VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

October 8, 1993

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Serial No. 93-451A
NL&P/ETS R0
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
INSERVICE INSPECTION PROGRAM
PRESSURIZER WELD EXAMINATIONS

Inservice Inspection Program relief requests SR-005 were submitted for Surry Power Station Units 1 and 2 on April 16, 1987 and supplemented on February 15, 1989. These requests identified a support structure obstruction which prevented complete examination of the shell-to-top head weld and intersecting longitudinal weld on the pressurizers (1-RC-E-2 and 2-RC-E-2). Specifically, relief was requested from the full volumetric examinations requirements of Section XI, 1980 Edition, Winter 1980 Addenda, Category B-B. As an alternative, we proposed to examine the welds to the extent practical, and delay removing the support structure to perform a complete examination of the identified welds until later in the second ten year interval. These requests were evaluated and approved by the staff in a SER dated March 14, 1991.

We reassessed the pressurizer welds and conclude that removal of the support structure from the pressurizer to perform a complete examination is not practical. Our evaluation estimated that the removal activities and examination of the obstructed portion of the welds will require an expenditure of 18.4 man-rem per unit to accomplish. Based on the large man-rem expenditure, we believe that a complete examination requiring support structure removal is not commensurate with the gain in assurance of component integrity. As such, on August 11, 1993, we requested withdrawal of the original relief requests, with the intention of completing the weld examinations to the extent practical for both units. In a subsequent telephone conversation with your staff to discuss the pressurizer weld examination coverage, it was determined that submitting revised relief requests for the examinations would be necessary. Accordingly, we have reassessed the extent of examination coverage for each weld using the applicable Code requirements, and are providing the details in revised relief requests (SR-005) for both Surry Unit 1 and Unit 2, included as Attachments 1 and 2 to this letter. This letter supersedes our August 11, 1993 request (Serial No. 93-451).

We propose to perform the remaining third period Category B-B examinations on the

140013

A047
1/1

pressurizer without removing the support interferences during the 1994 refueling outages for both units. The Code required examination will be completed to the extent practical. If the examination coverage attained for these welds is significantly less than what is proposed by the relief requests, we will submit actual weld examination coverage results following each refueling outage for your review.

These relief requests have been reviewed by the Surry Station Nuclear Safety and Operating Committee. In order to support the Unit 1 refueling outage, we request your review and concurrence of the revised relief request for Unit 1 by November 1, 1993, to support detailed outage planning for the Unit 1 refueling outage currently scheduled to begin in February 1994. If you have any questions concerning these requests please contact us.

Very truly yours,

W. L. Stewart

Attachments

cc: U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N. W.
Suite 2900
Atlanta, Georgia 30323

Mr. M. W. Branch
NRC Senior Resident Inspector
Surry Power Station

Attachment 1

Surry Power Station Unit 1

Pressurizer Weld Examinations

RELIEF REQUEST NO. SR-005 (Revised)

I. IDENTIFICATION OF COMPONENTS

Weld#	Component ID#	Description	Class
1-07	1-RC-E-2	shell to head	1
1-15	1-RC-E-2	longitudinal	1

II. IMPRACTICAL CODE REQUIREMENTS

The 1980 Edition of ASME Section XI, Category B-B, items B2.11 and B2.12 requires a volumetric examination of 100% of the circumferential shell to head weld and 1 foot of the intersecting longitudinal weld.

III. BASIS FOR RELIEF

The pressurizer is covered with an insulation support ring (attachment 1). The insulation support ring is 6 inches wide, where it interferes with the examination. This ring prevents complete volumetric coverage of both the upper shell to head weld and intersecting longitudinal weld. Total removal of the insulation support ring is considered impractical due to high anticipated exposure levels estimated at 18.4 man-rem. Partial removal of the support ring at the mechanical connection would allow some increase in coverage near the mechanical connection, where the support ring could be spread apart. However, the actual area of weld made accessible to this increased coverage is estimated to be very small in relation to the overall weld length, because the insulation support structure is rigid, interconnected with cross supports, and welded to the supports for the safety valves and power operated relief valves. The intersection of the circumferential shell to head and longitudinal welds is physically located behind one of these supports. Examination coverage of this area would not be improved by partial removal at the mechanical connection.

Any removal of the mechanical connection and spreading apart of the insulation support structure would increase the risk of misalignment problems, and warping of the structure. This risk coupled with the marginal increase in examination coverage, makes partial removal of the insulation support structure also impractical.

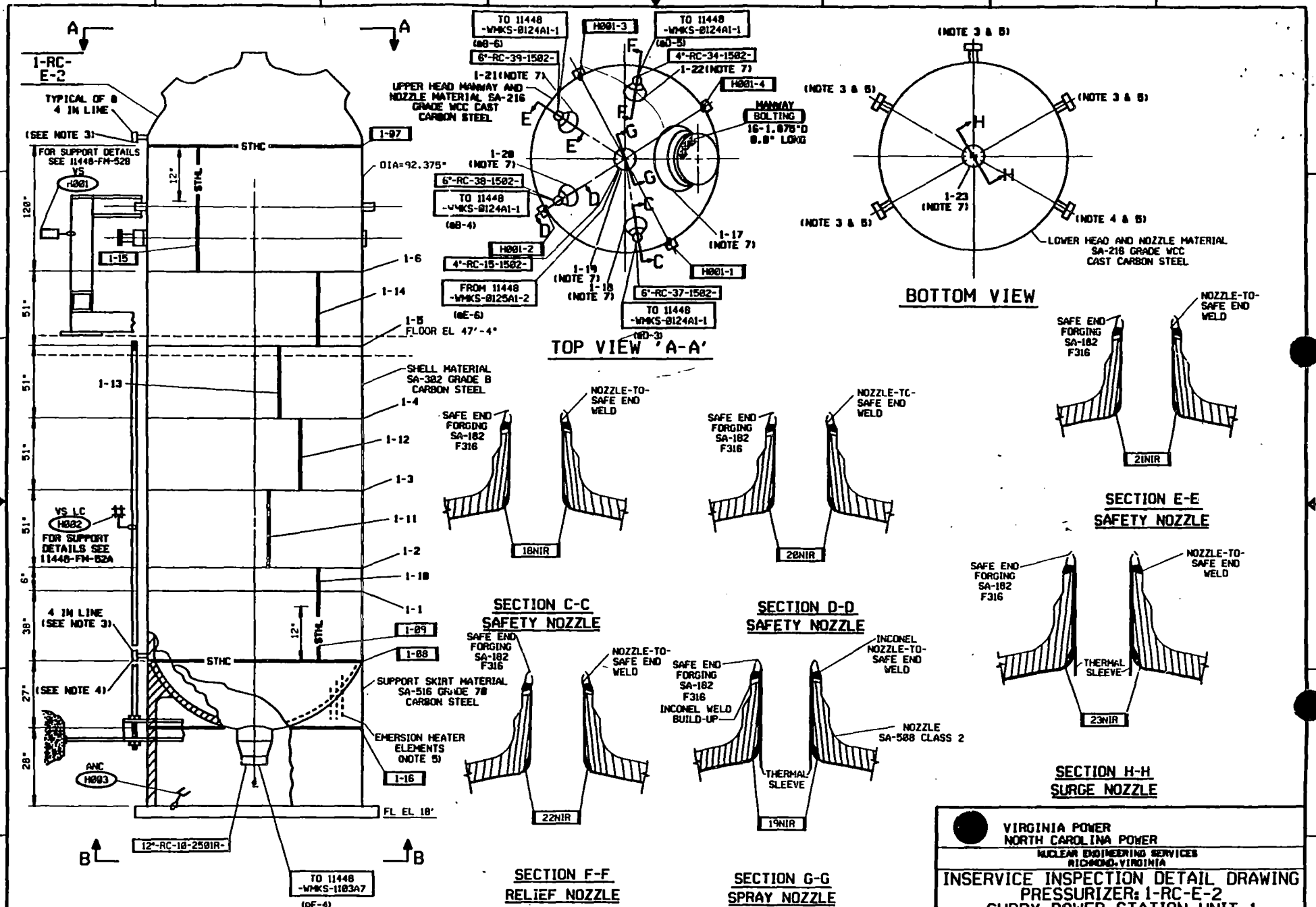
IV. ALTERNATE PROVISIONS

A volumetric examination will be performed to the extent practical on welds 1-07 and 1-15. No extended beam path examinations can be performed, since the pressurizer is a clad

vessel. The estimated coverage in the perpendicular beam path directions are detailed in attachment 2. The parallel beam path estimates are as follows:

