

January 19, 2001  
NG-01-0072

Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station 0-P1-17  
Washington, DC 20555-0001

Subject: Duane Arnold Energy Center  
Docket No: 50-331  
Op. License No: DPR-49

Additional Information Regarding Inservice  
Inspection Relief Request NDE-R028, Revision 1

References: 1. Letter dated February 7, 2000, NG-00-0111, from K. Peveler  
(IES Utilities Inc.) to NRC, Relief Requests NDE-R028, Revision 1  
and MC-R008; RRF-F002 Flaw Evaluation  
2. Letter dated October 18, 1999, from NRC to E. Protsch  
(IES Utilities Inc.), Safety Evaluation of Third 10-Year Interval  
Inservice Inspection Program Plan Requests for Relief for  
Duane Arnold Energy Center

File: A-100, A-286

Reference 1 requested approval of Duane Arnold Energy Center (DAEC) Inservice Inspection Program Relief Request NDE-R028, Revision 1. NDE-R028 was approved by the NRC by letter dated October 18, 1999 (Reference 2). Revision 1 modified NDE-R028 to incorporate additional nozzle-to-vessel welds which were examined during refueling outage (RFO) 16 and for which 100% coverage could not be obtained.

On January 11, 2001, a teleconference was held between the NRC Staff and Nuclear Management Company, LLC (NMC) personnel to discuss NDE-R028, Revision 1. The Staff requested additional information as to which welds involve reactor pressure vessel (RPV) appurtenances which obstruct full examination coverage. The Staff also requested diagrams showing nozzle curvature which inhibits examination coverage. This information is provided on the attached examination summary sheets and nozzle diagrams. As shown on the summary sheets, examination coverages of the welds examined during RFO 16 were limited due to nozzle configurations; examination coverage of weld RCB-D001 was also limited due to insulation support bracket interference.

A047

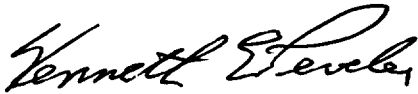
January 19, 2001

NG-01-0072

Page 2


Should you have any questions regarding this matter, please contact this office.

Sincerely,



Kenneth E. Peveler  
Manager, Regulatory Performance

Attachment

cc: G. Park (w/a)   
C. Rushworth (w/a)  
M. Wadley (w/o)  
G. VanMiddlesworth (w/o)  
B. Mozafari (NRC-NRR) (w/a)  
J. Dyer (Region III) (w/a)  
NRC Resident Office (w/a)  
Docu (w/a)

**Attachment to NG-01-0072  
(13 Pages)**



GE NUCLEAR ENERGY

## EXAMINATION SUMMARY SHEET

Report No.:  
199010Site and Unit: Duane ArnoldComponent ID: CSA-D001Outage: RF016REACTOR VESSEL - NOZZLEASME Cat.: B-D

ASME Item

B3.90

Aug Requirements:

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
0° Long.	99DM-052	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99
45° Shear	99DM-053	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99
60° Shear	99DM-054	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99

## Examination Results:

During the manual ultrasonic examination of CSA-D001 no recordable indications were detected by the 0° longitudinal and 45° and 60° shear wave search units.

The examination was performed from the RPV shell side only due to the nozzle configuration.

63% of the Code required volume was examined.

Examination results were compared to data report 88-143,144,145 from 1988 outage with ☒ No Change

These examinations were performed under Work Order: N/A

☐ Change

This Summary and the following data sheets have been reviewed and accepted by the following personnel:

Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/4/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>NA</u>	Date: <u>11/4/99</u>
Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/7/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>ANII</u>	Date: <u>11/8/99</u>

RWP: \_\_\_\_\_

Dose: \_\_\_\_\_ mr.

Page 1 of 5



GE NUCLEAR ENERGY

## EXAMINATION SUMMARY SHEET

Report No.:

199112

Site and Unit:

Duane Arnold

Component ID:

MSB-D001

Outage:

RF016REACTOR VESSEL - NOZZLE

ASME Cat.:

B-D

ASME Item

B3.90

Aug Requirements:

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
0° Long.	99DM-046	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99
45° Shear	99DM-047	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99
60° Shear	99DM-048	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99

## Examination Results:

During the manual ultrasonic examination of MSB-D001 no recordable indications were detected by the 0° longitudinal and 45° and 60° shear wave search units.

