

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

August 5, 1993

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

Serial No. 93-435  
NL&P/EJW  
Docket Nos. 50-338  
50-339  
License Nos. NPF-4  
NPF-7

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**NORTH ANNA POWER STATION UNITS 1 AND 2**  
**INSERVICE INSPECTION PROGRAM**  
**SECOND TEN YEAR INTERVAL RELIEF REQUESTS**

North Anna Power Station Unit 1 is presently in the second period of the second ten-year interval. North Anna Unit 1 examinations have been conducted to the requirements of the 1983 Edition and Summer 1983 Addenda of ASME Section XI. North Anna Unit 2 is currently in the first period of the second ten year interval. North Anna Unit 2 examinations have been conducted to the requirements of the 1986 Edition of ASME Section XI.

Pursuant to 10 CFR 50.55a (g) 5, relief is requested from certain requirements of the ASME Section XI Code associated with partial examinations conducted for North Anna Unit 1. Relief Request NDE-20 (attached) is being provided detailing the basis of this relief. Relief is also requested from certain requirements of ASME Section XI associated with hydrostatic testing for North Anna Units 1 and 2. Relief Requests SPT-12 (attached) for Unit 1 and SPT-15 (attached) for Unit 2 are provided detailing the basis for this relief.

These relief requests have been approved by the North Anna Station Nuclear Safety and Operating Committee.

If you have any questions concerning these requests, please contact us.

Very truly yours,



W. L. Stewart  
Senior Vice President - Nuclear

Enclosures

AD47

cc: United States Nuclear Regulatory Commission  
Region II  
101 Marietta Street, N.W.  
Suite 2900  
Atlanta, GA 30323

NRC Senior Resident Inspector  
North Anna Power Station

NORTH ANNA UNIT 1  
RELIEF REQUEST NDE-20

**I. IDENTIFICATION OF COMPONENTS**

<u>Mark/Weld #</u>	<u>Line #</u>	<u>Drawing #</u>	<u>Class</u>
1	RC-R-1	11715-WMKS-RC-R-1.2	1
1	SI-TK-2	11715-WMKS-SI-TK-2	2
10	6"-RC-39-1502-Q1	11715-WMKS-RC-E-2	1
11	6"-RC-38-1502-Q1	11715-WMKS-RC-E-2	1
12	6"-RC-37-1502-Q1	11715-WMKS-RC-E-2	1
4A	29"-RC-1-2501-Q1	11715-WMKS-0109E-1	1
5A	31"-RC-2-2501-Q1	11715-WMKS-0109E-1	1
37	27 1/2"-RC-3-2501-Q1	11715-WMKS-0109E-1	1
SW-39	12"-RC-22-1502-Q1	11715-WMKS-0109E-2	1
16A	29"-RC-4-2501-Q1	11715-WMKS-0109F-1	1
17A	31"-RC-5-2501-Q1	11715-WMKS-0109F-1	1
SW-19	6"-RC-18-1502-Q1	11715-WMKS-0109F-2	1
SW-41	12"-RC-23-1502-Q1	11715-WMKS-0109F-2	1
SW-42	6"-RC-19-1502-Q1	11715-WMKS-0109F-2	1
28A	29"-RC-7-2501-Q1	11715-WMKS-0109G-1	1
29A	31"-RC-8-2501-Q1	11715-WMKS-0109G-1	1

**II. IMPRACTICABLE CODE REQUIREMENTS**

The 1983 edition, Summer 1983 Addenda (inclusive) of ASME Section XI in Tables IWB-2500-1 and IWC-2500-1 does not allow any limitations to the required volumetric and surface examinations. Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, allows a reduction in coverage, if it is less than 10%.

**III. BASIS FOR RELIEF**

The components listed above have been examined to the extent practical as required by the Code. Due to interferences of other components or weld joint geometry, the reduction in coverage for the listed components was greater than 10%. Tables NDE-20-1, 2, 3, and 4 are provided detailing the limitations experienced. Amplifying sketches are also provided. Alternative components could not be substituted for examination due to the mandatory selection requirements of the Code.

**IV. ALTERNATE PROVISIONS**

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements.

**Table NDE-20-1  
North Anna Unit 1  
Examination Coverage Estimates (Reactor Vessel)  
Category B-A, Item B1.40**

<u>Mark/Weld #</u>	<u>Beam Angle</u>	<u>Exam Area</u>	<u>Scan Direction</u>	<u>% Exam</u>	<u>Reason For Partial</u>	<u>Sketch#</u>
1 (0° - 120°)	0	Weld & Base	-	72	Joint Configuration And Lifting Lug Interference	1A & 1B
	45	Weld	2	13		
	45	Weld	5	97		
	45	Weld	7	99		
	45	Weld	8	99		
	60	Weld	2	7		
	60	Weld	5	98		
	60	Weld	7	99		
	60	Weld	8	99		
	45 & 60	Base	2	36		
	45 & 60	Base	5	91		
	45 & 60	Base	7	68		
	45 & 60	Base	8	68		

Surface coverage 98%

UT Scan Direction Definitions

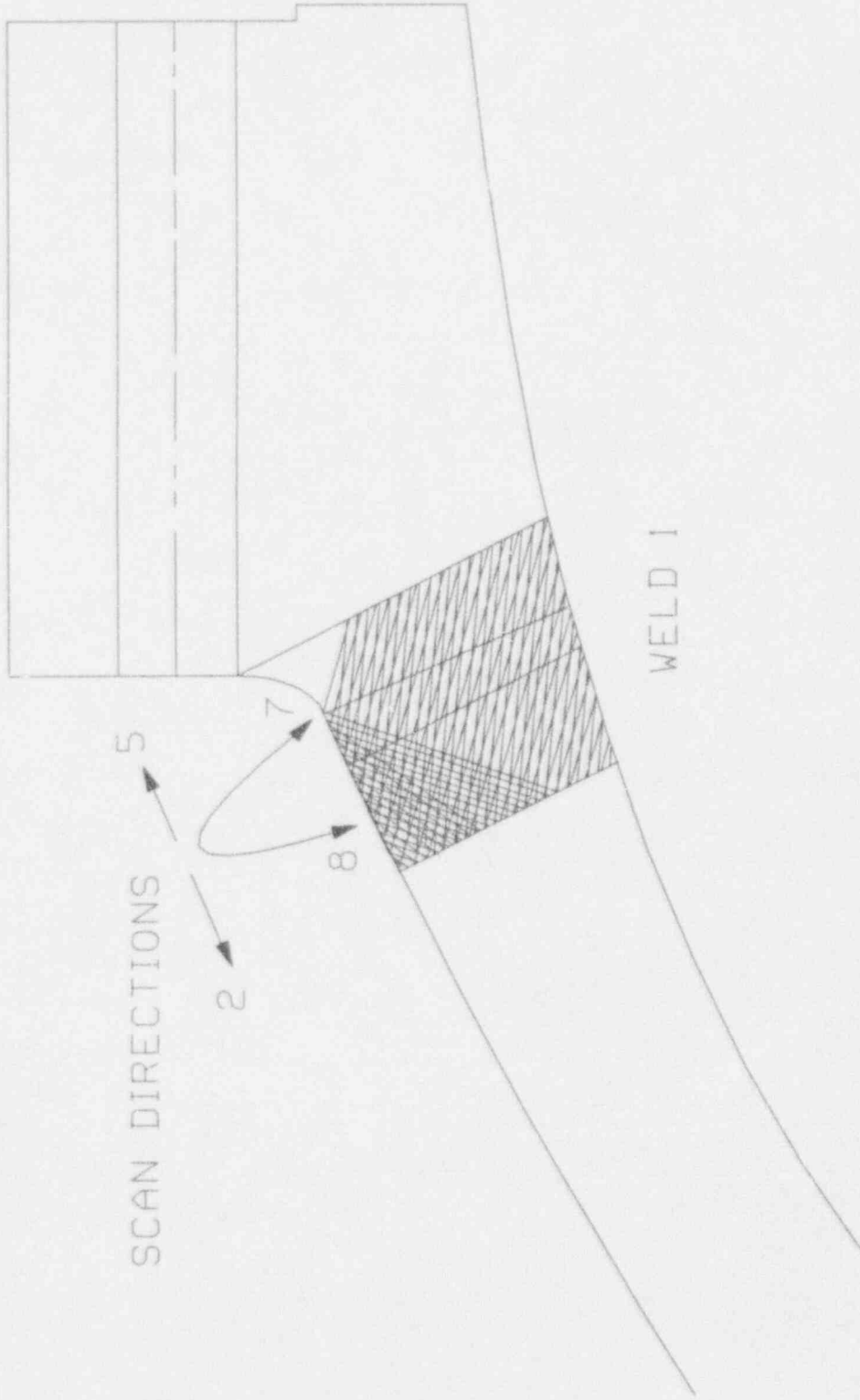
2 - Axial scan flange side of weld

5 - Axial scan head side of weld

7 - Circumferential scan, clockwise (looking down on head)

