



Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 479-858-4704

Stephenie L. Pyle
Manager, Licensing
Arkansas Nuclear One

1CAN071202

July 25, 2012

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

SUBJECT: Requests for Relief from American Society of Mechanical Engineers (ASME)
Section XI Volumetric Examination Requirements
Fourth 10-Year Interval, First Period
Arkansas Nuclear One, Unit 1
Docket No. 50-313
License No. DPR-51

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a(g)(6)(i), Entergy Operations, Inc. (Entergy) requests relief from the requirements of the ASME, Boiler and Pressure Vessel Code, Section XI pertaining to volumetric examinations at Arkansas Nuclear One, Unit 1 (ANO-1). In several locations it was determined that the examinations were impractical due to interference or geometry. Individual relief requests are provided in the attachments, divided by examination category.

10 CFR 50.55a(g)(5)(iv) requires that the basis for the determination of impracticality be submitted to the NRC for review and approval within 12 months after the expiration of the 120-month inspection interval. These reliefs are for the fourth ANO-1 10-year Inservice Inspection interval, first period. The interval and first period started on May 31, 2008. The first period ended May 30, 2011.

There are no new regulatory commitments made in this submittal.

If you have any questions or require additional information, please contact me.

Sincerely,

Original signed by David B. Bice for S. L. Pyle

SLP/rwc

Attachments:

1. Request for Relief – ANO1-ISI-021
2. Request for Relief – ANO1-ISI-022

cc: Mr. Elmo E. Collins
Regional Administrator
U. S. Nuclear Regulatory Commission, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

NRC Senior Resident Inspector
Arkansas Nuclear One
P. O. Box 310
London, AR 72847

U. S. Nuclear Regulatory Commission
Attn: Mr. Kaly Kalyanam
MS O-8 B1
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Mr. Bernard R. Bevill
Arkansas Department of Health
Radiation Control Section
4815 West Markham Street
Slot #30
Little Rock, AR 72205

Attachment 1 to

1CAN071202

**Request for Relief
ANO1-ISI-021**

**REQUEST FOR RELIEF
ANO1-ISI-021**

Components / Numbers:	Pressurizer Nozzle Welds – 05-012 and 05-013
Code Classes:	American Society of Mechanical Engineers (ASME) Code Class 1
References:	ASME Section XI 2001 Edition w/ 2003 Addenda, Table IWB-2500-1 Code Case N-460
Examination Category:	B-D
Item Number(s)	B3.110
Description:	Full Penetration Welded Nozzles in Vessels – Inspection Program B
Unit / Inspection Interval Applicability:	Arkansas Nuclear One, Unit 1 (ANO-1) / Fourth (4th) 10-Year Interval, First (1 st) Inspection Period

I. CODE REQUIREMENTS

ASME Section XI, Table IWB-2500-1, Examination Category B-D, “Full Penetration Welded Nozzles in Vessels – Inspection Program B”:

Item B3.110 requires a volumetric examination of Pressurizer Nozzle-to-Vessel Weld volume, as depicted in Figures IWB-2500-7(a) through (d), as applicable.

II. RELIEF REQUEST

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.

III. BASIS FOR RELIEF

During ultrasonic examination of the non-Appendix VIII Pressurizer Nozzle-to-Vessel welds listed in Table 1, greater than 90% coverage of the required examination volume could not be obtained. Examinations were performed utilizing Entergy approved procedures specific to ferritic vessels greater than 2 inches in thickness.

Due to the geometric configuration of the components, effective volumetric examination could only be performed from the shell side of the welds. The use of 0°, 45° and 60° beam angles in the axial and circumferential direction were not able to achieve greater than 90% code required volume as required by Code Case N-460. See Table 1 for additional information.

Radiography is not practical on these types of nozzle-to-vessel weld configurations, which prevent placement of the film and exposure source. To effectively perform any significant additional Code allowable ultrasonic examinations, modification and/or replacement of the component would be required. The examinations performed on the subject items in addition to the examination of other vessel welds contained in the Inservice Inspection program would detect generic degradation, if it existed, therefore demonstrating an acceptable level of integrity.

