

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Bart D. Withers  
President and  
Chief Executive Officer

March 5, 1992

WM 92-0035

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Station P1-137  
Washington, D. C. 20555

Subject: Docket No. 50-482: Inservice Inspection Program  
Relief Requests

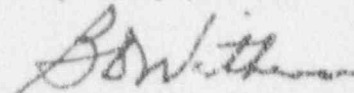
Gentlemen:

The purpose of this letter is to transmit requests for relief from ASME Section XI requirements for the Wolf Creek Generating Station Inservice Inspection (ISI) Program in accordance with 10 CFR 50.55a(g)(5)(iii). Provided in the attachment are relief requests which apply to ISI Periods 1 and 2. Relief Request IIR-23, IIR-24, IIR-25, IIR-26, IIR-27, IIR-28, and IIR-29 concern examinations required by ASME Section XI. IIR-30 is associated with Wolf Creek Nuclear Operating Corporation's commitment to perform augmented examinations in addition to the examinations required by ASME Section XI.

WCNOC requests approval of the relief requests prior to May 5, 1992 which coincides with the end of ISI Period 2.

If you have any questions concerning this matter, please contact me or Mr. S. G. Wideman of my staff.

Very truly yours,



Bart D. Withers  
President and  
Chief Executive Officer

BDW/aem

Attachment

cc: A. T. Howell (NRC), w/a  
R. D. Martin (NRC), w/a  
C. A. Pick (NRC), w/a  
W. D. Rockley (NRC), w/a

1047

ISI RELIEF REQUEST IIR-23

<u>Components:</u>	BB-01-F207	BB-01-F307	BB-01-F407	BB-01-F305
	BB-01-F405	BB-01-F306	BB-01-F203	BB-01-F303

Category: B-J

Description: Reactor Coolant Pumps "B", "C" and "D" Suction to Elbow, Steam Generators "C" and "D" Outlet Safe-End to Elbow, Steam Generator "C" Outlet Elbow to Crossover Leg Spool, and Reactor Pressure Vessel Outlet Nozzles "B" and "C" Safe-End to Pipe.

Code Requirement: Section XI, Table IWB-2500-1, item B9.1 requires the inner 1/3t of the weld plus 1/4" of the base metal beyond the weld toe to be scanned as shown by Figure IWB-2500-8.

Basis for Relief: The transducers used to examine Cast Stainless Steel (CSS) were too large to maintain sufficient contact in the circumferential scanning mode (reference Figure 1). They did, however, maintain adequate contact when scanning perpendicular to the weld axis.

Wolf Creek contends that other transducers may have maintained better contact along the weld crown, but would not have provided as an effective examination. This is because the transducers used to examine this CSS material were designed specifically to enhance the flaw detection capabilities.

The transducer size, frequency, damping, focusing and wave mode were all variables optimized to provide the best response in this coarse grain material. When transducers deviate from this design and are used to send sound into CSS material, it is entirely probable that the returning sound/signal has been so altered by the effects of scattering that any flaw indications would be masked by the noise reflections caused by grain boundaries.

With welds F207, F307, F407, F305, F405 and F306, the weld crown and weld shrinkage causes transducer lift off. With welds F203 and F303, the weld taper causes transducer lift off.

Alternate Examination: The code required volumetric examination will be completed perpendicular to the weld axis from two (2) directions.

ASME Code Section III: Complete ultrasonic examinations of these welds at 0° and 41° showed no indications.

Evaluation of Plant Safety: Strict ASME Section III quality controls were used when designing, fabricating and installing these welds. In addition, these welds were examined using ultrasonic equipment, with no irregularities found. Any future indications of significant size will be found by the alternate examination and corrective action will be taken.

A satisfactory level of safety to the plant and its personnel will be achieved by the alternate examination.

ISI RELIEF REQUEST IIR-24

Component: TEM01-SEAM-2-W

Category: C-A

Description: Boron Injection Tank Upper Head to Shell Weld

Code Requirement: Section XI, Table IWC-2500-1, Item C1.20, requires the weld plus 1/2" of the base metal on both sides of the weld be scanned as shown by Figure IWC-2500-1.

Basis for Relief: The transducers used to examine Cast Stainless Steel (CSS) material were too large to maintain sufficient contact when running along the weld crown (circumferential examination). Thus, resulting with 0% inspection using the circumferential scan (reference Figure 1).

Wolf Creek contends that other transducers may have maintained better contact along the weld crown, but would not have provided as an effective examination. This is because the transducers used to examine this CSS material were designed specifically to enhance the flaw detection capabilities.

The transducer size, frequency, damping, focusing, and wave mode were all variables optimized to provide the best response in this coarse grain material. When transducers deviate from this design and are used to send sound into CSS material, it is entirely probable that the returning sound/signal has been so altered by the effects of scattering that any flaw indications would be masked by the noise reflections caused by grain boundaries.

Alternate Examination: The code required volumetric examination will be completed perpendicular to the weld axis from two (2) directions.

ASME Code Section III: A complete ultrasonic examination was performed at an angle of  $0^{\circ}$  and approximately 50% of the weld was examined with angles of  $41^{\circ}$ . These inspections revealed no indications.

Evaluation of Plant Safety: Strict ASME Section III quality controls were used when designing, fabricating and installing this weld. This weld was ultrasonic inspected to the extent possible, with no irregularities found. The probability of a flaw occurring in the area not being examined is small. Most future indications of significant size will be found by examination of the weld as it is now.

Based on the above, a satisfactory level of safety will be achieved without providing a complete examination of the mentioned weld. The safety of the plant and its personnel is not being compromised.

