying and/or replacing components. Examinations performed on the subject components, in addition to examinations of similar welds and inner radius sections contained in the program, would detect generic degradation, if it existed, thereby demonstrating an acceptable level of integrity. Therefore, Entergy requests the NRC staff authorize the proposed alternative pursuant to 10 CFR 50.55a(g)(6)(i).

ATTACHMENT

RELIEF REQUEST
ANO1-ISI-001

EXAMINATION COVERAGE CALCULATION SHEETS

WELD 03-008

Entergy EXAMINATION COVERAGE CALCULATION SHEET

Attachment #: A

■ ANO 1	□ ANO 2	□ Grand Gulf	□ River Bend	□ Waterford 3

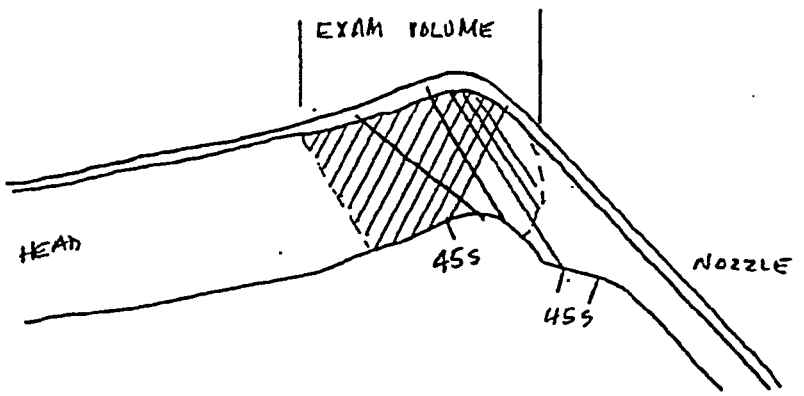
Component ID: 03-008 Report No.: 198ISIUT060 Material Type: CS clad

Vessel Weld T: ~9.0" Angles Used: 45° · 60° 70° S - ½ V, 0° L

NOTES:

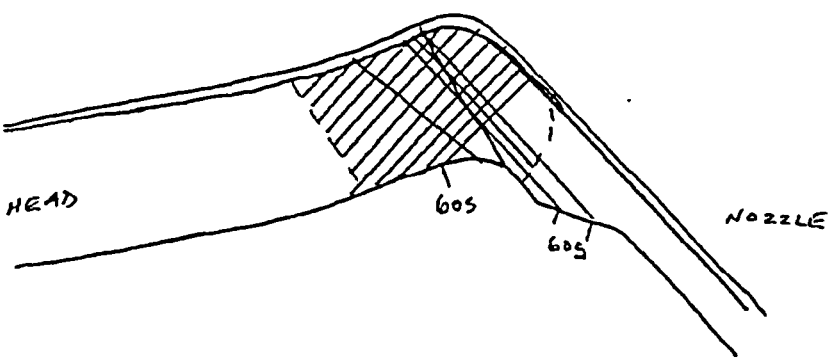
1 **The 1/2T dimension on each side of the weld is for Class 1 vessel volume.**
2 **This is an approximate percent of the examination volume for which coverage was obtained.**
3 **The plot shown is a representation of the actual profile and not to scale.**

45°Shear-wave Scan Directions



No Coverage Direction #1 Direction #2

60° Shear-wave scan directions



No Coverage Direction #1 Direction #2

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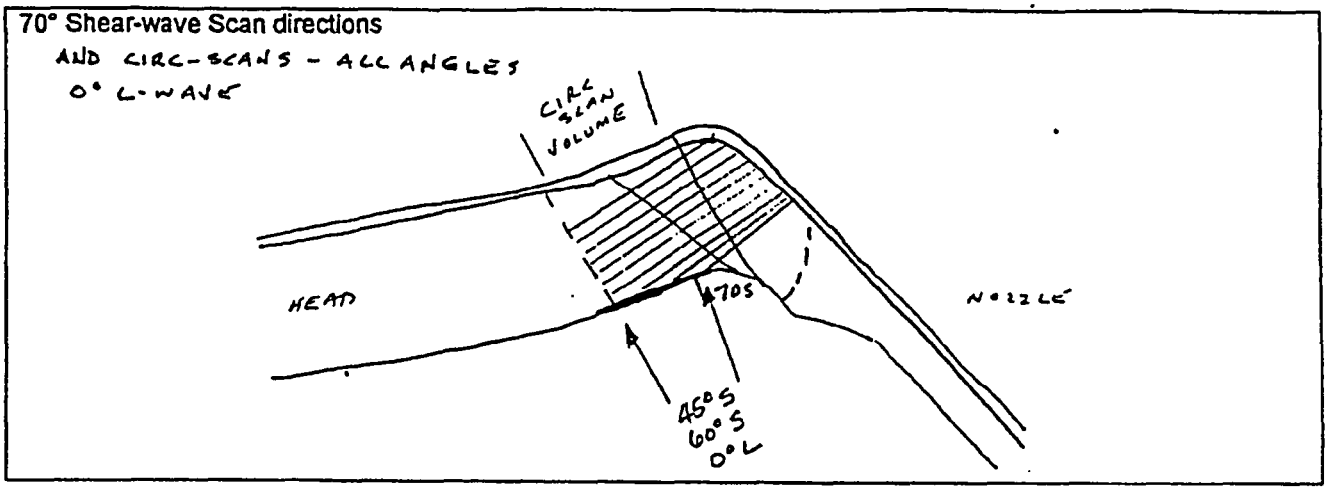
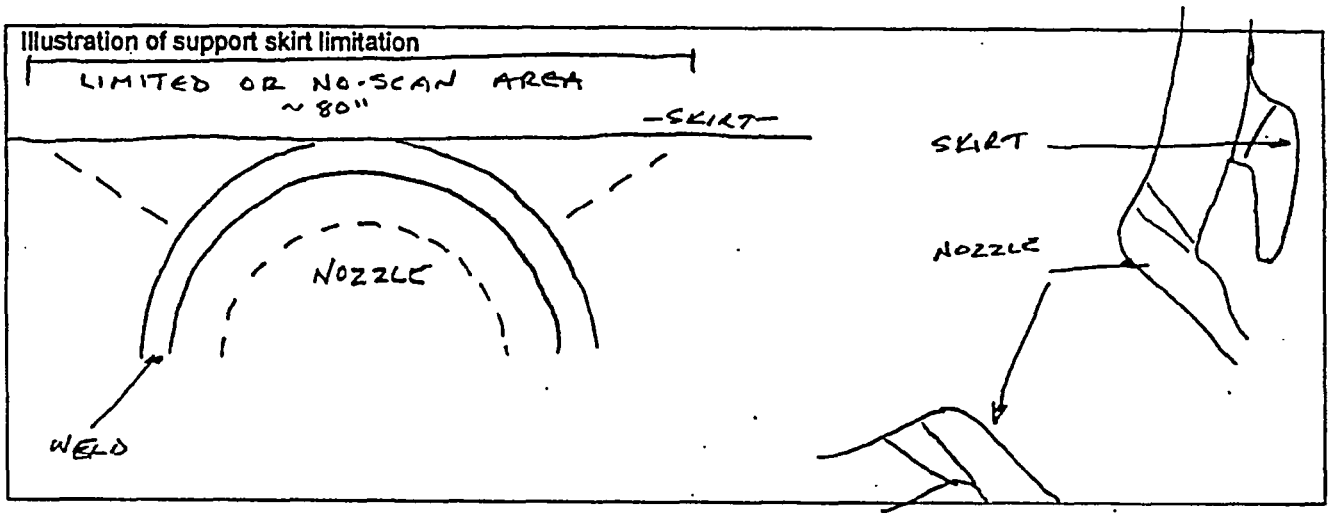
EXAMINATION COVERAGE CALCULATION SHEET

70° Shear-wave Scan directions



No Coverage Direction #1 Direction #2

Illustration of support skirt limitation



No Coverage Direction #3 Direction #4

Required scan coverage:
Weld ~30.2 %, Base material head side ~ 68.7%, Base material nozzle side ~22.3%
TOTAL EXAM VOLUME OBTAINED: 40.4%

COMMENTS: Steam generator cold leg nozzle to lower head. This is primarily a single sided examination. Scans were performed from the nozzle side to supplement coverage with minimal effect. The support skirt prevented scanning around the total circumference of the nozzle. The cumulative coverage estimation includes the code required base metal coverage adjacent to the weld and the factor of multiple angles from multiple directions.

7/24/02

INNER RADIUS 03-009

Entergy

EXAMINATION COVERAGE CALCULATION SHEET

Attachment #: A

■ ANO 1	□ ANO 2	□ Grand Gulf	□ River Bend	□ Waterford 3

Component ID: 03-009 Report No.: 198ISIUT062, 063 Material Type: CS clad

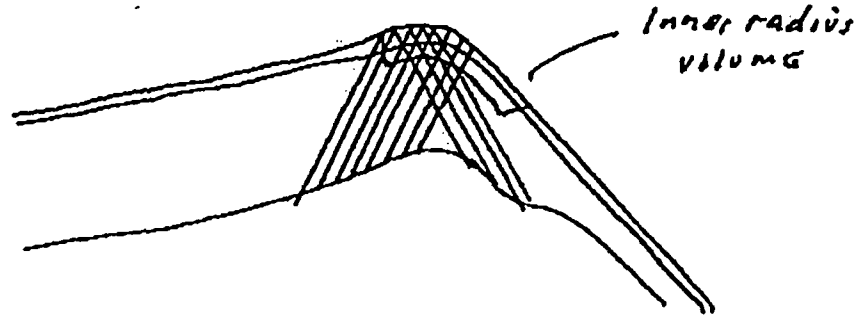
Vessel Weld T: ~9.0" Angles Used: 45°, 60°, 70° S - ½ V

NOTES:

1. **The examination volume for Class 1 nozzles includes ½" radial distance into the nozzle from the inside radius (see figure IWB-2500-7(b).**
2. **This is an approximate percent of the examination volume for which coverage was obtained.**
3. **The plot shown is a representation of the actual profile and not to scale.**

45°Shear-wave Scan Directions

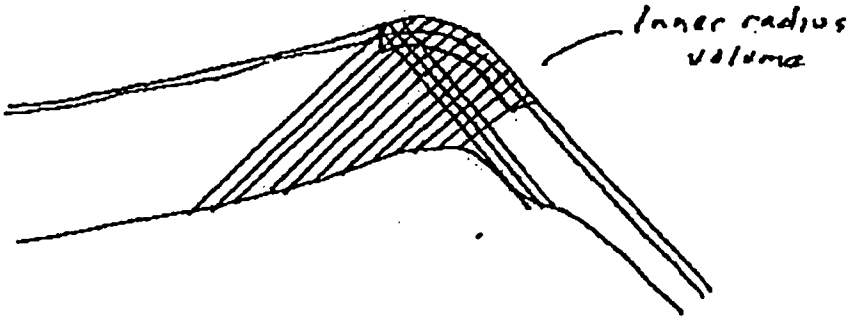
03-009



No Coverage Direction #1 Direction #2

60° Shear-wave scan directions

03-009



No Coverage Direction #1 Direction #2

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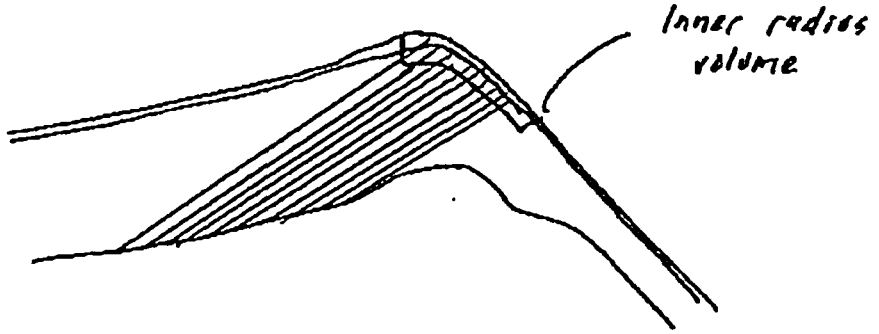
EXAMINATION COVERAGE CALCULATION SHEET

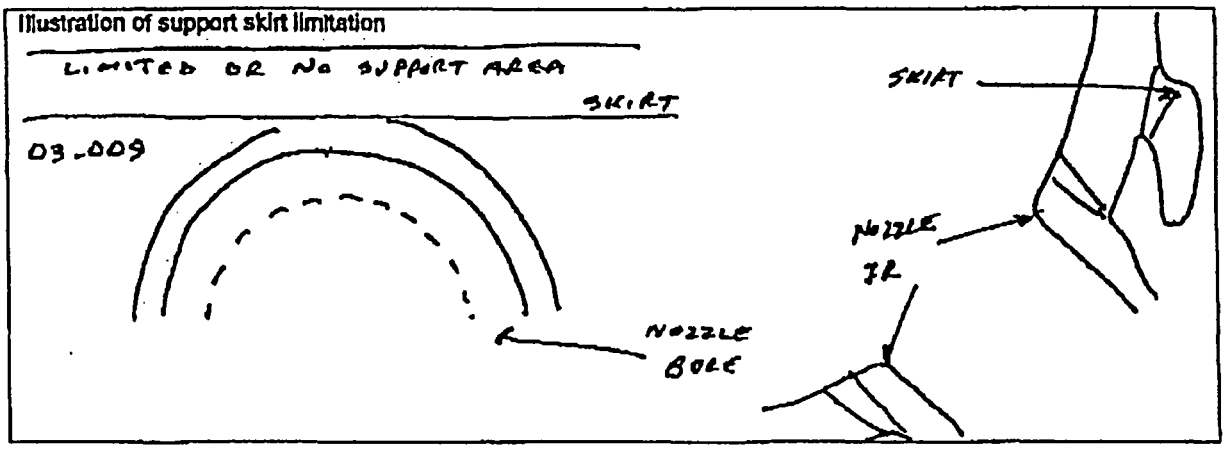
70° Shear-wave Scan directions

03-009



No Coverage Direction #1 Direction #2

Illustration of support skirt limitation



No Coverage Direction #3 Direction #4

Required scan coverage obtained:

CUMULATIVE TOTAL EXAM VOLUME OBTAINED: 90.7%

COMMENTS: Steam generator cold leg nozzle to lower head. This is primarily a single sided examination. Scans were performed from the nozzle side to supplement coverage with minimal effect. The support skirt prevented scanning around the total circumference of the nozzle. The cumulative coverage estimation includes a summary of the scans with multiple angles from the accessible directions.