The examination was performed from the RPV shell side only due to the nozzle configuration.

63% of the Code required volume was examined.

Examination results were compared to data report 91-132A,B,C from 1991 outage with ☒ No Change

These examinations were performed under Work Order: N/A ☐ Change

This Summary and the following data sheets have been reviewed and accepted by the following personnel:

Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/4/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>NA</u>	Date: <u></u>
Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/7/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>ANIE</u>	Date: <u>11/8/99</u>

RWP: \_\_\_\_\_

Dose: \_\_\_\_\_ mr.

Page 1 of 5



GE NUCLEAR ENERGY

## EXAMINATION SUMMARY SHEET

Report No.:

199114

Site and Unit: **Duane Arnold**Component ID: **RCA-D001**Outage: **RF016****REACTOR VESSEL - NOZZLE**ASME Cat.: **B-D**

ASME Item

**B3.90**

Aug Requirements:

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
-----------------	------------	-----------	-----------	-------------------	-----------------------	------------	------

0° Long.	99DM-067	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/3/99
45° Shear	99DM-068	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/3/99
60° Shear	99DM-069	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/3/99

## Examination Results:

During the manual ultrasonic examination of RCA-D001 no recordable indications were detected by the 0° longitudinal and 45° and 60° shear wave search units.

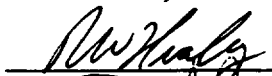
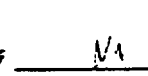
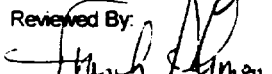

The examination was performed from the RPV shell side only due to the nozzle configuration.

59% of the Code required volume was examined.

Examination results were compared to data report R-127 from 1990 outage with ☒ No Change

These examinations were performed under Work Order: N/A ☐ Change

This Summary and the following data sheets have been reviewed and accepted by the following personnel:

Reviewed By: 	Level: <b>III</b>	Date: <b>11/4/99</b>	Reviewed By: 	Title: <b>N/A</b>	Date: <b>11/4/99</b>
Reviewed By: 	Level: <b>III</b>	Date: <b>11/7/99</b>	Reviewed By: 	Title: <b>N/A</b>	Date: <b>11/8/99</b>

RWP: \_\_\_\_\_

Dose: \_\_\_\_\_ mr.

Page **1** of **5**



GE NUCLEAR ENERGY

## EXAMINATION SUMMARY SHEET

Report No.:

199042

Site and Unit:

Duane Arnold

Component ID:

RCB-D001

Outage:

RF016REACTOR VESSEL - NOZZLE

ASME Cat.:

B-D

ASME Item

B3.90

Aug Requirements:

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
45° Shear	99DM-020	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	10/28/99
0° Long.	99DM-021	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	10/28/99
60° Shear	99DM-022	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	10/28/99

## Examination Results:

During the manual ultrasonic examination of RCB-D001 no recordable indications were detected by the 0° longitudinal wave and 45° and 60° shear wave search units.

The examination was performed from the RPV shell side only due to nozzle configuration. The examination was limited due to insulation support bracket interference.

57% of the Code required volume was examined.

Examination results were compared to data report

88-266

from

1988

outage with



No Change

These examinations were performed under Work Order:

N/A



Change

This Summary and the following data sheets have been reviewed and accepted by the following personnel:

Reviewed By: <u>W. H. H. H.</u>	Level: <u>III</u>	Date: <u>11/3/99</u>	Reviewed By: <u>N/A</u>	Title: _____	Date: _____
Reviewed By: <u>H. H. H. H.</u>	Level: <u>III</u>	Date: <u>11/7/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>ASIS</u>	Date: <u>11/15/99</u>

RWP: \_\_\_\_\_

Dose: \_\_\_\_\_ mr.

Page 1 of 5



GE NUCLEAR ENERGY

## EXAMINATION SUMMARY SHEET

Report No.:  
199046Site and Unit: Duane ArnoldComponent ID: RRA-D001Outage: RF016REACTOR VESSEL - NOZZLEASME Cat.: B-D

ASME Item

B3.90

Aug Requirements:

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
0° Long.	99DM-070	N/A	UT-DAC-300V0 Rev. 0	IE-30	Bob Paszkowski	III	11/4/99
45° Shear	99DM-071	N/A	UT-DAC-300V0 Rev. 0	IE-30	Bob Paszkowski	III	11/4/99
60° Shear	99DM-072	N/A	UT-DAC-300V0 Rev. 0	IE-30	Bob Paszkowski	III	11/4/99

## Examination Results:

During the manual ultrasonic examination of RRA-D001 no recordable indications were detected by the 0° longitudinal and 45° and 60° shear wave search units.