# TYPICAL CIRCUMFERENTIAL SCAN LIFTOFF

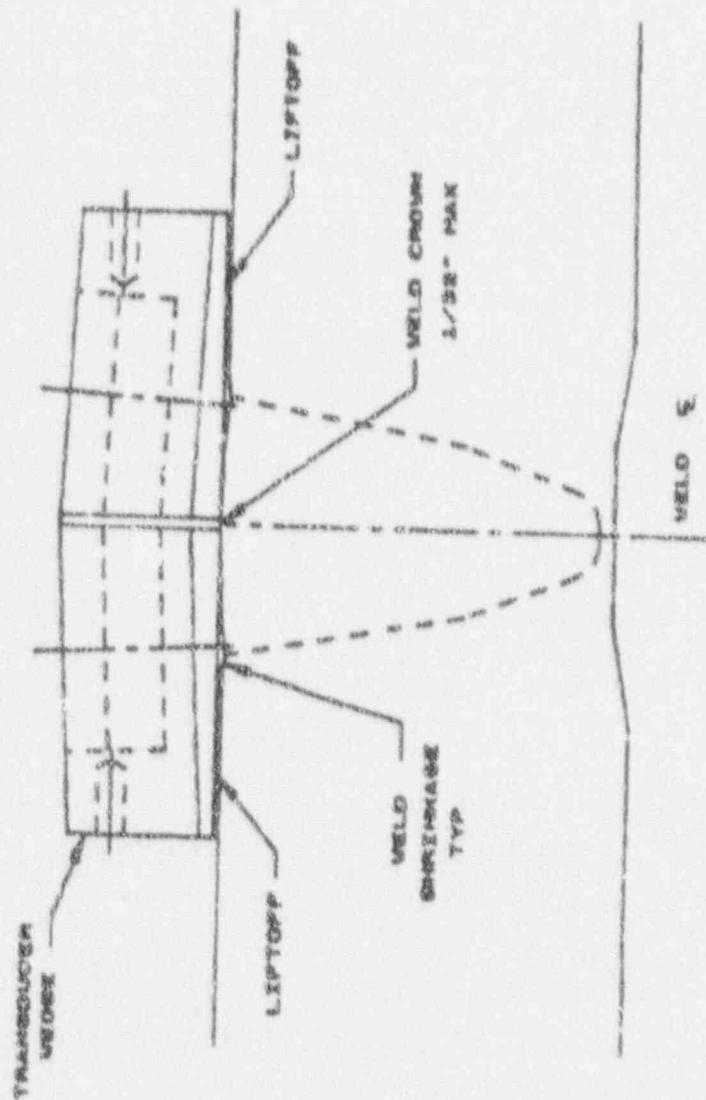


FIGURE 1

ISI RELIEF REQUEST IIR-25

Components: EJ-02-F022

Category: C-F

Description: 12" Pipe to Residual Heat Removal Heat Exchanger (EEJ01B) - B Inlet Weld

Code Requirement: Section XI, Table IWC-2500-1, Item Number C5.11, requires 100% surface examination of the 12" pipe to heat exchanger weld as defined by Figure IWC-2500-7

Basis for Relief: The surface examination of the subject weld is 39% obstructed by a 1 1/2" by 1 5/8" ring. The ring is welded over the downstream toe of the weld; therefore, making it impossible to get the required 1/2" coverage beyond the toe of the weld. To examine the obstructed area would require physically removing the welded ring (reference Figure 1).

Alternate Examination: None; the Code required surface examination will be completed to the maximum extent practical.

ASME Code Section III: Liquid Penetrant examination showed no indications. The preservice examination was not subject to the obstruction described above.

Evaluation of Plant Safety: Strict ASME Section III quality controls were used when designing, fabricating and installing this weld. In addition, this weld was liquid penetrant examined, with no irregularities found. The probability of a flaw occurring in the area not being examined is small. Most future indications of significant size will be found by examination of the weld as it is now.

Based on the above, a satisfactory level of safety will be achieved without providing a complete examination of the mentioned weld.

ISI RELIEF REQUEST IIR-26

Component: EJ-02-C020

Category: C-C

Description: Integrally Welded Attachments - 8 Lugs

Code Requirement: Section XI, Table IWC-2500-1, Item Number C3.20, requires 100% surface examinations of each integrally welded attachment as defined by IWC-2500-5

Basis for Relief: The surface examination of the subject integrally welded attachments (lugs) are 24% obstructed on two (2) of the lugs. The obstruction is a result of a permanent hanger that is used to support the Residual Heat Removal (RHR) piping. The diagonal supports of this hanger cross over the required inspection area on two of the lugs (reference Figure 2).

Alternate Examination: None; the Code required surface examination will be completed to the maximum extent practical.

ASME Code Section III: Liquid Penetrant examination showed no indications. The preservice examination was not subject to the obstruction described above.

Evaluation of Plant Safety: Strict ASME Section III quality controls were used when designing, fabricating and installing these lugs. In addition, these lugs were liquid penetrant examined, with no irregularities found. The probability of a flaw occurring in the area not being examined is small. Most future indications of significant size will be found by examination of the lugs as they are now.

Based on the above, a satisfactory level of safety will be achieved without providing a complete examination of the mentioned lugs.

## ISI RELIEF REQUEST IIR-27

Component: TEM01-SEAM-3-WCategory: C-ADescription: Boron Injection Tank Bottom Head to Shell Weld

Code Requirement: Section XI, Table IWC-2500-1, Item Number C1.20, requires the weld plus 1/2" of the base metal on both sides of the weld be scanned as shown by Figure IWC-2500-1.

Basis for Relief: The volumetric examination of the subject weld is limited in the following way:

<u>LIMITATIONS</u>	<u>BEAM TOWARD</u>	<u>BEAM TOWARD</u>
	<u>SHELL</u>	<u>HEAD</u>
Weld Configuration	-57%	-33%
Leg Supports	-22%	-25%
Instrumentation Nozzle	- 4%	- 5%
Total Weld Coverage	17%	37%

The circumferential examination was 100% limited due to the weld configuration (reference Figures 3A through 3D for the percentage breakdown).

The transducers used to examine Cast Stainless Steel (CSS) material were too large to maintain sufficient contact when running along the weld crown. However, Wolf Creek contends that other transducers may have maintained better contact along the weld crown, but would not have provided as an effective examination. This is because the transducers used to examine this CSS material were designed specifically to enhance the flaw detection capabilities.

The transducer size, frequency, damping, focusing, and wave mode were all variables optimized to provide the best response in this coarse grain material. When transducers deviate from this design and are used to send sound into CSS material, it is entirely probable that the returning sound/signal has been so altered by the effects of scattering that any flaw indications would be masked by the noise reflections caused by grain boundaries.

Alternate Examination: None; the Code required volumetric examination will be completed to the maximum extent possible.

ASME Code Section III: A complete ultrasonic examination was performed at an angle of  $0^{\circ}$ . The axial and circumferential scans were limited in the following way:

<u>SCAN METHOD</u>	<u>HEAD TO</u>	<u>SHELL TO</u>
	<u>SHELL</u>	<u>HEAD</u>
Axial	-40%	-90%
Circumferential	-40%	-90%

These inspections revealed no indications.

Evaluation of Plant Safety: Strict ASME Section III quality controls were used when designing, fabricating and installing these lugs. This weld was ultrasonic inspected to the extent possible, with no irregularities found.

In addition to ultrasonic examination, a System Pressure Test (STS PE-044A) was performed on the Boron Injection Tank in May of 1991, with no indications of leakage to the tank. The upper head to shell weld (TEM01-SFAM-2-W) was ultrasonic inspected in Refuel Outage 3 in the axial direction, with no indications found.

Based on the above, a satisfactory level of safety will be achieved without providing a complete examination of the mentioned weld.