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6/25/07

WELD 05-012

Entergy

EXAMINATION COVERAGE CALCULATION SHEET

Attachment #: A

■ ANO 1	□ ANO 2	□ Grand Gulf	□ River Bend	□ Waterford 3

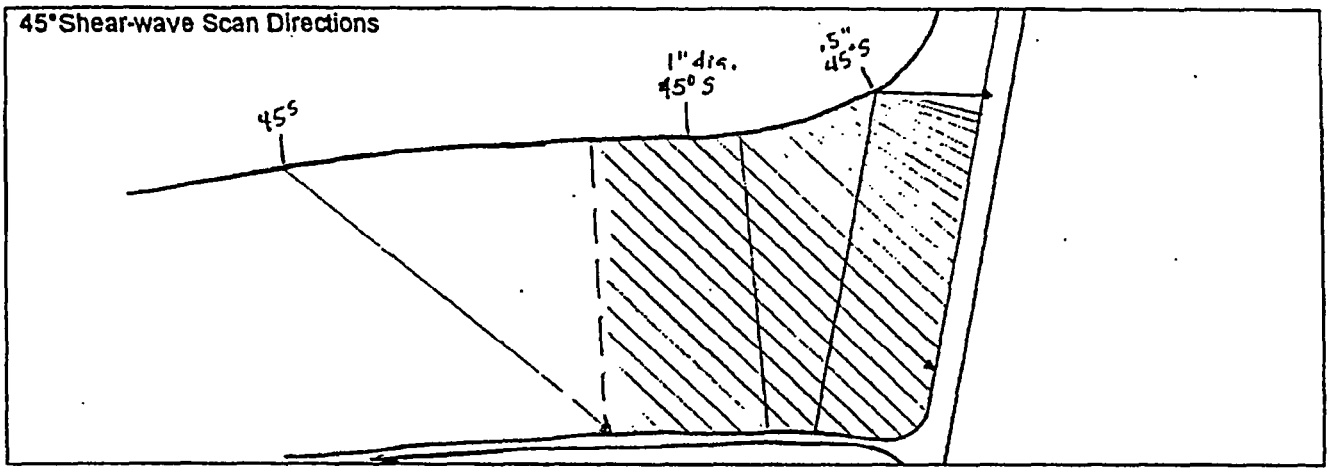
Component ID: 05-012 Report No.: 198ISIUT010, 030, 031, 038 Material Type: CS clad

Vessel Weld T: ~5.0" Angles Used: 45° · 60° 70° S - ½ V, 0° L

NOTES:

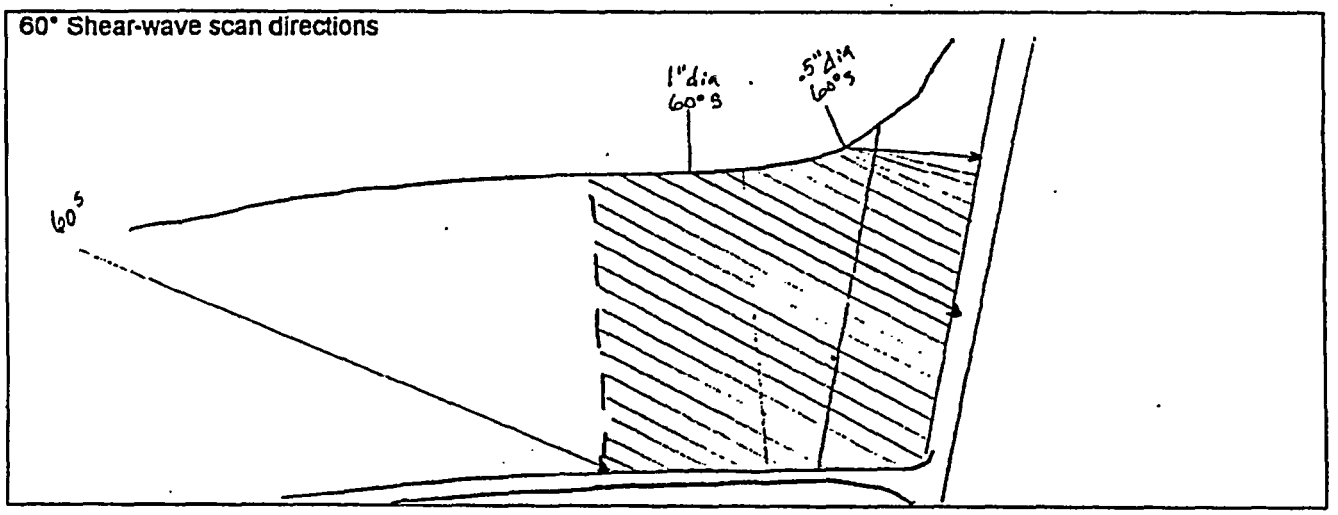
1 **The 1/2T dimension on each side of the weld is for Class 1 vessel volume.**
2 **This is an approximate percent of the examination volume for which coverage was obtained.**
3 **The plot shown is a representation of the actual profile and not to scale.**

45°Shear-wave Scan Directions



No Coverage Direction #1 Direction #2

60° Shear-wave scan directions

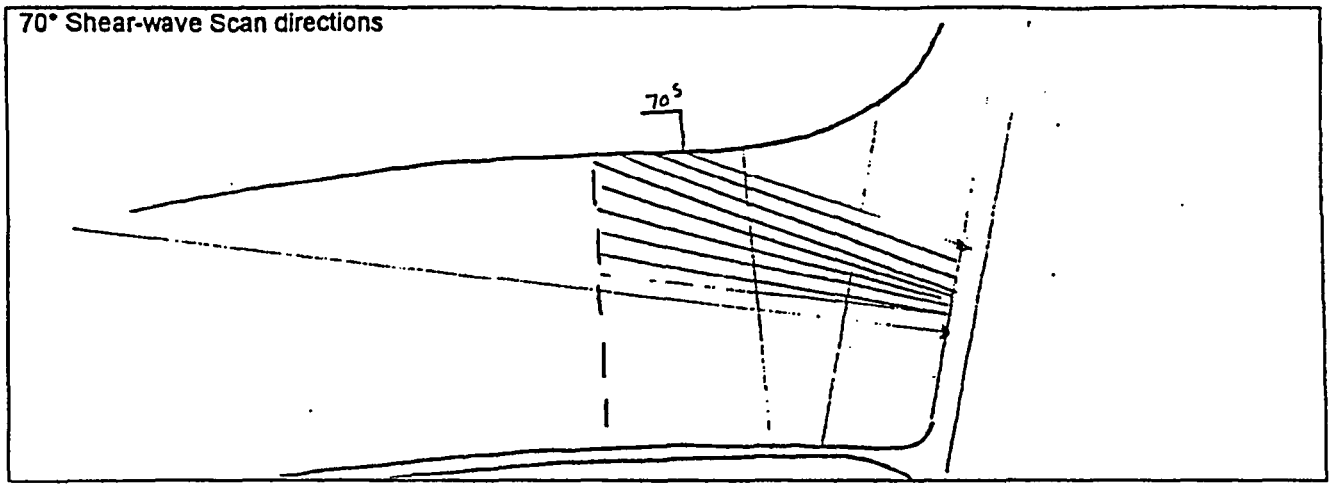


No Coverage Direction #1 Direction #2

Entergy

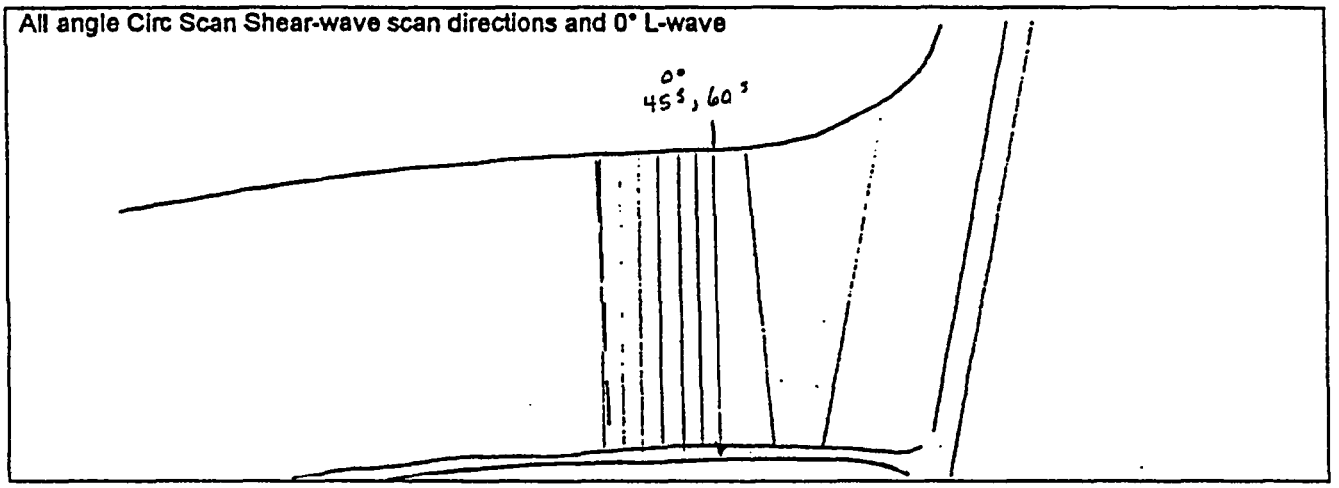
EXAMINATION COVERAGE CALCULATION SHEET

70° Shear-wave Scan directions



No Coverage Direction #1 Direction #2

All angle Circ Scan Shear-wave scan directions and 0° L-wave



No Coverage Direction #3 Direction #4

Required scan coverage obtained:
Weld ~ 18.6 %, Base material head side ~ 92.9 %, Base material nozzle side ~ 22.1 %
TOTAL EXAM VOLUME OBTAINED: 45%

COMMENTS: Pressurizer spray nozzle to head weld. This is a single sided examination. The cumulative coverage estimation includes the code required base metal coverage adjacent to the weld and the factor of multiple angles from multiple directions. Coverage illustrations depict added scans with .5" diameter transducers to increase coverage, 1" diameter transducers were used for the primary examination.

WELD 05-013

Entergy EXAMINATION COVERAGE CALCULATION SHEET

Attachment #: A

■ ANO 1	□ ANO 2	□ Grand Gulf	□ River Bend	□ Waterford 3

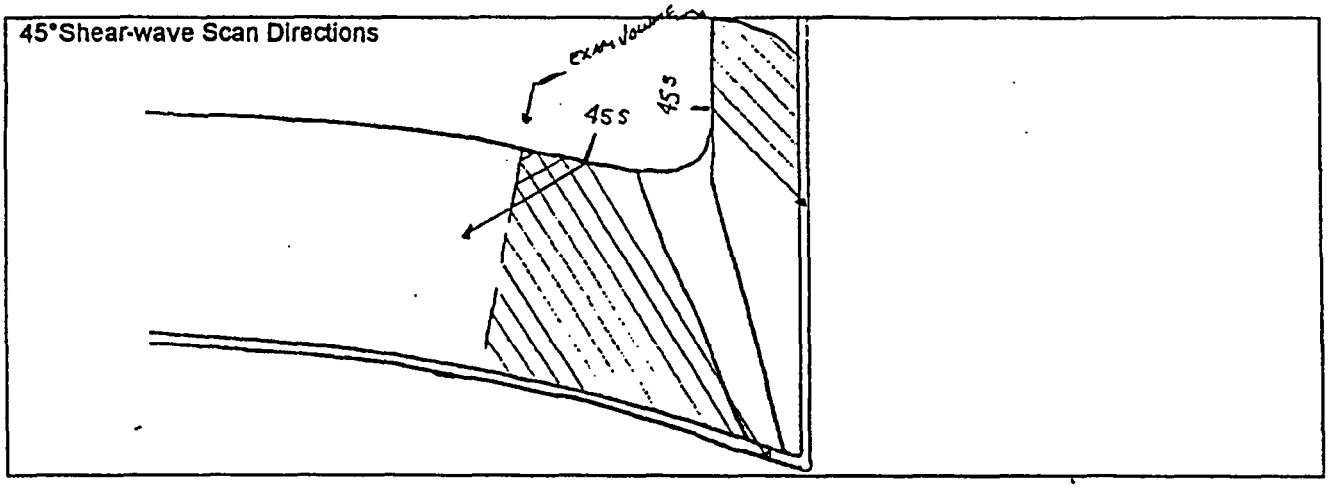
Component ID: 05-013 Report No.: 199ISIUT018, 019 Material Type: CS clad

Vessel Weld T: ~5.5" Angles Used: 45°, 60°, 70° S - ½ V, 0° L

NOTES:

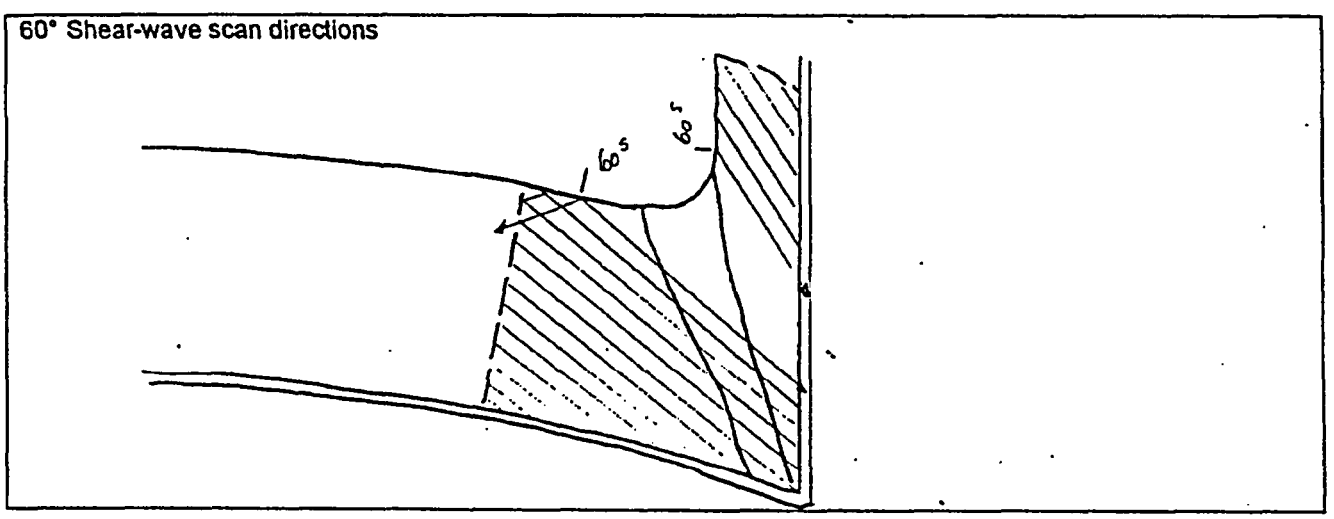
1. **The 1/2T dimension on each side of the weld is for Class 1 vessel volume.**
2. **This is an approximate percent of the examination volume for which coverage was obtained.**
3. **The plot shown is a representation of the actual profile and not to scale.**