8 - Circumferential scan, counterclockwise (looking down on head)

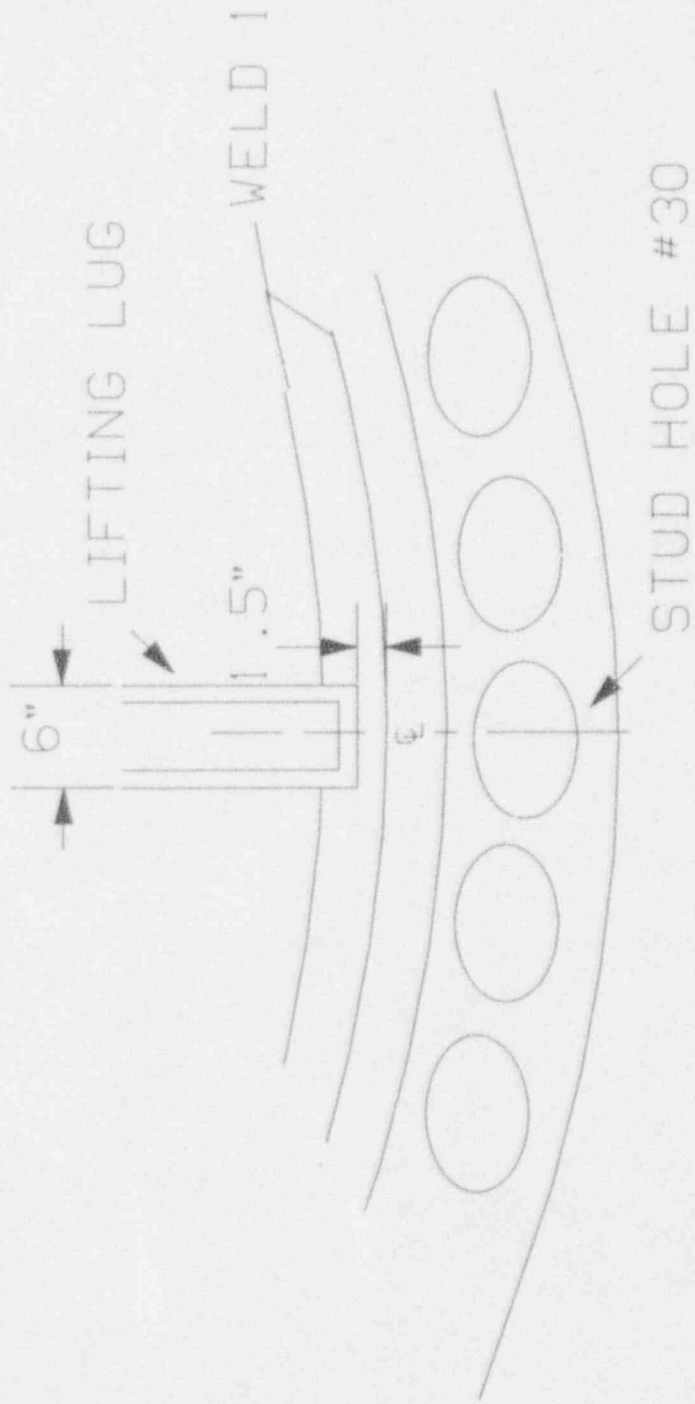
45 DEGREE AND 60 DEGREE



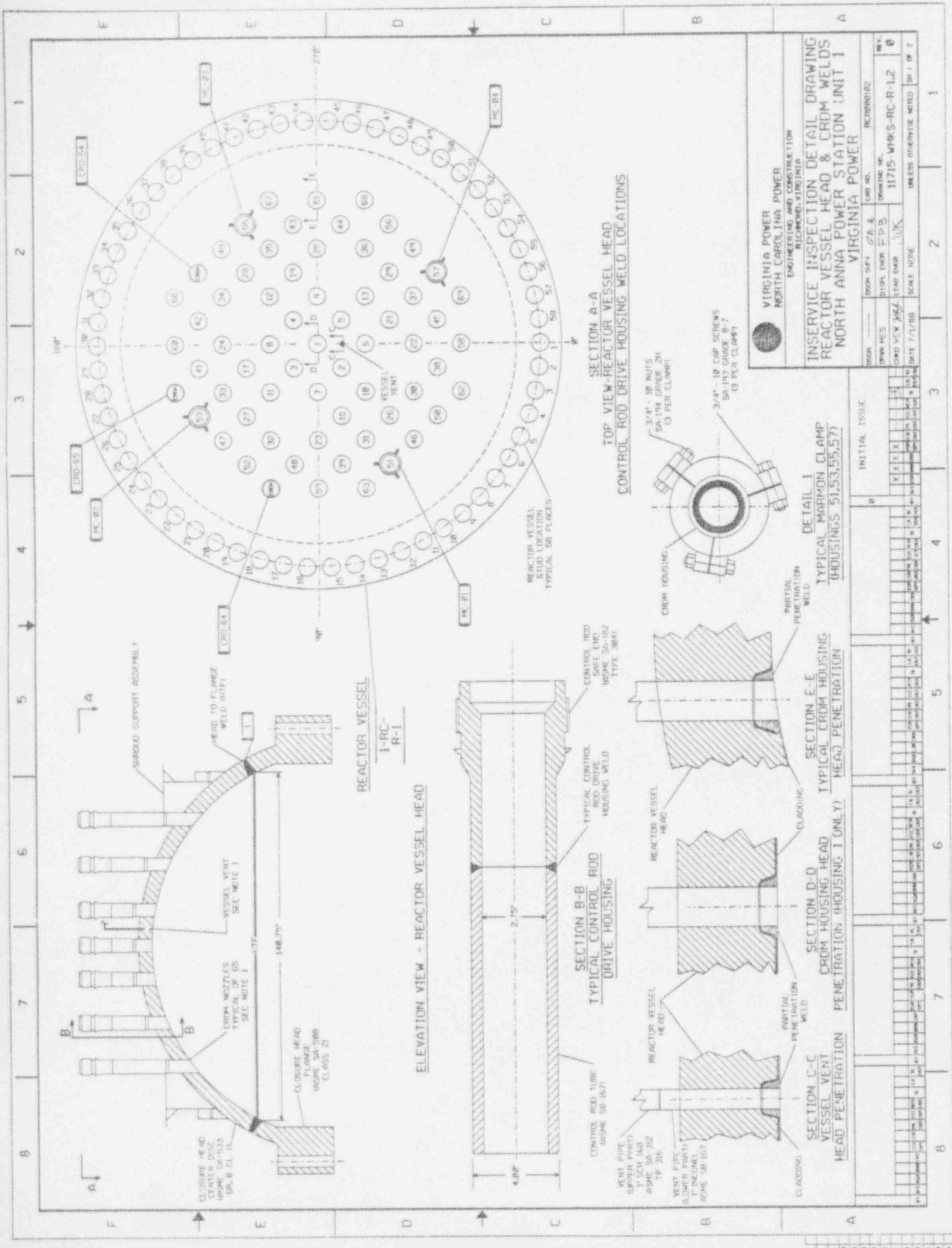
SCAN DIRECTIONS

WELD 1

SKETCH 1A



SKETCH 1 B



**VIRGINIA POWER**  
NORTH CAROLINA POWER  
ENGINEERING AND CONSTRUCTION  
RICHMOND, VIRGINIA

**INSERVICE INSPECTION DETAIL DRAWING**  
REACTOR VESSEL HEAD & CROM WELDS  
NORTH ANNA POWER STATION UNIT 1  
VIRGINIA POWER

DESIGN	DATE	BY	APP'D	REVISION NO.
DRW. NO.	11715	WPKS-RC-R-1.2		0
LOAD NO.				
SCALE				

UNLESS OTHERWISE NOTED SH 1 OF 2

NO.	REVISION	DATE	INITIALS	ISSUE
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				



**Table NDE-20-2  
North Anna Unit 1  
Examination Coverage Estimates (Vessels)  
Category B-D, Item B3.110**

<u>Mark/Weld#</u>	<u>Beam Angle</u>	<u>Exam Area</u>	<u>Scan Direction</u>	<u>% Exam</u>	<u>Reason For Partial</u>	<u>Sketch#</u>
10, 11, 12	0	Weld & Base	-	80	Nozzle Geometry, Cladding Prevents Extended V-path	2
	45	Weld	2	85		
	45	Weld	5	25		
	45	Weld	7	100		
	45	Weld	8	100		
	60	Weld	2	90		
	60	Weld	5	15		
	60	Weld	7	100		
	60	Weld	8	100		
	45 & 60	Base	2	80		
	45 & 60	Base	5	35		
	45 & 60	Base	7	65		
	45 & 60	Base	8	65		