Component: EBB01A-SEAM-1-W

Category: B-B

Description: Steam Generator "A" Tubesheet-to-Channel Head Weld

Code Requirement: Section XI, Table IWB-2500-1, Item Number B2.40, requires 100% volumetric examination of the Steam Generator Tubesheet-to-Channel Head Weld as defined by Figure IWB-2500-6

Basis for Relief: The volumetric examination of the subject weld is 22.4% obstructed by four (4) supports. The 60° axial scan on the tubesheet side is 20% obstructed by the support flange. The obstruction results from insufficient base metal between the weld and flange to complete this angle beam examination. There is approximately 1% obstruction due to weld taper and the code data plate. Reference Figure 4 for weld layout.

Alternate Examination: None; the Code required volumetric examination will be completed to the maximum extent practical.

ASME Code Section III: Ultrasonic scans at 0°, 45° and 60° showed no indications. These preservice examinations were subject to the obstructions described above.

Evaluation of Plant Safety: Strict ASME Section III quality controls were used when designing, fabricating and installing this weld. In addition, this weld was examined using ultrasonic equipment, with no irregularities found. The probability of a flaw occurring only in one of these areas not being examined is extremely small. Most future indications of significant size will be found by examination of the weld as it is now.

Based on the above, a satisfactory level of safety will be achieved without providing a complete examination of this weld.

ISI RELIEF REQUEST IIR-29

Component: EBB01C-SEAM-1-W

Category: B-B

Description: Steam Generator "C" Tubesheet-to-Channel Head Weld

Code Requirement: Section XI, Table IWB-2500-1, Item Number B2.40, requires 100% volumetric examination of the Steam Generator Tubesheet-to-Channel Head Weld as defined by Figure IWB-2500-6

Basis for Relief: The volumetric examination of the subject weld is 22.4% obstructed by four (4) supports. The 60° axial scan on the tubesheet side is 30% obstructed by the support flange. The obstruction results from insufficient base metal between the weld and flange to complete this angle beam examination. There is approximately 1% obstruction due to weld taper and the code data plate. Reference Figure 5 for weld layout.

Alternate Examination: None; the Code required volumetric examination will be completed to the maximum extent practical.

ASME Code Section III: Ultrasonic scans at 0°, 45° and 60° showed no indications. These preservice examinations were subject to the obstructions described above.

Evaluation of Plant Safety: Strict ASME Section III quality controls were used when designing, fabricating and installing this weld. In addition, this weld was examined using ultrasonic equipment, with no irregularities found. The probability of a flaw occurring only in one of these areas not being examined is extremely small. Most future indications of significant size will be found by examination of the weld as it is now.

Based on the above, a satisfactory level of safety will be achieved without providing a complete examination of this weld.

ISI RELIEF REQUEST IIR-29

Component: TBB03-10B-C-W and TBB03-10B-D-W

Category: B-D

Description: Pressurizer Nozzle to Pressurizer Vessel Head Welds

Code Requirement: Section XI, Table IWB-2500-1, Item Number B3.110, requires 100% volumetric examination of the Pressurizer Nozzle to Pressurizer Vessel Head Weld, as defined by Figure IWB-2500-7.

Basis for Relief: Pressurizer Nozzle weld taper and base metal taper near the nozzle causes the transducer to lift off. As a result, a portion of the weld required volume (WRV) receives no shear wave examination when using 45° and 60° angle beams. This was observed when examining Nozzle to Vessel Welds TBB03-10B-C-W and TBB03-10B-D-W. For both welds, 15% of the WRV could not be scanned using a 45° angle beam, and 11.5% of the WRV could not be scanned using a 60° angle beam.

Alternate Examination: None; the Code required volumetric examination will be completed to the maximum extent practical.

ASME Code Section III: Complete ultrasonic scans at 0°, 45° and 60° showed geometrical indications only.

Evaluation of Plant Safety: Strict ASME Section III quality controls were used when designing, fabricating and installing these welds. In addition, these welds were examined using ultrasonic equipment, showing only geometrical indications. The probability of a flaw occurring only in one of these areas not being examined is extremely small. Most future indications of significant size will be found by examination of the welds as they are now.

Based on the above, a satisfactory level of safety will be achieved without providing a complete examination of the mentioned welds.

ISI RELIEF REQUEST IIR-30  
(Augmented)

Component: PBB01B-FLYWHEEL

Category: N/A

Description: Reactor Coolant Pump "E" Flywheel

Code Requirement: Augmented examination for compliance with Regulatory Guide 1.14 Reactor Coolant Pump Flywheel Integrity, Section C.4 requires surface examination of all exposed surfaces

Basis for Relief: The surface examination of the subject Flywheel is 3% obstructed by a seal ring that is located on the bottom side of the Flywheel (reference Figure 6).

Tight clearances are required for seal ring location. This ring reduces the vacuum effect produced by the rotating flywheel in order to prevent oil from being sucked out of the oil reservoir stand pipe. After the ring is set, it should not be moved unless absolutely necessary.

Alternate Examination: None; the Code required surface examination will be completed to the maximum extent practical.

ASME Code Section III: This is the Preservice Inspection Examination. No rejectable indications were found. There were four (4) small (1/16" and less) rounded surface (penetrant exam) indications found in the Core Area and Keyways.

Evaluation of Plant Safety: The Flywheel was examined to the fullest extent possible, utilizing UT, MT and PT examination methods. The probability of a flaw occurring in the area not being examined is extremely small.

Based on the above, a satisfactory level of safety will be achieved without providing a complete examination of the Flywheel.

