Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25

Attachment 2

Dresden Nuclear Power Station Fourth Inservice Inspection (ISI) Interval Limited Coverage Non-Destructive Examination (NDE) Summary Sheets

HITACHI Examination Summary Sheet

Report No.: D2R22-075

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC1A-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 1 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier	II	10/30/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier	II	10/30/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier	II	10/30/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier	II	10/30/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier	II	10/30/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier	II	10/30/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier	II	10/30/11
70°L	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier	II	10/30/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted due to the proximity of the jet pump diffuser.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flaw indications were recorded.

The Auto coverage was calculated to be 88.0%.

Previous data was reviewed with no changes.

The examination results were compared with data report 000100 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By:	Level:	Date:	Utility Review By:	Date: 11-5-11
			ANII Reviewed By:	Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1A-VERT

Report No.: D2R22-075

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC1A_3	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC1A_4	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".
Scan files 2-SC1A_1 and 2 were voided.

Analyzed by: Brad Dummer Level III 11/2/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-075

DRESDEN UNIT-2
Weld 2-SC1A

Weld Length = 133. / Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A	8.1	8.1	7.7%	117	3.4%
70° T-Scan CCW (S4 NS)	A	8.1	8.1	7.7%	117	3.4%
45° T-Scan (S6 FV)	A	44.4	44.4	84.6%	117	37.2%
70° P-Scan UP (S4 NS)	A	8.1	8.1	7.7%	117	3.4%
70° P-Scan DN (S4 NS)	A	8.1	8.1	7.7%	117	3.4%
45° P-Scan (S6 FV)	A	44.4	44.4	84.6%	117	37.2%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 88.0%

Rev. 0 9/23/05

Comments:
A - Automated scanning was not restricted.
Scanning was limited due to the proximity of the jet pump diffuser.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination
Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1A-VERT
Report No.: D2R22-075

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC1A_3	10/28/11	270.00	195.00	DN (Fwd)	-75.00	0245	0335
2-SC1A_4	10/28/11	196.00	141.50	DN (Fwd)	-54.50	0339	0420

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of thejet pump diffuser. Scan files 2-SC1A_1 and 2 were voided.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 106°F **Couplant:** Water

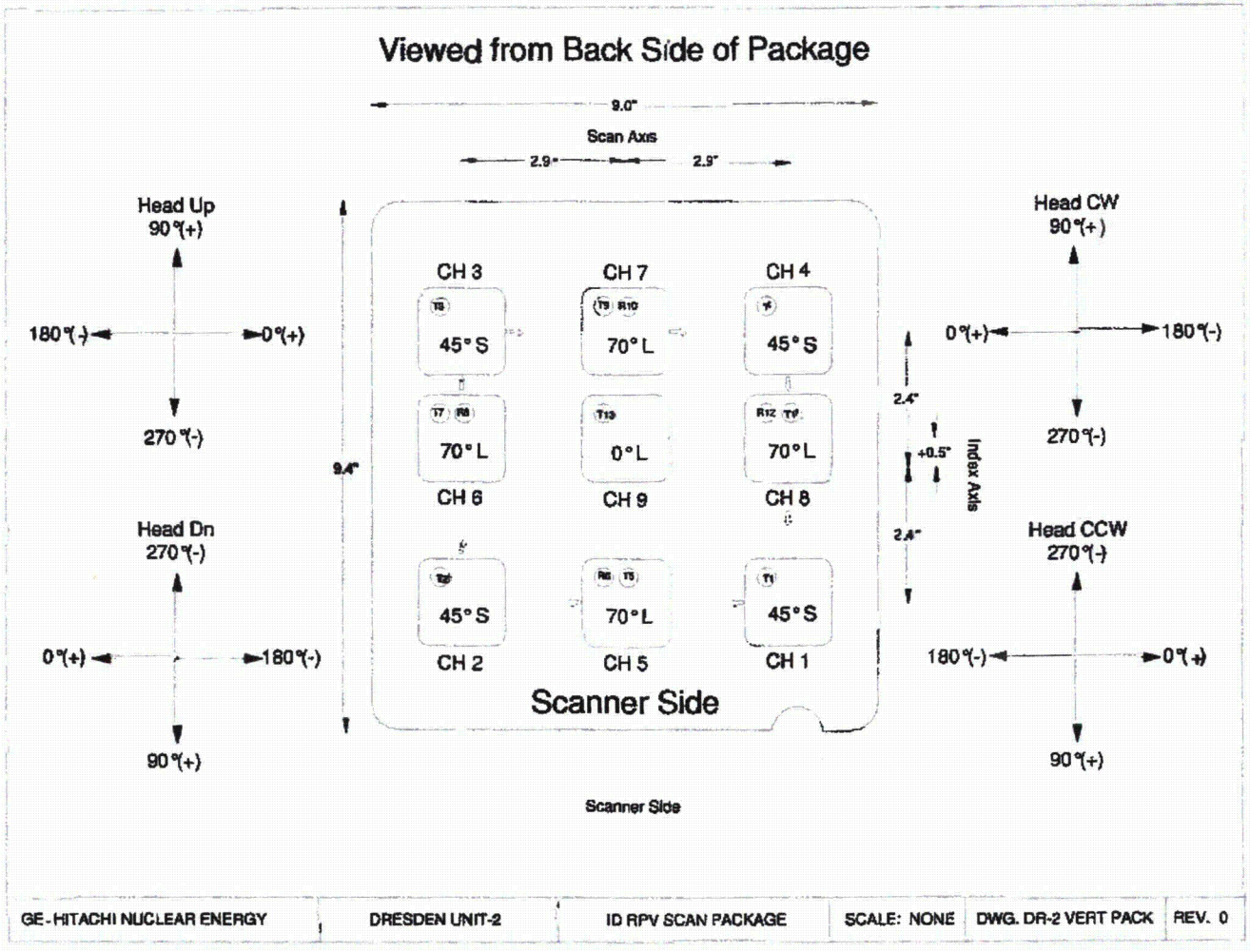
Operators: Clint Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