45°Shear-wave Scan Directions



No Coverage Direction #1 Direction #2

60° Shear-wave scan directions



No Coverage Direction #1 Direction #2

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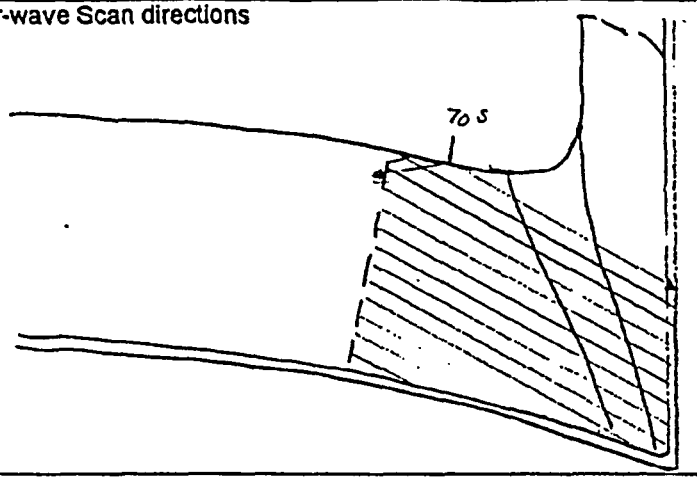
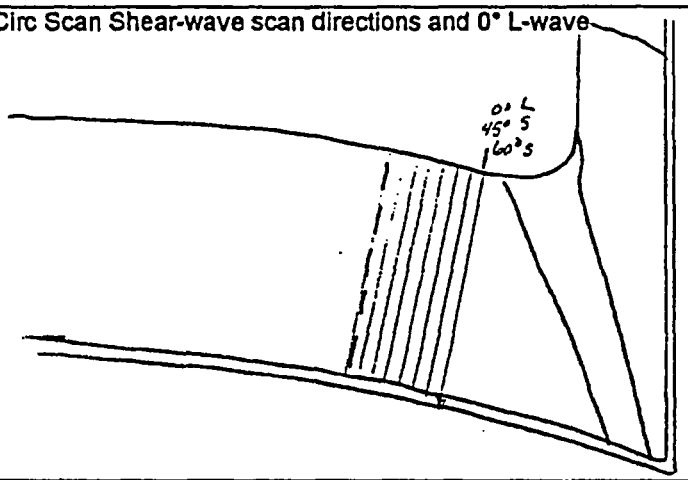
EXAMINATION COVERAGE CALCULATION SHEET

70° Shear-wave Scan directions



No Coverage Direction #1 Direction #2

All angle Circ Scan Shear-wave scan directions and 0° L-wave



No Coverage Direction #3 Direction #4

Required scan coverage obtained:
Weld ~15.9 %, Base material head side ~ 65.7%, Base material nozzle side ~32.5%
TOTAL EXAM VOLUME OBTAINED: 38%

COMMENTS: Pressurizer head to safety nozzle. This is primarily a single sided examination. Scans were performed from the nozzle side to supplement coverage with minimal effect. The cumulative coverage estimation includes the code required base metal coverage adjacent to the weld and the factor of multiple angles from multiple directions. Coverage illustrations depict only one location of a complicated nozzle geometry.

Gauthier 7/24/02

ENCLOSURE 2

CNRO-2004-00060

RELIEF REQUEST
ANO1-ISI-003

ENTERGY OPERATIONS, INC.
RELIEF REQUEST
ANO1-ISI-003

I. ASME COMPONENTS

Component/Number:	Steam generator A upper shell-to-upper nozzle belt circumferential weld 03-047
ASME Code Class:	2
References:	1. ASME Section XI 1992 Edition, Table IWC-2500-1 2. ASME Section XI 1980 Edition with the Winter 1981 Addenda 3. Letter from the NRC to Entergy Operations, Inc., *Evaluation of Entergy Operations, Inc. Request for Authorization to Update Inservice Inspection Programs to the 1992 and Portions of the 1993 ASME Boiler and Pressure Vessel Code, Section XI for Arkansas Nuclear One, Units 1 and 2, Grand Gulf Nuclear Station, River Bend Station, and Waterford Steam Electric Station, Unit 3 (TAC Nos. M94472, M94471, M94454, M94473, and M94488)*, dated December 12, 1996 4. ASME Code Case N-460 – Alternative Examination Coverage for Class 1 and 2 Welds, Section XI, Division 1
Examination Category:	C-A
Item Numbers:	C1.10
Unit / Inspection Interval Applicability:	Arkansas Nuclear One Unit 1 – third (3^{rd}) 10-year interval

II. ASME CODE REQUIREMENT(S)

ASME Section XI, Table IWC-2500-1, Examination Category C-A, Item C1.10 requires essentially 100% volumetric examination of the pressure retaining welds. ASME Code Case N-460 allows a reduction in coverage for Class 1 and 2 welds due to interference or geometry as long as the overall coverage is greater than 90%.

III. RELIEF REQUESTED

Pursuant to 10 CFR 50.55a(g)(6)(i), Entergy Operations, Inc. (Entergy) requests relief from achieving the Code-required coverage (> 90%) when performing volumetric examinations of the subject weld. See information in Table 1.

Table 1 Limited C-A Examination			
Item ID	Description	Coverage (%)	Reason for Limitation
03-047	Steam generator upper nozzle belt-to-upper shell weld	75.1	Nozzle-to-vessel configuration

IV. BASIS FOR RELIEF

During the ultrasonic examination of Weld 03-047, 100% coverage of the required examination volume could not be obtained due to the configuration of the steam generator. Specifically, effective volumetric examination was limited by the nozzle belt taper. Examination coverage calculation sheets provided in the attachment of this relief request show the shell-to-nozzle belt configuration, limitations, and the beam plots of the different examination angles used. The volume was scanned using 45°, 60°, and 70° beam angles. The heat affected zone was captured as shown in the examination coverage calculation sheets.

One mid-wall recordable indication (as defined in Reference 2) exists in the examined volume and is completely contained within that volume. It has been evaluated per ASME IWC-3500 and determined to be acceptable. Additionally, ultrasonic data from the most recent examination has been compared with data from the previous examination; this comparison indicates no change in the indication.

Radiography is not practical because of the geometry of the component, which prevents proper placement of the film and exposure source. To perform the Code-required examination would require modifying and/or replacing the component. The examinations performed on Weld 03-047, in addition to the examination of other steam generator welds contained in the program, would detect generic degradation, if it existed, thereby demonstrating an acceptable level of integrity.

V. PROPOSED ALTERNATIVE EXAMINATIONS

Entergy has examined Weld 03-047 to the extent practical and will continue to perform pressure testing on the weld as required by the Code.

VI. CONCLUSION

10 CFR 50.55a(g)(6)(i) states:

> The Commission will evaluate determinations under paragraph (g)(5) of this section that code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Due to design configuration, it is impractical to obtain greater than 90% coverage on Weld 03-047. To obtain the required coverage would necessitate modifying and/or replacing the component. Examinations performed on the subject weld, in addition to examinations of similar welds contained in the program, would detect generic degradation, if it existed, thereby demonstrating an acceptable level of integrity. Therefore, Entergy requests the NRC staff authorize the proposed alternative pursuant to 10 CFR 50.55a(g)(6)(i).

ATTACHMENT

RELIEF REQUEST
ANO1-ISI-003

WELD 03-047
EXAMINATION COVERAGE CALCULATION SHEETS

EXAMINATION COVERAGE CALCULATION SHEET

Attachment #: A

■ ANO 1	□ ANO 2	□ Grand Gulf	□ River Bend	□ Waterford 3

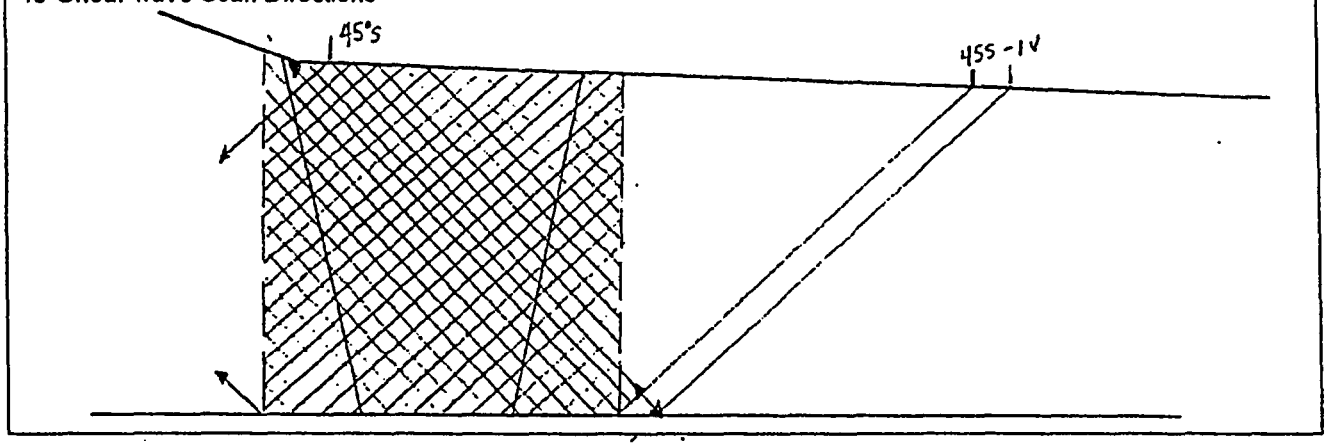
Component ID: 03-047 Report No.: 99ISIUT027 Material Type: CS

Vessel Weld T: ~5.5" Angles Used: 45° 1V, 60°, 70° S - ½ V, 0° L

NOTES:

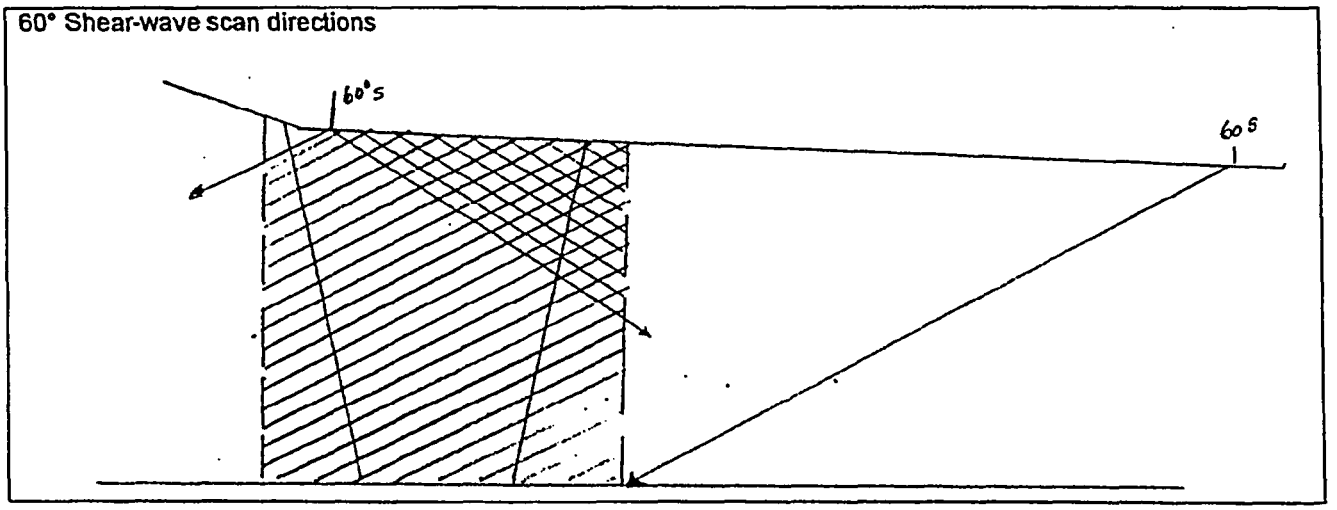
1. **The ½" dimension on each side of the weld is for Class 2 vessel volume.**
2. **This is an approximate percent of the examination volume for which coverage was obtained.**
3. **The plot shown is a representation of the actual profile and not to scale.**

45°Shear-wave Scan Directions



No Coverage Direction #1 Direction #2

60° Shear-wave scan directions

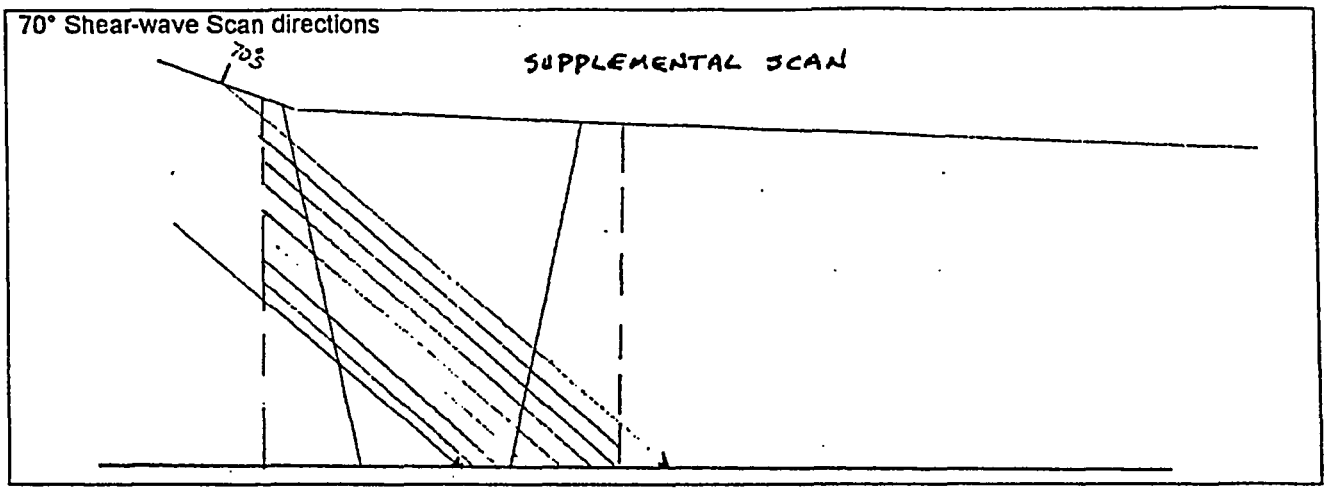


No Coverage Direction #1 Direction #2

Entergy

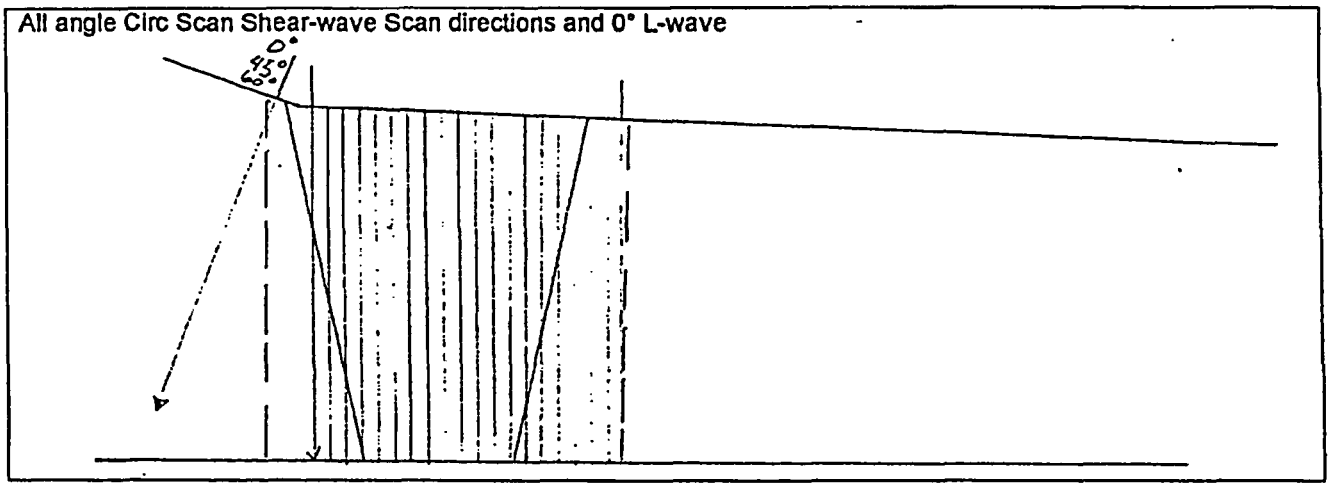
EXAMINATION COVERAGE CALCULATION SHEET

70° Shear-wave Scan directions



No Coverage Direction #1 Direction #2

All angle Circ Scan Shear-wave Scan directions and 0° L-wave



No Coverage Direction #3 Direction #4

Required scan coverage:
Weld ~87.5%, Base material nozzle belt side ~37.8%, Base material shell side 100%