Weld #	45°(7&8)	60°(7&8)
1-07	79%	79%
1-15(accessible length only approx. 5")	26%	26%

ATTACHMENT 1



1	REDRAWN FOR ISI THIS DRAWING SUPERSEDES 11448-WMKS-RC-E-002 REV 0	0
	INITIAL ISSUE	

VIRGINIA POWER
NORTH CAROLINA POWER
NUCLEAR ENGINEERING SERVICES
RICHMOND, VIRGINIA

INSERVICE INSPECTION DETAIL DRAWING PRESSURIZER: 1-RC-E-2 SURRY POWER STATION UNIT 1 VIRGINIA POWER

DSGN ——	DSGN SUPV RAR	CAD NO. RCE000201	
DRWN GTW	DISPL ENGR DEN	DRAWING NO. 11448-WMKS-RC-E-002	REV. 1
CHKD MBL	LEAD ENGR DEN		
DATE 12/04/89	SCALE NONE	UNLESS OTHERWISE NOTED	SH 1 OF 2

17-APR-1991 09:20
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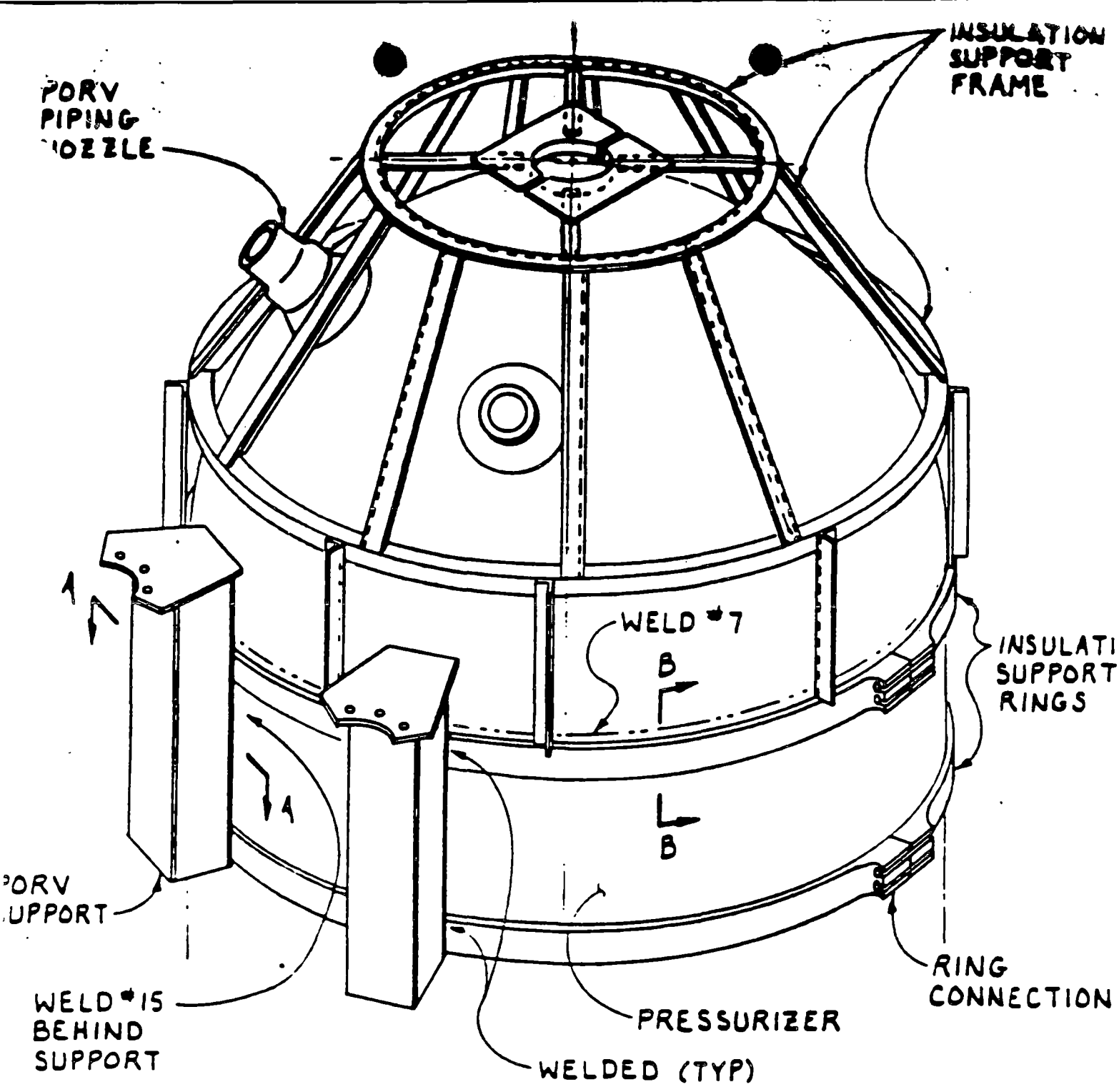
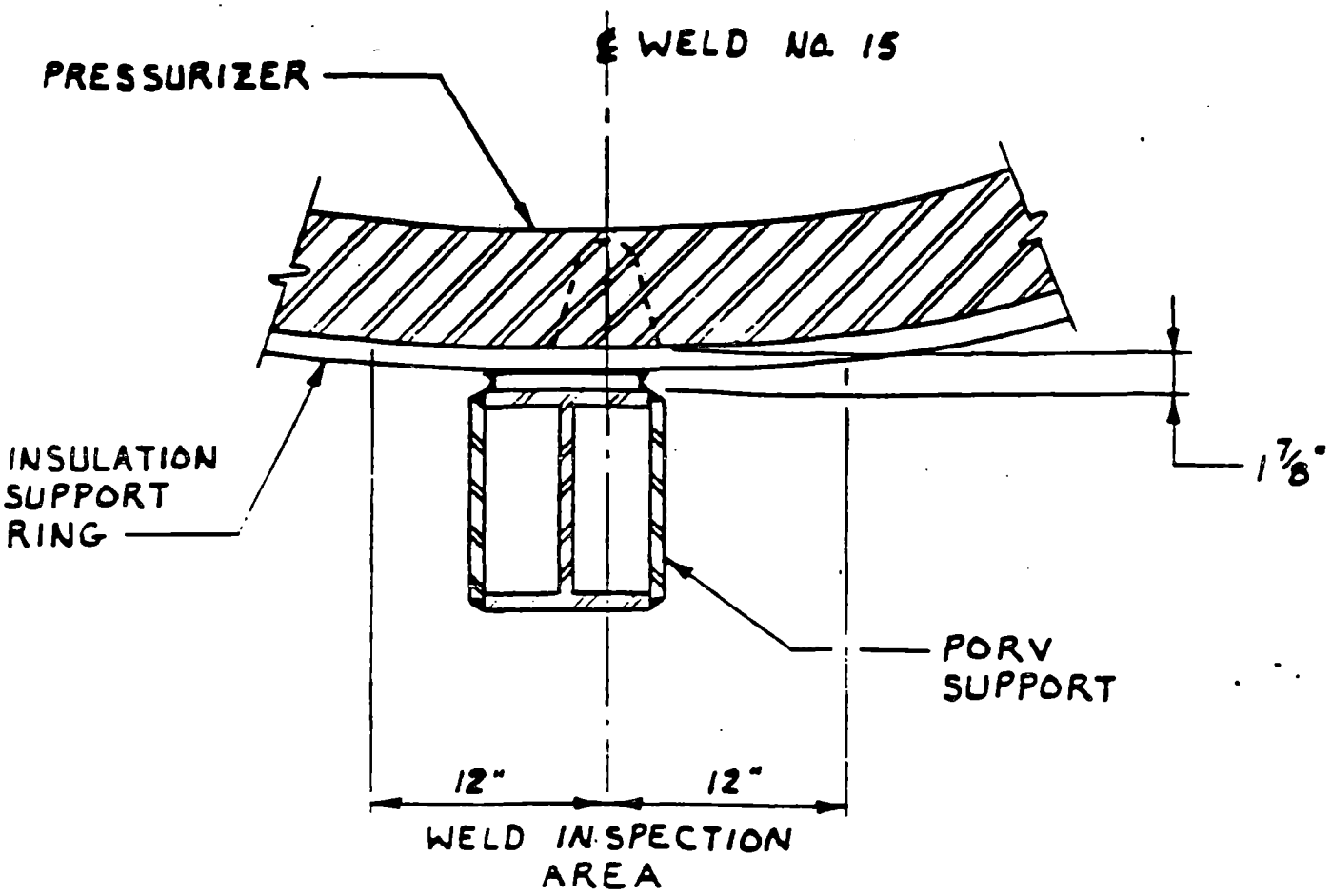