IV. PROPOSED ALTERNATIVE EXAMINATIONS

No alternative testing is proposed at this time. Entergy has examined these welds to the extent practical and will continue to perform pressure testing on the subject components as required by the Code.

V. 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.

Entergy believes that it is impractical to obtain greater examination coverage on these welds. To effectively obtain significant additional coverage would necessitate modification and/or replacement of the component. The examinations performed on the subject welds, in addition to the examination of similar welds contained in the program, would detect generic degradation, if it existed, demonstrating an acceptable level of integrity. Entergy requests the proposed relief be authorized pursuant to 10 CFR 50.55a(g)(6)(i).

Table 1
Limited B-D Examinations

Component Description				Additional Information					
Item Number	Comp. ID	Item Description	Estimated % Coverage of Code Required Volume	Examination Summary	Scan Plan	Exam Method and Limitations	Search Units	Surface Examination	Exam Results
B3.110	05-012	Pressurizer (PZR) Spray Nozzle-to-Head Circumferential Weld	36.6	This is essentially a single sided exam from the vessel surface due to the component configuration. Both the nozzle and head are carbon steel with stainless steel cladding on the inside surface.	See the attached sketch (Figure 1) derived from ultrasonic testing (UT) examination report 1-ISI-UT-10-021 on file at ANO.	Manual UT Effective volumetric examination could only be obtained from the PZR head surface.	Wave modalities are longitudinal and shear. Insonification angles included 0°, 45°, and 60°.	None required.	Intermittent geometric indications at the nozzle bore were observed and recorded.
B3.110	05-013	PZR Safety Valve Nozzle-to-Head Circumferential Weld	42.0	This is essentially a single sided exam from the vessel surface due to the component configuration. Both the nozzle and head are carbon steel with stainless steel cladding on the inside surface.	See the attached sketch (Figure 2) derived from UT examination report 1-ISI-UT-10-022 on file at ANO.	Manual UT Effective volumetric examination could only be obtained from the PZR head surface.	Wave modalities are longitudinal and shear. Insonification angles included 0°, 45°, and 60°.	None required.	Intermittent geometric indications at the nozzle bore were observed and recorded.

Figure 1

Scan Plan and Coverage for Component 05-012

(Shaded area depicts code-required volume)