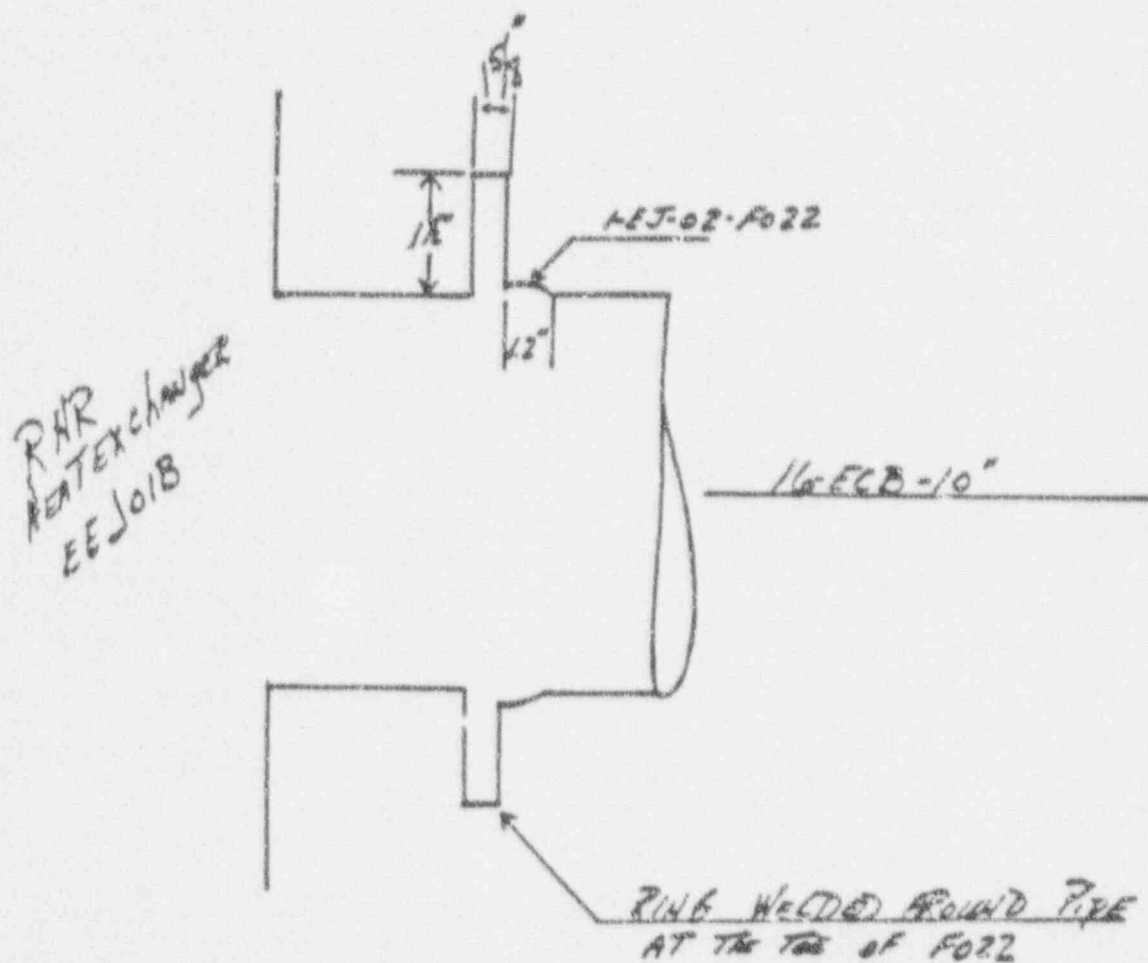
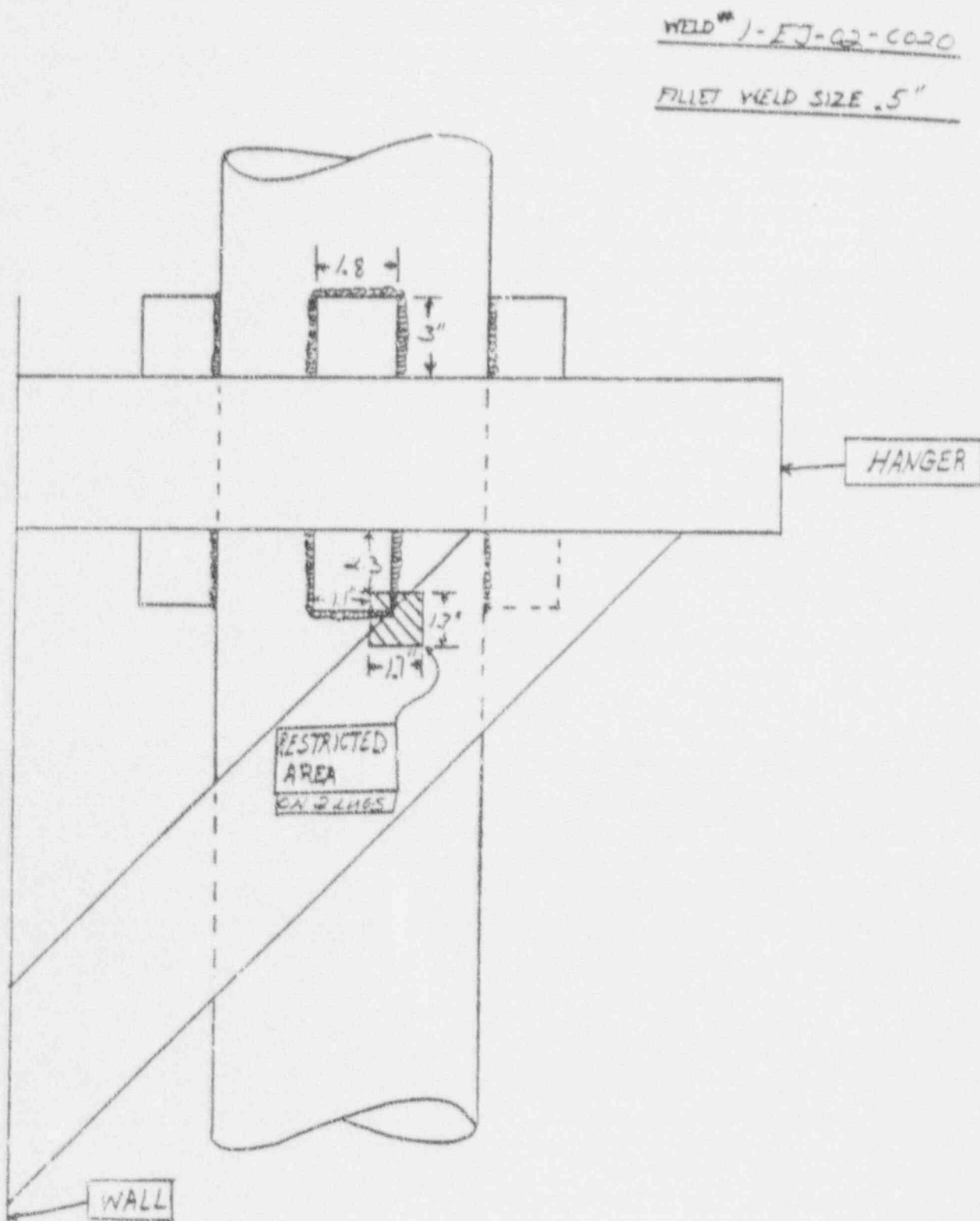