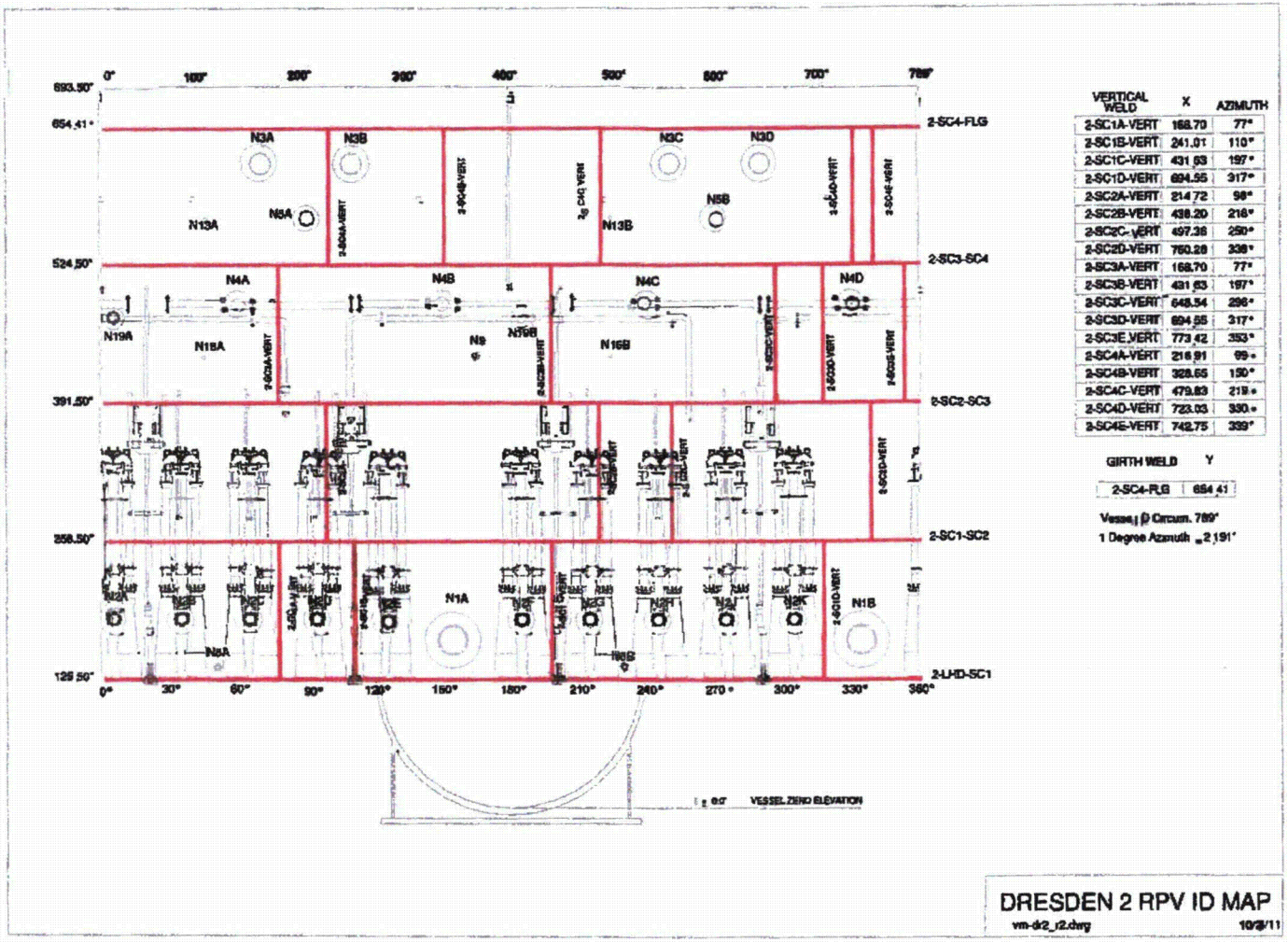
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	168.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.53	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	438.20	216°
2-SC2C-VERT	497.36	250°
2-SC2D-VERT	760.28	338°
2-SC3A-VERT	168.70	77°
2-SC3B-VERT	431.53	197°
2-SC3C-VERT	648.54	296°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.83	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

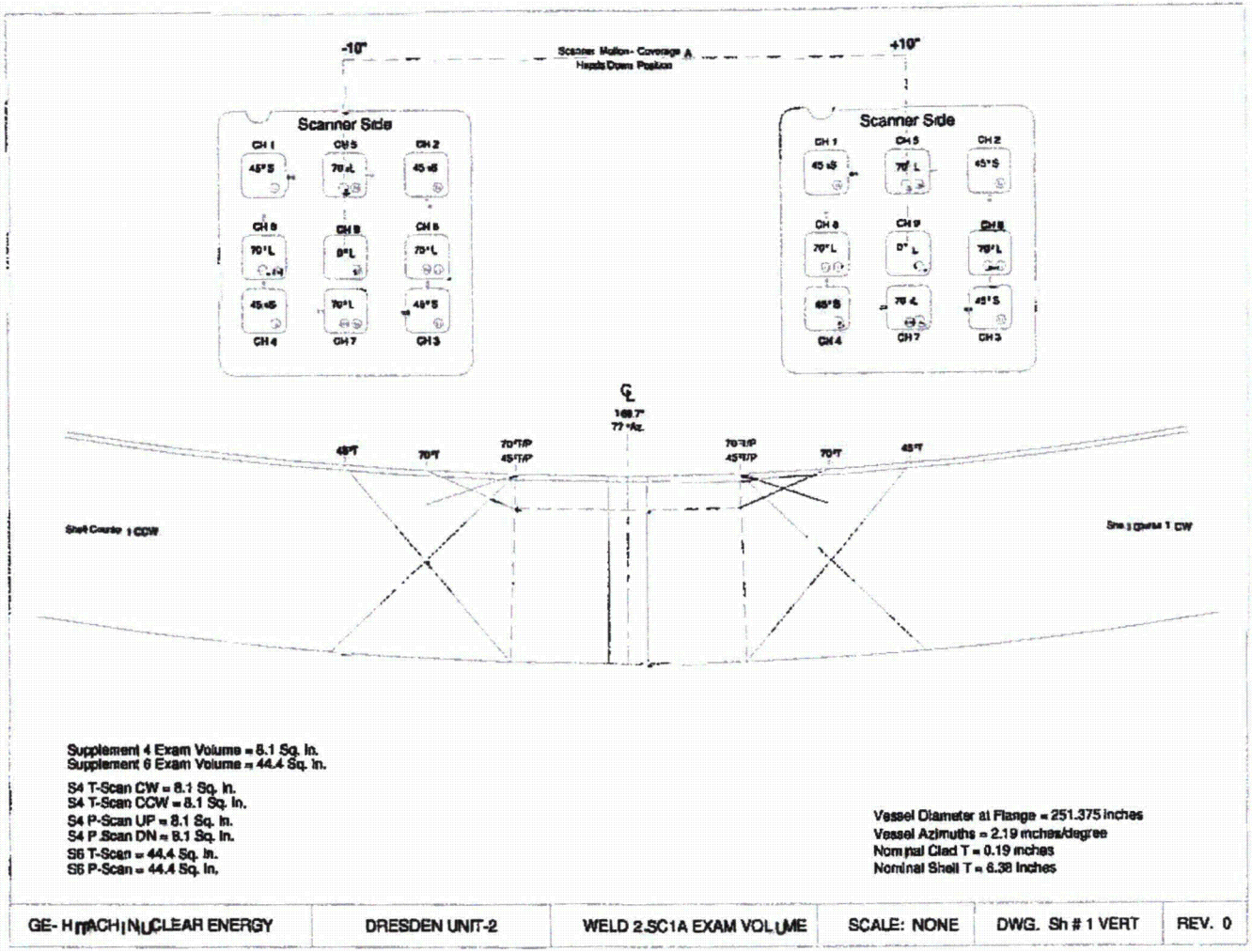
GIRTH WELD	Y
2-SC4-FLG	654.41

Vessel ID Circum. 789"
1 Degree Azimuth = 2.191"