Not to Scale

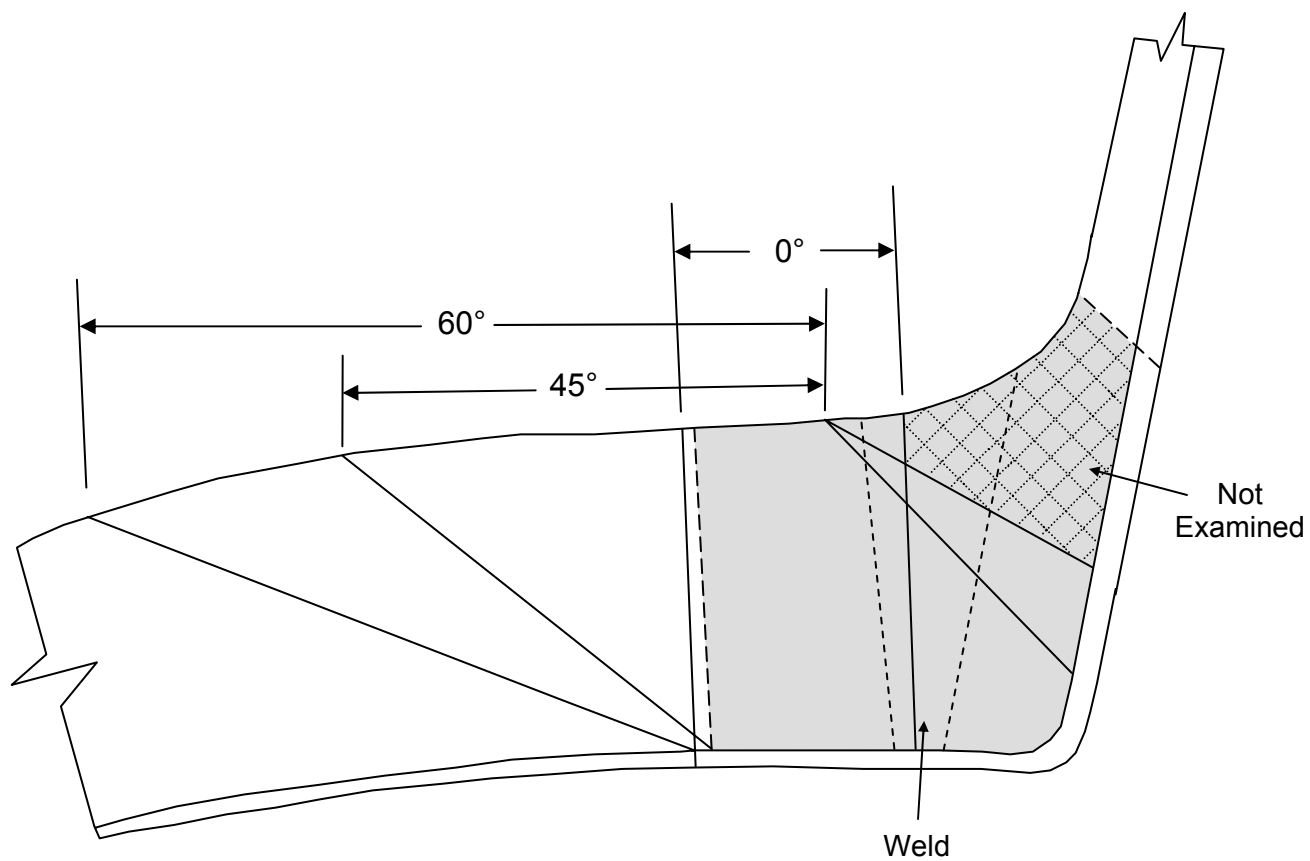
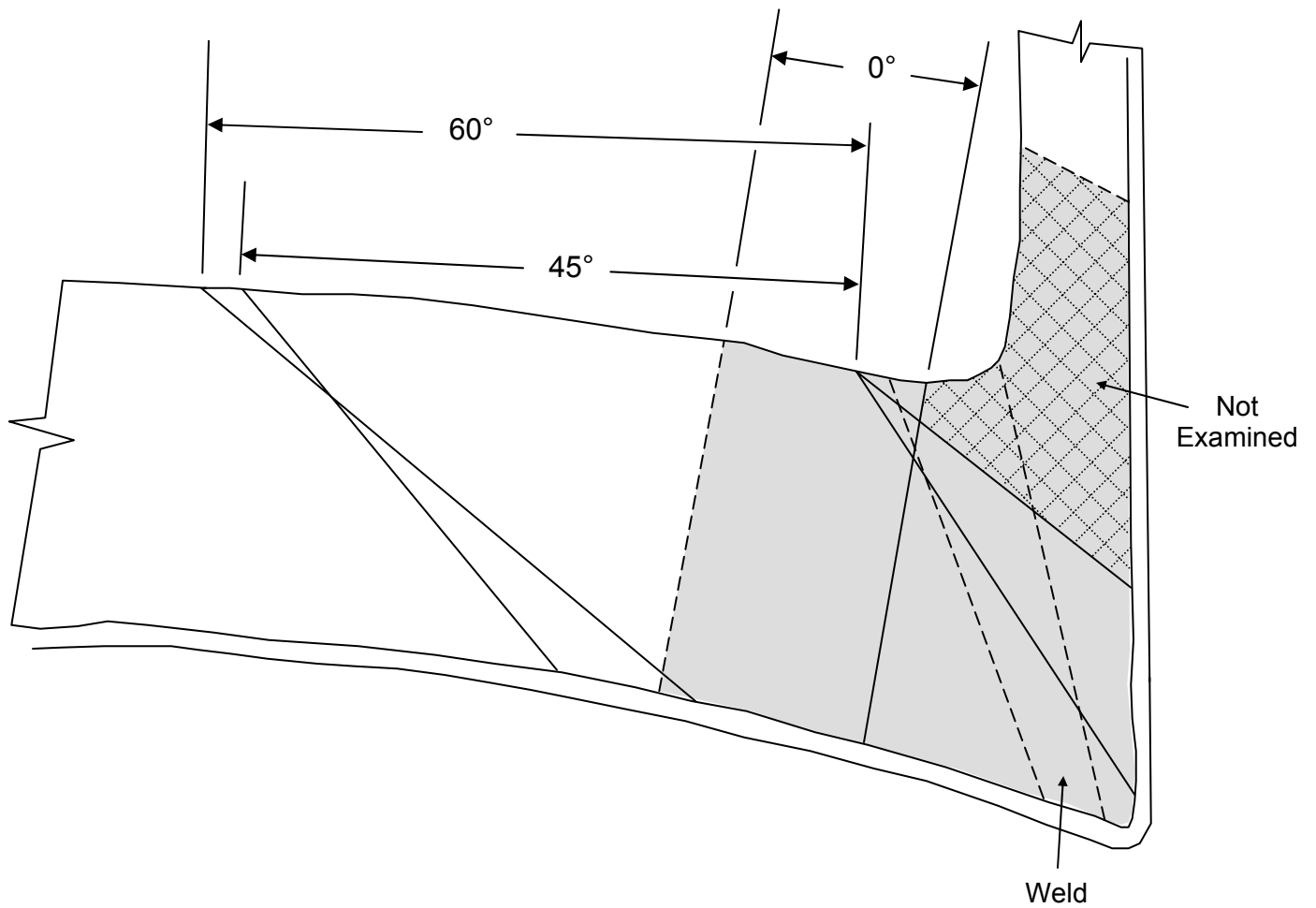