The examination was performed from the RPV shell side only due to the nozzle configuration.

63% of the Code required volume was examined.

Examination results were compared to data report 88-821 from 1988 outage with ☒ No Change

These examinations were performed under Work Order: N/A ☐ Change

This Summary and the following data sheets have been reviewed and accepted by the following personnel:

Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/12/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>ANEE</u>	Date: <u>11/12/99</u>
Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/12/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>ANEE</u>	Date: <u>11/12/99</u>

RWP: \_\_\_\_\_

Dose: \_\_\_\_\_ mr.

Page 1 of 5





GE NUCLEAR ENERGY

## EXAMINATION SUMMARY SHEET

Report No.:

I99048

Site and Unit: Duane ArnoldComponent ID: RRB-D001Outage: RF016REACTOR VESSEL - NOZZLEASME Cat.: B-D

ASME Item

B3.90

Aug Requirements:

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
0° Long.	99DM-101	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/6/99
45° Shear	99DM-102	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/6/99
60° Shear	99DM-103	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/6/99

## Examination Results:

During the manual ultrasonic examination of RRB-D001 no recordable indications were detected by the 0° longitudinal and 45° and 60° shear wave search units.

The examination was performed from the RPV shell side only due to the nozzle configuration.

63% of the Code required volume was examined.

Examination results were compared to data report

88-289

from

1988

outage with



No Change

These examinations were performed under Work Order:

N/A



Change

This Summary and the following data sheets have been reviewed and accepted by the following personnel:

<u>Michael</u>	<u>II</u>	<u>11/12/99</u>	<u>UA</u>		
Reviewed By:	Level:	Date:	Reviewed By:	Title:	Date:
<u>Paul Henry</u>	<u>III</u>	<u>11/12/99</u>	<u>ANET</u>	<u>ANET</u>	<u>11/15/99</u>
Reviewed By:	Level:	Date:	Reviewed By:	Title:	Date:

RWP: \_\_\_\_\_

Dose: \_\_\_\_\_ mr.

Page 1 of 5



GE NUCLEAR ENERGY

## EXAMINATION SUMMARY SHEET

Report No.:  
199050

Site and Unit:

Duane Arnold

Component ID:

RRC-D001

Outage:

RF016REACTOR VESSEL - NOZZLE

ASME Cat.:

B-D

ASME Item

B3.90

Aug Requirements:

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
0° Long.	99DM-073	N/A	UT-DAC-300V0 Rev. 0	IE-30	Bob Paszkowski	III	11/4/99
45° Shear	99DM-074	N/A	UT-DAC-300V0 Rev. 0	IE-30	Bob Paszkowski	III	11/4/99
60° Shear	99DM-075	N/A	UT-DAC-300V0 Rev. 0	IE-30	Bob Paszkowski	III	11/4/99

## Examination Results:

During the manual ultrasonic examination of RRC-D001 no recordable indications were detected by the 0° longitudinal and 45° and 60° shear wave search units.

The examination was performed from the RPV shell side only due to the nozzle configuration.

63% of the Code required volume was examined.

Examination results were compared to data report

87-409

from

1987

outage with



No Change

These examinations were performed under Work Order:

N/A



Change

This Summary and the following data sheets have been reviewed and accepted by the following personnel:

Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/14/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>ANIL</u>	Date: <u>11/15/99</u>
Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/14/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>ANIL</u>	Date: <u>11/15/99</u>

RWP: \_\_\_\_\_

Dose: \_\_\_\_\_ mr.

Page 1 of 5



GE NUCLEAR ENERGY

## EXAMINATION SUMMARY SHEET

Report No.:

199117

Site and Unit: Duane ArnoldComponent ID: VID-D001Outage: RF016REACTOR VESSEL - NOZZLEASME Cat.: B-D

ASME Item

B3.90

Aug Requirements:

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
0° Long.	99DM-049	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99
45° Shear	99DM-050	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99
60° Shear	99DM-051	N/A	UT-DAC-300V0 Rev. 0	IE-30	John Shea	II	11/2/99

## Examination Results:

During the manual ultrasonic examination of VID-D001 no recordable indications were detected by the 0° longitudinal and 45° and 60° shear wave search units.