Weld Location Map

HITACHI

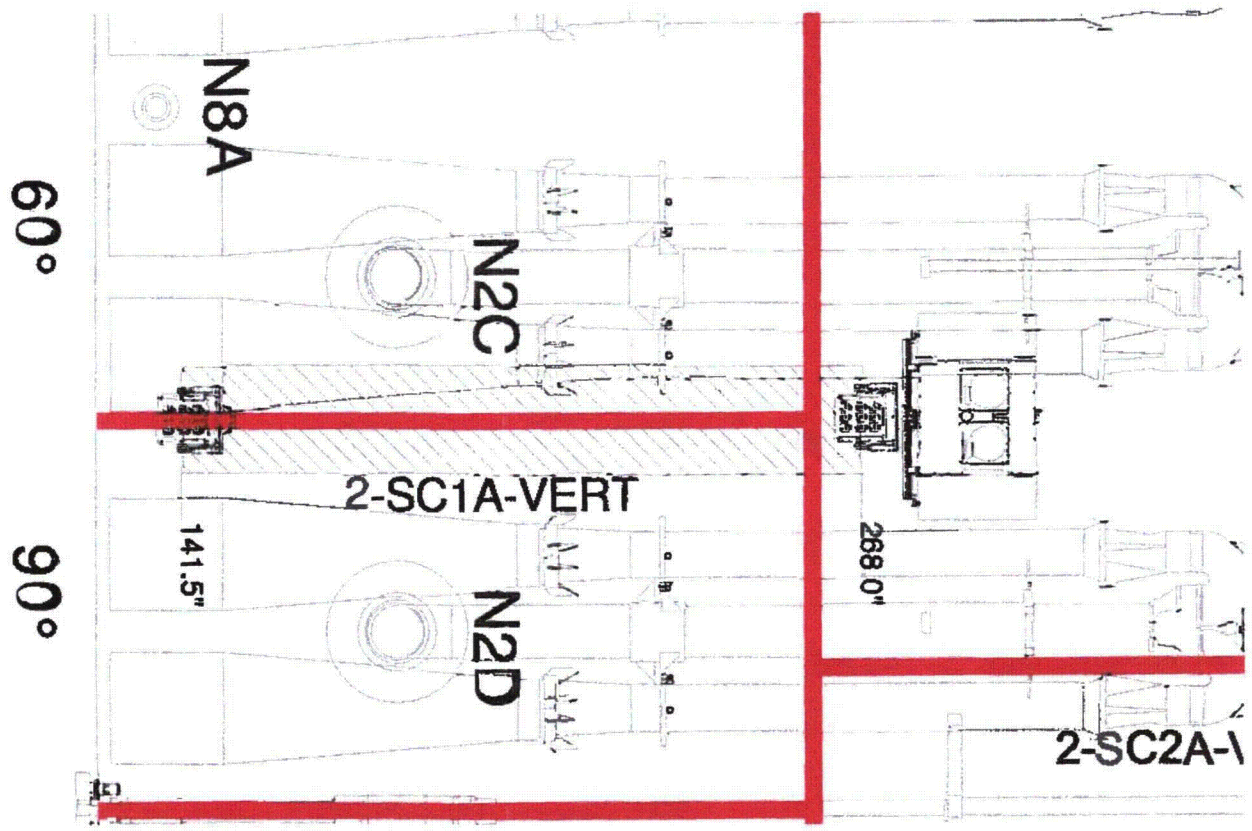
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

Dresden
Reference Drawings



Scanned Patches – Coverage "A"

HITACHI Examination Summary Sheet

Report No.: D2R22-076

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC1B-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 1 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
70°L	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted by the proximity of the shroud repair lower contact.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

Two (2) acceptable flaw indications were recorded. The indications are characteristic of fabrication artifacts and were not recorded during the previous examinations. This is attributed to differences in procedure recording critiria.

The Auto coverage was calculated to be 40.2%.

Previous data was reviewed with no changes.

The examination results were compared with data report 000200 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By: _____ Level: _____ Date: 11/6/11

Utility Review By: _____ Date: 11-5-11

ANII Reviewed By: _____ Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1B-VERT

Report No.: D2R22-076

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC1B_1	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC1B_2	Head Down	NRI	NRI	NRI	NRI	NRI	RI (1)	NRI	RI (1)	~	~	~	~
2-SC1B_3	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".

Analyzed by: Brad Dummer Level III 11/2/2011

HITACHI

SP2000 RPV Examination Indication Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1B-VERT

Report: D2R22-076

			Maximum Amplitude Position				Indication Length Information				
Ind. No.	File	Channel	Amp dB	L Pos	W Pos	Depth	W Min	W Max	Length	Axis	Remarks
1	2-SC1B_2	6	-27.0	245.50	-2.60	0.45	-3.10	-2.35	0.75	Circ.	D1 = 0.29" D2 = 0.45"
2	2-SC1B_2	8	-18.5	249.00	-2.40	0.55	-2.90	-2.15	0.75	Circ.	D1 = 0.44" D2 = 0.55"

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". Measurements in inches.

Analyzed by: Brad Dummer Level III 11/2/2011

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project: Dresden Unit-2
Weld ID: 2-SC1B

Indication: 1

	Measured	Rounded
Flaw Through Wall =	0.16	0.15
Flaw Length "l" =	0.75	0.75
Surface Separation "S" =	0.10	0.1

	Measured	Rounded
"T" nominal =	6.375	6.4
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	~	~
0.05	2.0	2.2	~	~
0.10	2.2	2.5	2.20	2.50 Y
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 2.20	Allowed 2.50

a = 0.075
a/l value = 0.100
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.5%
a/t = 1.2%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.

Evaluation by: Brad Dummer Level III BD

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: _____

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project: Dresden Unit-2
Weld ID: 2-SC1B

Indication: 2

	Measured	***Rounded***
Flaw Through Wall =	0.11	0.1
Flaw Length "l" =	0.75	0.75
Surface Separation "S" =	0.25	0.25

	Measured	***Rounded***
"T" nominal =	6.375	6.4
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	~	~
0.05	2.0	2.2	2.07	2.30 Y
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 2.07	Allowed 2.30

a = 0.050
a/l value = 0.067
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.3%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.