TOTAL EXAM VOLUME OBTAINED: 75.1%

COMMENTS: Steam generator upper nozzle belt to upper shell weld. The primary limitation was on the required circumferential scans on the upper nozzle belt taper, base material. The cumulative coverage estimation includes the code required base metal coverage adjacent to the weld and the factor of multiple angles from multiple directions.

Ramsey
7/24/02

ENCLOSURE 3

CALIBRATION DATA SHEETS
SUPPORTING RELIEF REQUESTS ANO1-ISI-001 AND ANO1-ISI-003

WELD 03-008

ANO Outage: 1R14 — ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 198ISIUT060

Unit 1

Page 1 of 2

(●) ISI ( ) PSI ( ) INFO

( ) MAINTENANCE ( ) WOT

Exam/Item ID 03-008

Comp/System E24A

DWG # M1D-2

Cat / Item B-D / B 3.130

Exam Comp Temp 65°F

Item Config NOZZLE-TO-LOWER HEAD

Exam Surface EXTERNAL

Company RAYTHEON

Code Edition ASME XI 1980/W81

Procedure No. 1415.038 / 4

Cal. Block No. 40805

Cal. Block Temp 70°F

Size N/A "T" 9.0"

(●) Ferritic ( ) Austenitic

( ) Dissimilar (●) Clad

Cal Checks	SU1	SU2
Initial Cal Time	1016	1013
Initial Cal Date	4/27/98	4/27/98
Intermediate Time	1115	1135
Intermediate Time	1210	1220
Final Cal Time	1240	1242
Final Cal Date	4/27/98	4/27/98

Scans Performed	Completed Yes	No
Scan 1, 0 If Req'd	( )	(●)
Scan 2, with flow	(●)	( )
Scan 3, against flow	(●)	( )
Scan 4, CW	(●)	( )
Scan 5, CCW	(●)	( )

Couplant Type: ULTRAGEL II

Couplant Batch: 95125

Therm SN: 62450

Cal Due: 1/12/99

Remarks/Reason for Incomplete Scan(s)

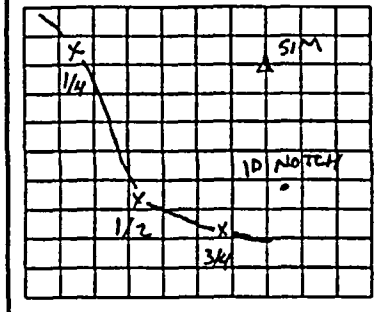
SIMULATOR-45°, 5TH ECHO FROM 2" RADIUS ON ROMPAS,80% FSH@7 SCREEN DIV. @ 48.2dB. 60°, 40% FSH @ 8 SCREEN DIV. @ 59.8dB. SCANNED FROM NOZZLE SIDE FOR SUPPLEMENTAL COVERAGE. SEE REPORT 198ISIUT061 FOR ADDITIONAL SCANS.NOTE EXAM LIMITATIONS ON PAGE 2.

Futher Evaluation Required? ( ) Yes (●) No

Examiners: Ronald V. Swain — RON V SWAIN — Level: II — Date: 4/27/98

Jason Polisenski — Jason Polisenski — Level: II — Date: 4/27/98

Search Unit #1



Screen Range = 20.0"

( ) Depth (●) Metal Path

Manufacture: KBA

Serial No.: C06285

Size: 1.0" Shape: ROUND

Freq: 1.0 Style: GAMMA

Exam Angle: 45° Mode SHEAR

Measured Angle: 46°

Wedge Style: ABWS

Cable Type: RG 58 Len: 12'6"

Ref Block: 789937

Instrument Settings

Make/Model: Staveley / Sonic 136

Serial No: 821K

Delay: 0.793 Range: 20.0"

M'tl Cal/Vel: 0.127 Pulser: 222

Damping: 500 Reject: OFF

Rep. Rate: 1Khz Freq: 1.0Mhz

Filter: 1 Mode: P/E

Reference Sensitivity

Axial: 48.2dB Circ: 48.2dB

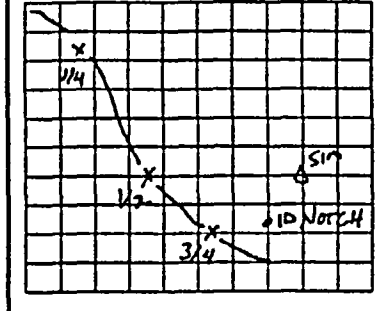
SDH Sensitivity: 48.2dB

Exam Sensitivity

Axial: 60.4dB Circ: 60.4dB

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Search Unit #2



Screen Range = 25.0"

( ) Depth (●) Metal Path

Manufacture: KBA

Serial No.: 000NBB

Size: 1.0" Shape: ROUND

Freq: 1.0 Style: GAMMA

Exam Angle: 60° Mode SHEAR

Measured Angle: 60°

Wedge Style: ABWS

Cable Type: RG 58 Len: 12'6"

Ref Block: 789937

Instrument Settings

Make/Model: Staveley / Sonic 136

Serial No: 821K

Delay: 1.28 Range: 25.0"

M'tl Cal/Vel: 0.129 Pulser: 222

Damping: 500 Reject: OFF

Rep. Rate: 1Khz Freq: 1.0Mhz

Filter: 1 Mode: P/E

Reference Sensitivity

Axial: 59.8dB Circ: N/A

SDH Sensitivity: 57.6dB

Exam Sensitivity

Axial: 75.0dB Circ: N/A

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Reviewers: B Panther Date: 4/28/98 Reviewers: Lay Shyr ISI Date: 4-28-98

ANII: C.W. Thompson Date: 4-28-98

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															

ANO Outage: 1R14 — ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 198ISIUT061

Unit 1
Page 1 of 1
(●) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT
Exam/Item ID 03-008
Comp/System E24A
DWG # M1D-2
Cat / Item B-D / B 3 130
Exam Comp Temp 65°F
Item Config NOZZLE-TO-LOWER HEAD
Exam Surface EXTERNAL

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.038 / 4

Cal. Block No. 40805
Cal. Block Temp 70°F
Size N/A "T" 9.0"

(●) Ferritic ( ) Austenitic
( ) Dissimilar (●) Clad

Cal Checks	SU1	SU2
Initial Cal Time	1026	1030
Initial Cal Date	4/27/98	4/27/98
Intermediate Time	1145	1100
Intermediate Time		
Final Cal Time	1243	1245
Final Cal Date	4/27/98	4/27/98

Scans Performed	Completed Yes	Completed No
Scan 1, 0 If Req'd	(●)	( )
Scan 2, with flow	(●)	( )
Scan 3, against flow	(●)	( )
Scan 4, CW	( )	(●)
Scan 5, CCW	( )	(●)

Couplant Type: ULTRAGEL II
Couplant Batch: 95125
Therm SN: 62450
Cal Due: 1/12/99

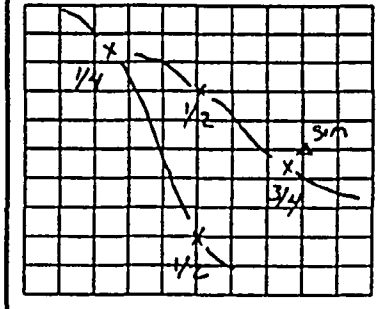
Remarks/Reason for Incomplete Scan(s)

SIMULATOR-70°, 7TH ECHO ON ROMPAS 50% FSH @ 8 SCREEN DIV.@ 65.4dB. 0°, 5TH BACK ECHO ON ROMPAS ,60% FSH @ 3.4 SCREEN DIV @36.4 dB.70° EXAM SENSITIVITY IS CLAD INTERFACE SIGNAL @ 20% FSH, 0° IS BACKWALL @ 80% FSH. SCANNED FROM NOZZLE SIDE FOR SUPPLEMENTAL COVERAGE.0° EXAMINATION WAS LAM SCAN AND WELD VOLUME. SCANNED FROM NOZZLE SIDE FOR SUPPLEMENTAL COVERAGE. SEE REPORT 198ISIUT060 FOR ADDITIONAL SCANS. NOTE EXAM LIMITATIONS ON PAGE 2.

Futher Evaluation Required? ( ) Yes (●) No

Examiners: Ronald V. Swain — Level: II Date: 4/27/98
RON V SWAIN
Jason Polisensky — Level: II Date: 4/27/98
Jason Polisensky

Search Unit #1



Screen Range = 20.0"
( ) Depth (●) Metal Path

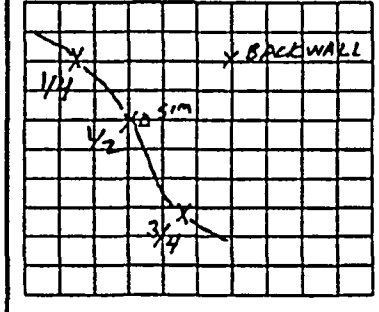
Manufacture: KBA
Serial No.: C05213
Size: 1.0" Shape: ROUND
Freq: 1.0 Style: GAMMA
Exam Angle: 70° Mode SHEAR
Measured Angle: 69°
Wedge Style: ABWS
Cable Type: RG 58 Len: 12'6"
Ref Block: 789937

Instrument Settings

Make/Model: Staveley / Sonic 136
Serial No: 821K
Delay: 1.460 Range: 25.0"
M'tl Cal/Vel: 0.130 Pulser: 222
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1.0Mhz
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: 65.4/68.4 Circ: N/A
SDH Sensitivity: 65.4/68.4 dB
Exam Sensitivity
Axial: 74.4dB Circ: N/A

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Search Unit #2



Screen Range = 15.0"
( ) Depth (●) Metal Path

Manufacture: KBA
Serial No.: A22105SP
Size: 1.0" Shape: ROUND
Freq: 2.25 Style: GAMMA
Exam Angle: 0° Mode LONG.
Measured Angle: N/A
Wedge Style: N/A
Cable Type: RG 58 Len: 12'6"
Ref Block: 789937

Instrument Settings

Make/Model: Staveley / Sonic 136
Serial No: 821K
Delay: 0.00 Range: 15.0"
M'tl Cal/Vel: 0.231 Pulser: 222
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 2.25
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: N/A Circ: N/A
SDH Sensitivity: 36.4dB
Exam Sensitivity
Axial: 48.8dB Circ: N/A

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Reviewers: K Pankhar Date: 4/28/98 Reviewers: [illegible] Date: 4-28-98
ANII: C.W. Thompson Date: 4-28-98

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															

INNER RADIUS 03-009

Page 5 of 20

ANO Outage: 1R14 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 198ISIUT062

Unit 1

Page 1 of 2

(●) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT

Exam/Item ID 03-009
Comp/System E24A
DWG # M1D-2
Cat / Item B-D / B3.140
Exam Comp Temp 65°F
Item Config NOZZLE IR
Exam Surface EXTERNAL

Cal Checks	SU1	SU2
Initial Cal Time	1016	1013
Initial Cal Date	4/27/98	4/27/98
Intermediate Time	1115	1135
Intermediate Time	1210	1220
Final Cal Time	1240	1242
Final Cal Date	4/27/98	4/27/98

Scans Performed	Completed Yes	Completed No
Scan 1, 0 If Req'd	( )	(●)
Scan 2, with flow	(●)	( )
Scan 3, against flow	(●)	( )
Scan 4, CW	(●)	( )
Scan 5, CCW	(●)	( )

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.031 / 3

Cal. Block No. 40805
Cal. Block Temp 70°F
Size N/A "T" 9.0"

Couplant Type: ULTRAGEL II
Couplant Batch: 95125
Therm SN: 62450
Cal Due: 1/12/99

(●) Ferritic ( ) Austenitic
( ) Dissimilar (●) Clad

Remarks/Reason for Incomplete Scan(s)

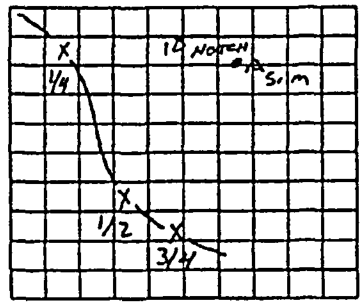
SIMULATOR-45°, 5TH ECHO FROM 2" RADIUS ON ROMPAS,80% FSH@7 SCREEN DIV. @ 48.2dB. 60°, 40% FSH @ 8 SCREEN DIV. @ 59.8dB. SCANNED FROM NOZZLE SIDE FOR SUPPLEMENTAL COVERAGE. SEE REPORT 198ISIUT063 FOR ADDITIONAL SCANS. NOTE EXAM LIMITATIONS ON PAGE 2.