The examination was performed from the RPV shell side only due to the nozzle configuration.

63% of the Code required volume was examined.

Examination results were compared to data report

R-129

from

1990

outage with



No Change

These examinations were performed under Work Order:

N/A



Change

This Summary and the following data sheets have been reviewed and accepted by the following personnel:

Reviewed By: <u>[Signature]</u>	Level: <u>II</u>	Date: <u>11/4/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>NA</u>	Date: <u>11/2/99</u>
Reviewed By: <u>[Signature]</u>	Level: <u>III</u>	Date: <u>11/2/99</u>	Reviewed By: <u>[Signature]</u>	Title: <u>ANCI</u>	Date: <u>11/2/99</u>

RWP: \_\_\_\_\_

Dose: \_\_\_\_\_ mr.

Page 1 of 5

2	8/8/95	REVISED PER DURF-0011	DA	GD	SS	SS
1	2-09-94	DRAFTED FOR VESSEL INSPECTION PROGRAM	MS	DF	GP	SS
NO.	DATE	REVISION	DRFTR	CHKD	ENGR	VER.

NO.	DESCRIPTION	BILL OF MATL.	PROCED.
1	FORGING	SA508 CLASS 2	
2	SAFE END FORGING	SB-166	
3	SAFE END EXT. FORGING	SA336 CLASS F8	
4	INSERT	INCONEL 82	
5	THERMAL SLEEVE	SA336 CLASS F8	
6	1ST CLAD LAYER	309L	
7	2ND & 3RD CLAD LAYER	308L	
8	SHELL PLATE #3	SA533 CLASS 1 GR.B	

IES:  
Inservice Inspection Program  
Reactor Pressure Vessel Sketch

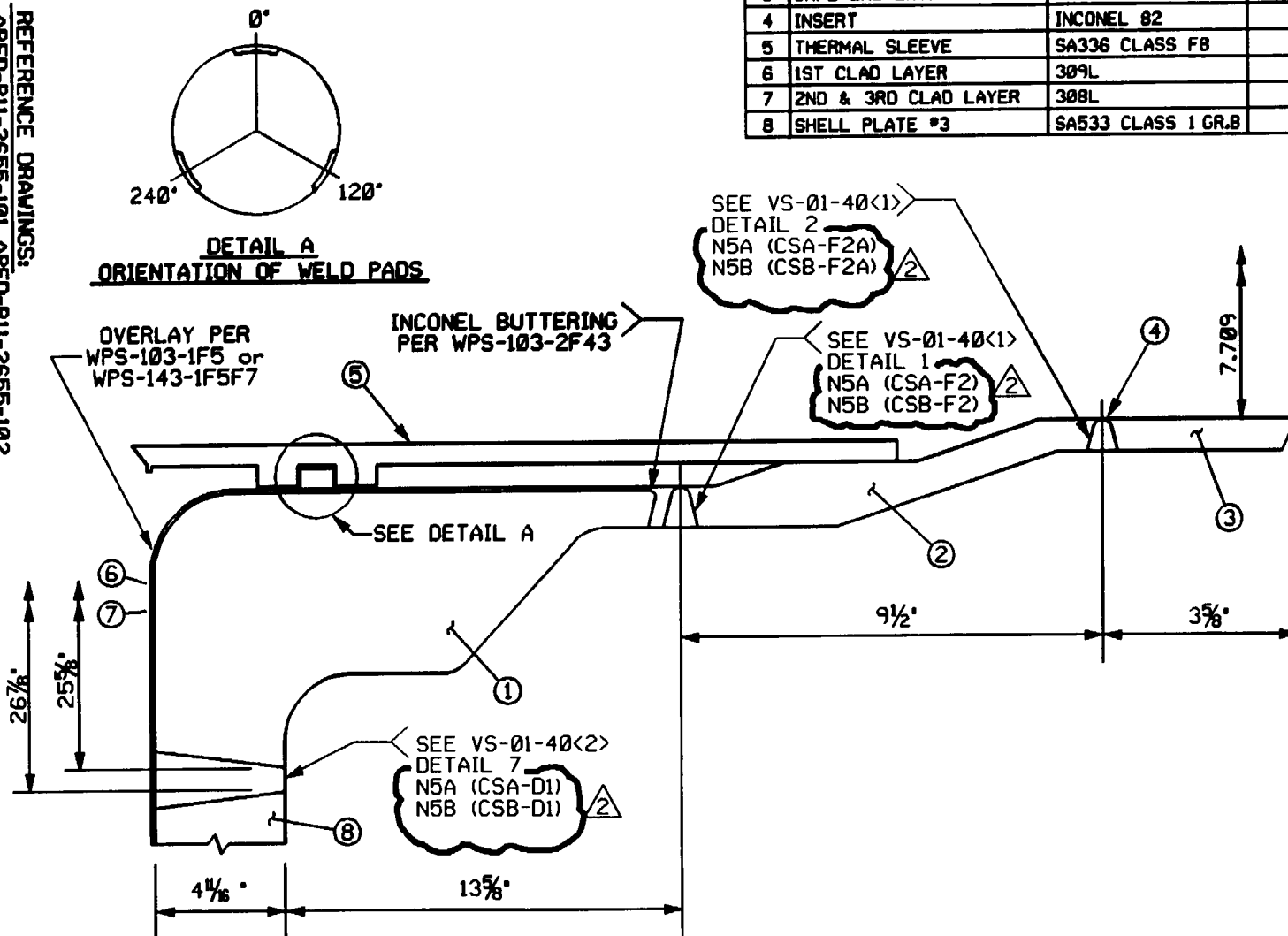
DWG. NO.