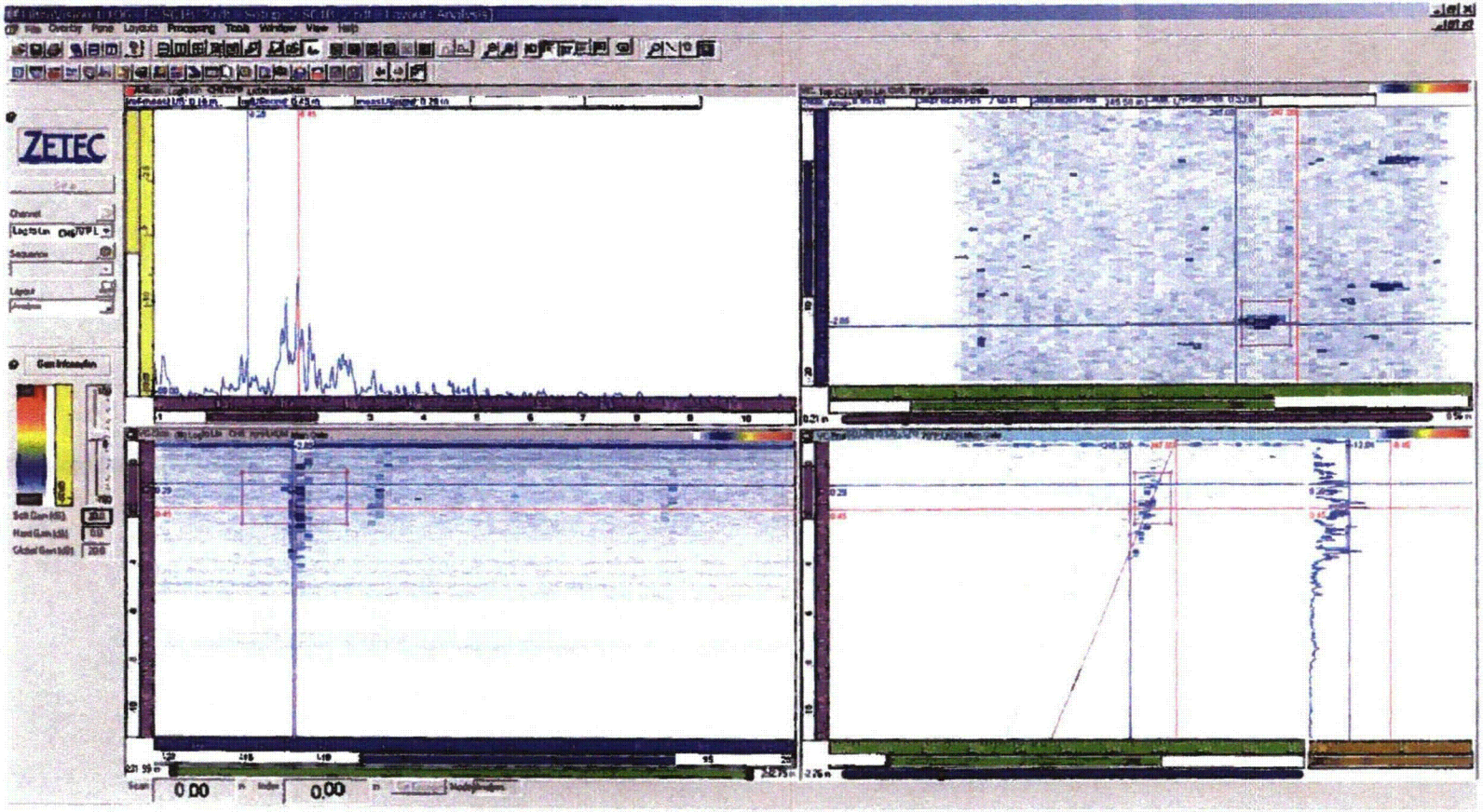
Evaluation by: Brad Dummer Level III BD

Reviewed by: Chris Minor Level III CM

Utility Reviewed by: _____

HITACHI

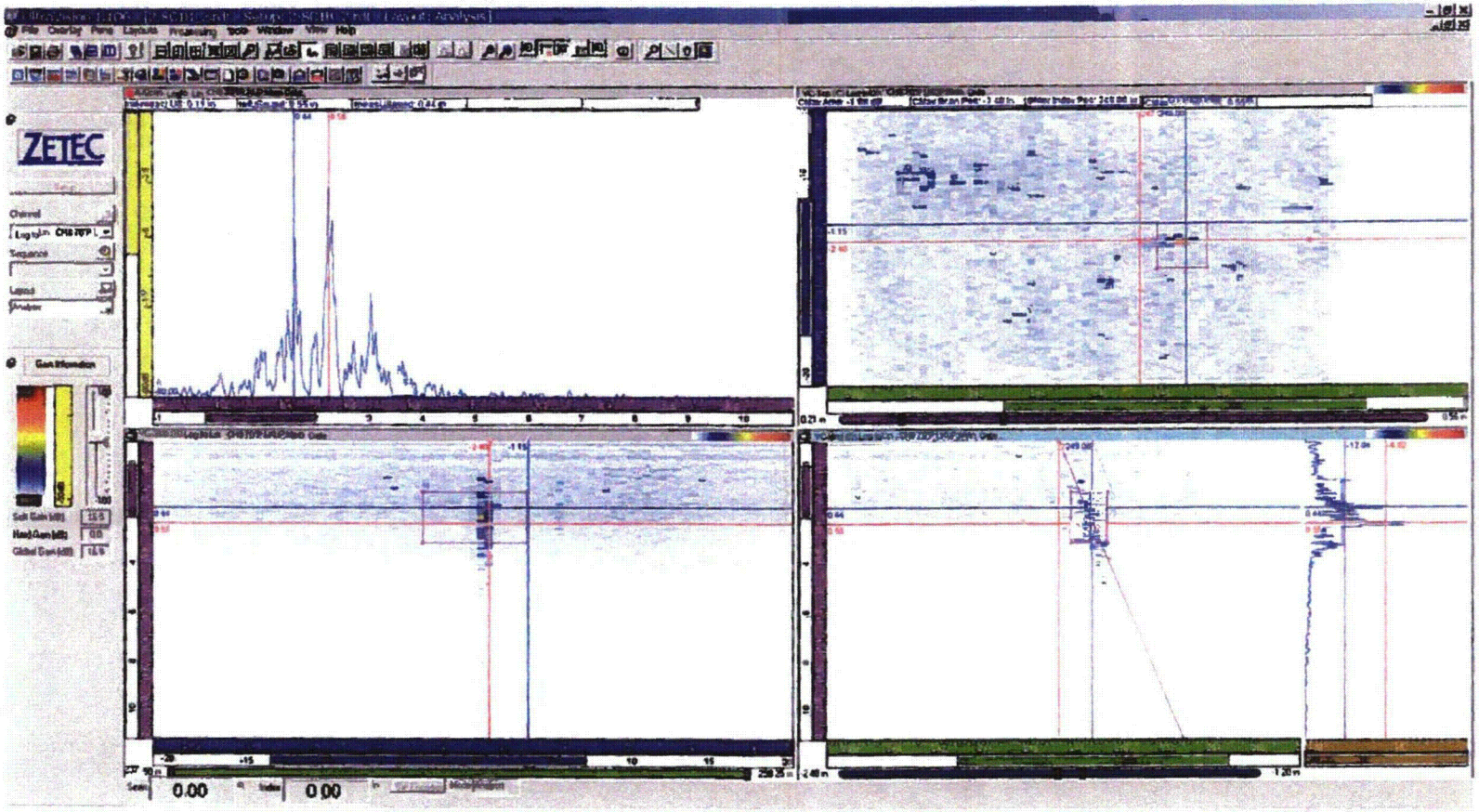
Dresden
Indication Prints



Indication 1

HITACHI

Dresden
Indication Prints



Indication 2

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-076

DRESDEN UNIT-2
Weld 2-SC1B

		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
Weld Length = 133. Exam Volume = 52.5		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A/B	8.1	8.1	7.7%	53.5	1.6%
70° T-Scan CCW (S4 NS)	A/B	8.1	8.1	7.7%	53.5	1.6%
45° T-Scan (S6 FV)	A/B	44.4	44.4	84.6%	53.5	17.0%
70° P-Scan UP (S4 NS)	A/B	8.1	8.1	7.7%	53.5	1.6%
70° P-Scan DN (S4 NS)	A/B	8.1	8.1	7.7%	53.5	1.6%
45° P-Scan (S6 FV)	A/B	44.4	44.4	84.6%	53.5	17.0%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 40.2%