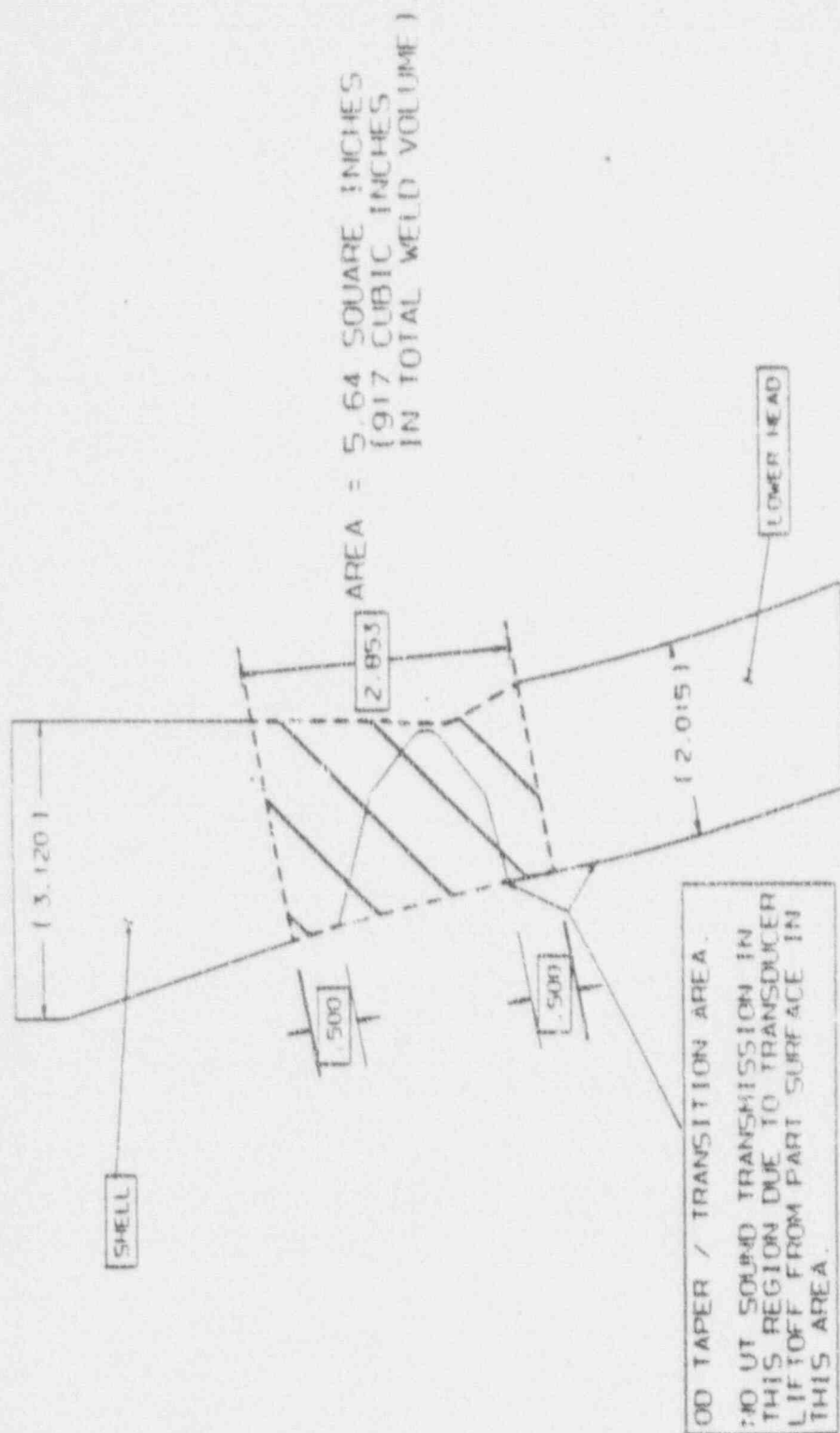
Figure 1



NOTE: NOT TO SCALE

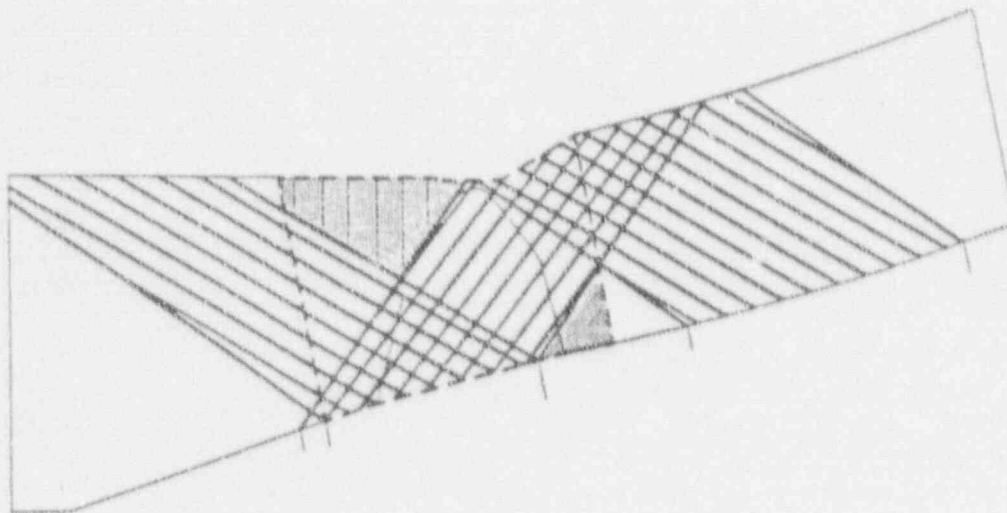
RESTRICTED DUE TO HANGER

Figure 2

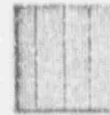


AREA OF INTEREST

Figure 3A



AREA COVERAGE  
 BEAM DIRECTION TOWARDS SHELL:  
 UPPER REGION - 2.06 SQUARE INCHES  
 236 CUBIC INCHES  
 36 PERCENT  
 LOWER REGION - 0.388 SQUARE INCHES  
 45 CUBIC INCHES  
 7 PERCENT  
 TOTAL:  
 PERCENTAGE OF WELD EXAMINED: 43  
 PERCENTAGE OF WELD NOT EXAMINED: 57  
 BEAM DIRECTION TOWARDS HEAD:  
 3.76 SQUARE INCHES  
 430 CUBIC INCHES  
 67 PERCENT  
 TOTALS:  
 PERCENTAGE OF WELD EXAMINED: 67  
 PERCENTAGE OF WELD NOT EXAMINED: 33



= AREA OF INTEREST NOT EXAMINED

TOTAL WELD COVERAGE  
 WITHOUT EXTERNAL  
 RESTRICTIONS

Figure CB

# AREA COVERAGE BY INSTRUMENTATION NOZZLE

NOTE:  
LENGTH OF RESTRICTION 4 INCHES @ 2 LOCATIONS  
THIS YIELDS 5.0% OF THE TOTAL WELD IS UNDER  
INSTRUMENTATION NOZZLE.