UT Scan Direction Definitions

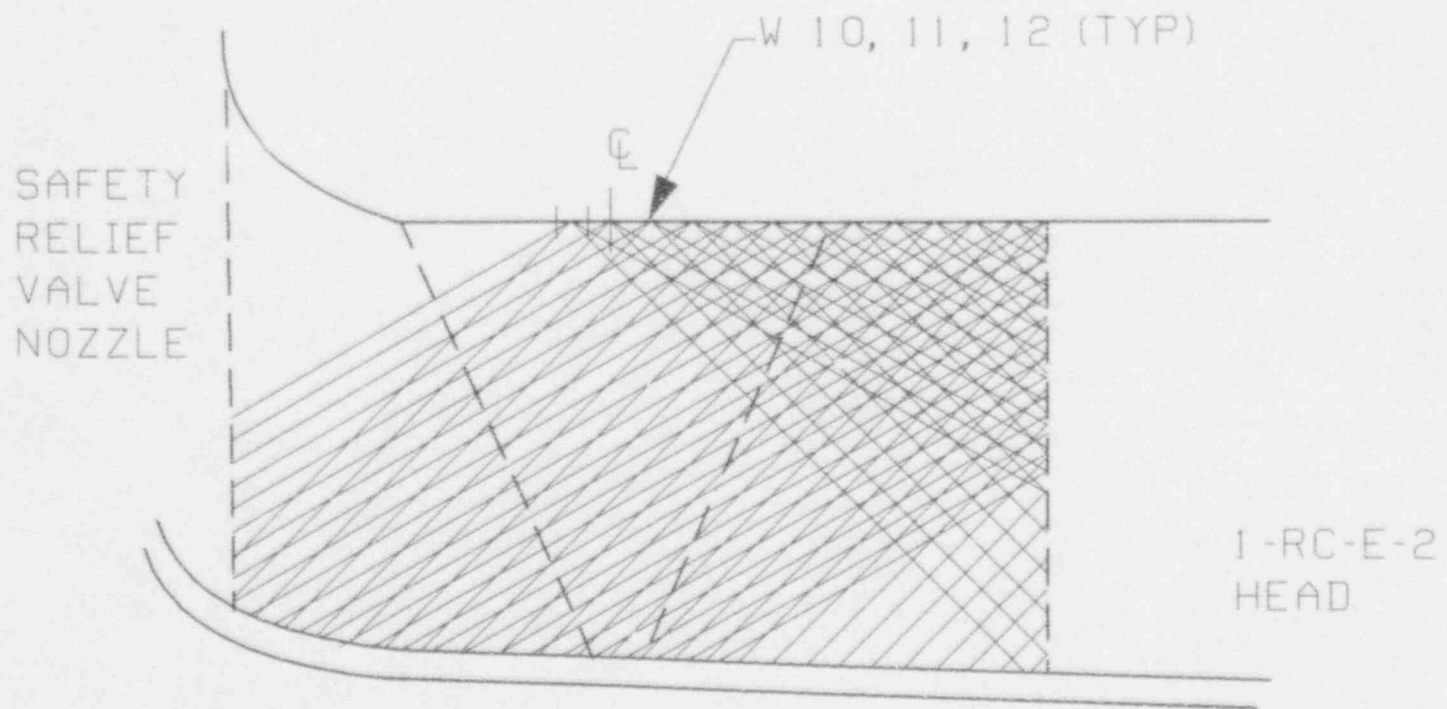
2 - Axial scan flange side of weld

5 - Axial scan head side of weld

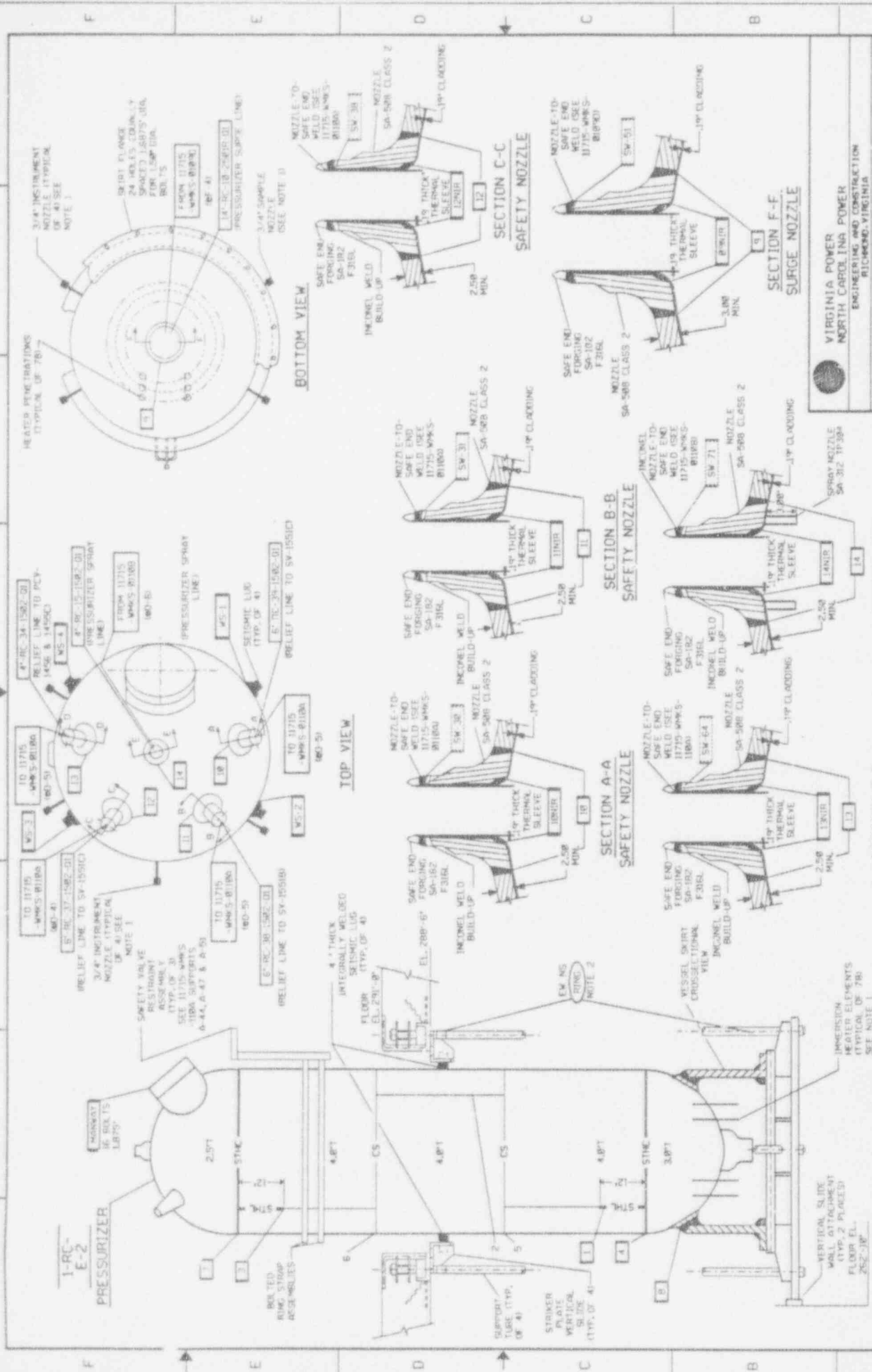
7 - Circumferential scan, clockwise (looking down on head)

8 - Circumferential scan, counterclockwise (looking down on head)





SKETCH 2



VIRGINIA POWER  
 NORTH CAROLINA POWER  
 ENGINEERING AND CONSTRUCTION  
 RICHMOND, VIRGINIA

INSERVICE INSPECTION DETAIL DRAWING  
 PRESSURIZER: J-RC-E-2  
 NORTH ANNA POWER STATION UNIT 1  
 VIRGINIA POWER

DESIGN	1000N SPT	DATE	7/20/80	SCALE	NONE
DRW	DC/3/EF	BY	EMR	CHKD	WEM
REV.		NO.		DATE	
1		1			
2		2			
3		3			
4		4			
5		5			
6		6			
7		7			
8		8			