INSULATION SUPPORT ISO

(FOR STUDY OF INTERFERENCES WITH ISI NDE OF PRESSURIZER WELDS #7 & 15)

DRAWN BY: JJB	PRESSURIZER INSULATION SUPPORT
ENGINEER:	
DATE:	

Rev. 4



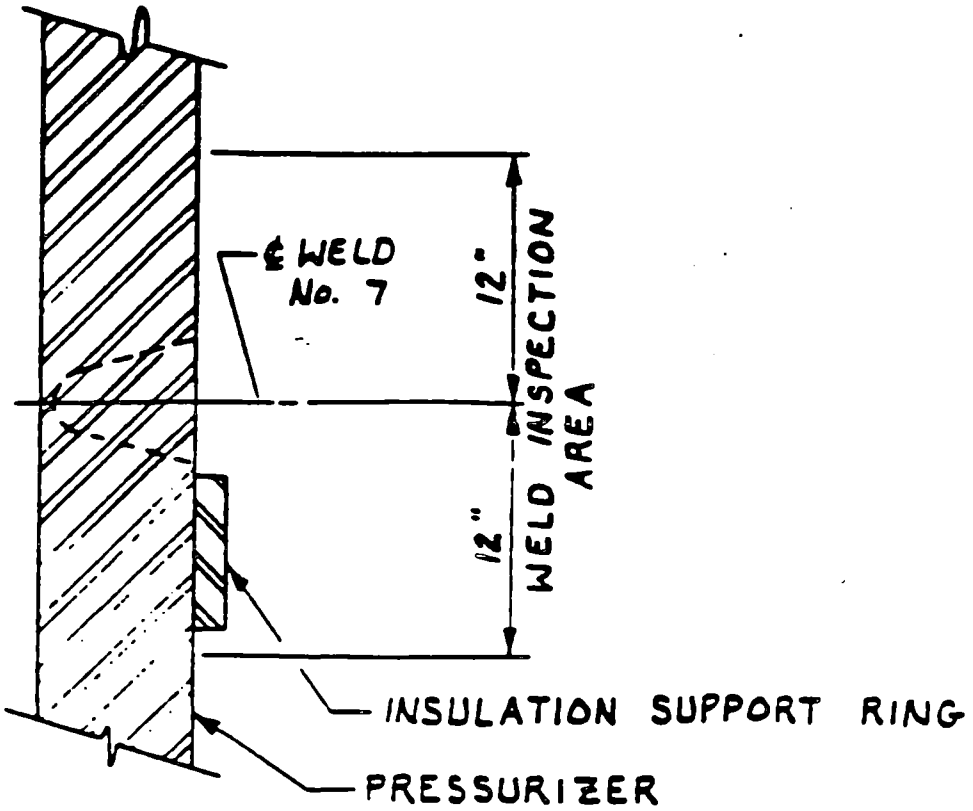
SECTION A-A

N. T. S.

DRAWN BY: JWB

ENGINEER:

PRESSURIZER INSULATION SUPPORT



SECTION B-B

N.T.S

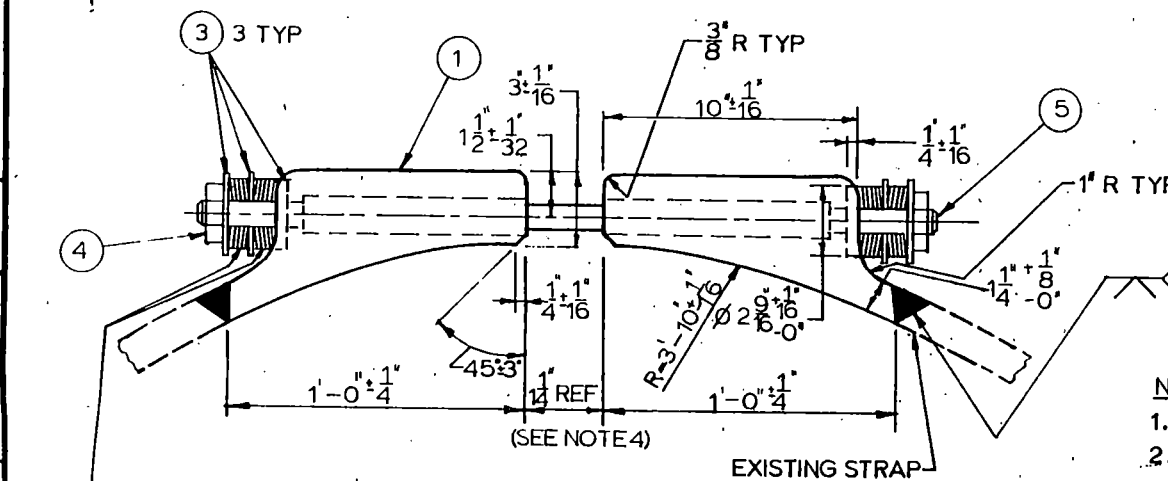
DRAWN BY: JWB

ENGINEER:

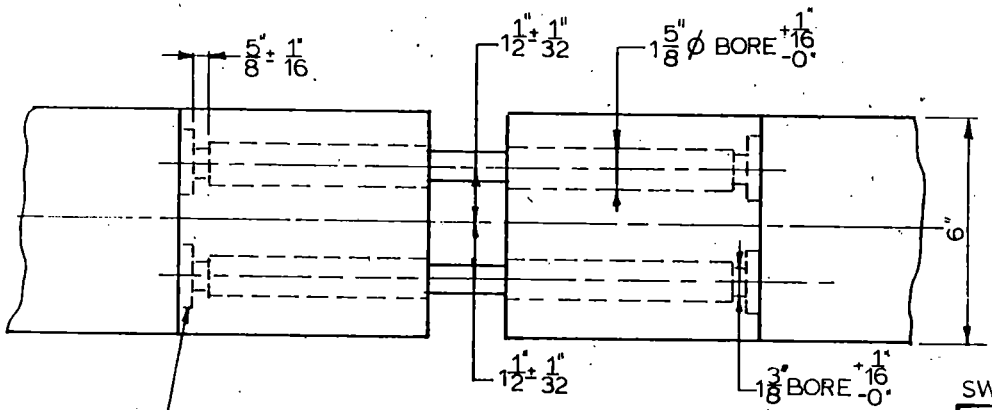
DATE:

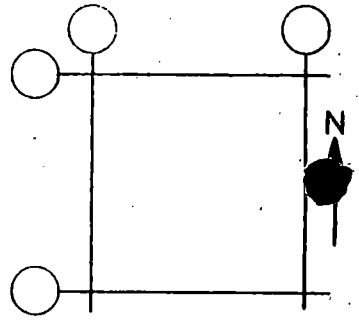
PRESSURIZER INSULATION SUPPORT

Rev. 4



PLAN





LOCATION PLAN

NOTES:

1. SCALE: NONE
2. STUDS SHALL BE PRELOADED TO PRODUCE A MEASURED STRAIN OF .028" ± .002"; THIS TO BE DONE WHILE THE FOLLOWING CONDITIONS EXIST:
   PRESSURIZER SHELL AT AMBIENT TEMP & ATMOS. PRESSURE AND STRAP AT AMBIENT TEMP ± 15° F
3. INSULATION ON SUPPORT COLUMNS TO BE IN ACCORDANCE W/ DC-84-69
4. AT FINAL INSTALLATION THIS DIMENSION TO BE 1 1/4" ± 1/2"
5. SPECIFIC WELDING & NDT PROCEDURES SHALL BE DEVELOPED FOR THIS JOINT IN ACCORDANCE WITH SITE SPECIFIC EQUIPMENT AND CONDITIONS
6. SEE SK.738955/8471-M-40
7. REFERENCE DWG. 11448-FP-9D-7
8. DESIGN BASED ON CALC. NO. 14937.03-MN(B)-263-JC REV. 0
9. DISCARD 'JOINT SPACER' (SEE REF. DWG.)
10. SEE SK.738955/8471-M-41; 43 & 45

FINAL DRAFT

SWEC 14937.03 DC-84-71

Q.A. CAT. I
NUCLEAR SAFETY RELATED

ISSUE	DESCRIPTION	DRN	CHK	APPD	DATE
6					
5					
4					
3					
2					
1	ORIGINAL ISSUE APVD FOR CONSTR.	DJP	[illegible]	JAB	[illegible]

PRESSURIZER SAFETY AND RELIEF VALVE (PSRV) SUPPORT MODIFICATIONS

EXPANSION [illegible]

SURRY POWER STATION UNIT 1
VIRGINIA ELECTRIC & POWER CO.

STONE & WEBSTER ENGINEERING CORP
BOSTON, MASS

SK.738955/8471-M-39-1

AREAS	LEVELS	WORK PKG

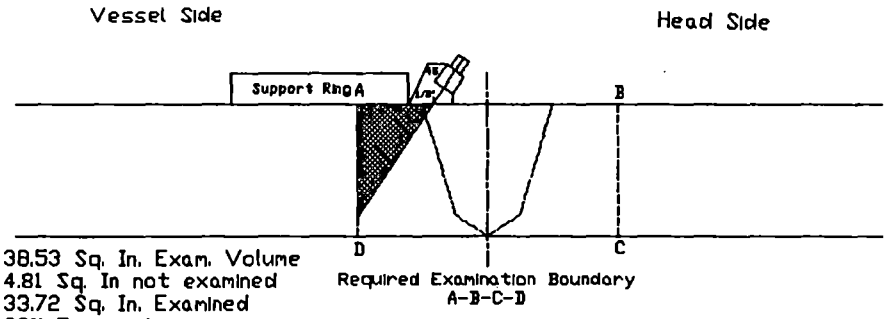
ISSUE ⊖
PRINTS
APP CARD

ATTACHMENT 2

Surry Unit 1
Pressurizer
Weld 7 Partial Examination Evaluation

(Hatched areas represent no examination coverage)

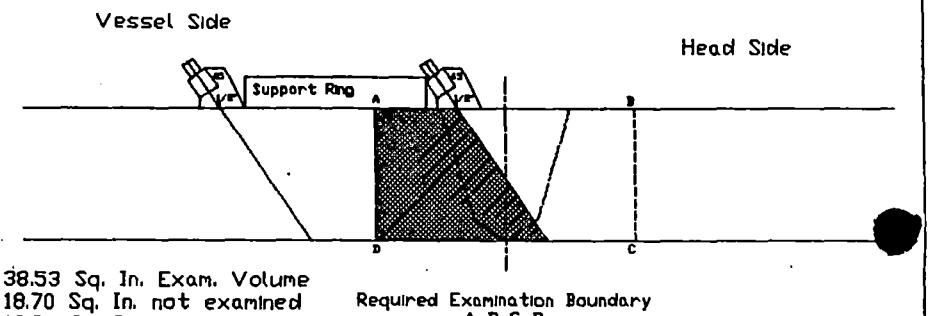
Weld 7
5 Scan
45° 1/2" Transducer



38.53 Sq. In. Exam. Volume
4.81 Sq. In not examined
33.72 Sq. In. Examined
88% Examined

Required Examination Boundary
A-B-C-D

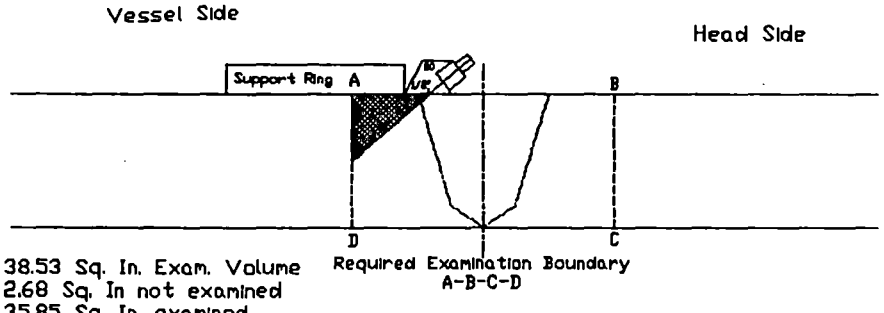
Weld 7
2 Scan
45° 1/2" Transducer



38.53 Sq. In. Exam. Volume
18.70 Sq. In. not examined
19.83 Sq. In. Examined
51% Examined

Required Examination Boundary
A-B-C-D

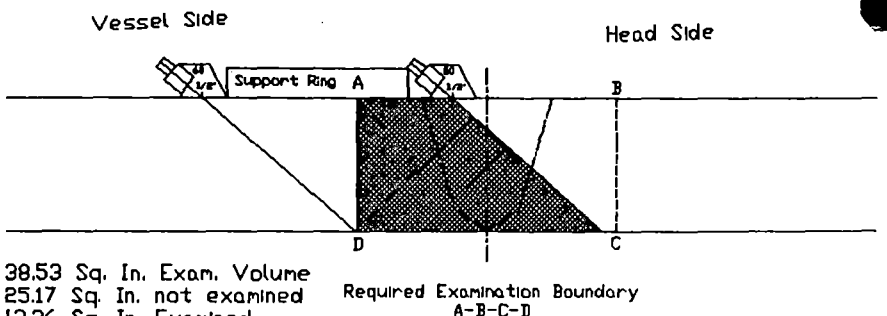
Weld 7
5 Scan
60° 1/2" Transducer



38.53 Sq. In. Exam. Volume
2.68 Sq. In not examined
35.85 Sq. In. examined
93% Examined

Required Examination Boundary
A-B-C-D

Weld 7
2 Scan
60° 1/2" Transducer

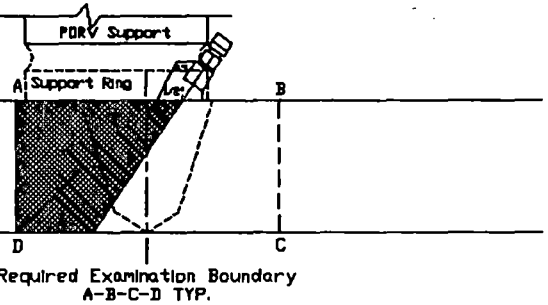


38.53 Sq. In. Exam. Volume
25.17 Sq. In. not examined
13.36 Sq. In. Examined
35% Examined

Required Examination Boundary
A-B-C-D

Surry Unit 1
Pressurizer
Weld 15 Partial Examination Evaluation
(Hatched areas represent no examination coverage)