BEAM DIRECTION TOWARD SHELL:  
UPPER REGION - 0.46 SQUARE INCHES  
3.68 CUBIC INCHES  
.41 PERCENT

LOWER REGION - 0.55 SQUARE INCHES  
4.40 CUBIC INCHES  
.55 PERCENT

TOTALS:  
PERCENT OF WELD EXAMINED: 0.9  
PERCENT OF WELD NOT EXAMINED: 4.1

BEAM DIRECTION TOWARDS HEAD:  
0.0 SQUARE INCHES  
0.0 CUBIC INCHES  
0.0 PERCENT

TOTALS:  
PERCENT OF WELD EXAMINED: 0.0  
PERCENT OF WELD NOT EXAMINED: 5



= AREA OF INTEREST NOT EXAMINED

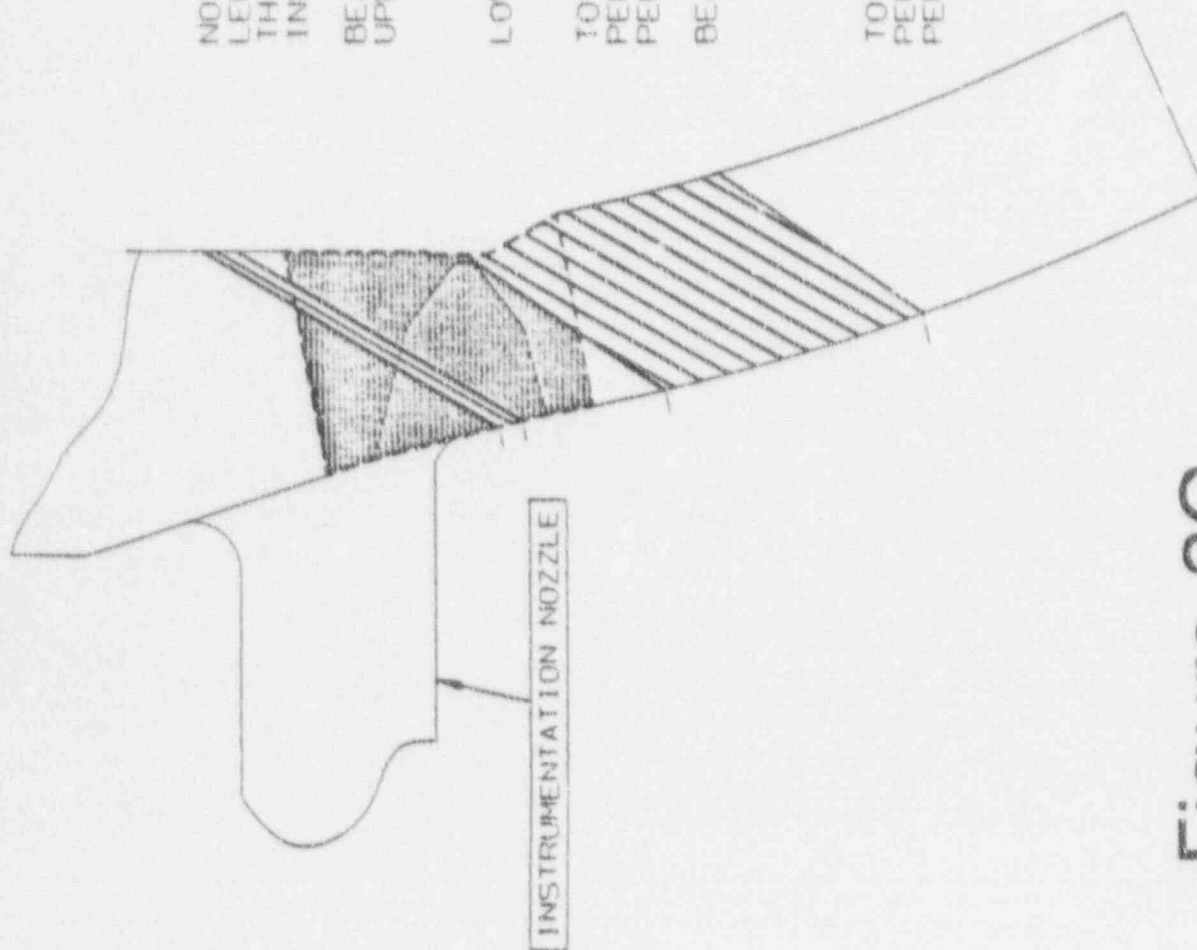


Figure 3C

COVERAGE IN AREA WITH INSTRUMENTATION NOZZLE

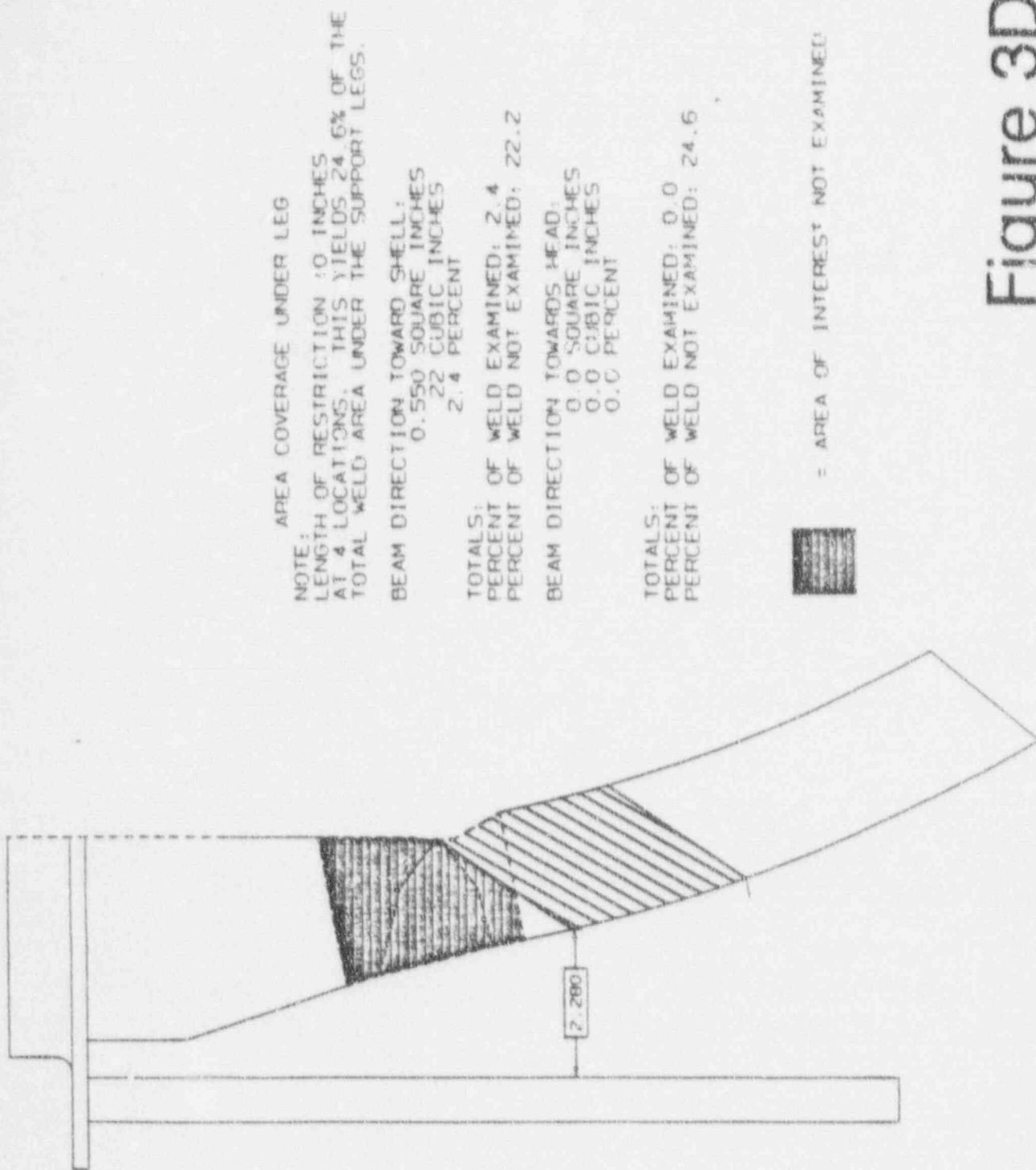
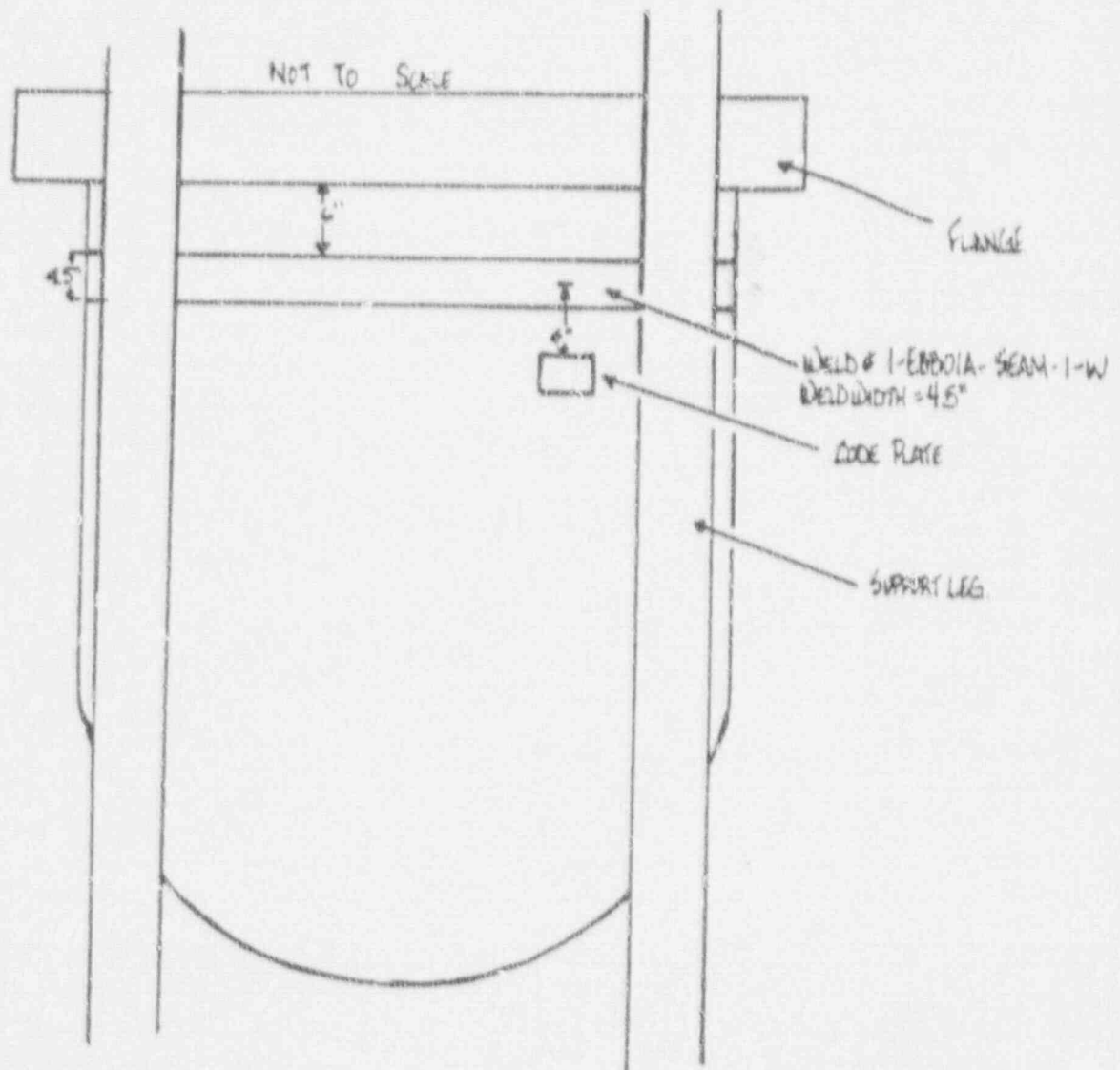