UNLESS OTHERWISE NOTED (S) 1 OF 2

GENERAL ELEVATION

1					
2					
3					
4					
5					
6					
7					
8					

INITIAL ISSUE

1					
2					
3					
4					
5					
6					
7					
8					

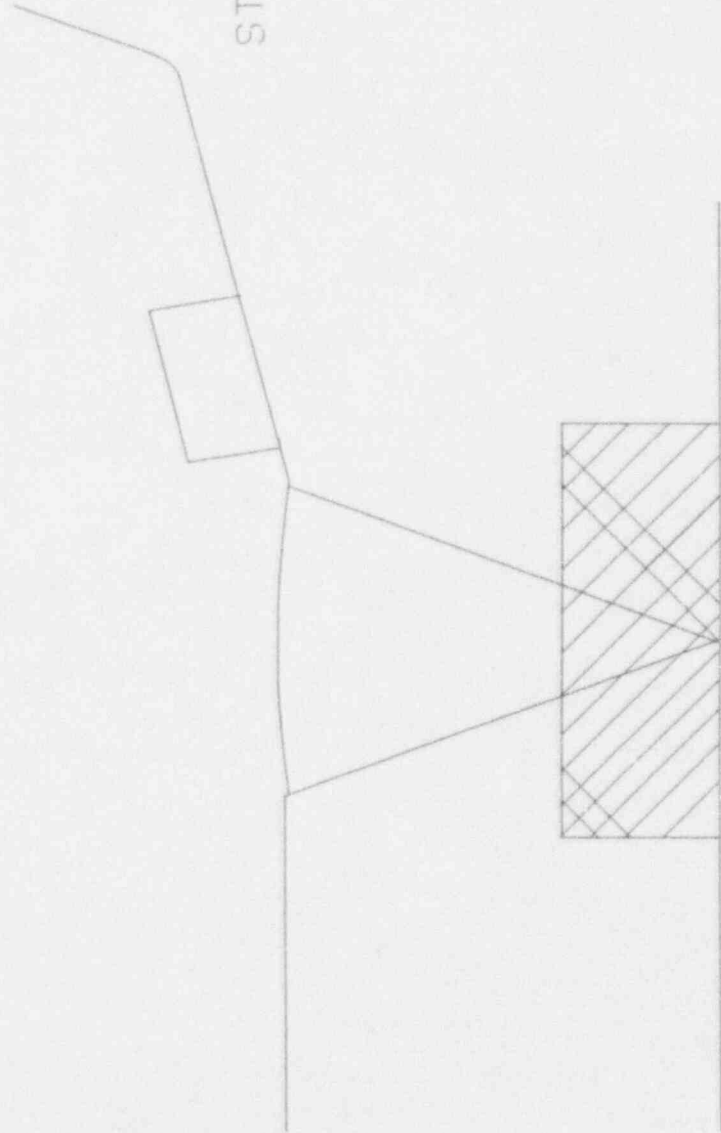
**Table NDE-20-3  
North Anna Unit 1  
Examination Coverage Estimates (Piping & Integral Attachments)**

Mark/Weld #	Category	Item #	UT Scan Coverage %				Surface Coverage %	Reason For Partial	Sketch #
			2	5	7	8			
4A	B-F	B5.70	100	70	75	75	100	Nozzle & Weld Crown Geometry, Material Attenuation Prevents Extended V-path	3
5A	B-F	B5.70	91	94	80	80	100	Nozzle & Weld crown Geometry, Material Attenuation Prevents Extended V-path	3
16A	B-F	B5.70	100	62	90	90	100	Nozzle & Weld crown Geometry, Material Attenuation Prevents Extended V-path	3
17A	B-F	B5.70	62	100	90	90	100	Nozzle & Weld crown Geometry, Material Attenuation Prevents Extended V-path	3
28A	B-F	B5.70	78	100	90	90	100	Nozzle & Weld crown Geometry, Material Attenuation Prevents Extended V-path	3
29A	B-F	B5.70	83	100	90	90	100	Nozzle & Weld crown Geometry, Material Attenuation Prevents Extended V-path	3
37	B-J	B9.11	75	0	90	90	100	Nozzle & Weld crown Geometry, Material Attenuation Prevents Extended V-path	4
SW-39	B-J	B9.31	90	0	27	27	100	Branch Connection Configuration	5
SW-19	B-J	B9.31	90	0	27	27	100	Branch Connection Configuration	5
SW-41	B-J	B9.31	90	0	27	27	100	Branch Connection Configuration	5
SW-42	B-J	B9.31	90	0	27	27	100	Branch Connection Configuration	5

UT Scan Direction Definitions

- 2 - Axial scan, 180 degrees from isometric flow direction (weld count).
- 5 - Axial scan, the same direction as the isometric flow (weld count).
- 7 - Circumferential scan, clockwise rotation when viewing in the direction of isometric flow.
- 8 - Circumferential scan, counterclockwise rotation when viewing in the direction of isometric flow.

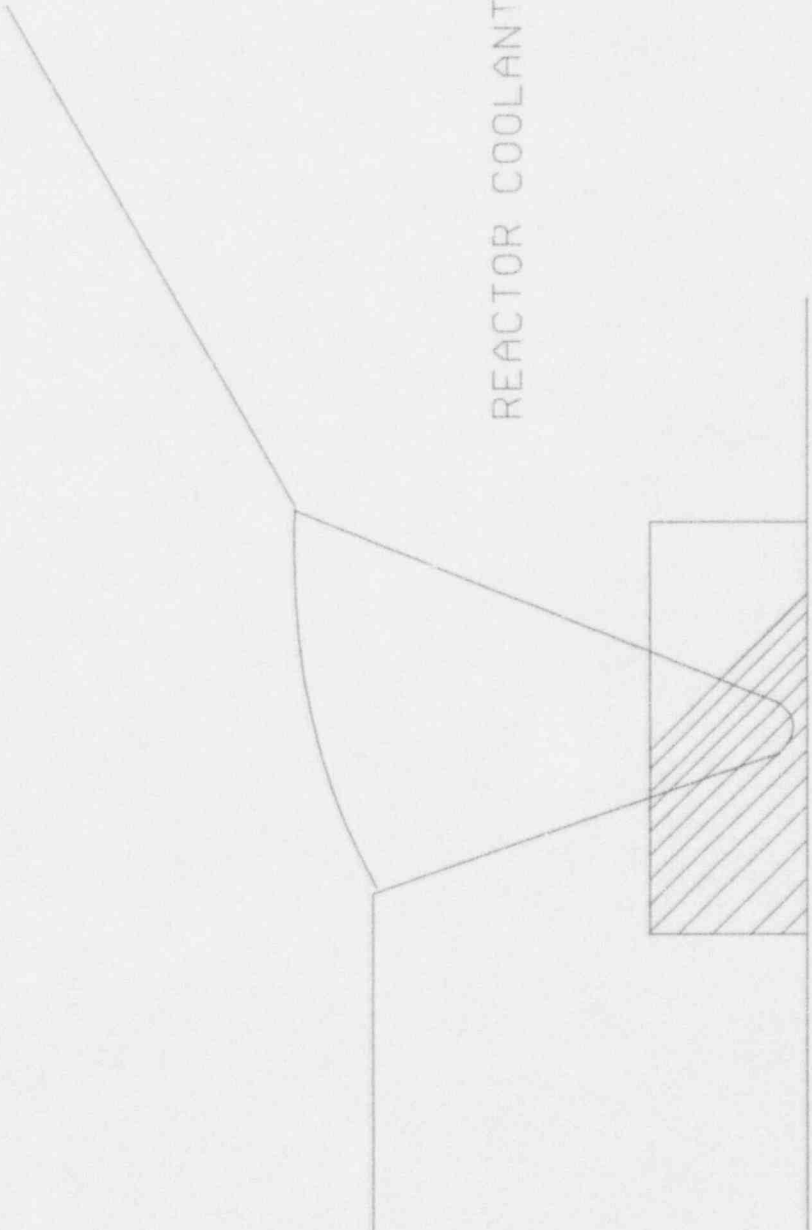
STEAM GENERATOR



WELD 4A, 5A, 16A, 17A, 28A, AND 29A (TYPICAL)

SKETCH 3

REACTOR COOLANT PUMP



WELD 37

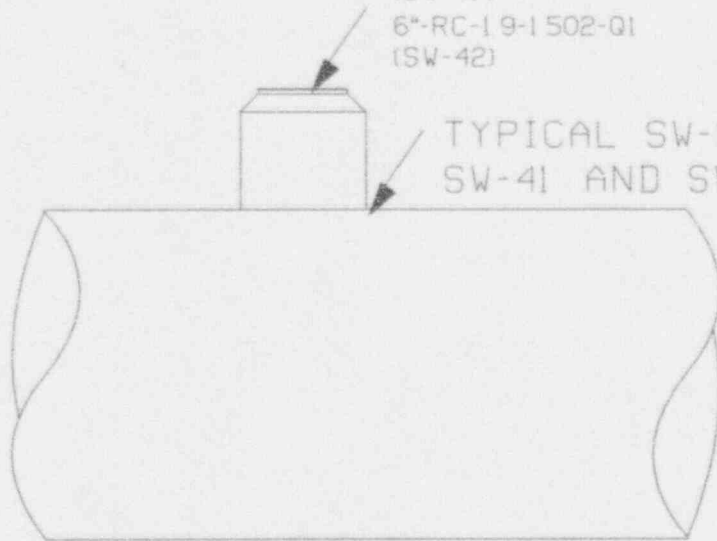
SKETCH 4

6"-RC-18-1502-Q1  
(SW-19)

12"-RC-22-1502-Q1  
(SW-39)

12"-RC-23-1502-Q1  
(SW-41)