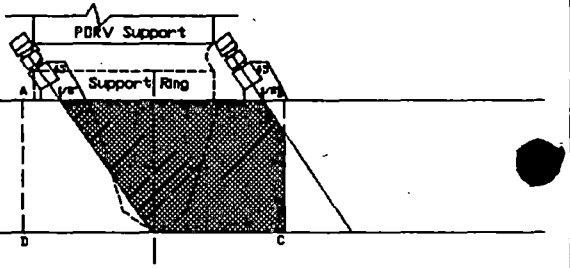
Weld 15
2 Scan without Support Ring interferenc
45° 1/2" Transducer



38.53 Sq. In. Exam. Volume
17.72 Sq. In. not examined
20.81 Sq. In. Examined
54% Examined

Clockwise

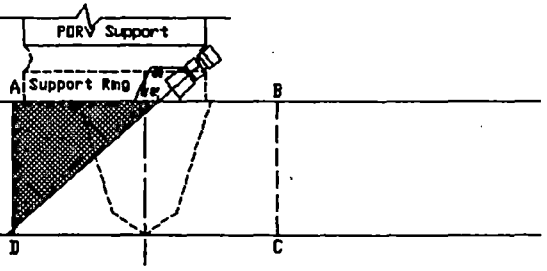
Weld 15
5 Scan without Support Ring interference
45° 1/2" Transducer



38.53 Sq. In. Exam. Volume
25.89 Sq. In. not examined
12.64 Sq. In. Examined
33% Examined

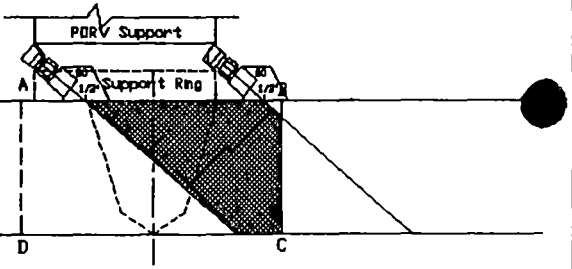
Counterclockwise

Weld 15
2 Scan without Support Ring interference
60° 1/2" Transducer



38.53 Sq. In. Exam. Volume
10.06 Sq. In. not examined
28.47 Sq. In. Examined
74% Examined

Weld 15
5 Scan without Support Ring interference
60° 1/2" Transducer



38.53 Sq. In. Exam. Volume
17.59 Sq. In. not examined
20.94 Sq. In. Examined
54% Examined

NOTE: Weld 15 coverage estimate applies only to the area of the weld not covered and made inaccessible by the insulation support ring. Of the Code required examination area, the insulation support ring covers 6 inches of weld 15, allowing approximately 3 inches above the ring to be accessible, and 3 inches below the ring to be accessible.

SURRY UNIT 2

Attachment 2

Surry Power Station Unit 2

Pressurizer Weld Examinations

RELIEF REQUEST NO. SR-005 (Revised)

I. IDENTIFICATION OF COMPONENTS

Weld#	Component ID#	Description	Class
1-07	2-RC-E-2	shell to head	1
1-02	2-RC-E-2	longitudinal	1

II. IMPRACTICAL CODE REQUIREMENTS

The 1980 Edition of ASME Section XI, Category B-B, items B2.11 and B2.12 requires a volumetric examination of 100% of the circumferential shell to head weld and 1 foot of the intersecting longitudinal weld.

III. BASIS FOR RELIEF

The pressurizer is covered with an insulation support ring (attachment 1). The insulation support ring is 6 inches wide, where it interferes with the examination. This ring prevents complete volumetric coverage of both the upper shell to head weld and intersecting longitudinal weld. Total removal of the insulation support ring is considered impractical due to high anticipated exposure levels estimated at 18.4 man-rem. Partial removal of the support ring at the mechanical connection would allow some increase in coverage near the mechanical connection, where the support ring could be spread apart. However, the actual area of weld made accessible to this increased coverage is estimated to be very small in relation to the overall weld length, because the insulation support structure is rigid, interconnected with cross supports, and welded to the supports for the safety valves and power operated relief valves. The intersection of the circumferential shell to head and longitudinal welds is physically located behind one of these supports. Examination coverage of this area would not be improved by partial removal at the mechanical connection.

Any removal of the mechanical connection and spreading apart of the insulation support structure would increase the risk of misalignment problems, and warping of the structure. This risk coupled with the marginal increase in examination coverage, makes partial removal of the insulation support structure also impractical.

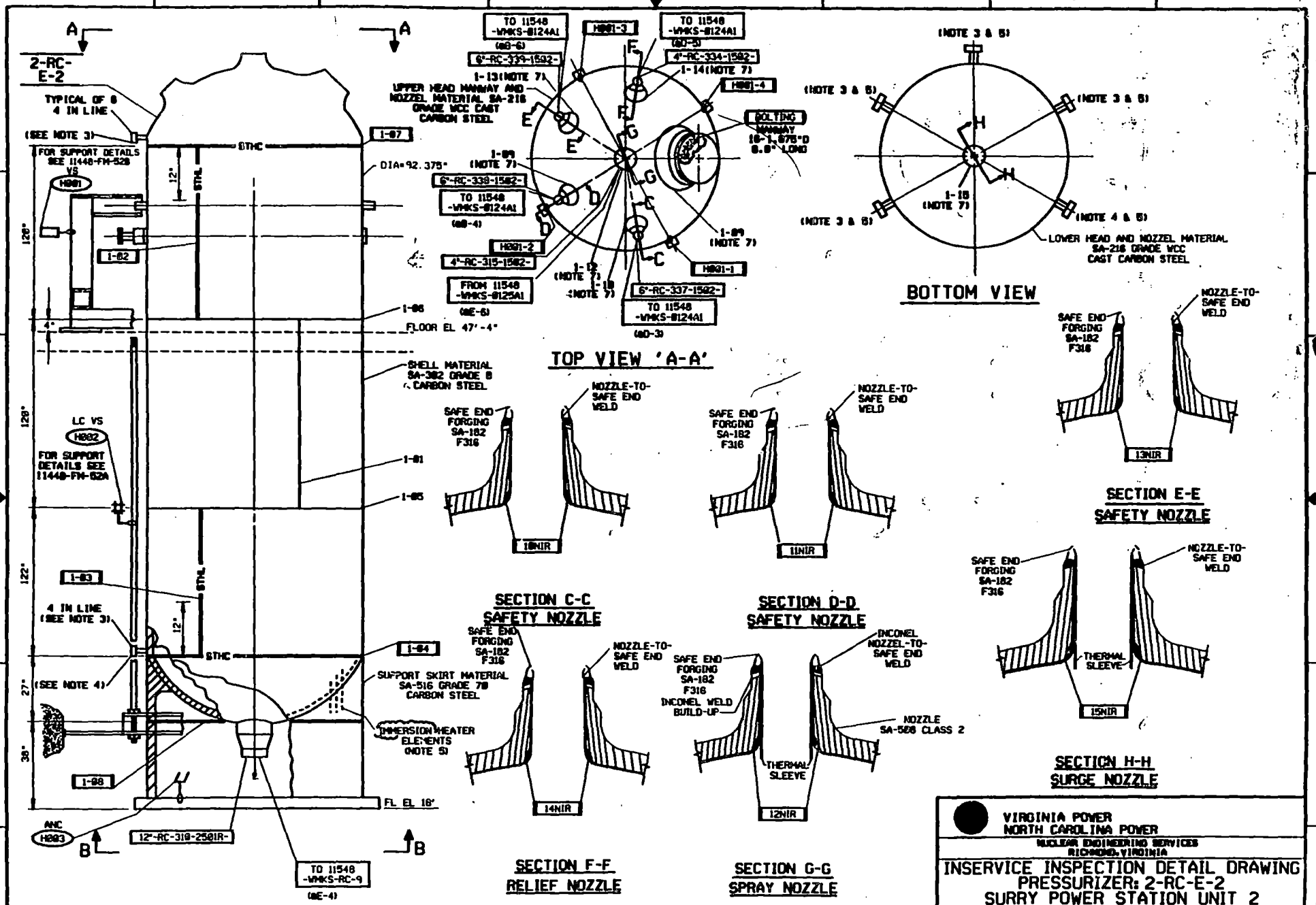
IV. ALTERNATE PROVISIONS

A volumetric examination will be performed to the extent practical on welds 1-07 and 1-02. No extended beam path examinations can be performed, since the pressurizer is a clad

vessel. The estimated coverage in the perpendicular beam path directions are detailed in attachment 2. The parallel beam path estimates are as follows:

Weld #	45°(7&8)	60°(7&8)
1-07	26%	26%
1-02(accessible length only approx. 7.5")	100%	100%

ATTACHMENT 1



REV.	DESCRIPTION	BY	CHK	APP	DATE
2	REVISED PER ISI REVIEW				
1	REDRAWN FOR ISI THIS DRAWING SUPERSEDES 11548-WMKS-RC-E-002 REV-0	X	X	X	X

VIRGINIA POWER
NORTH CAROLINA POWER
NUCLEAR ENGINEERING SERVICES
RICHMOND, VIRGINIA

INSERVICE INSPECTION DETAIL DRAWING PRESSURIZER: 2-RC-E-2 SURRY POWER STATION UNIT 2 VIRGINIA POWER

DSGN ——	DSGN SUPV	CAD NO. RCE000201	
DRWN GTW	DISPL ENGR WFM	DRAWING NO. 11548-WMKS-RC-E-002	REV. 2
CHKD MBL	LEAD ENGR ARF		
DATE 12/04/85	SCALE NONE	UNLESS OTHERWISE NOTED	SH 1 OF 2

15-SEP-1992 11:37
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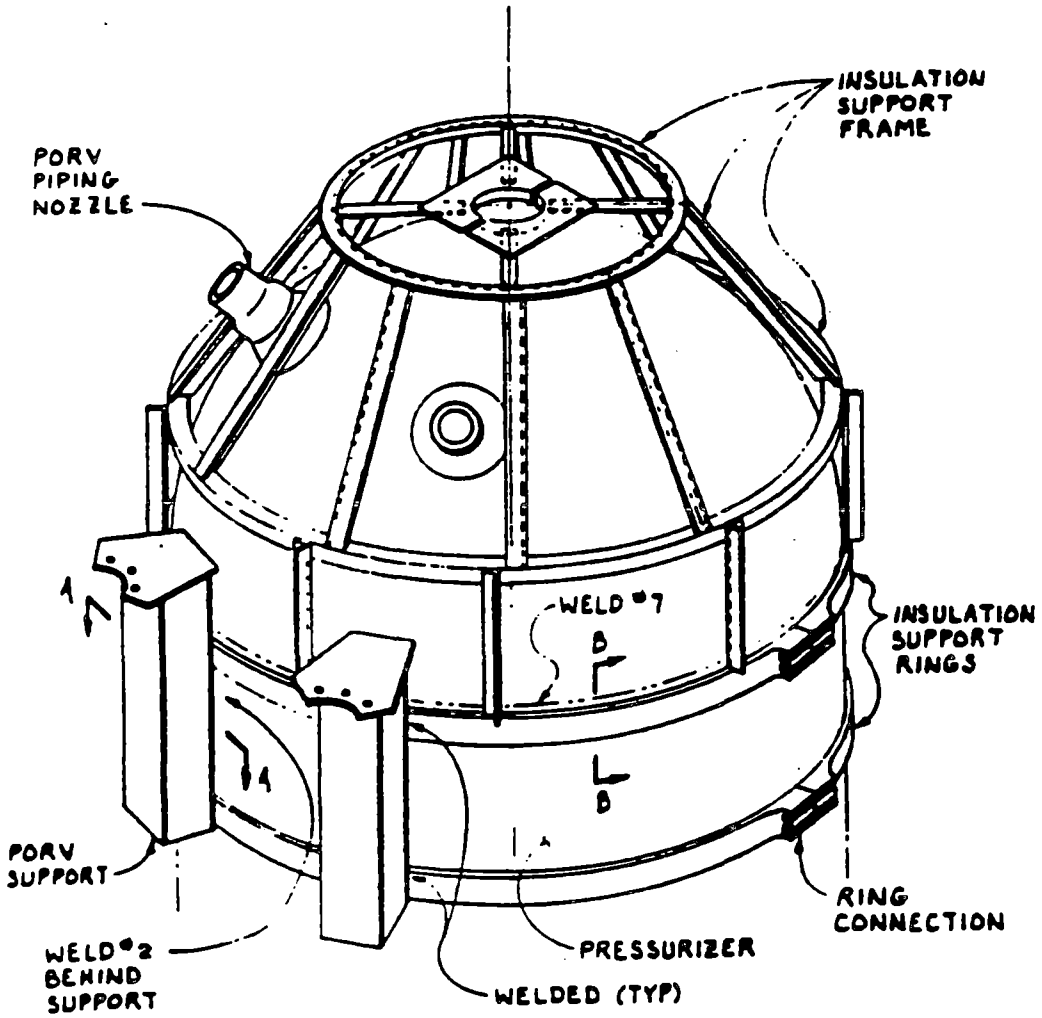


INSULATION SUPPORT ISO

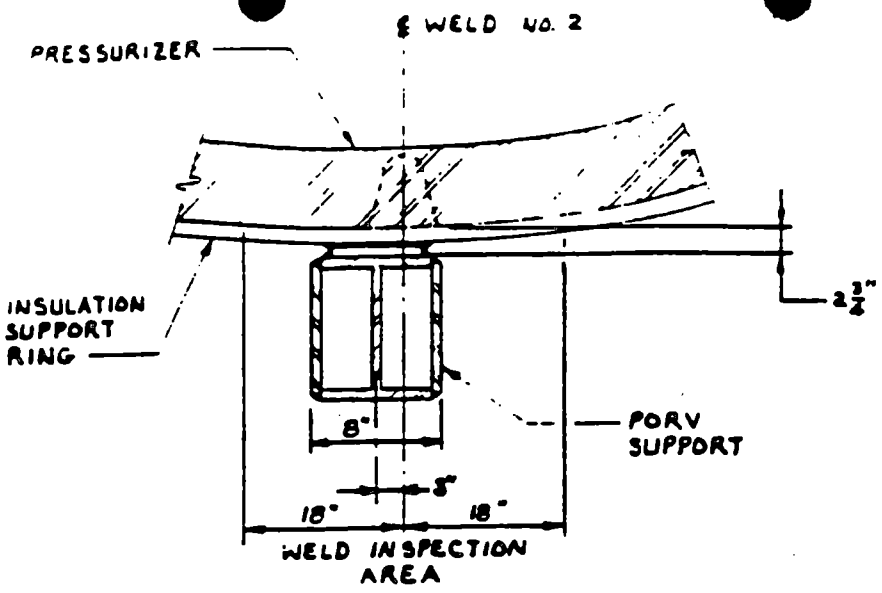
(FOR STUDY OF INTERFERENCES WITH ISI NDE OF PRESSURIZER WELDS #7 & 2)