Rev. 0 9/23/05

Comments:
A/B - Automated scanning was not restricted.
Scanning was limited due to the proximity of the shroud repair lower contact.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination
Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1B-VERT
Report No.: D2R22-076

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC1B_1	10/29/11	205.00	248.00	DN (Rev)	43.00	0952	1034
2-SC1B_2	10/29/11	253.00	238.00	DN (Fwd)	-15.00	1042	1058
2-SC1B_3	10/29/11	235.00	278.00	UP (Fwd)	43.00	1205	1244

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the shroud tie down lower contact bracket.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 106°F **Couplant:** Water

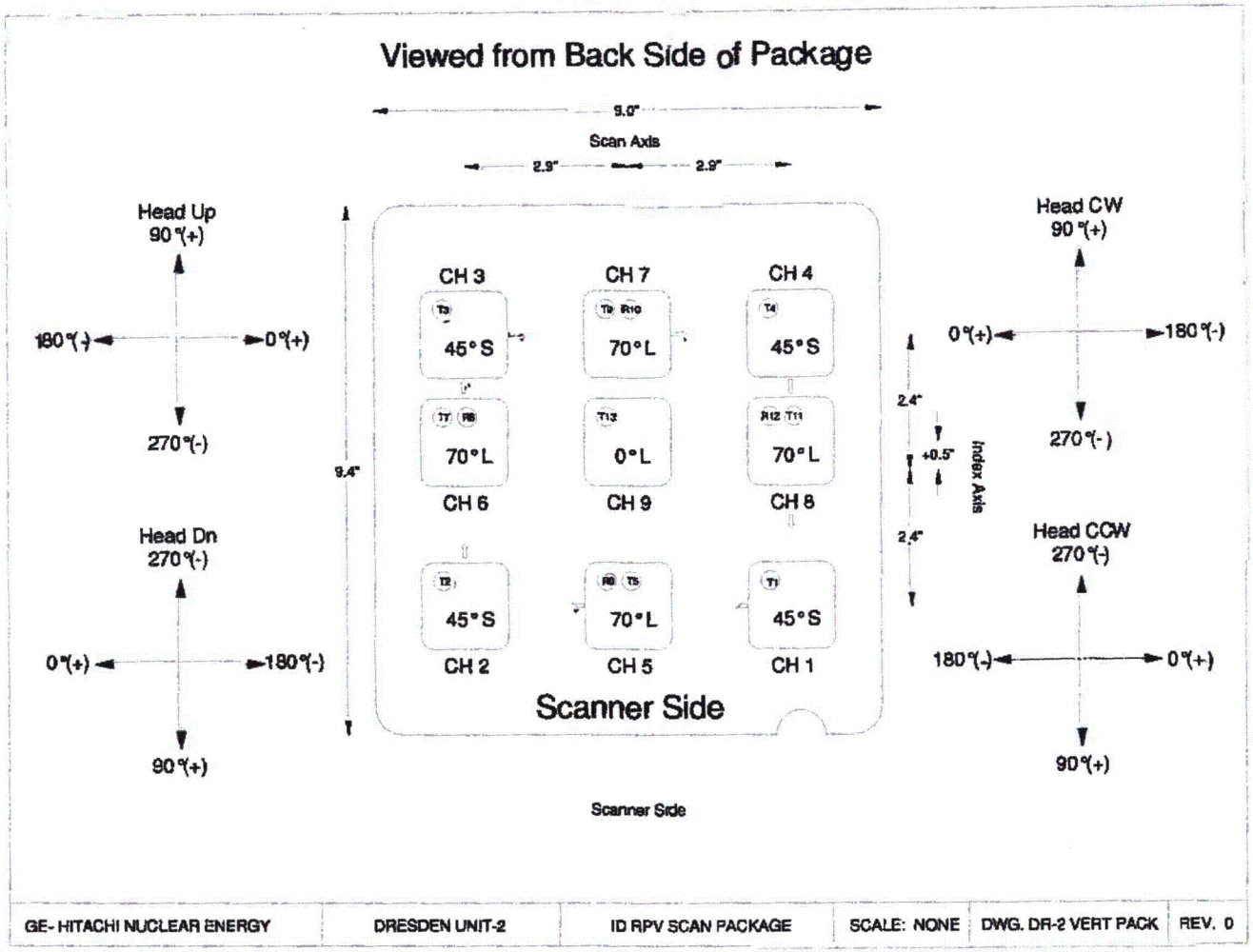
Operators: Shane Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

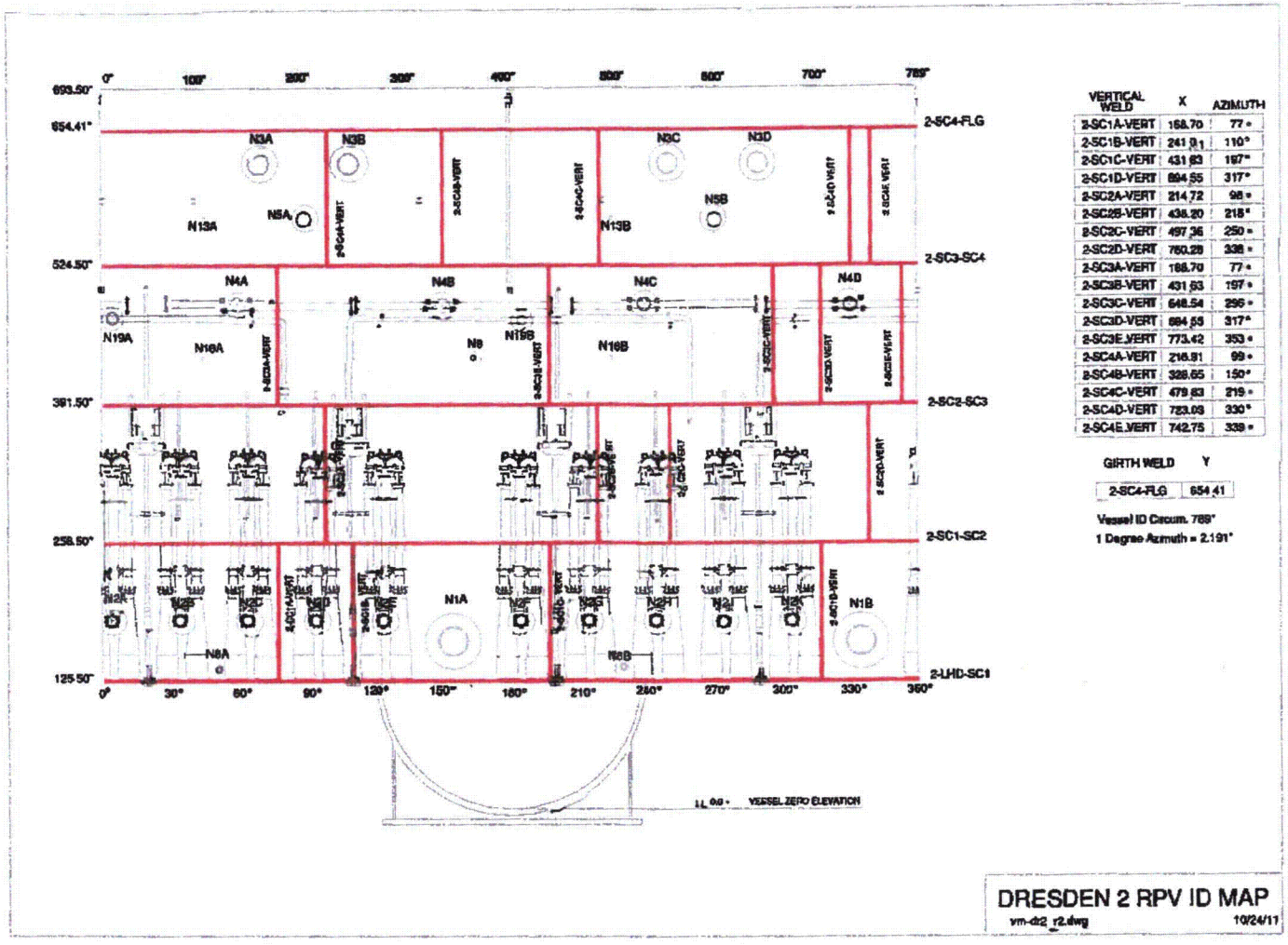
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	168.70	77°
2-SC1B-VERT	241.91	110°
2-SC1C-VERT	431.63	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	438.20	218°
2-SC2C-VERT	497.36	250°
2-SC2D-VERT	760.29	338°
2-SC3A-VERT	168.70	77°
2-SC3B-VERT	431.63	197°
2-SC3C-VERT	648.54	296°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.63	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