Futher Evaluation Required? ( ) Yes (●) No

Examiners: [signature] RON V SWAIN Level: II Date: 4/27/98

[signature] Jason Polisensky Level: II Date: 4/27/98

Search Unit #1



Screen Range = 20.0"

( ) Depth (●) Metal Path

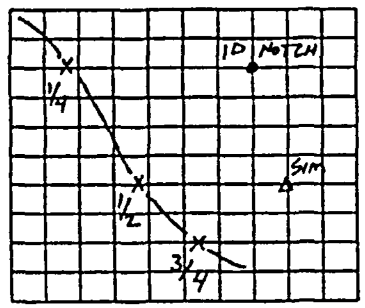
Manufacture: KBA
Serial No.: C06285
Size: 1.0" Shape: ROUND
Freq: 1.0 Style: GAMMA
Exam Angle: 45° Mode SHEAR
Measured Angle: 46°
Wedge Style: ABWS
Cable Type: RG 58 Len: 12'6"
Ref Block: 789937

Instrument Settings

Make/Model: Staveley / Sonic 136
Serial No: 821K
Delay: 0.793 Range: 20.0"
M'tl Cal/Vel: 0.127 Pulser: 222
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1.0Mhz
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: Skew 54.4 Circ: N/A
SDH Sensitivity: 48.2dB
Exam Sensitivity
Axial: 60.4dB Circ: N/A

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Search Unit #2



Screen Range = 25.0"

( ) Depth (●) Metal Path

Manufacture: KBA
Serial No.: 000NBB
Size: 1.0" Shape: ROUND
Freq: 1.0 Style: GAMMA
Exam Angle: 60° Mode SHEAR
Measured Angle: 60°
Wedge Style: ABWS
Cable Type: RG 58 Len: 12'6"
Ref Block: 789937

Instrument Settings

Make/Model: Staveley / Sonic 136
Serial No: 821K
Delay: 1.28 Range: 25.0"
M'tl Cal/Vel: 0.129 Pulser: 222
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1.0Mhz
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: Skew 69.0 Circ: N/A
SDH Sensitivity: 57.6dB
Exam Sensitivity
Axial: 75.0dB Circ: N/A

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Reviewers: [signature] Date: 4/28/98 Reviewers: [signature] ISI Date: 4-28-98

ANII: C.W. Thompson Date: 4-28-98

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															

ANO Outage: 1R14 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 198ISIUT063

Unit 1

Page 1 of 1

(●) ISI ( ) PSI ( ) INFO

( ) MAINTENANCE ( ) WQT

Exam/Item ID 03-009

Comp/System E24A

DWG # M1D-2

Cat / Item B-D / B3.140

Exam Comp Temp 65°F

Item Config NOZZLE IR

Exam Surface EXTERNAL

Cal Checks	SU1	SU2
Initial Cal Time	1026	
Initial Cal Date	4/27/98	
Intermediate Time	1145	
Intermediate Time		
Final Cal Time	1243	
Final Cal Date	4/27/98	

Scans Performed	Completed Yes	No
Scan 1, 0 If Req'd	( )	(●)
Scan 2, with flow	(●)	( )
Scan 3, against flow	(●)	( )
Scan 4, CW	( )	(●)
Scan 5, CCW	( )	(●)

Company RAYTHEON

Code Edition ASME XI 1980/W81

Procedure No. 1415.031 / 3

Cal. Block No. 40805

Cal. Block Temp 70°F

Size N/A "T" 9.0"

Couplant Type: ULTRAGEL II

Couplant Batch: 95125

(●) Ferritic ( ) Austenitic

( ) Dissimilar (●) Clad

Therm SN: 62450

Cal Due: 1/12/99

Remarks/Reason for Incomplete Scan(s)

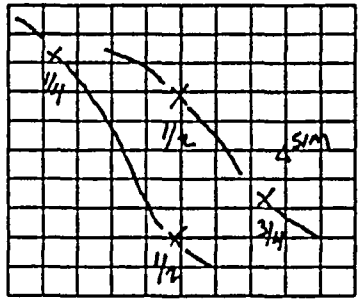
SIMULATOR-70°, 7TH ECHO ON ROMPAS 50% FSH @ 8 SCREEN DIV.@ 65.4dB, 70° EXAM SENSITIVITY IS CLAD INTERFACE SIGNAL @ 20% FSH, 0° IS BACKWALL @ 80% FSH. SCANNED FROM NOZZLE SIDE FOR SUPPLEMENTAL COVERAGE. SCANNED FROM NOZZLE SIDE FOR SUPPLEMENTAL COVERAGE. SEE REPORT 198ISIUT062 FOR ADDITIONAL SCANS.

Futher Evaluation Required? ( ) Yes (●) No

Examiners: Ronald V. Swain Level: II Date: 4/27/98
RON V SWAIN

Jason Polisensky Level: II Date: 4/27/98
Jason Polisensky

Search Unit #1



Screen Range = 20.0"

( ) Depth (●) Metal Path

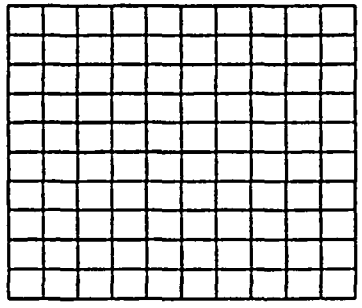
Manufacture: KBA
Serial No.: C05213
Size: 1.0" Shape: ROUND
Freq: 1.0 Style: GAMMA
Exam Angle: 70° Mode SHEAR
Measured Angle: 69°
Wedge Style: ABWS
Cable Type: RG 58 Len: 12'6"
Ref Block: 789937

Instrument Settings

Make/Model: Staveley / Sonic 136
Serial No: 821K
Delay: 1.460 Range: 25.0"
M'tl Cal/Vel: 0.130 Pulser: 222
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1.0Mhz
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: 65.4/68.4 Circ: N/A
SDH Sensitivity: 65.4/68.4 dB
Exam Sensitivity
Axial: 74.4dB Circ: N/A

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Search Unit #2



Screen Range = N/A

( ) Depth ( ) Metal Path

Manufacture: N/A
Serial No.: N/A
Size: N/A Shape: N/A
Freq: N/A Style: N/A
Exam Angle: N/A Mode N/A
Measured Angle: N/A
Wedge Style: N/A
Cable Type: N/A Len: N/A
Ref Block: N/A

Instrument Settings

Make/Model: Staveley / Sonic 136
Serial No: N/A
Delay: N/A Range: N/A
M'tl Cal/Vel: N/A Pulser: N/A
Damping: N/A Reject: N/A
Rep. Rate: N/A Freq: N/A
Filter: N/A Mode: N/A
Reference Sensitivity
Axial: N/A Circ: N/A
SDH Sensitivity: N/A
Exam Sensitivity
Axial: N/A Circ: N/A

Instrument Linearity Acceptable: ( ) Amp ( ) Vert ( ) Horiz

Reviewers: [signature] Date: 4/28/98 Reviewers: [signature] Date: 4-28-98

ANII: C.W. Thompson Date: 4-28-98

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															

WELD 05-012

ANO Outage: 1R14

ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 198ISIUT010

Unit 1

Page 1 of 1

(●) ISI ( ) PSI ( ) INFO

( ) MAINTENANCE ( ) WQT

Exam/Item ID 05-012

Comp/System N/A

DWG # M1G-69

Cat / Item B-D / B3.110

Exam Comp Temp 90°F

Item Config SPRAY NOZZLE TO HEAD

Exam Surface OD

Cal Checks	SU1	SU2
Initial Cal Time	1335	1345
Initial Cal Date	4/5/98	4/5/98
Intermediate Time	N/A	N/A
Intermediate Time	N/A	N/A
Final Cal Time	1629	1631
Final Cal Date	4/5/98	4/5/98

Scans Performed	Completed Yes	Completed No
Scan 1, 0 If Req'd	( )	(●)
Scan 2, with flow	( )	(●)
Scan 3, against flow	(●)	( )
Scan 4, CW	(●)	( )
Scan 5, CCW	(●)	( )

Company RAYTHEON

Code Edition ASME XI 1980/W81

Procedure No. 1415.038 / 4

Cal. Block No. 40908

Cal. Block Temp 85°F

Size 20.0" "T" 5.0"

(●) Ferritic ( ) Austenitic

( ) Dissimilar (●) Clad

Couplant Type: ULTRAGEL II

Couplant Batch: 95125

Therm SN: 62837

Cal Due: 1/12/99

Remarks/Reason for Incomplete Scan(s)

THE WEDGE FOR THE 35° TRANSDUCER WAS ANO-35-01. THE WEDGE FOR THE 45° TRANSDUCER WAS ANO-020. SCANS 4 AND 5 PERFORMED WITH THE 45° TRANSDUCER ONLY. THE 35° TRANSDUCER WAS USED TO INCREASE THE AMOUNT OF COVERAGE. THE WELD WAS IDENTIFIED BY THE DRAWING. REFERENCE REPORT 198ISIUT030 & 198ISIUT031 FOR THE ADDITIONAL SCANS AN ANGLES.

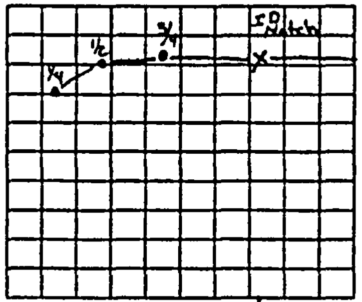
exam one side 45% Coverage KP 4/24/98

Futher Evaluation Required? ( ) Yes (●) No

Examiners: [signature] JAY MILLER Level: II Date: 4/5/98

[signature] NEIL B PRESTWICH Level: II Date: 4/5/98

Search Unit #1



Screen Range = 10.0" (7.2)

( ) Depth (●) Metal Path

Manufacture: KBA

Serial No.: A17203

Size: 1.0" Shape: ROUND

Freq: 2.25 Style: GAMMA

Exam Angle: 35° Mode SHEAR

Measured Angle: 37°

Wedge Style: MSWS

Cable Type: RG 58 Len: 12'6"

Ref Block: 789937

Instrument Settings

Make/Model: SONIC 136

Serial No: 471F

Delay: .482" Range: 10.0"

M'tl Cal/Vel: .129"/us Pulser: 222 ns

Damping: 200 ohms Reject: OFF

Rep. Rate: 1 KHZ Freq: 2.25

Filter: 1 Mode: P/E

Reference Sensitivity

Axial: 48.2 dB Circ: N/A

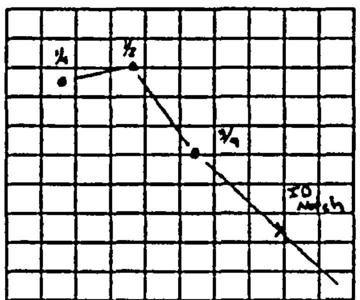
SDH Sensitivity: 44.2 dB

Exam Sensitivity

Axial: 58.2 dB Circ: N/A

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Search Unit #2



Screen Range = 10.0" (7.9)

( ) Depth (●) Metal Path

Manufacture: KBA

Serial No.: K24023

Size: 1.0" Shape: ROUND

Freq: 2.25 Style: GAMMA

Exam Angle: 45° Mode SHEAR

Measured Angle: 47°

Wedge Style: MSW

Cable Type: RG 58 Len: 12'6"

Ref Block: 789937

Instrument Settings

Make/Model: SONIC 136

Serial No: 471F

Delay: .846" Range: 10.0"

M'tl Cal/Vel: .129"/us Pulser: 222 ns

Damping: 200 ohms Reject: OFF

Rep. Rate: 1 KHZ Freq: 2.25

Filter: 1 Mode: P/E

Reference Sensitivity

Axial: 45.2dB Circ: 45.2dB

SDH Sensitivity: 45.2dB

Exam Sensitivity

Axial: 59.2dB Circ: 59.2dB

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Reviewers: [signature] Date: 4/10/98 Reviewers: [signature] ISI Date: 4-13-98

ANII: [signature] Date: 4-13-98

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															NO RECORDABLE INDICATIONS

NOTE: The 35-degree transducer did not result in increased coverage as initially expected. Therefore, no associated examination coverage calculation sheet was developed for the 35-degree scan.

ANO Outage: 1R14 — ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 198ISIUT030

Unit 1
Page 1 of 3
(●) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT
Exam/Item ID 05-012
Comp/System N/A
DWG # M1G-69
Cat / Item B-D / B3.110
Exam Comp Temp 90° F
Item Config SPRAY NOZZLE TO HEAD
Exam Surface EXTERIOR

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.038 / 4

Cal. Block No. 40908
Cal. Block Temp 85° F
Size 20.0" "T" 5.0"

(●) Ferritic ( ) Austenitic
( ) Dissimilar (●) Clad

Cal Checks	SU1	SU2
Initial Cal Time	1355	1405
Initial Cal Date	4/5/98	4/5/98
Intermediate Time	N/A	N/A
Intermediate Time	N/A	N/A
Final Cal Time	1638	1644
Final Cal Date	4/5/98	4/5/98

Scans Performed	Completed Yes	Completed No
Scan 1, 0 If Req'd	( )	(●)
Scan 2, with flow	( )	(●)
Scan 3, against flow	(●)	( )
Scan 4, CW	(●)	( )
Scan 5, CCW	(●)	( )

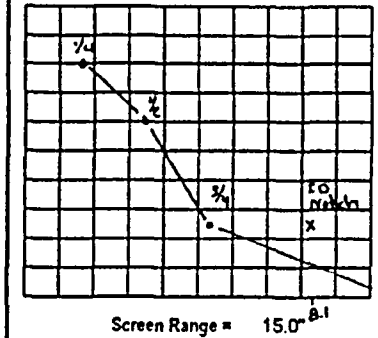
Couplant Type: ULTRAGEL II
Couplant Batch: 95125
Therm SN: 62837
Cal Due: 1/12/99

Remarks/Reason for Incomplete Scan(s)

THE WEDGE FOR THE 60° IS S/N ANO-007. THE WEDGE FOR THE 70° IS S/N ANO-98-01. REFERENCE REPORT 198ISIUT010 AND 198ISIUT031 FOR ADDITIONAL SCANS/ANGLES. WELD IDENTIFIED BY THE DRAWING. SCAN 4 & 5 PERFORMED WITH THE 60° ONLY. 70° TRANSDUCER WAS PERFORMED TO INCREASE THE AMOUNT OF COVERAGE.