Figure 2

Scan Plan and Coverage for Component 05-013

(Shaded area depicts code-required volume)

Not to Scale



Attachment 2 to

1CAN071202

**Request for Relief
ANO1-ISI-022**

**REQUEST FOR RELIEF
ANO1-ISI-022**

Components / Numbers:	See Table 1
Code Classes:	American Society of Mechanical Engineers (ASME) Code Class 1
References:	ASME Section XI 2001 Edition w/2003 Addenda, Table IWB-2500-1 Code Case N-716 Code Case N-460
Examination Category:	B-J (R-A)
Item Number(s)	B9.11 (R1.11; R1.11 / 16)
Description:	Pressure Retaining Welds in Piping
Unit / Inspection Interval Applicability:	Arkansas Nuclear One, Unit 1 (ANO-1) / Fourth (4th) 10-Year Interval, First (1 st) Inspection Period

I. CODE REQUIREMENTS

ASME Section XI, Table IWB-2500-1, Examination Category B-J, "Pressure Retaining Welds in Piping – Inspection Program B":

Item B9.11, as allowed by the Risk Informed process, requires a volumetric examination of circumferential piping welds nominal pipe size 4 inches or larger, as depicted in Figures IWB-2500-8 and Risk Informed Inservice Inspection Evaluation Procedure, Electric Power Research Institute (EPRI) Report No. TR-106706.

ASME Code Case N-460 allows a reduction in Class 1 examination coverage due to interference or geometry, provided the reduction is less than 10%.

The examinations listed in Table 1 are Performance Demonstrated Initiative (PDI) examinations. With the implementation of Appendix VIII, only ½ Vee path examinations have been allowed to be used in austenitic materials and angle beams are no longer credited to extend beyond the centerline of austenitic welds for consideration of Code coverage, in accordance with qualified PDI procedures. Additional discussion, as to the examination coverage determination process when using Appendix VIII techniques on single-sided austenitic welds, is provided in Section III of this relief request.

II. RELIEF REQUEST

Pursuant to 10CFR50.55a(g)(6)(i), Entergy Operations, Inc. (Entergy) requests relief from achieving greater than 90% coverage when performing volumetric examinations of the components identified in Table 1.

III. BASIS FOR RELIEF

During ultrasonic examination of the piping welds listed in Table 1, greater than 90% coverage of the required examination volume could not be obtained as required by Code Case N-460.

Access for axial scanning was limited on the upstream side of weld 22-064 at top dead center due to interference of a weld-o-let and on the downstream side of weld 22-064 at bottom dead center due to interference of an adjacent pipe run.