VS-01-14

REV.  
2

CORE SPRAY NOZZLE  
MK N5A/B

REFERENCE DRAWINGS:  
APED-B11-2655-101, APED-B11-2655-102





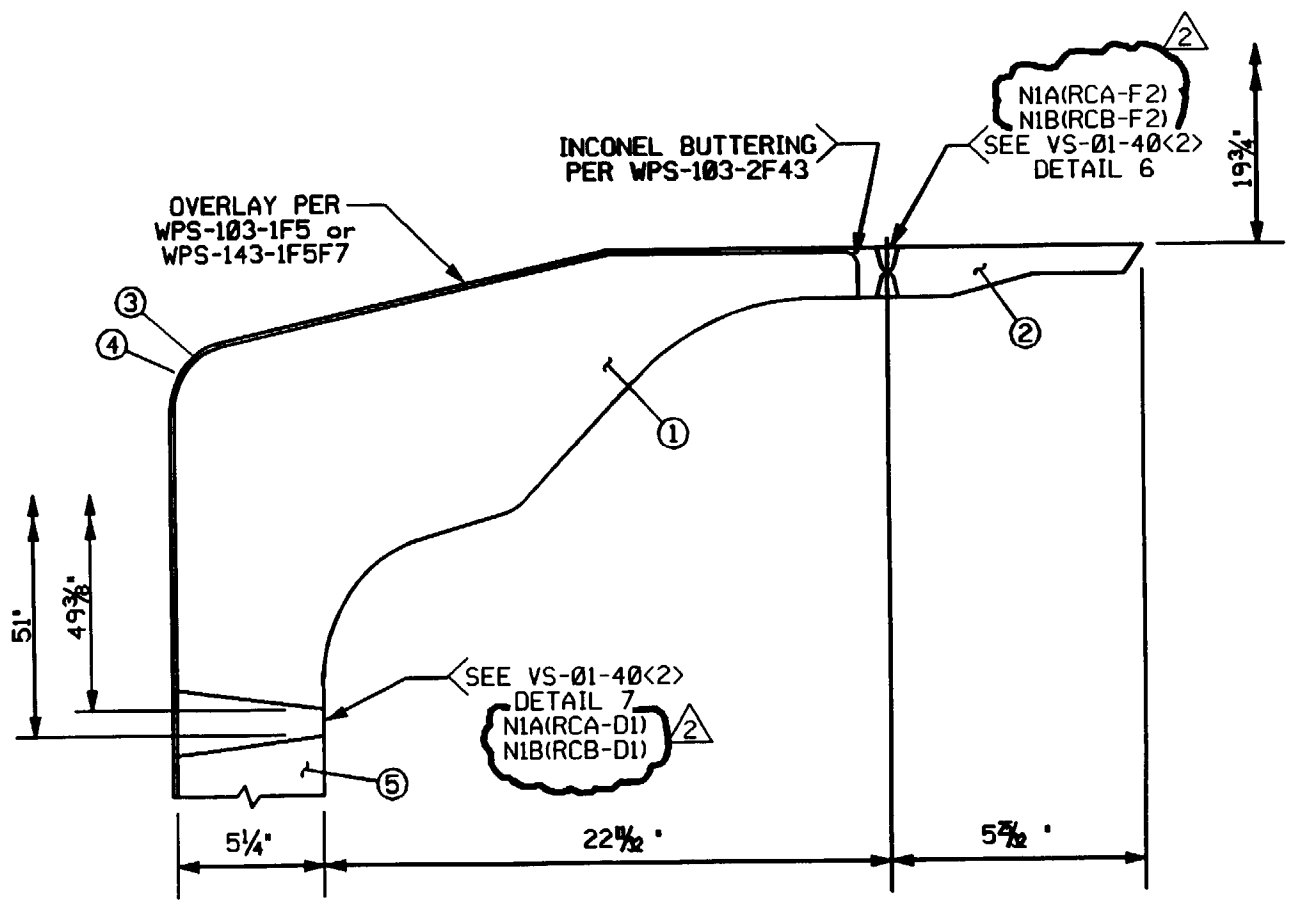
2	8/8/95	REVISED PER DURF-0011	DA	GD	SS	SS
1	12-08-94	DRAFTED FOR VESSEL INSPECTION PROGRAM	MS	DF	GP	SS
NO.	DATE	REVISION	DWR	TR	CHKD	ENGR
						VER.