SURRY POWER STATION

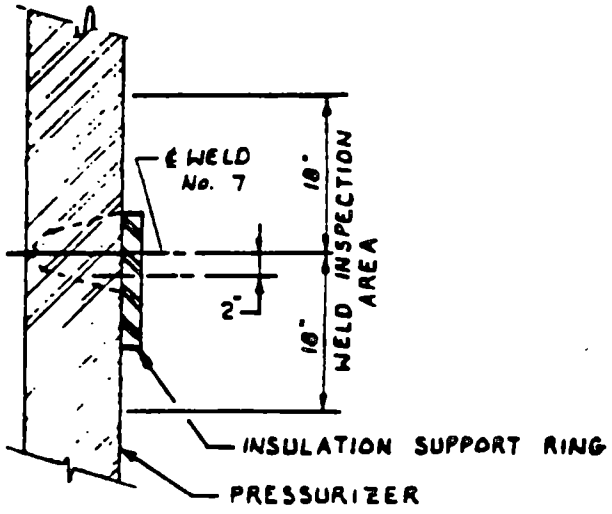
PRESSURIZER WELD UT INTERFERENCE UNIT 2

DRAWN BY:	ENGINEER:	DATE:
MM	R L Miller	10-20-96

Rev. 2



SECTION A-A



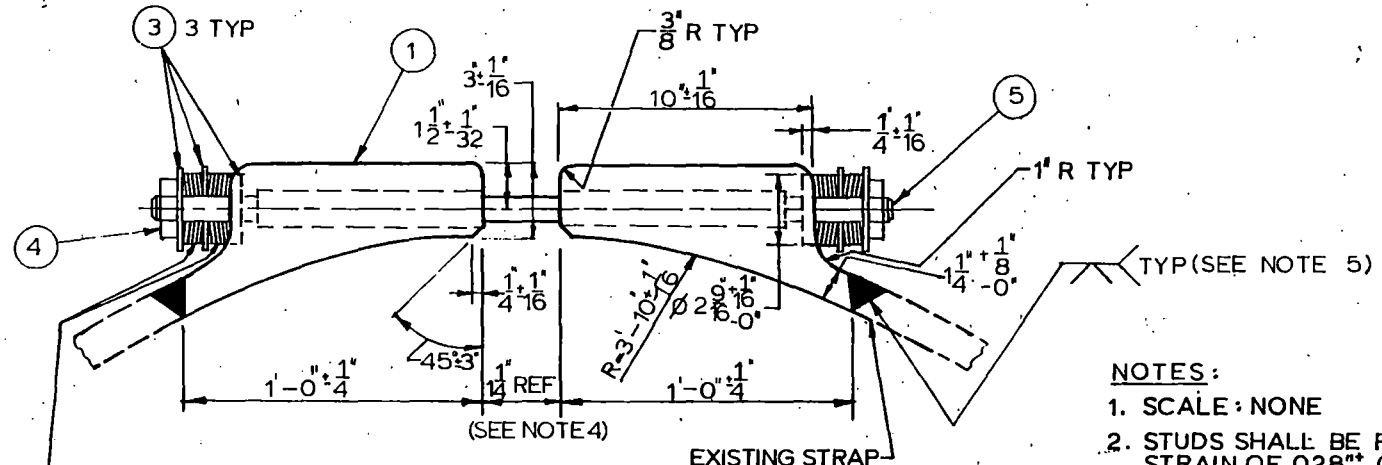
SECTION B-B

SURRY POWER STATION

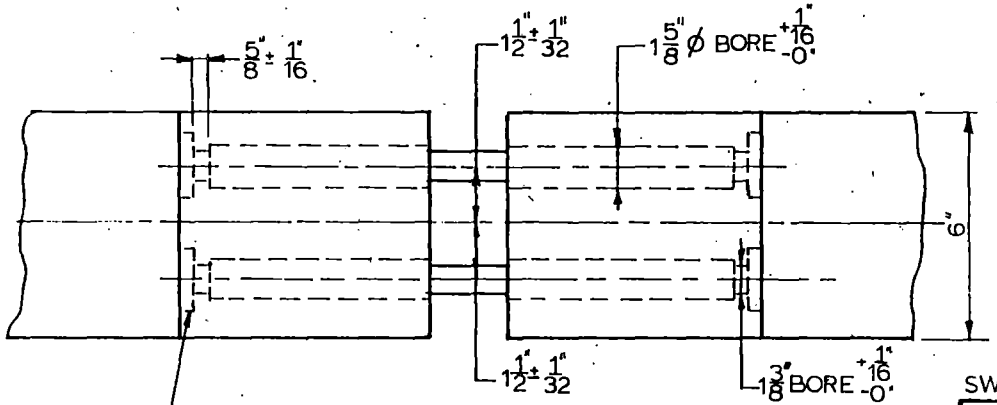
PRESSURIZER WELD UT INTERFERENCE UNIT 2

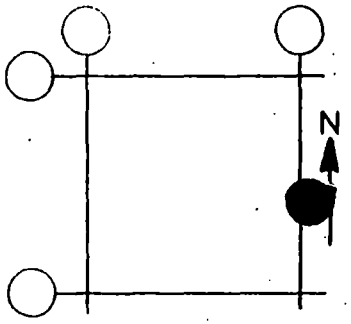
DRAWN BY:	ENGINEER:	DATE:
MM	R.L. Miller	10-20-86

Rev. 2



PLAN





LOCATION PLAN

NOTES:

1. SCALE: NONE
2. STUDS SHALL BE PRELOADED TO PRODUCE A MEASURED STRAIN OF .028"±.002"; THIS TO BE DONE WHILE THE FOLLOWING CONDITIONS EXIST:
   PRESSURIZER SHELL AT AMBIENT TEMP & ATMOS. PRESSURE AND STRAP AT AMBIENT TEMP ± 15° F
3. INSULATION ON SUPPORT COLUMNS TO BE IN ACCORDANCE W/ DC-84-69
4. AT FINAL INSTALLATION THIS DIMENSION TO BE $1\frac{1}{4}"\pm\frac{1}{2}"$
5. SPECIFIC WELDING & NDT PROCEDURES SHALL BE DEVELOPED FOR THIS JOINT IN ACCORDANCE WITH SITE SPECIFIC EQUIPMENT AND CONDITIONS
6. SEE SK.738955/8471-M-40
7. REFERENCE DWG. 11448-FP-9D-7
8. DESIGN BASED ON CALC. NO. 14937.03-MN(B)-263-JC REV. 0
9. DISCARD 'JOINT SPACER' (SEE REF. DWG.)
10. SEE SK.738955/8471-M-41; 43 & 45

FINAL DRAFT

Q.A. CAT. I
NUCLEAR SAFETY RELATED

SWEC 14937.03 DC-84-71

ISSUE	DESCRIPTION	CHK'D	APP'D	DATE
6				
5				
4				
3				
2				
1	ORIGINAL ISSUE APVD FOR CONSTR	DJP	MK	7/16/85

PRESSURIZER SAFETY AND RELIEF VALVE (PSRV) MODIFICATIONS

EXPANSION

SURRY POWER STATION UNIT 1
VIRGINIA ELECTRIC & POWER CO.