Futher Evaluation Required? ( ) Yes (●) No

Examiners: JAY MILLER Level: II Date: 4/5/98
NEIL B PRESTWICH Level: II Date: 4/5/98



Screen Range = 15.0" 8.1

( ) Depth (●) Metal Path

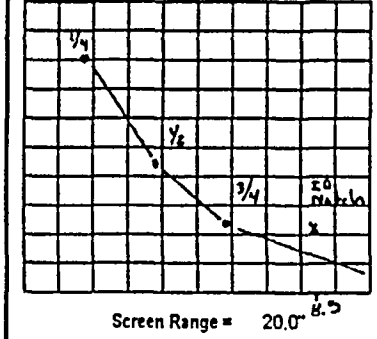
Search Unit #1

Manufacture: KBA
Serial No.: J25217
Size: 1.0" Shape: ROUND
Freq: 2.25 Style: GAMMA
Exam Angle: 60° Mode SHEAR
Measured Angle: 61.5°
Wedge Style: MSW
Cable Type: RG 58 Len: 12' 6"
Ref Block: 789937

Instrument Settings

Make/Model: SONIC 136
Serial No: 471F
Delay: 1.28" Range: 15.0"
M'tl Cal/Vel: .129"/us Pulser: 222 ns
Damping: 200 ohms Reject: OFF
Rep. Rate: 1 KHZ Freq: 2.25
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: 52.2 dB Circ: 52.2 dB
SDH Sensitivity: 52.2 dB
Exam Sensitivity
Axial: 60.2 dB Circ: 60.2 dB

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz



Screen Range = 20.0" 8.5

( ) Depth (●) Metal Path

Search Unit #2

Manufacture: KBA
Serial No.: K24022
Size: 1.0" Shape: ROUND
Freq: 2.25 Style: GAMMA
Exam Angle: 70° Mode SHEAR
Measured Angle: 72°
Wedge Style: MSW
Cable Type: RG 58 Len: 12' 6"
Ref Block: 789937

Instrument Settings

Make/Model: SONIC 136
Serial No: 471F
Delay: 1.43" Range: 20.0"
M'tl Cal/Vel: .129"/us Pulser: 222 ns
Damping: 200 ohms Reject: OFF
Rep. Rate: 1 KHZ Freq: 2.25
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: 56.0 dB Circ: N/A
SDH Sensitivity: 56.0 dB
Exam Sensitivity
Axial: 62.0 dB Circ: N/A

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Reviewers: K Pan Lee Date: 4/13/98 Reviewers: Larry Sly ISI Date: 4-13-98
ANII: C.W. Thompson Date: 4-13-98

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
GEO	1	3	60°	50%	N/A	1° CW	N/A	360°	N/A	10.5	N/A	N/A	12.1"	N/A	I. D. GEOMETRY - 360° INTERMITTENT AT VARIOUS AMPLITUDES
GEO	2	3	70°	100%	N/A	5° CCW	N/A	360°	N/A	13.25	N/A	N/A	15.4"	N/A	I. D. GEOMETRY - 360° INTERMITTENT AT VARIOUS AMPLITUDES

ANO Outage: 1R14 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 198ISIUT038

Unit 1

Page 1 of 2

(●) ISI ( ) PSI ( ) INFO

( ) MAINTENANCE ( ) WQT

Exam/Item ID 05-012

Comp/System N/A

DWG # M1G-69

Cat / Item B-D / B3.110

Exam Comp Temp 75°F

Item Config SPRAY NOZZLE TO HEAD

Exam Surface EXTERIOR

Cal Checks	SU1	SU2
Initial Cal Time	0919	0937
Initial Cal Date	4/9/98	4/9/98
Intermediate Time	N/A	N/A
Intermediate Time	N/A	N/A
Final Cal Time	1327	1333
Final Cal Date	4/9/98	4/9/98

Scans Performed	Completed Yes	Completed No
Scan 1, 0 if Req'd	( )	(●)
Scan 2, with flow	( )	(●)
Scan 3, against flow	(●)	( )
Scan 4, CW	(●)	( )
Scan 5, CCW	(●)	( )

Company RAYTHEON

Code Edition ASME XI 1980/W81

Procedure No. 1415.038 / 4

Cal. Block No. 40908

Cal. Block Temp 68°F

Size 20.0" "T" 5.0"

(●) Ferritic ( ) Austenitic

( ) Dissimilar (●) Clad

Couplant Type: ULTRAGEL II

Couplant Batch: 95125

Therm SN: 62837

Cal Due: 1/12/99

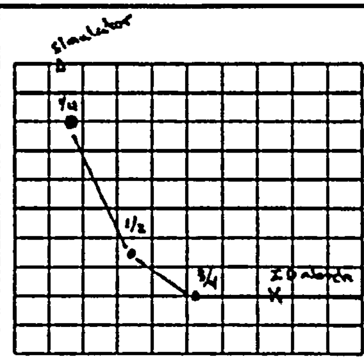
Remarks/Reason for Incomplete Scan(s)

SUPPLEMENTAL SCANS WITH .5" TRANSDUCERS TO INCREASE COVERAGE VOLUME. REFERENCE REPORTS 198ISIUT010, 030 & 031 FOR PREVIOUS INFORMATION AND COVERAGE PLOTS.

Further Evaluation Required? ( ) Yes (●) No

Examiners: [signature] JAY MILLER Level: II Date: 4/9/98

[signature] NEIL B PRESTWICH Level: II Date: 4/9/98



Screen Range = 10.0"

( ) Depth (●) Metal Path

Search Unit #1

Manufacture: KBA

Serial No.: 44077

Size: .50" Shape: ROUND

Freq: 2.25 Style: GAMMA

Exam Angle: 45° Mode SHEAR

Measured Angle: 45°

Wedge Style: MSW-QC

Cable Type: RG 174 Len: 12'

Ref Block: 94-6545

Instrument Settings

Make/Model: SONIC 136

Serial No: 471F

Delay: .470" Range: 10"

M'tl Cal/Vel: .124"/US Pulser: 222 NS

Damping: 500 OHMS Reject: OFF

Rep. Rate: 4 KHZ Freq: 2.25

Filter: 1 Mode: P/E

Reference Sensitivity

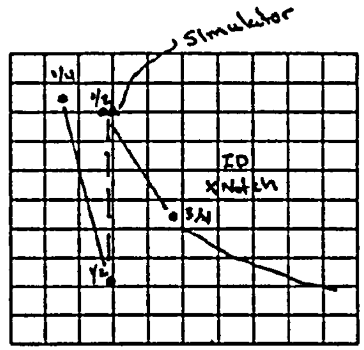
Axial: 35.8 dB Circ: 35.8 dB

SDH Sensitivity: 35.8 dB

Exam Sensitivity

Axial: 49.8 dB Circ: 4938 dB

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz



Screen Range = 15.0"

( ) Depth (●) Metal Path

Search Unit #2

Manufacture: KBA

Serial No.: 45264

Size: .50" Shape: ROUND

Freq: 2.25 Style: GAMMA

Exam Angle: 60° Mode SHEAR

Measured Angle: 58°

Wedge Style: MSW-QC

Cable Type: RG 174 Len: 12'

Ref Block: 94-6545

Instrument Settings

Make/Model: SONIC 136

Serial No: 471F

Delay: .462" Range: 15.0"

M'tl Cal/Vel: .124"/US Pulser: 222 NS

Damping: 500 OHMS Reject: OFF

Rep. Rate: 4 KHZ Freq: 2.25

Filter: 1 Mode: P/E

Reference Sensitivity

Axial: 52.8 dB Circ: 52.8 dB

SDH Sensitivity: 42.4 dB/52.8 dB

Exam Sensitivity

Axial: 66.8 dB Circ: 66.8 dB

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Reviewers: [signature] Date: 4/10/98 Reviewers: [signature] ISI Date: 4-13-98

ANII: C.W. Thompson Date: 4-13-98

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
GEO	1	3	45°	100%	N/A	TDC	N/A	360°	N/A	-0.6"	N/A	N/A	2.7"	N/A	I. D. GEOMETRY - 360° INTERMITTENT
GEO	2	3	60°	100%	N/A	TDC	N/A	360°	N/A	-0.1"	N/A	N/A	3.25"	N/A	I. D. GEOMETRY - 360° INTERMITTENT
GEO	3	3	60°	50%	N/A	TDC	N/A	360°	N/A	1.6"	N/A	N/A	5.0"	N/A	I. D. GEOMETRY - 360° INTERMITTENT

ANO Outage: 1R14 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 198ISIUT031

Unit 1
Page 1 of 1
(●) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT
Exam/Item ID 05-012
Comp/System N/A
DWG # M1G-69
Cat / Item B-D / B3.110
Exam Comp Temp 90°F
Item Config SPRAY NOZZLE TO HEAD
Exam Surface EXTERIOR

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415 038 / 4

Cal. Block No. 40908
Cal. Block Temp 85°F
Size 20.0" "T" 5.0"

(●) Ferritic ( ) Austenitic
( ) Dissimilar (●) Clad

Cal Checks	SU1	SU2
Initial Cal Time	1325	N/A
Initial Cal Date	4/5/98	
Intermediate Time	N/A	N/A
Intermediate Time	N/A	N/A
Final Cal Time	1644	N/A
Final Cal Date	4/5/98	

Scans Performed	Completed Yes	Completed No
Scan 1, 0 If Req'd	(●)	( )
Scan 2, with flow	( )	(●)
Scan 3, against flow	( )	(●)
Scan 4, CW	( )	(●)
Scan 5, CCW	( )	(●)

Couplant Type: ULTRAGEL II
Couplant Batch: 95125
Therm SN: 62837
Cal Due: 1/12/99

Remarks/Reason for Incomplete Scan(s)

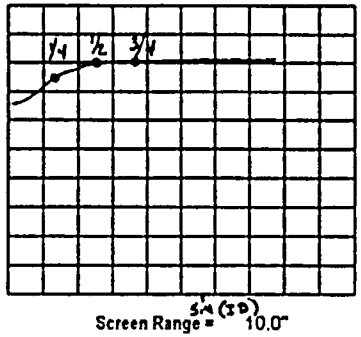
** 0° SCAN FOR PLANAR FLAWS IN THE WELD, SCANNED +12 ABOVE REFERENCE dB. REFERENCE REPORT 198ISIUT010 AND 198ISIUT030 FOR ADDITIONAL SCANS/ANGLES. WELD IDENTIFIED BY DRAWING.

198ISNT038 FOR ADDED SCANS.
R 4/10/98

Futher Evaluation Required? ( ) Yes (●) No

Examiners: JAY MILLER Level: II Date: 4/5/98
NEIL B PRESTWICH Level: II Date: 4/5/98

Search Unit #1



Screen Range = 5" (FD) 10.0"

( ) Depth (●) Metal Path

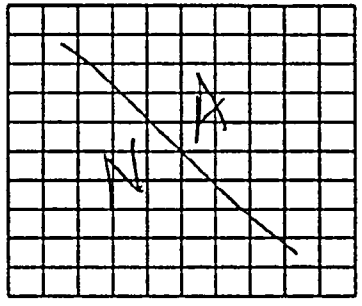
Manufacture: KBA
Serial No.: A22105SP
Size: 1.0" Shape: ROUND
Freq: 2.25 Style: GAMMA
Exam Angle: 0° Mode P/E
Measured Angle: N/A
Wedge Style: N/A
Cable Type: RG 58 Len: 12' 6"
Ref Block: 789937

Instrument Settings

Make/Model: SONIC 136
Serial No: 471F
Delay: -0.044" Range: 10.0"
M'tl Cal/Vel: .228"/us Pulser: 222 ns
Damping: 200 ohms Reject: OFF
Rep. Rate: 1 KHZ Freq: 2.25
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: N/A Circ: N/A
SDH Sensitivity: 30.0 dB
Exam Sensitivity
Axial: ** Circ: **

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Search Unit #2



Screen Range = N/A

( ) Depth ( ) Metal Path

Manufacture: N/A
Serial No.: N/A
Size: N/A Shape: N/A
Freq: N/A Style: N/A
Exam Angle: N/A Mode N/A
Measured Angle: N/A
Wedge Style: N/A
Cable Type: N/A Len: N/A
Ref Block: N/A

Instrument Settings

Make/Model: N/A
Serial No: N/A
Delay: N/A Range: N/A
M'tl Cal/Vel: N/A Pulser: N/A
Damping: N/A Reject: N/A
Rep. Rate: N/A Freq: N/A
Filter: N/A Mode: N/A
Reference Sensitivity
Axial: N/A Circ: N/A
SDH Sensitivity: N/A
Exam Sensitivity
Axial: N/A Circ: N/A

Instrument Linearity Acceptable: ( ) Amp ( ) Vert ( ) Horiz

Reviewers: K Panther Date: 4/10/98 Reviewers: Lay Sly ISI Date: 4-13-98
ANII: C.W. Thompson Date: 4-13-98

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															NO RECORDABLE INDICATIONS

WELD 05-013

ANO Outage: 1R15 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

1R15

Data Sheet # 199ISIUT018

Unit 1
Page 1 of 12

(•) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT

Exam/Item ID 05-013
Comp/System PRESSURIZER
DWG # MIG-69
Cat / Item B-D / B3.110
Exam Comp Temp 120°
Item Config PZR Upper Head to Relief Nozzle
Exam Surface EXTERIOR

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.038 / 5

Cal. Block No. 40908
Cal. Block Temp 110°
Size "T" 5.5"

(•) Ferritic ( ) Austenitic
( ) Dissimilar (•) Clad

Couplant Type: ULTRAGEL II
Couplant Batch: 98325
Therm SN: 194392
Cal Due: 1/5/00

Cal Checks	SU1	SU2
Initial Cal Time	1005	1020
Initial Cal Date	9/17/99	9/17/99
Intermediate Time	1730	1740
Intermediate Time	N/A	N/A
Final Cal Time	1945	1950
Final Cal Date	9/17/99	9/17/99

Scans Performed	Completed Yes	No
Scan 1, 0 If Req'd	(•)	( )
Scan 2, with flow	(•)	( )
Scan 3, against flow	(•)	( )
Scan 4, CW	(•)	( )
Scan 5, CCW	(•)	( )

Remarks/Reason for Incomplete Scan(s)

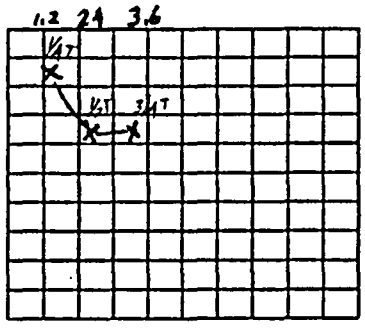
SEE DATA SHEET #199ISIUT019 FOR 60° AND 70° SHEAR EXAMINATON DATA

See 199ISIUT031 and 032 for supplemental coverage. KB 9/29/99

Futher Evaluation Required? ( ) Yes (•) No

Examiners: Neil B. Prestwich Level: II Date: 9/20/99
NEIL B PRESTWICH

Daniel R. Schanink Level: II Date: 9/20/99
DANIEL SCHANINK



Screen Range = 10.0"

( ) Depth (•) Metal Path

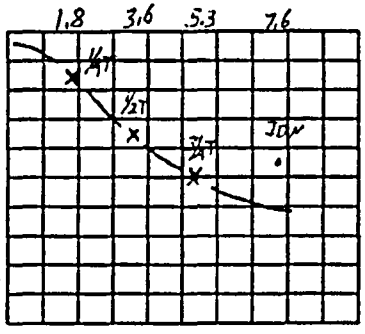
Search Unit #1

Manufacture: KBA
Serial No.: L04120
Size: 1.0" Shape: ROUND
Freq: 2.25 Style: GAMMA
Exam Angle: 0° Mode LONG.
Measured Angle: N/A
Wedge Style: N/A
Cable Type: RG-58 Len: 12'
Ref Block: 90-4722