Figure 3D

COVERAGE IN AREA WITH BIT LEGS



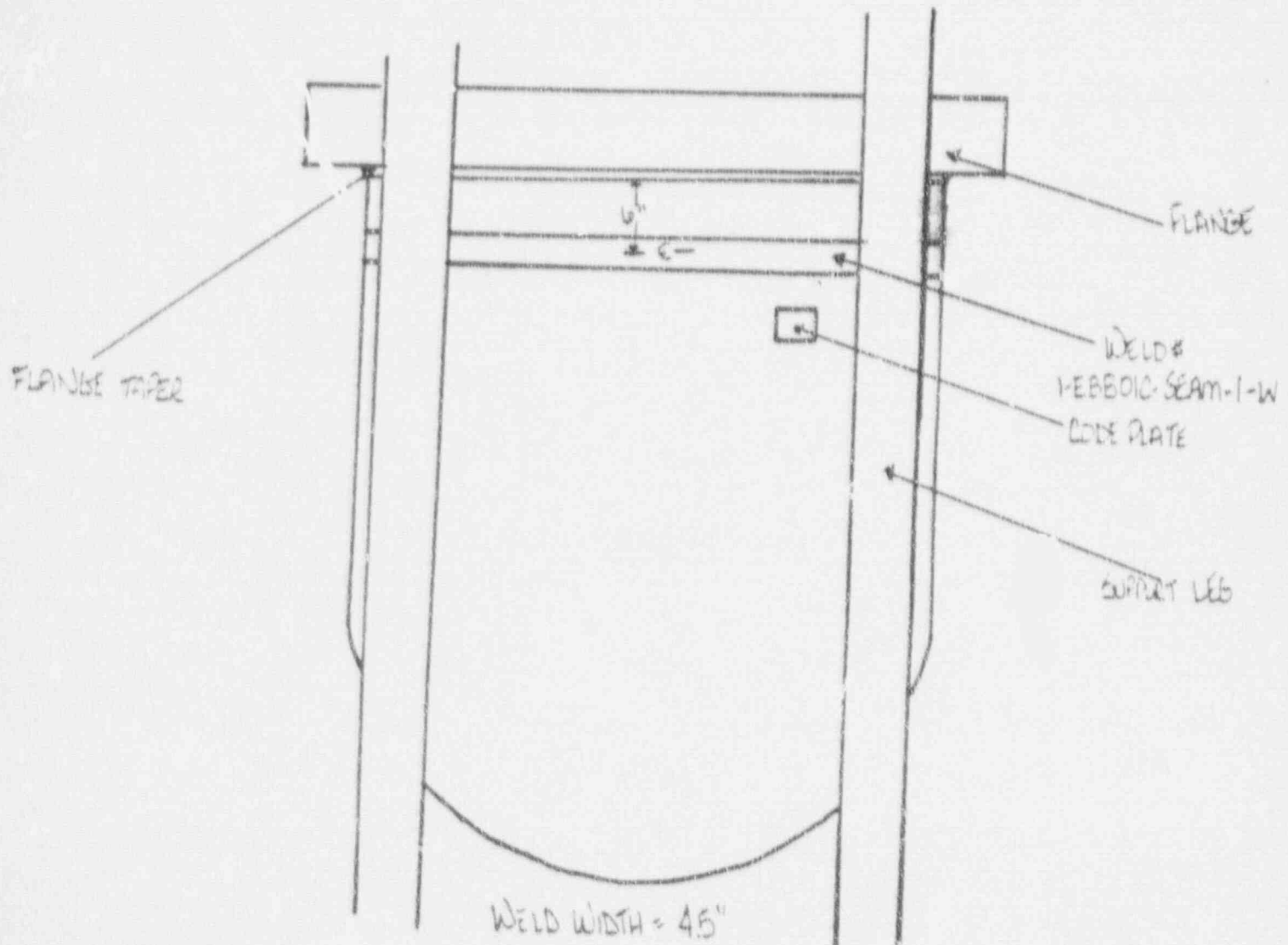
SUPPORT LEG LOCATIONS

39 1/4" to 63 1/4" CCW FROM DATUM X0, FULL SCAN AREA  
42 3/4" to 66 3/4" CW FROM DATUM X0, FULL SCAN AREA  
44" to 68" CCW FROM DATUM IV, FULL SCAN AREA  
38 1/2" to 62 1/2" CW FROM DATUM N, FULL SCAN AREA

CODE PLATE LOCATION

29 1/2" to 30 1/2" CW FROM DATUM X0  
4" to 8 1/4" BELOW WELD Q.

Figure 4



### SUPPORT LEG LOCATIONS

6" CW to 6 1/2" CW of Datum NO  
6" CW to 6 5/8" CW of Datum NO  
6 1/2" CW to 6 5/8" CW of Datum NO  
6 1/2" CW to 6 3/4" CW of Datum NO

### CODE PLATE LOCATION

from 7" to 10 3/4" below E of weld  
ON Bottom Head side  
22 1/2" to 29 1/2" CW from Datum NO

TAPER ON FLANGE LOCATED 6" BACK FROM E OF WELD

Figure 5

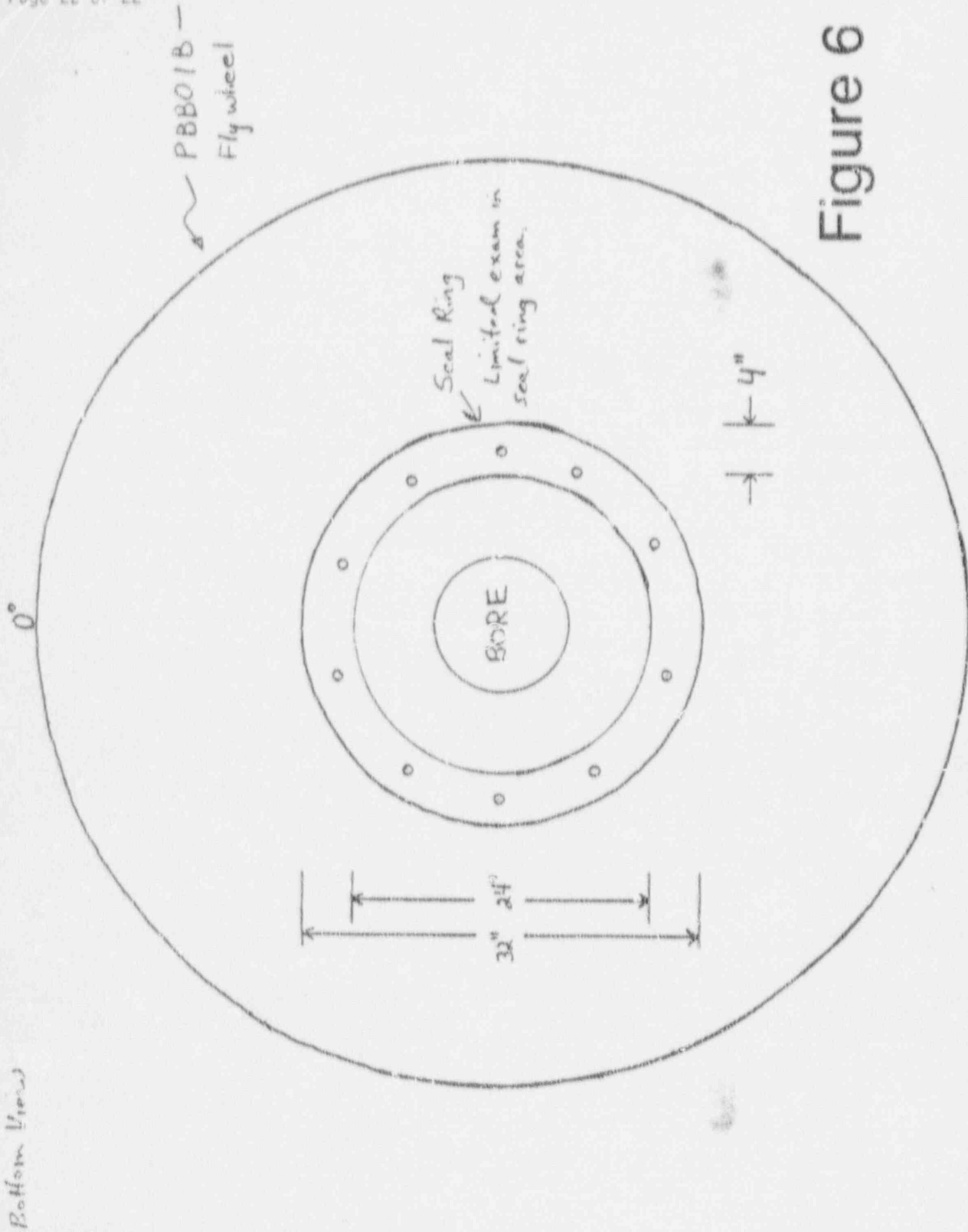


Figure 6