NO.	DESCRIPTION	BILL OF MATL.	PROCD.
1	FORGING	SA508 CLASS 2	
2	SAFE END FORGING	SA336 CLASS F8	
3	1ST CLAD LAYER	309L	
4	2ND & 3RD CLAD LAYER	308L	
5	SHELL PLATE #1	SA533 CLASS 1 GR.B	

IES:  
Inservice Inspection Program  
Reactor Pressure Vessel Sketch

REFERENCE DRAWING:  
APED-811-2665-095

DWG. NO. VS-01-10  
RECIRCULATION OUTLET  
NOZZLE MK N1A/B  
REV. 2



1	12/17/99	ISSUED PER DUF-U0133 FOR ECP-1627	JW	TAK	LAL CEZ
NO	DATE	REVISION	DRFTR	CHK'D	ENGR. VER.

NO.	DESCRIPTION	BILL OF MATL.	PROCD.
1	FORGING	SA508 CLASS 2	
2	SAFE END FORGING	SB-166	
3	SAFE END EXT. FORGING	SA336 CLASS F8 S.S.	
4	CONSUMABLE INSERT	INCONEL 82	
5	1ST CLAD LAYER	309L	
6	2ND & 3RD CLAD LAYER	308L	
7	THERMAL SLEEVE	SB-168	
8	THERM. SLEEVE INNER EXT.	304L SA240	
9	SHELL PLATE *1	SA533 CLASS 1 GR.B	
10	THERMAL SLEEVE ADAPTER	SB-166	