Instrument Settings

Make/Model: SONIC 136
Serial No: 1118M
Delay: 0.242 Range: 10.0"
M'tl Cal/Vel: 0.235 Pulser: 222
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 2.25
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: 34.8dB Circ: N/A
SDH Sensitivity: 34.8dB
Exam Sensitivity
Axial: 53.2dB Circ: N/A

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz



Screen Range = 10.0"

(•) Depth (•) Metal Path

Search Unit #2

Manufacture: KBA
Serial No.: C06285
Size: 1.0" Shape: ROUND
Freq: 1.0 Style: GAMMA
Exam Angle: 45° Mode SHEAR
Measured Angle: 46°
Wedge Style: MSW
Cable Type: RG 58 Len: 12'
Ref Block: 90-4722

Instrument Settings

Make/Model: SONIC 136
Serial No: 1118M
Delay: 1.03 Range: 10.0"
M'tl Cal/Vel: 0.128 Pulser: 500
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1.0
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: 48.6dB Circ: 48.6dB
SDH Sensitivity: 48.6dB
Exam Sensitivity
Axial: 60.6dB Circ: 60.6dB

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz

Reviewers: [signature] Date: 9-25-99 Reviewers: [signature] Date: 9/27/99

ANII: C.W. Thomas Date: 9-29-99 ISI [signature] 9-29-99

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
GEO	1	2	45	100	215°	225°	240°	0.8	3.5	8.0	7.1	5.2	7.8	8.2	ACCEPTABLE bore

ANO Outage: 1R15 — ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 199ISIUT019

Unit 1
Page 1 of 1
(•) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT
Exam/Item ID 05-013
Comp/System PRESSURIZER
DWG # MIG-69
Cat / Item B-D / B3.110
Exam Comp Temp 120°
Item Config PZR Upper Head to Relief Nozzle
Exam Surface EXTERIOR

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.038 / 5

Cal Block No. 40908
Cal Block Temp 110°
Size "T" 5.5"

(•) Ferritic ( ) Austenitic
( ) Dissimilar ( ) Clad

Couplant Type: ULTRAGEL II
Couplant Batch: 98325
Therm SN: 194392
Cal Due: 1/5/00

Cal Checks	SU1	SU2
Initial Cal Time	1030	1045
Initial Cal Date	9/17/99	9/17/99
Intermediate Time	1745	1750
Intermediate Time	N/A	N/A
Final Cal Time	1955	2000
Final Cal Date	9/17/99	9/17/99

Scans Performed	Completed Yes	Completed No
Scan 1, 0 If Req'd	( )	(•)
Scan 2, with flow	(•)	( )
Scan 3, against flow	(•)	( )
Scan 4, CW	(•)	( )
Scan 5, CCW	(•)	( )

Remarks/Reason for Incomplete Scan(s)

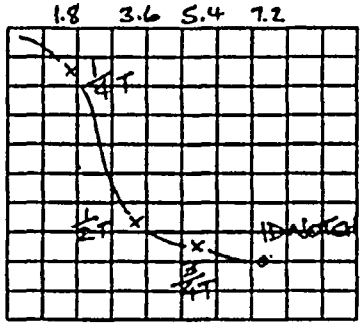
SEE DATA SHEET# 099ISIUT018 FOR 0° AND 45° SHEAR EXAMINATION DATA. WELD IDENTIFIED BY DRAWING.

See 199ISIUT031 and 032 for supplemental coverage. KP 9/28/99

Futher Evaluation Required? (•) Yes (•) No

Examiners: Neil B. P — Level: II Date: 9/20/99
NEIL B PRESTWICH

Daniel B Schanink — Level: II Date: 9/20/99
DANIEL SCHANINK



Screen Range = 15.0"
( ) Depth (•) Metal Path

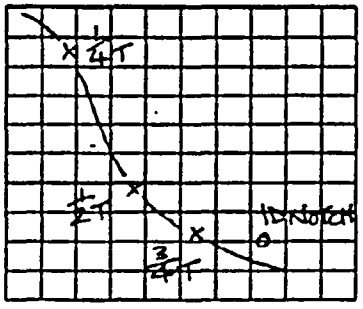
Search Unit #1

Manufacture: KBA
Serial No.: 000NBB
Size: 1.0" Shape: round
Freq: 1.0 Style: GAMMA
Exam Angle: 60° Mode SHEAR
Measured Angle: 63°
Wedge Style: MSW
Cable Type: RG 58 Len: 12'
Ref Block: 90-4722

Instrument Settings

Make/Model: SONIC 136
Serial No: 1118M
Delay: 1.270 Range: 15.0"
Mtl Cal/Vel: 0.127 Pulser: 500
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1.0
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: 52.4dB Circ: 52.4dB
SDH Sensitivity: 52.4dB
Exam Sensitivity
Axial: 64.4dB Circ: 64.4dB

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz



Screen Range = 20.0"
(•) Depth ( ) Metal Path

Search Unit #2

Manufacture: KBA
Serial No.: C05213
Size: 1.0" Shape: ROUND
Freq: 1.0 Style: GAMMA
Exam Angle: 70° Mode SHEAR
Measured Angle: 70°
Wedge Style: MSW
Cable Type: RG 58 Len: 12'
Ref Block: 90-4722

Instrument Settings

Make/Model: SONIC 136
Serial No: 1118M
Delay: 1.540 Range: 20.0"
Mtl Cal/Vel: 0.127 Pulser: 500
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1.0
Filter: 1 Mode: P/E
Reference Sensitivity
Axial: 58.6dB Circ: N/A
SDH Sensitivity: 58.6dB
Exam Sensitivity
Axial: 70.6dB Circ: N/A

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz

Reviewers: [signature] Date: 9-25-99 Reviewers: [signature] Date: 9/27/99
ANII: C.W. Thompson Date: 9-29-99 ISI Lead Eng 9-29-99

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															ACCEPTABLE

ANO Outage: 1r15 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 199ISIUT031

Unit 1
Page 1 of 1
(•) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT
Exam/Item ID 05-013
Comp/System PRESSURIZER
DWG # MIG-69
Cat / Item B-D / B 3.110
Exam Comp Temp 83°
Item Config PZR Upper Head to Relief Nozzl
Exam Surface EXTERIOR

Cal Checks	SU1	SU2
Initial Cal Time	0724	
Initial Cal Date	9/28/99	
Intermediate Time	0901	
Intermediate Time	0911	
Final Cal Time	0944	
Final Cal Date	9/28/99	

Scans Performed	Completed Yes	No
Scan 1, 0 If Req'd	(•)	( )
Scan 2, with flow	( )	(•)
Scan 3, against flow	( )	(•)
Scan 4, CW	( )	(•)
Scan 5, CCW	( )	(•)

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.038 / 5

Cal. Block No. 40908
Cal. Block Temp 75°
Size NA "T" 5.5"

Couplant Type: ULTRAGEL II
Couplant Batch: 98325
Therm SN: 190847
Cal Due: 10/5/99

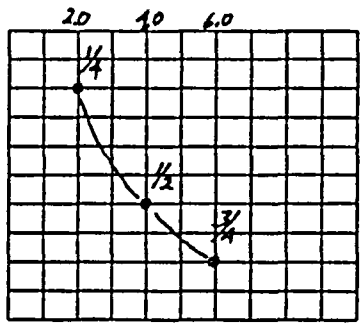
(•) Ferritic ( ) Austenitic
(•) Dissimilar ( ) Clad

Remarks/Reason for Incomplete Scan(s)

WELD IDENTIFIED BY DRAWING. SUPPLEMENTAL COVERAGE EXAM TO REPORT #'S 199ISIUT018 AND 199ISIUT019.

Futher Evaluation Required? ( ) Yes (•) No

Examiners: Daniel R Schanink — DANIEL SCHANINK — Level: II Date: 9/28/99
Ronald V. Swain — RONALD V SWAIN — Level: III Date: 9/28/99



Screen Range = 6"
( ) Depth (•) Metal Path

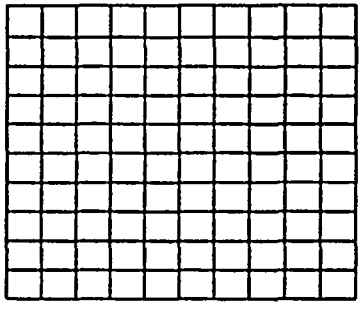
Search Unit #1

Manufacture: HARRISONIC
Serial No.: CM0208-S
Size: .5" Shape: round
Freq: 2.25 Style: NA
Exam Angle: 0° Mode: LONG
Measured Angle: NA
Wedge Style: INTEGRAL
Cable Type: RG 174 Len: 6'
Ref Block: 94-6546

Instrument Settings

Make/Model: SONIC 136
Serial No: 136-154
Delay: 0.022 Range: 6"
M'tl Cal/Vel: .227 Pulser: 222
Damping: 500 Reject: OFF
Rep. Rate: 4K Freq: 2.25
Filter: 2 Mode: P/E
Reference Sensitivity
Axial: 22.0 Circ: 22.0
SDH Sensitivity: 22.0
Exam Sensitivity
Axial: 42.0 Circ: 42.0

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz



Screen Range = NA
(•) Depth ( ) Metal Path

Search Unit #2

Manufacture: N/A
Serial No.: NA
Size: N/A Shape: NA
Freq: N/A Style: NA
Exam Angle: NA Mode: NA
Measured Angle: NA
Wedge Style: NA
Cable Type: NA Len: NA
Ref Block: NA

Instrument Settings

Make/Model: NA
Serial No: NA
Delay: NA Range: NA
M'tl Cal/Vel: NA Pulser: NA
Damping: NA Reject: NA
Rep. Rate: NA Freq: NA
Filter: NA Mode: NA
Reference Sensitivity
Axial: NA Circ: N/A
SDH Sensitivity: NA
Exam Sensitivity
Axial: NA Circ: N/A

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz

Reviewers: [signature] Date: 9/29/99 Reviewers: ISI [signature] Date: 9-29-99
ANII: C.W. Thompson Date: 9-29-99

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															ACCEPTABLE

ANO Outage: 1r15 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 199ISIUT032

Unit 1
Page 1 of 1
(•) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT
Exam/Item ID 05-013
Comp/System PRESSURIZER
DWG # MIG-69
Cat / Item B-D / B 3.110
Exam Comp Temp 83°
Item Config PZR Upper Head to Relief Nozzl
Exam Surface EXTERIOR

Cal Checks	SU1	SU2
Initial Cal Time	0748	0818
Initial Cal Date	9/28/99	9/28/99
Intermediate Time	0927	0912
Intermediate Time	0939	0926
Final Cal Time	0947	0950
Final Cal Date	9/28/99	9/28/99

Scans Performed	Completed Yes	No
Scan 1, 0 If Req'd	( )	(•)
Scan 2, with flow	(•)	( )
Scan 3, against flow	(•)	( )
Scan 4, CW	(•)	( )
Scan 5, CCW	(•)	( )

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.038 / 5

Cal. Block No. 40908
Cal. Block Temp 75°
Size NA "T" 5.5"

Couplant Type: ULTRAGEL II
Couplant Batch: 98325
Therm SN: 190847
Cal Due: 10/5/99

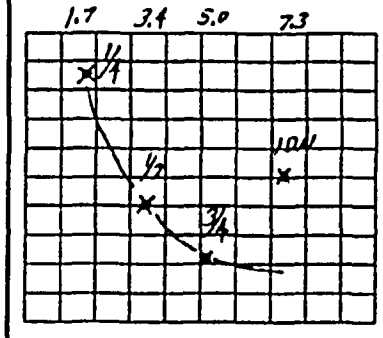
(•) Ferritic ( ) Austenitic
( ) Dissimilar ( ) Clad

Remarks/Reason for Incomplete Scan(s)

WELD IDENTIFIED BY DRAWING. SUPPLEMENTAL COVERAGE EXAM TO REPORT #'S 199ISIUT018 AND 199ISIUT019.

Futher Evaluation Required? ( ) Yes (•) No

Examiners: Daniel R. Schanink DANIEL SCHANINK Level: II Date: 9/28/99
Ronald V. Swain RONALD V SWAIN Level: III Date: 9/28/99



Screen Range = 10"
( ) Depth (•) Metal Path

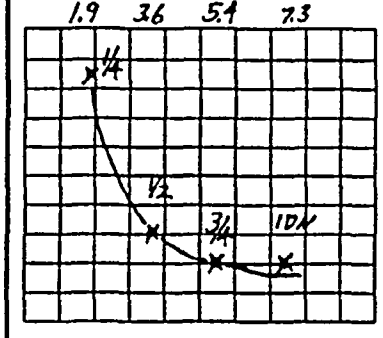
Search Unit #1

Manufacture: KBA
Serial No.: 000YYF
Size: .50 Shape: ROUND
Freq: 1.0 Style: MSW
Exam Angle: 45° Mode: SHEAR
Measured Angle: 45°
Wedge Style: MSWQC
Cable Type: RG 174 Len: 6'
Ref Block: 94-6546

Instrument Settings

Make/Model: SONIC 136
Serial No: 136-154
Delay: .394 Range: 10"
M'tl Cal/Vel: .126 Pulser: 500
Damping: 500 Reject: OFF
Rep. Rate: 2K Freq: 1MHZ
Filter: 2 Mode: P/E
Reference Sensitivity
Axial: 35.2 Circ: 35.2
SDH Sensitivity: 35.2
Exam Sensitivity
Axial: 47.2 Circ: 47.2

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz



Screen Range = 12"
(•) Depth (•) Metal Path

Search Unit #2

Manufacture: KBA
Serial No.: 00141Y
Size: .50 Shape: ROUND
Freq: 1.0 Style: MSW
Exam Angle: 60° Mode: SHEAR
Measured Angle: 57°
Wedge Style: MSWQC
Cable Type: RG 174 Len: 6'
Ref Block: 94-6546

Instrument Settings

Make/Model: SONIC 136
Serial No: 136-154
Delay: .510 Range: 12"
M'tl Cal/Vel: .126 Pulser: 500
Damping: 500 Reject: OFF
Rep. Rate: 2K Freq: 1MHZ
Filter: 2 Mode: PE
Reference Sensitivity
Axial: 45.2 Circ: 45.2
SDH Sensitivity: 45.2
Exam Sensitivity
Axial: 57.2 Circ: 57.2

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz

Reviewers: R. Renthen Date: 9/28/99 Reviewers: [illegible] Date: 9-29-99
ANII: C.W. Thompson Date: 9-29-99

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															ACCEPTABLE

WELD 03-047

ANO Outage: 1R15 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

1R15

Data Sheet # 199ISIUT027

Unit 1
Page 1 of 1
(•) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WQT
Exam/Item ID 03-047
Comp/System STEAM GEN. E24A
DWG # MID-2
Cat / Item C-A / C 1.10
Exam Comp Temp 87°
Item Config Upper Shell to Upper Nozzle Bel
Exam Surface OD

Cal Checks	SU1	SU2
Initial Cal Time	08:37	08:35
Initial Cal Date	9/24/99	9/24/99
Intermediate Time	17:26	17:18
Intermediate Time	08:23	08:24
Final Cal Time	11:38	11:39
Final Cal Date	9/25/99	9/25/99

Scans Performed	Completed Yes	Completed No
Scan 1, 0 If Req'd	(•)	( )
Scan 2, with flow	(•)	( )
Scan 3, against flow	( )	(•)
Scan 4, CW	( )	(•)
Scan 5, CCW	( )	(•)

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.038 / 5

Cal. Block No. UT-35
Cal. Block Temp 72°
Size NA "T" 5.5"

( ) Ferritic ( ) Austenitic
( ) Dissimilar (•) Clad

Couplant Type: ULTRAGEL II
Couplant Batch: 98325
Therm SN: 194268
Cal Due: 1/5/00

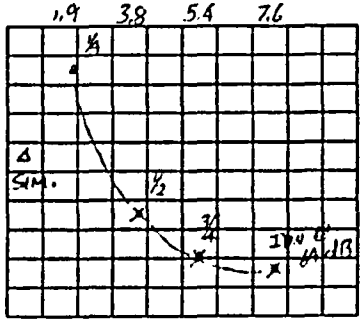
Remarks/Reason for Incomplete Scan(s)

WELD IDENTIFIED BY DRAWING. 70° USED FOR SCAN 2 ONLY. DATUM O AT CENTERLINE OF MANWAY. INDICATION #1 PREVIOUSLY RECORDED 3/15/1992 AT 212.75" L. REFER TO REPORT # ISI UT 048-1. INSULATION RING LIMITATIONS TO 70° SCAN AT 20"-26", 90"-96", 233"-237", 301"-307" AND 354"-357".