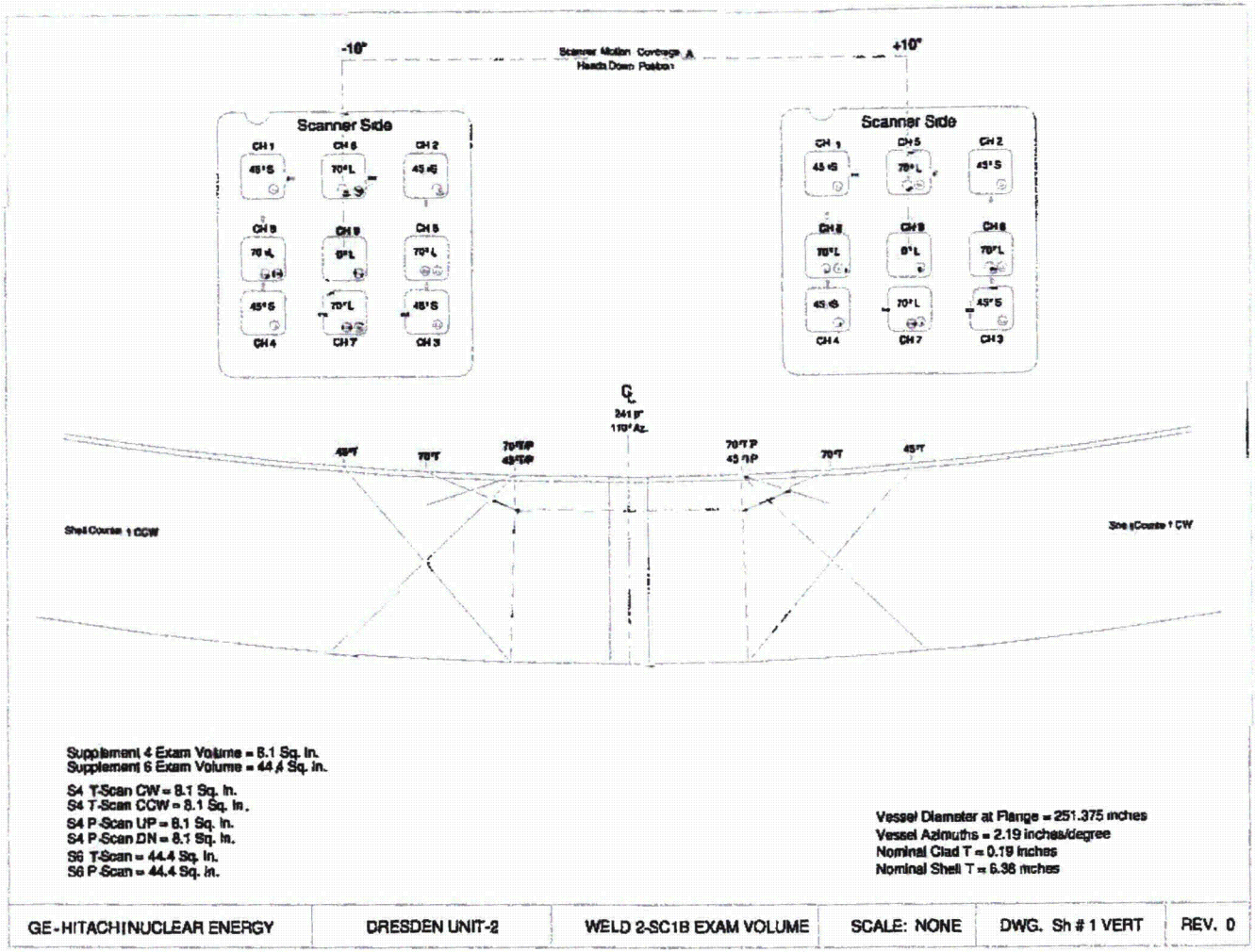
GIRTH WELD	Y
2-SC4-FLG	654.41

Vessel ID Circum. 769"
1 Degree Azimuth = 2.191"

Weld Location Map

HITACHI

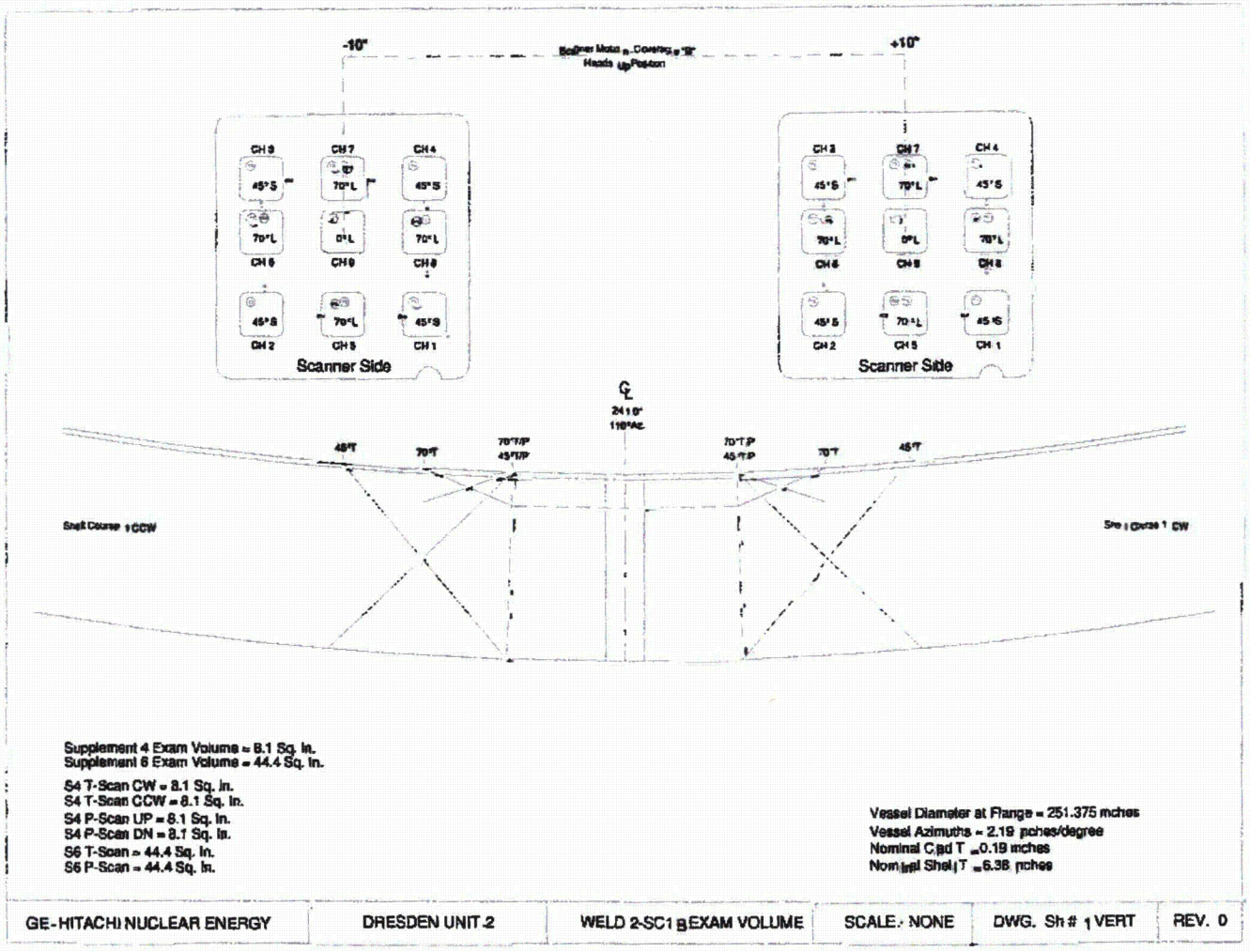
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