6"-RC-19-1502-Q1  
(SW-42)

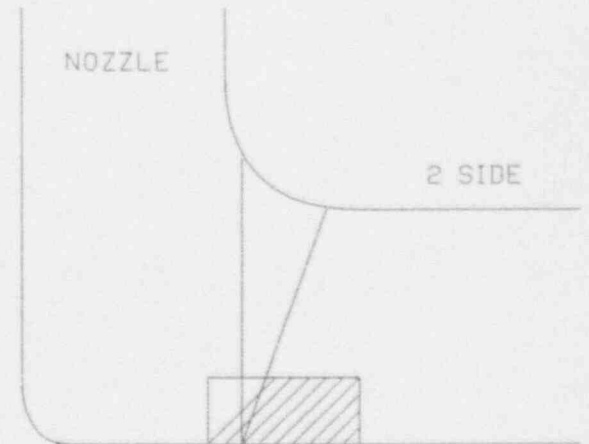


TYPICAL SW-19, SW-39  
SW-41 AND SW-42

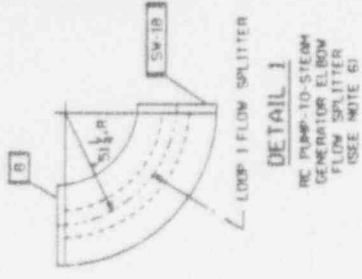
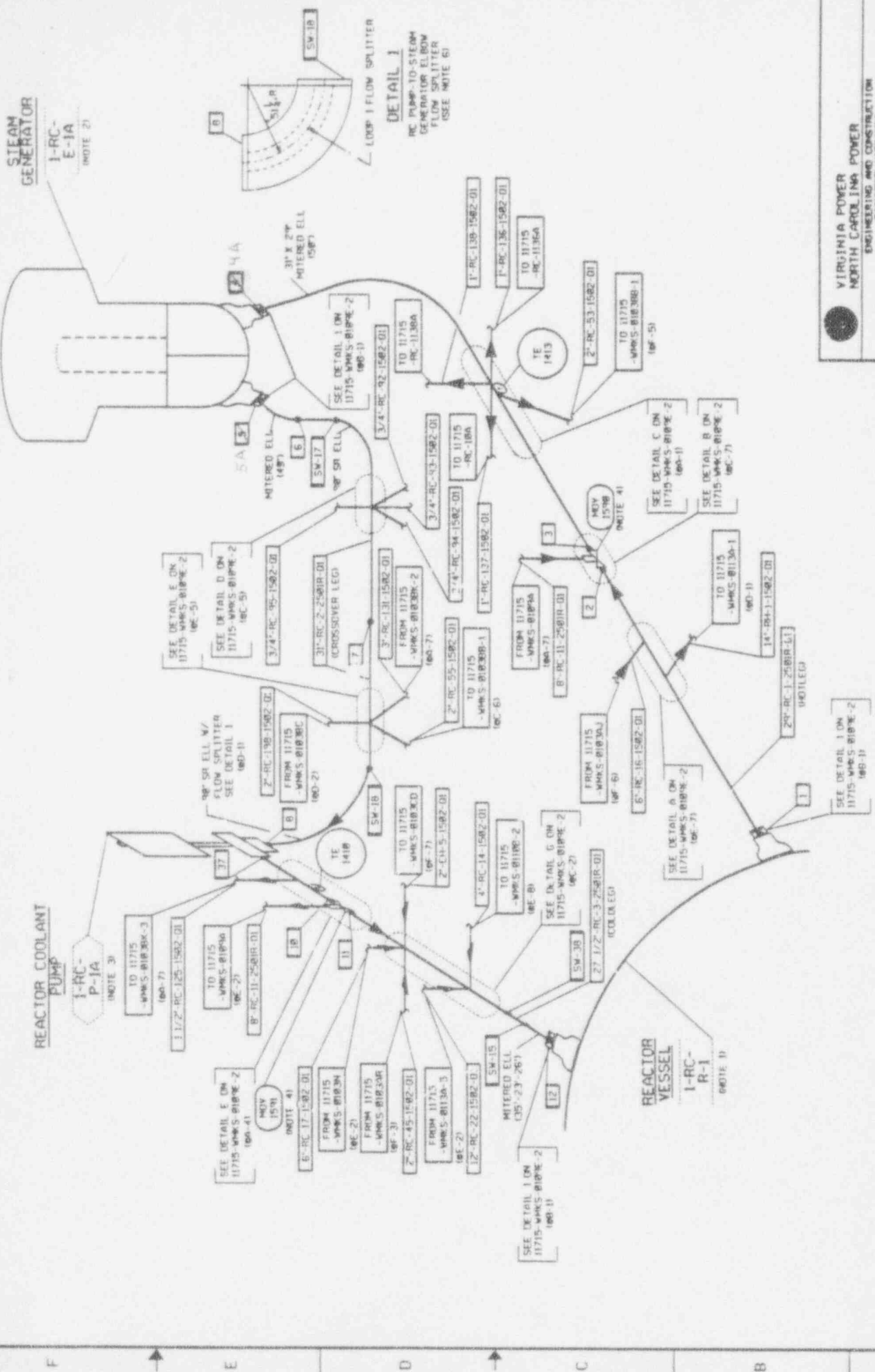
29"-RC-4-2501 R-Q1  
(SW-19)

27 1/2"-RC-3-2501 R-Q1  
(SW-39)

27 1/2"-RC-6-2501 R-Q1  
(SW-41 AND SW-42)



SKETCH 5



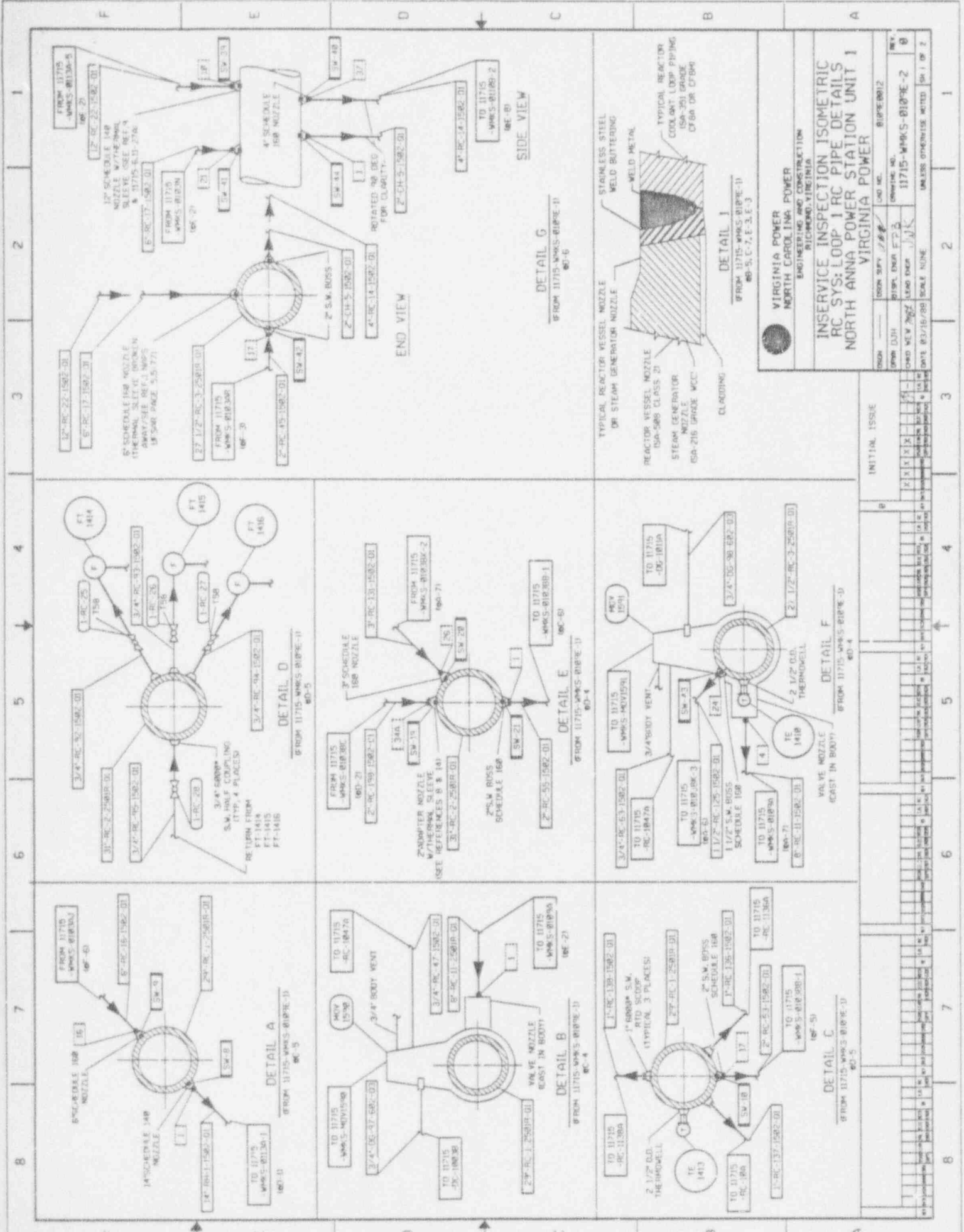
**VIRGINIA POWER**  
**NORTH CAROLINA POWER**  
 ENGINEERING AND CONSTRUCTION  
 RICHMOND, VIRGINIA