Futher Evaluation Required? ( ) Yes (•) No

Examiners: Daniel R Schanink — Level: II — Date: 9/25/99
DANIEL SCHANINK

Neil B. P — Level: II — Date: 9/25/99
NEIL B PRESTWICH



Screen Range = 20

(•) Depth ( ) Metal Path

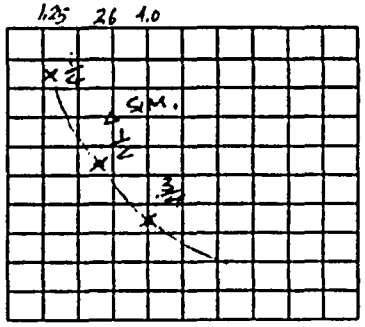
Search Unit #1

Manufacture: KBA
Serial No.: C05213
Size: 1.0" Shape: ROUND
Freq: 1 0 Style: GAMMA
Exam Angle: 70° Mode: SHEAR
Measured Angle: 70°
Wedge Style: MSW
Cable Type: RG 58 Len: 12'
Ref Block: 90 4722

Instrument Settings

Make/Model: STAVELY
Serial No: 136-1118M
Delay: 1.54 Range: 20
M'tl Cal/Vel: .127 Pulser: 500
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq; 1MHZ
Filter: 1 Mode: PE
Reference Sensitivity
Axial: 64.0 Circ: 64.0
SDH Sensitivity: 58.0
Exam Sensitivity
Axial: 76.0 Circ: NA

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz



Screen Range = 10

(•) Depth ( ) Metal Path

Search Unit #2

Manufacture: KBA
Serial No.: L04120
Size: 1.0" Shape: ROUND
Freq: 2.25 Style: GAMMA
Exam Angle: 0° Mode: LONG
Measured Angle: NA
Wedge Style: N/A
Cable Type: RG 58 Len: 12'
Ref Block: 90 4722

Instrument Settings

Make/Model: STAVELY
Serial No: 136-1118M
Delay: .107 Range: 10
M'tl Cal/Vel: .234 Pulser: 222
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1
Filter: 1 Mode: PE
Reference Sensitivity
Axial: 28.0 Circ: 28.0
SDH Sensitivity: 28.0
Exam Sensitivity
Axial: 48.0 Circ: 48.0

Instrument Linearity Acceptable: (•) Amp (•) Vert (•) Horiz

Reviewers: Ken Forsther Date: 9/28/99 Reviewers: JSI Date: 9-29-99
ANII: C.W. Thompson Date: 9-29-99

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
RI	1	2	70	80	221.2"	221.4"	222.1"	0.9"	4.80"	5.70"	6.80"	5.00"	5.80"	6.80"	FABRICATON DEFECT. Acceptable AB 9/29/99

ANO Outage: 1R15 ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 199ISIUT028

Unit 1

Page 1 of 1

(●) ISI ( ) PSI ( ) INFO

( ) MAINTENANCE ( ) WQT

Exam/Item ID 03-047

Comp/System STEAM GEN. E24A

DWG # MID-2

Cat / Item C-A / C 1.10

Exam Comp Temp 87°

Item Config Upper Shell to Upper Nozzle Bel

Exam Surface OD

Cal Checks	SU1	SU2
Initial Cal Time	08:49	NA
Initial Cal Date	9/24/99	
Intermediate Time	17:22	NA
Intermediate Time	08:20	NA
Final Cal Time	11:37	NA
Final Cal Date	9/25/99	

Scans Performed	Completed Yes	Completed No
Scan 1, 0 if Req'd	( )	(●)
Scan 2, with flow	(●)	( )
Scan 3, against flow	(●)	( )
Scan 4, CW	( )	(●)
Scan 5, CCW	( )	(●)

Company RAYTHEON

Code Edition ASME XI 1980/W81

Procedure No. 1415.038 / 5

Cal. Block No. UT-35

Cal. Block Temp 72°

Size NA "T" 5.5"

(●) Ferritic ( ) Austenitic

( ) Dissimilar ( ) Clad

Couplant Type: ULTRAGEL II

Couplant Batch: 98325

Therm SN: 194268

Cal Due: 1/5/00

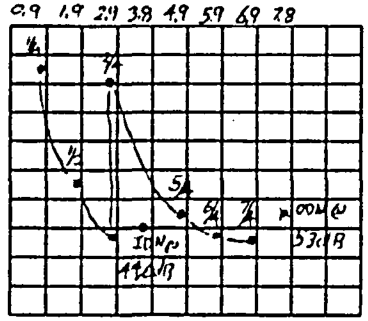
Remarks/Reason for Incomplete Scan(s)

WELD IDENTIFIED BY DRAWING. FULL VEE CALIBRATION UTILIZED FOR ADDITIONAL COVERAGE.

Futher Evaluation Required? ( ) Yes (●) No

Examiners: DANIEL SCHANINK Level: II Date: 9/25/99

NEIL B PRESTWICH Level: II Date: 9/25/99



Screen Range = 20" KF 7/25/02 per field data

(●) Depth (●) Metal Path

Search Unit #1

Manufacture: KBA

Serial No.: C06285

Size: 1.0" Shape: ROUND

Freq: 1.0 Style: GAMMA

Exam Angle: 45° Mode: SHEAR

Measured Angle: 46°

Wedge Style: MSW

Cable Type: RG 58 Len: 12'

Ref Block: 90-4722

Instrument Settings

Make/Model: STAVELY

Serial No: 136-1118M

Delay: ~~1.03~~ 1.12 Range: ~~10~~ 20"

M'tl Cal/Vel: .128 Pulser: 500

Damping: 500 Reject: OFF

Rep. Rate: 1K Freq: 1MHZ

Filter: 1 Mode: PE

Reference Sensitivity

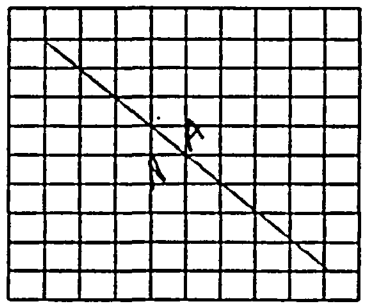
Axial: 44.6/53.0 Circ: 44.6/53.0

SDH Sensitivity: 44.6/53.0

Exam Sensitivity

Axial: 64.0 Circ: 64 0

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz



Screen Range = NA

( ) Depth ( ) Metal Path

Search Unit #2

Manufacture: N/A

Serial No.: NA

Size: N/A Shape: NA

Freq: N/A Style: NA

Exam Angle: NA Mode: NA

Measured Angle: NA

Wedge Style: NA

Cable Type: NA Len: NA

Ref Block: NA

Instrument Settings

Make/Model:

Serial No: NA

Delay: NA Range: NA

M'tl Cal/Vel: NA Pulser: NA

Damping: NA Reject: NA

Rep. Rate: NA Freq: NA

Filter: NA Mode: NA

Reference Sensitivity

Axial: NA Circ: NA

SDH Sensitivity: NA

Exam Sensitivity

Axial: NA Circ: NA

Instrument Linearity Acceptable: ( ) Amp ( ) Vert ( ) Horiz

Reviewers: Date: 9/28/99 Reviewers: ISI Date: 9-29-99

ANII: C.W. Thompson Date: 9-29-99

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
NRI															ACCEPTABLE

ANO Outage: 1R15 — ULTRASONIC CALIBRATION / EXAMINATION DATA SHEET

Data Sheet # 199ISIUT026

Unit 1
Page 1 of 3
(●) ISI ( ) PSI ( ) INFO
( ) MAINTENANCE ( ) WOT
Exam/Item ID 03-047
Comp/System STEAM GEN. E24A
DWG # MID-2
Cat / Item C-A / C 1.10
Exam Comp Temp 87°
Item Config Upper Shell to Upper Nozzle Bel
Exam Surface OD

Company RAYTHEON
Code Edition ASME XI 1980/W81
Procedure No. 1415.038 / 5

Cal. Block No. . UT-35
Cal. Block Temp 72°
Size NA "T" 5.5"

(●) Ferritic ( ) Austenitic
( ) Dissimilar ( ) Clad

Couplant Type: ULTRAGEL II
Couplant Batch: 98325
Therm SN: 194268
Cal Due: 1/5/00

Cal Checks	SU1	SU2
Initial Cal Time	0845	09:15
Initial Cal Date	9/24/99	9/24/99
Intermediate Time	17:22	17:23
Intermediate Time	08:20	08:22
Final Cal Time	11:37	11:39
Final Cal Date	9/25/99	9/25/99

Scans Performed	Completed Yes	Completed No
Scan 1, 0 If Req'd	( )	(●)
Scan 2, with flow	(●)	( )
Scan 3, against flow	(●)	( )
Scan 4, CW	(●)	( )
Scan 5, CCW	(●)	( )

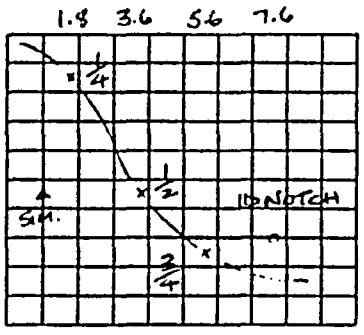
Remarks/Reason for Incomplete Scan(s)

WELD IDENTIFIED BY DRAWING. 60° USED FOR SCAN 2 AND 3. 45° USED FOR SCAN 4 AND 5. DATUM O AT CENTERLINE OF MANWAY. INDICATION #1 PREVIOUSLY RECORDED 3/15/1992 AT 212.75° L. REFER TO REPORT # ISI UT 048-1. INSULATION RING LIMITATIONS TO 60° SCAN 2 AT 20°-26°, 90°-96°, 233°-237°, 301°-307° AND 354°-357°.

Futher Evaluation Required? ( ) Yes (●) No

Examiners: Daniel R Schanink — Level: II — Date: 9/25/99
DANIEL SCHANINK

Neil B. Prestwich — Level: II — Date: 9/25/99
NEIL B PRESTWICH



Screen Range = 10
(●) Depth (●) Metal Path

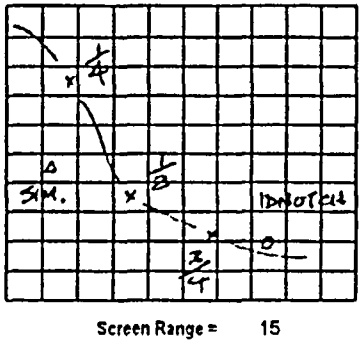
Search Unit #1

Manufacture: KBA
Serial No.: C06285
Size: 1.0" Shape: ROUND
Freq: 1.0 Style: GAMMA
Exam Angle: 45° Mode: SHEAR
Measured Angle: 46°
Wedge Style: MSW
Cable Type: RG 58 Len: 12'
Ref Block: 90 4722

Instrument Settings

Make/Model: STAVELY
Serial No: 136-1118M
Delay: 1.03 Range: 10
M'tl Cal/Vel: .128 Pulser: 500
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1MHZ
Filter: 1 Mode: PE
Reference Sensitivity
Axial: NA Circ: 44.6
SDH Sensitivity: 44.6
Exam Sensitivity
Axial: NA Circ: 64.6

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz



Screen Range = 15
(●) Depth (●) Metal Path

Search Unit #2

Manufacture: KBA
Serial No.: 000NBB
Size: 1.0" Shape: ROUND
Freq: 1.0 Style: GAMMA
Exam Angle: 60° Mode: SHEAR
Measured Angle: 62°
Wedge Style: MSW
Cable Type: RG 58 Len: 12'
Ref Block: 90 4722

Instrument Settings

Make/Model: STAVELY
Serial No: 136-1118M
Delay: 1.47 Range: 15
M'tl Cal/Vel: .127 Pulser: 500
Damping: 500 Reject: OFF
Rep. Rate: 1K Freq: 1
Filter: 1 Mode: PE
Reference Sensitivity
Axial: 61.0 Circ: NA
SDH Sensitivity: 51.6
Exam Sensitivity
Axial: 71.6 Circ: NA

Instrument Linearity Acceptable: (●) Amp (●) Vert (●) Horiz

Reviewers: Ken Panther Date: 9/29/99 Reviewers: ISI Lead Date: 9-29-99
ANII: C.W. Thompson Date: 9-29-99

Results	Ind #	Scan	Ang.	%DAC	L1	Lmax	L2	Ind Len	W1	Wmax	W2	S1	Smax	S2	Remarks
RI	2	2	60	80	221.5"	221.8	222.2"	0.70"	3.70"	4.40"	4.8"	3.90"	4.50"	5.40"	FABRICATION DEFECT. Acceptable KL 9/28/99

Page 20 of 20