IES:  
Inservice Inspection Program  
Reactor Pressure Vessel Sketch

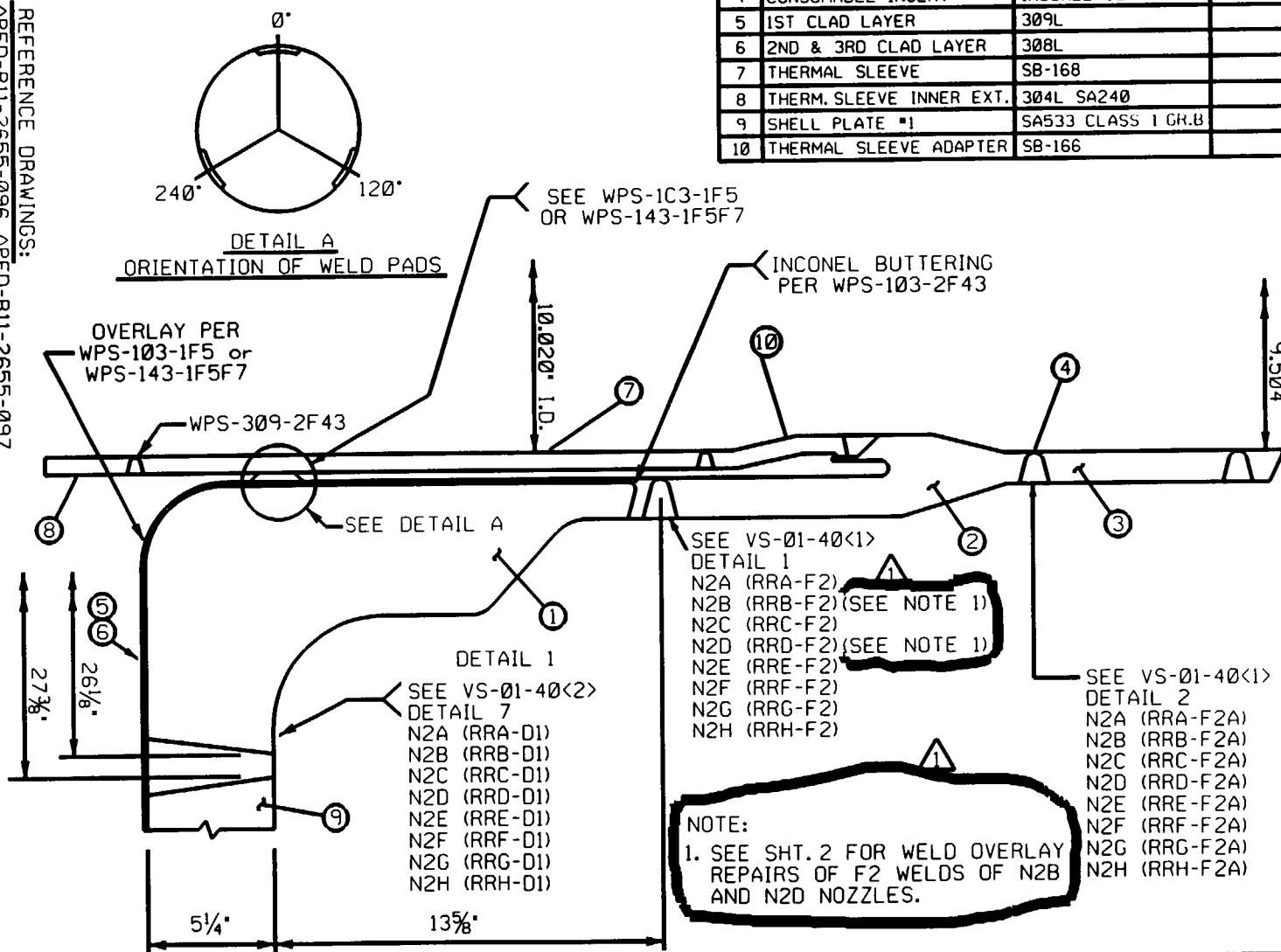
DWG. NO.

VS-01-11<01>

REV.

RECIRCULATION INLET  
NOZZLE MK N2A/H

REFERENCE DRAWINGS:  
APED-B11-2655-096, APED-B11-2655-097



2	8/8/95	REVISED PER DURF-0011	DA	GD	SS	SS
1	12-09-94	DRAFTED FOR VESSEL INSPECTION PROGRAM	MS	DF	GP	SS
NO.	DATE	REVISION	DRAWN	CHECKED	ENGR.	VER.

NO.	DESCRIPTION	BILL OF MATL.	PROCD.
1	FORGING	SA508 CLASS 2	
2	SAFE END FORGING	SA336 CLASS F8	
3	INSERT	INCONEL 82	
4	1ST CLAD LAYER	309	
5	2ND & 3RD CLAD LAYER	308L	
6	SHELL PLATE #4	SA533 CLASS 1 GR.8	

IES:  
Inservice Inspection Program  
Reactor Pressure Vessel Sketch

REFERENCE DRAWING:  
APED-811-2655-110

DWG. NO. VS-01-21  
INSTRUMENTATION  
NOZZLE MK N12A/B  
REV. 2