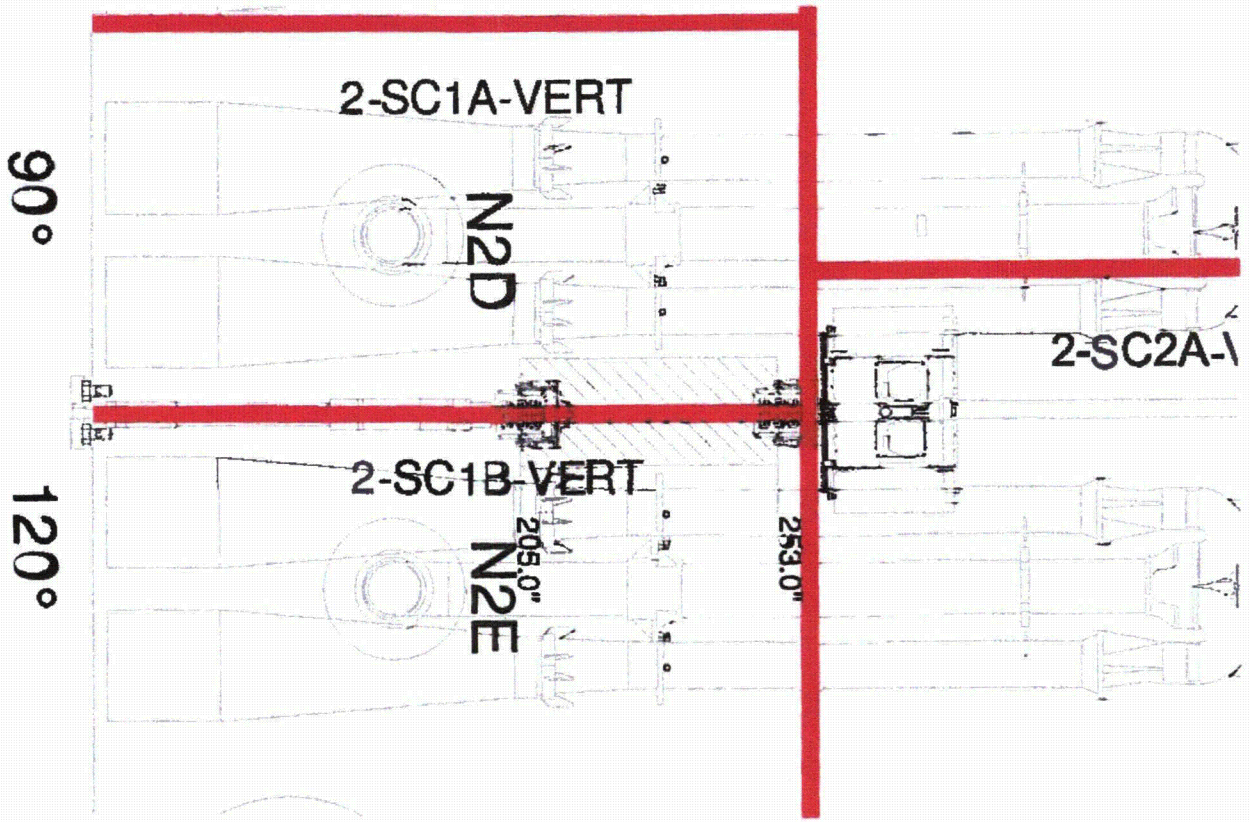
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