**INSERVICE INSPECTION ISOMETRIC**  
**RC SYS: LOOP 1 REACTOR COOLANT PIPE**  
**NORTH ANNA POWER STATION UNIT 1**  
**VIRGINIA POWER**

DESIGN	DATE	BY	CHKD	APP'D	SCALE	NOTE
11715-MKKS-01000-1	07/25/85	JJK	JJK	JJK	AS SHOWN	UNLESS OTHERWISE NOTED

NO.	REVISION	DATE	BY	CHKD	APP'D	SCALE	NOTE
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							





**REVISIONS**

NO.	DATE	BY	REASON
1	03/15/98	JJK	SCALE NONE
2			
3			
4			
5			
6			
7			
8			

**INITIAL ISSUE**

DESIGNER	CHAS. M. W. ANG
CHECKER	JJK
SCALE	NONE
DATE	03/15/98
BY	JJK
NO.	1
OF	2

**UNLESS OTHERWISE NOTED**

**Virginia Power**  
**North Carolina Power**  
**Engineering and Construction**  
**Richmond, Virginia**

**INSERVICE INSPECTION ISOMETRIC**  
**RC SYS: LOOP 1 RC PIPE DETAILS**  
**NORTH ANNA POWER STATION UNIT 1**  
**VIRGINIA POWER**

FROM 11715-WPKS-B10RE-11  
 80-5, C-7, E-3, E-3

FROM 11715-WPKS-B10RE-2  
 80-5

FROM 11715-WPKS-B10RE-3  
 80-4

FROM 11715-WPKS-B10RE-4  
 80-4

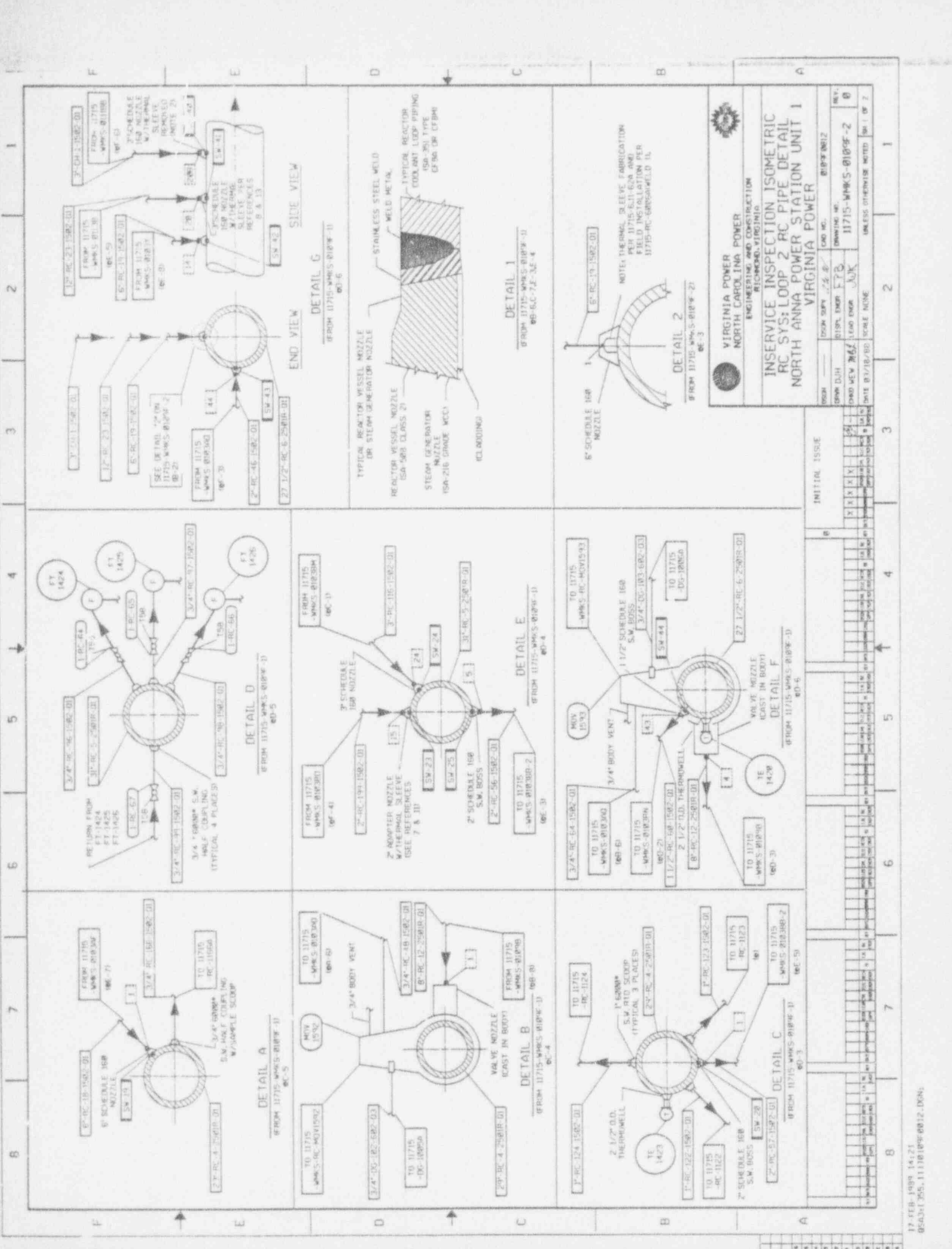
FROM 11715-WPKS-B10RE-5  
 80-5


FROM 11715-WPKS-B10RE-6  
 80-5

FROM 11715-WPKS-B10RE-7  
 80-5

FROM 11715-WPKS-B10RE-8  
 80-5






**VIRGINIA POWER**  
 NORTH CAROLINA POWER  
 ENGINEERING AND CONSTRUCTION  
 RICHMOND, VIRGINIA

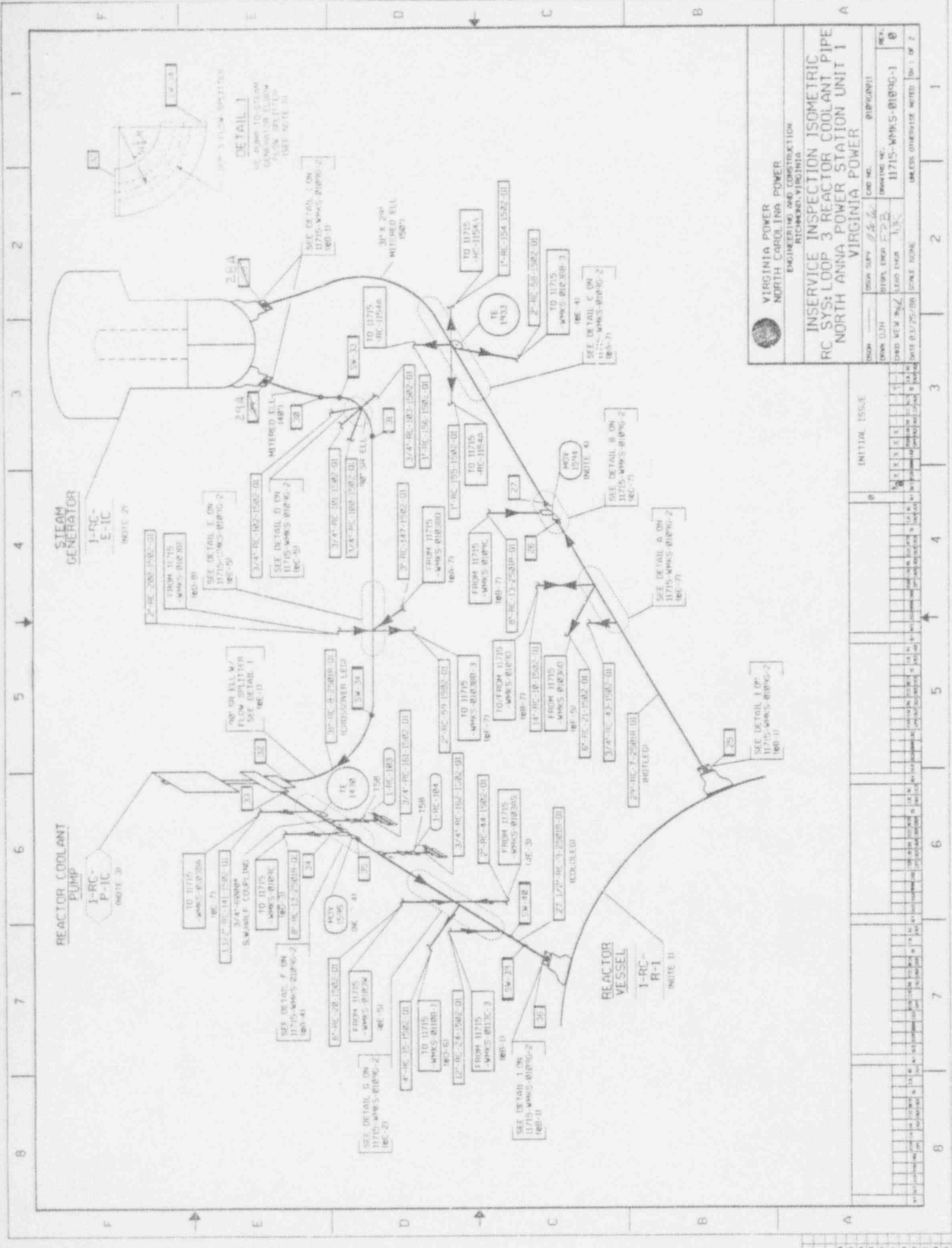
**INSERVICE INSPECTION ISOMETRIC**  
**RC SYS: LOOP 2 RC PIPE DETAIL**  
**NORTH ANNA POWER STATION UNIT 1**  
**VIRGINIA POWER**