STONE & WEBSTER ENGINEERING CORP
BOSTON, MASS

SK.738955/8471-M-39-1

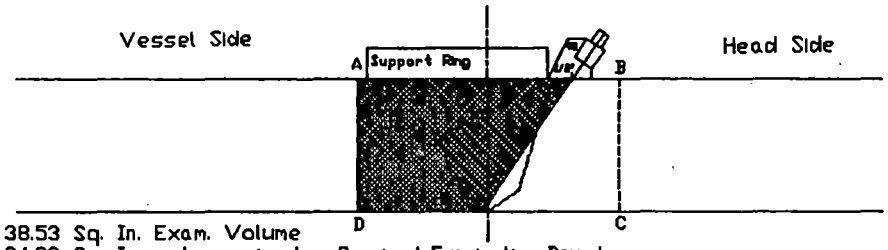
AREAS	LEVELS	WORK PKG

PRINTS — APP CARD — ISSUE

ATTACHMENT 2

Surry Unit 2
Pressurizer
Weld 7 Partial Examination Evaluation
(Hatched areas represent no examination coverage)

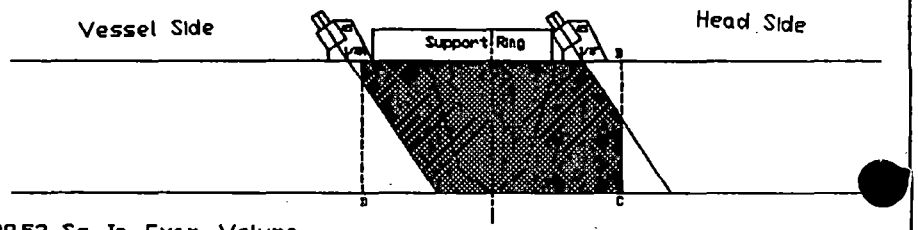
Weld 7
5 Scan
45° 1/2" Transducer



38.53 Sq. In. Exam. Volume
24.83 Sq. In. not examined
13.70 Sq. In. Examined
36% Examined

Required Examination Boundary
A-B-C-D

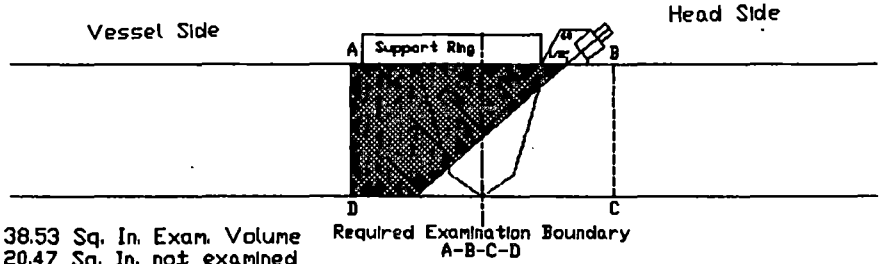
Weld 7
2 Scan
45° 1/2" Transducer



38.53 Sq. In. Exam. Volume
32.29 Sq. In. not examined
6.24 Sq. In. Examined
16% Examined

Required Examination Boundary
A-B-C-D

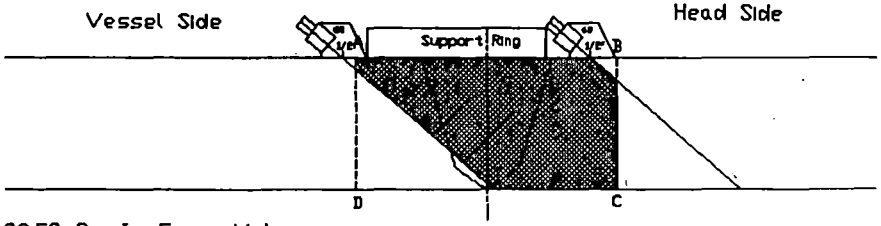
Weld 7
5 Scan
60° 1/2" Transducer



38.53 Sq. In. Exam. Volume
20.47 Sq. In. not examined
18.06 Sq. In. Examined
47% Examined

Required Examination Boundary
A-B-C-D

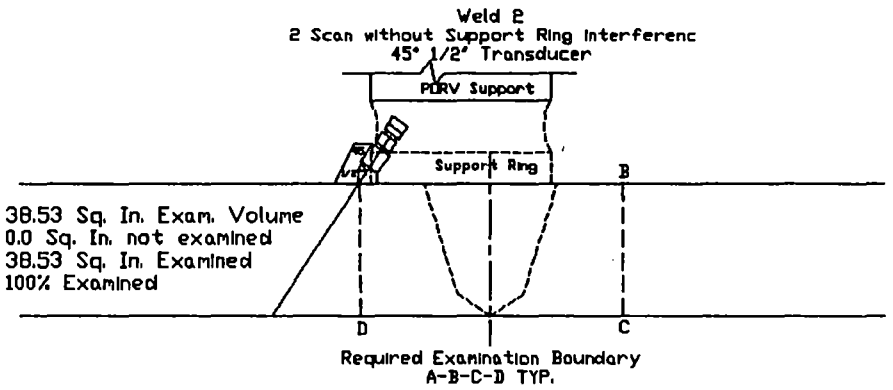
Weld 7
2 Scan
60° 1/2" Transducer



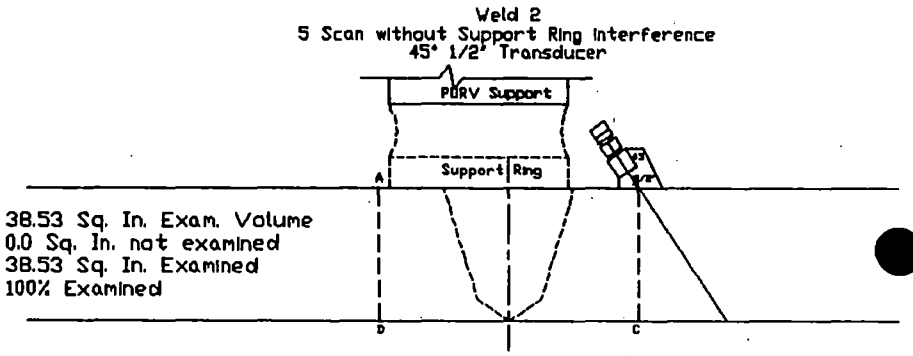
38.53 Sq. In. Exam. Volume
27.91 Sq. In. not examined
10.62 Sq. In Examined
28% Examined

Required Examination Boundary
A-B-C-D

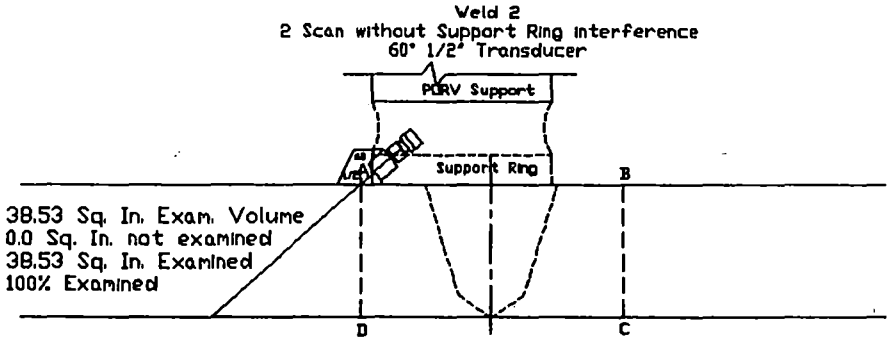
Surry Unit 2
Pressurizer
Weld 2 Partial Examination Evaluation
(Hatched areas represent no examination coverage)

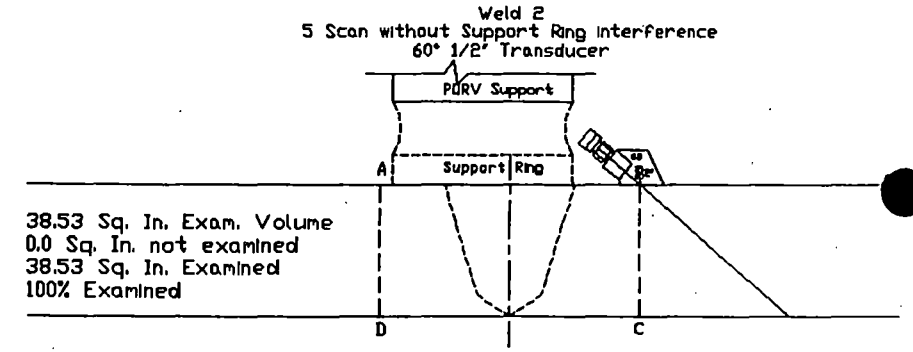


Clockwise



Counterclockwise





NOTE: Weld 2 coverage estimate applies only to the area of the weld not covered and made inaccessible by the insulation support ring. Of the Code required examination area, the insulation support ring covers the top 4 inches of weld 2, allowing approximately 8 inches to be accessible.