Access was limited to single side on weld 22-060 due to pipe-to-valve configuration for both axial and circumferential scans. See Table 1 for additional information.

Class 1 piping and components are often designed with welded joints such as nozzle-to-pipe, pipe-to-valve and pipe-to-pump which can physically obstruct a large portion of the required examination volume. For the weld 22-060, the examination was performed after the 10 CFR 50.55a mandatory implementation date for Appendix VIII of Section XI, and Code coverage percentages, provided, reflect what is currently allowed by qualified Appendix VIII techniques. Appendix VIII qualified PDI procedures have demonstrated that sound beams may potentially be attenuated and distorted when required to pass through austenitic weld metal. Still, the PDI qualified methods employ the best available technology for maximizing examination coverage of these types of welds. Examination was extended to the far side of the weld to the extent permitted by geometry, but this portion of the examination is not included in the reported coverage for welds examined under PDI and Appendix VIII rules.

Entergy has used the best available and EPRI approved techniques to examine the subject piping welds. To improve upon these examination coverage percentages, modification and/or replacement of the component would be required. Consistent with the ASME Section XI sampling approach, examination of the subject welds, when combined with examinations that have been performed on other welds within the same Examination Category, is adequate to detect generic degradation, if it existed, therefore demonstrating an acceptable level of integrity.

IV. PROPOSED ALTERNATIVE EXAMINATIONS

No alternative testing is proposed at this time. Entergy has examined the subject welds to the extent practical and will continue to perform pressure testing and VT-2 visual examination in accordance with ASME Section XI requirements to compliment the limited examination coverage after each refueling outage.

V. 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.

Entergy believes that it is impractical to obtain greater examination coverage on these areas. To obtain additional coverage would necessitate modification and/or replacement of the component. The examinations performed on the subject areas, in addition to the examination of similar welds contained in the program would detect generic degradation, if it existed, demonstrating an acceptable level of integrity. Therefore, Entergy requests the proposed relief be authorized pursuant to 10 CFR 50.55a(g)(6)(i).

<p>Table 1 Limited B-J (R-A) Examinations</p>									
Component Description				Additional Information					
Item Number	Comp. ID	Item Description	Estimated % Coverage of Code Required Volume	Examination Summary	Scan Plan	Exam Method and Limitations	Search Units	Surface Examination	Exam Results
B9.11 (R1.11)	22-064	Pipe-to-Elbow Circumferential Weld	Axial – 83.8 Circumferential – 91.9 Cumulative – 87.8	Component was scanned from both sides; however scanning of the required code volume was limited in the axial direction from the upstream side due to a weld-let and in both the axial and circumferential direction on the downstream side by an adjacent run of piping	See the attached sketch (Figure 1) derived from ultrasonic testing (UT) examination report 1-ISI-UT-10-019 on file at ANO.	Manual UT See the detailed sketch (Figure 2) of the limitations and their proximity to the component.	Wave modality was shear. Insonification angles included 45°, 60°, and 70°.	None required.	Intermittent root geometry observed and recorded 360° on the down-stream side.
B9.11 (R1.11 / 16)	22-060	Pipe-to-Valve Circumferential Weld	Axial – 50 Circumferential – 50 Cumulative – 50	This is essentially a single sided examination from the stainless steel piping side due to the component configuration. Axial and circumferential scanning was performed from the valve side to the extent possible. No code credit is being claimed for these scans.	See the attached sketch (Figure 3) derived from UT examination report 1-ISI-UT-10-018 on file at ANO.	Manual UT A detailed sketch (Figure 3) of the limitation is included with the scan plan.	Wave modality was shear. Insonification angles included 45°, 60°, and 70°.	None required.	Intermittent root geometry observed and recorded 360° on the down-stream side.