FROM: 11715-MNKS-0109F-2  
 DRAWING NO.: 11715-MNKS-0109F-2  
 DATE: 07/18/00  
 SCALE: NONE  
 SHEET NO.: 01 OF 2

INITIAL ISSUE

NO.	DATE	BY	CHKD BY	REASON
1	07/18/00	JUK	JUK	ISSUED FOR CONSTRUCTION

6	7	6	5	4	3	2	1
---	---	---	---	---	---	---	---



**VIRGINIA POWER**  
**NORTH CAROLINA POWER**  
 ENGINEERING AND CONSTRUCTION  
 RICHMOND, VIRGINIA

**INSERVICE INSPECTION ISOMETRIC**  
**RC SYS: LOOP 3 REACTOR COOLANT PIPE**  
**NORTH ANNA POWER STATION UNIT 1**  
**VIRGINIA POWER**

BOOK	BOOK SURV	REV. NO.	018762011
BOOK 111	BOOK 111	ISSUED BY	11715-NPKS-01876-1
BOOK 111	BOOK 111	DATE	11/17/75
BOOK 111	BOOK 111	SCALE	AS SHOWN
BOOK 111	BOOK 111	DATE	11/17/75
BOOK 111	BOOK 111	SCALE	AS SHOWN
BOOK 111	BOOK 111	DATE	11/17/75
BOOK 111	BOOK 111	SCALE	AS SHOWN

INITIAL ISSUE

NO.	DATE	BY	REVISION
1			
2			
3			
4			
5			
6			
7			
8			

**Table NDE-20-4**  
**North Anna Unit 1**  
**Examination Coverage Estimates (Boron Injection Tank)**  
**Category C-A, Item C1.20**

<u>Mark/Weld #</u>	<u>Beam Angle</u>	<u>Exam Area</u>	<u>Scan Direction</u>	<u>% Exam</u>	<u>Reason For Partial</u>	<u>Sketch #</u>
1 (58" - 116")	0	Weld & Base	-	91	Support Legs 3 and 4	6
	45	Weld	2	99		
	45	Weld	5	82		
	45	Weld	7	100		
	45	Weld	8	100		
	60	Weld	2	99		
	60	Weld	5	78		
	60	Weld	7	100		
	60	Weld	8	100		
	45 & 60	Base	2	98		
	45 & 60	Base	5	80		
	45 & 60	Base	7 (2 side)	100		
	45 & 60	Base	8 (2 side)	100		
	45 & 60	Base	7 (5 side)	87		
	45 & 60	Base	8 (5 side)	87		

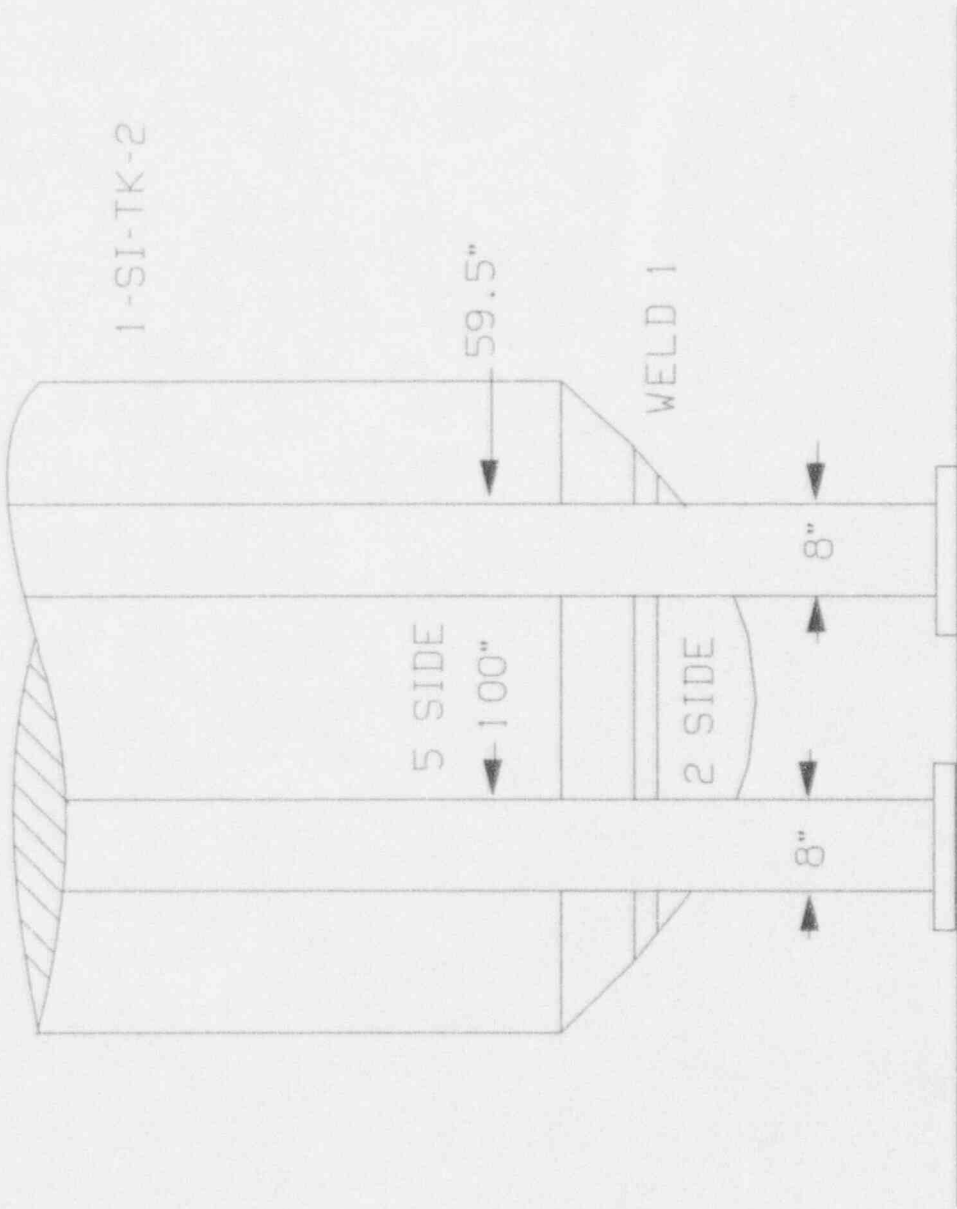
UT Scan Direction Definitions

2 - Axial scan head side of weld

5 - Axial scan shell side of weld

7 - Circumferential scan, clockwise (looking down on tank)

8 - Circumferential scan, counterclockwise (looking down on tank)



1-SI-TK-2

5 SIDE  
1.00"

59.5"