Figure 1
Scan Plan and Coverage for Component 22-064

Not to Scale

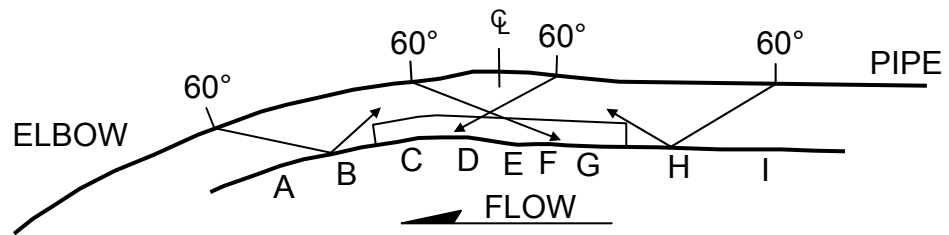


Figure 2

Limitation for Component 22-064

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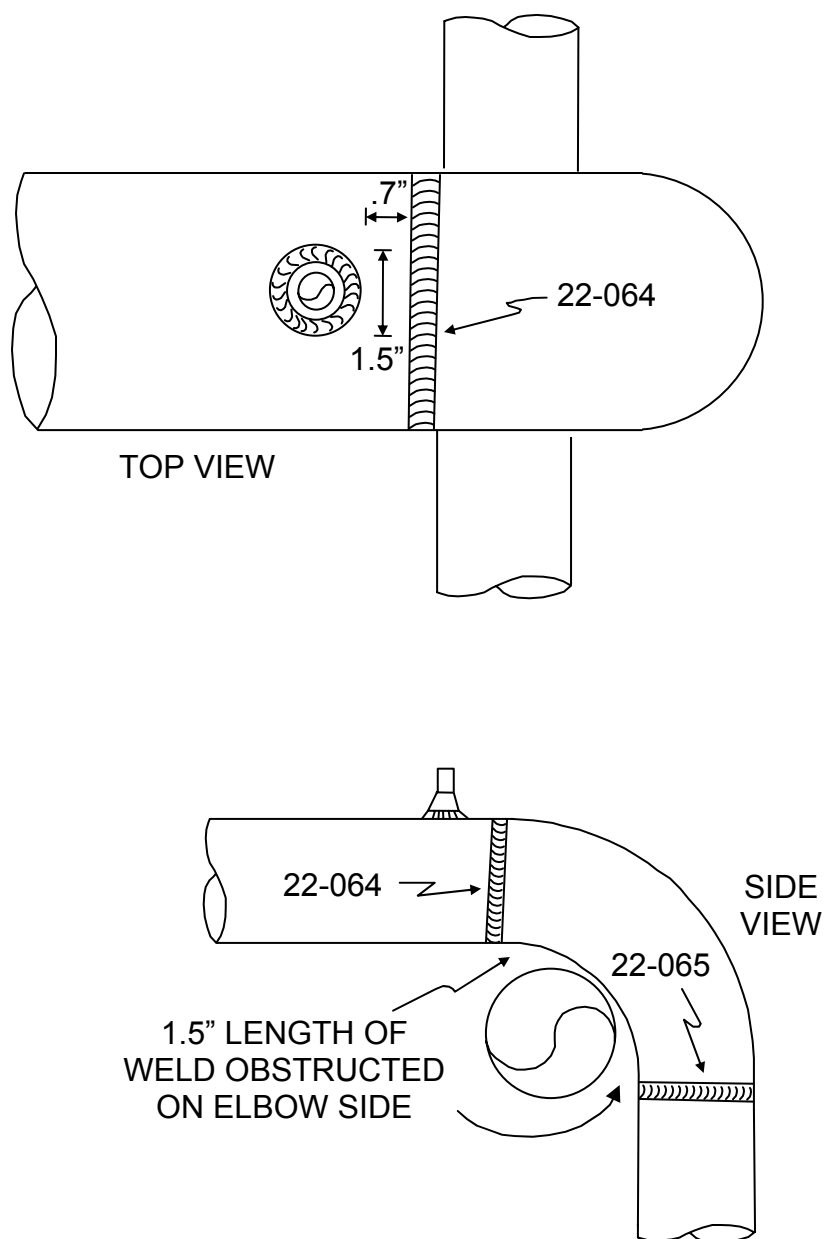


Figure 3
Scan Plan and Coverage for Component 22-060

Not to Scale