WELD 1

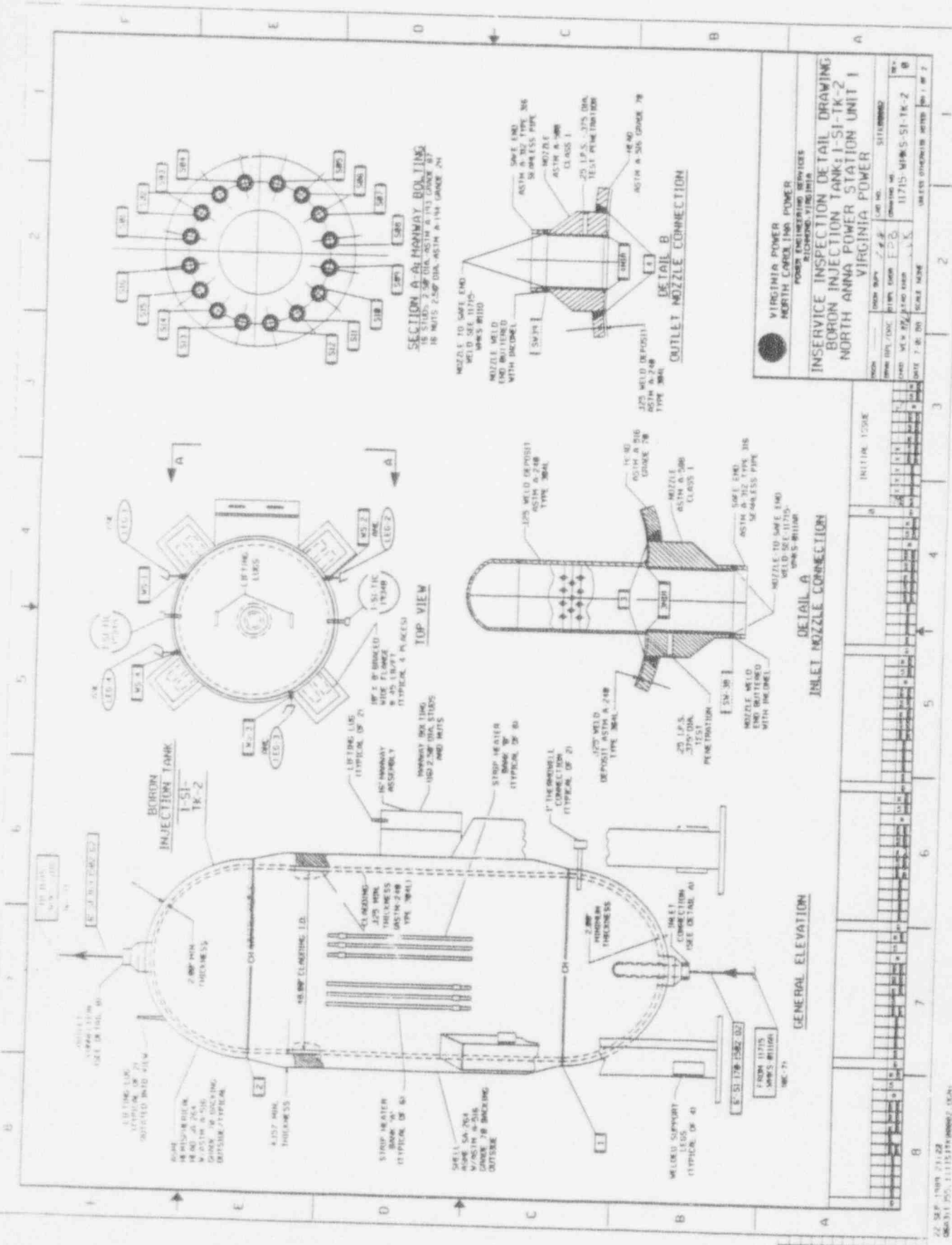
2 SIDE

8"

8"

SKETCH 6





**VIRGINIA POWER**  
NORTH CAROLINA POWER  
FOUR ENGINEERING SERVICES  
RICHMOND, VIRGINIA

**INSERVICE DETAIL DRAWING**  
BORON INJECTION TANK; 1-SI-TK-2  
NORTH ANNA POWER STATION UNIT 1  
VIRGINIA POWER

NO. 11725	REV. 001	DATE 7-8-79	SCALE NONE
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
DATE 11-15-78	DATE 11-15-78	DATE 11-15-78	DATE 11-15-78
BY	BY	BY	BY
11725-MKS-SI-TK-2	11725-MKS-SI-TK-2	11725-MKS-SI-TK-2	11725-MKS-SI-TK-2

22 SEP 1989 7:12P  
080311 255,11115174 00002 0001



NORTH ANNA UNIT 1  
RELIEF REQUEST SPT-12

**I. IDENTIFICATION OF COMPONENTS**

Class 1, 2, and 3 Components.

**II. IMPRACTICAL CODE REQUIREMENTS**

IWA-4000 and IWA-5214 require a hydrostatic pressure test in accordance with IWB-5000, IWC-5000, or IWD-5000 following welded repairs or installation of replacement items by welding.

**III. BASIS FOR RELIEF**

In past situations our utility has been required to defer or ask relief from ASME Section XI hydrostatic tests following repair or replacement activities due to various reasons, which identified a basis of impracticality. This has ranged from boundary valve isolation problems to incorporation of the steam generators in the test boundary. These situations have necessitated in some cases immediate communication with and approval from the NRC, so that start-up delays or LCO conditions could be avoided. Test deferrals, like those associated with the steam generator, eventually must be conducted, and are considered inordinately burdensome, considering that the ten-year hydrostatic tests have been eliminated for Class 1 and 2 systems with the approval in Regulatory Guide 1.147, Code Case N-498, "Alternative Rules for 10-year Hydrostatic Pressure Testing for Class 1 and 2 Systems, Section XI, Division 1." The Code has recognized that alternative rules should be available to hydrostatic testing to allow an option to the owner. They have developed Code Case N-416-1, Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding." This Code Case as of this writing has been passed by Section XI and has been sent up to Main Committee for approval. Accordingly, it is considered impractical to maintain only the hydrostatic option.

RELIEF REQUEST SPT-12 (Continued):

**IV. ALTERNATE TESTING**

In situations following welded repairs or installation of replacement items by welding, when the hydrostatic test required by IWA-4000 or IWA-5214 is not performed, the following alternative requirements shall be applied:

- 1) NDE shall be performed in accordance with the methods and acceptance criteria of the applicable Subsection of the 1989 Edition of ASME Section III. Additionally, where no construction NDE is required on partial and full penetration welds greater than 1 inch nominal pipe size, these welds shall receive a surface examination as a minimum.
- 2) Prior to or immediately upon return to service, a VT-2 visual examination shall be performed in conjunction with a system pressure test, using the 1983 Edition Summer 1983 Addenda of Section XI, in accordance with IWA-5000, at nominal operating pressure and temperature.
- 3) Use of this alternative shall be documented on the NIS-2 Form.

If the original Code Case N-416 was used to defer a Class 2 hydrostatic test, the deferred test may be eliminated when the requirements of this alternative testing have been met.

NORTH ANNA UNIT 2  
RELIEF REQUEST SPT-15

**I. IDENTIFICATION OF COMPONENTS**

Class 1, 2, and 3 Components.

**II. IMPRACTICAL CODE REQUIREMENTS**

IWA-4000 and IWA-5214 require a hydrostatic pressure test in accordance with IWB-5000, IWC-5000, or IWD-5000 following welded repairs or installation of replacement items by welding.

**III. BASIS FOR RELIEF**

In past situations our utility has been required to defer or ask relief from ASME Section XI hydrostatic tests following repair or replacement activities due to various reasons, which identified a basis of impracticality. This has ranged from boundary valve isolation problems to incorporation of the steam generators in the test boundary. These situations have necessitated in some cases immediate communication with and approval from the NRC, so that start-up delays or LCO conditions could be avoided. Test deferrals, like those associated with the steam generator, eventually must be conducted, and are considered inordinately burdensome, considering that the ten-year hydrostatic tests have been eliminated for Class 1 and 2 systems with the approval in Regulatory Guide 1.147, Code Case N-498, "Alternative Rules for 10-year Hydrostatic Pressure Testing for Class 1 and 2 Systems, Section XI, Division 1." The Code has recognized that alternative rules should be available to hydrostatic testing to allow an option to the owner. They have developed Code Case N-416-1, Alternative Pressure Test Requirement for Welded Repairs or Installation of Replacement Items by Welding." This Code Case as of this writing has been passed by Section XI and has been sent up to Main Committee for approval. Accordingly, it is considered impractical to maintain only the hydrostatic option.

RELIEF REQUEST SPT-15 (Continued):

**IV. ALTERNATE TESTING**

In situations following welded repairs or installation of replacement items by welding, when the hydrostatic test required by IWA-4000 or IWA-5214 is not performed, the following alternative requirements shall be applied:

- 1) NDE shall be performed in accordance with the methods and acceptance criteria of the applicable Subsection of the 1989 Edition of ASME Section III. Additionally, where no construction NDE is required on partial and full penetration welds greater than 1 inch nominal pipe size, these welds shall receive a surface examination as a minimum.
- 2) Prior to or immediately upon return to service, a VT-2 visual examination shall be performed in conjunction with a system pressure test, using the 1986 Edition of Section XI, in accordance with IWA-5000, at nominal operating pressure and temperature.
- 3) Use of this alternative shall be documented on the NIS-2 Form.

If the original Code Case N-416 was used to defer a Class 2 hydrostatic test, the deferred test may be eliminated when the requirements of this alternative testing have been met.