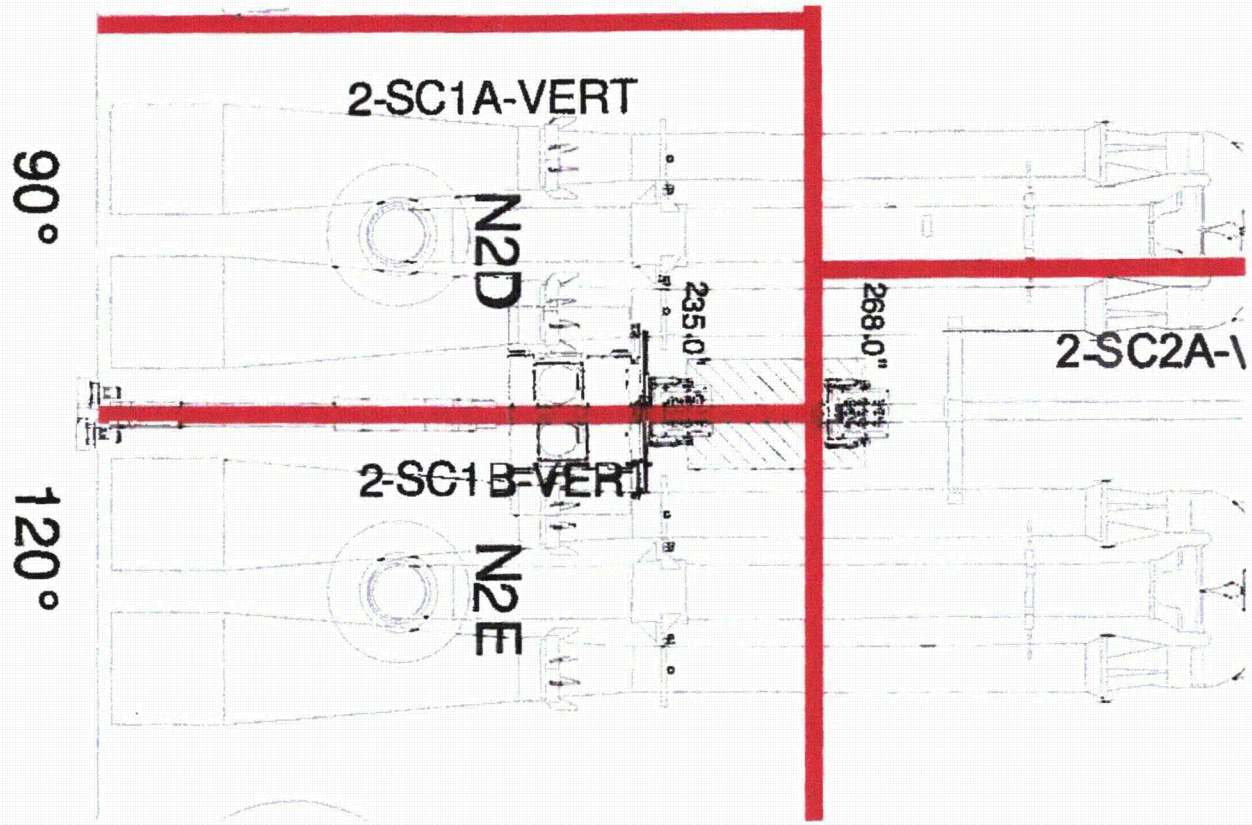
Dresden
Reference Drawings



Scanned Patches – Coverage "A"

HITACHI

Dresden
Reference Drawings



Scanned Patches – Coverage "B"

HITACHI Examination Summary Sheet

Report No.: D2R22-077

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-5C1C-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 1 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11
70°L	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/29/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted by the proximity of the shroud repair lower contact.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flow indications were recorded.

The Auto coverage was calculated to be 40.2%.

Previous data was reviewed with no changes.

The examination results were compared with data report 000300 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By: _____ Level: II Date: 11/3/11

Utility Review By: _____ Date: 11-5-11

ANII Reviewed By: _____ Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1C-VERT

Report No.: D2R22-077

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC1C_1	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC1C_2	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC1C_3	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".

Analyzed by: Brad Dummer Level III 11/2/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-077

DRESDEN UNIT-2
Weld 2-SC1C

		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
Weld Length = / Exam Volume =	133. / 52.5	Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A/B	8.1	8.1	7.7%	53.5	1.6%
70° T-Scan CCW (S4 NS)	A/B	8.1	8.1	7.7%	53.5	1.6%
45° T-Scan (S6 FV)	A/B	44.4	44.4	84.6%	53.5	17.0%
70° P-Scan UP (S4 NS)	A/B	8.1	8.1	7.7%	53.5	1.6%
70° P-Scan DN (S4 NS)	A/B	8.1	8.1	7.7%	53.5	1.6%
45° P-Scan (S6 FV)	A/B	44.4	44.4	84.6%	53.5	17.0%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 40.2%

Rev. 0 9/23/05

Comments:
A/B - Automated scanning was not restricted.
Scanning was limited due to the proximity of the shroud repair lower contact.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1C-VERT
Report No.: D2R22-077

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC1C_1	10/29/11	205.00	230.00	DN (Rev)	25.00	1617	1638
2-SC1C_2	10/29/11	252.00	245.00	DN (Fwd)	-7.00	1706	1725
2-SC1C_3	10/29/11	227.50	260.50	UP (Fwd)	33.00	1822	1838

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the shroud tie down lower contact bracket.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 106°F **Couplant:** Water

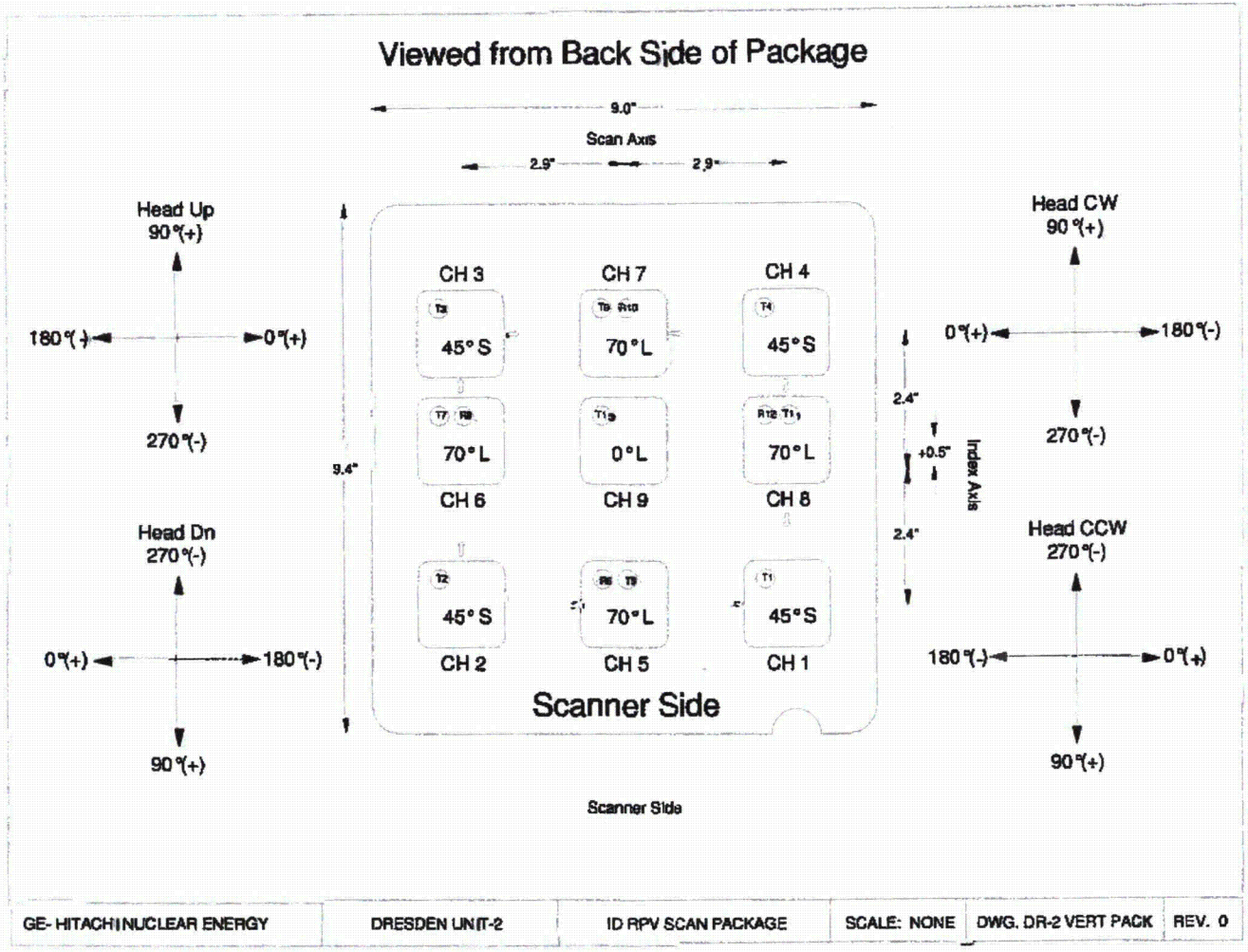
Operators: Shane Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

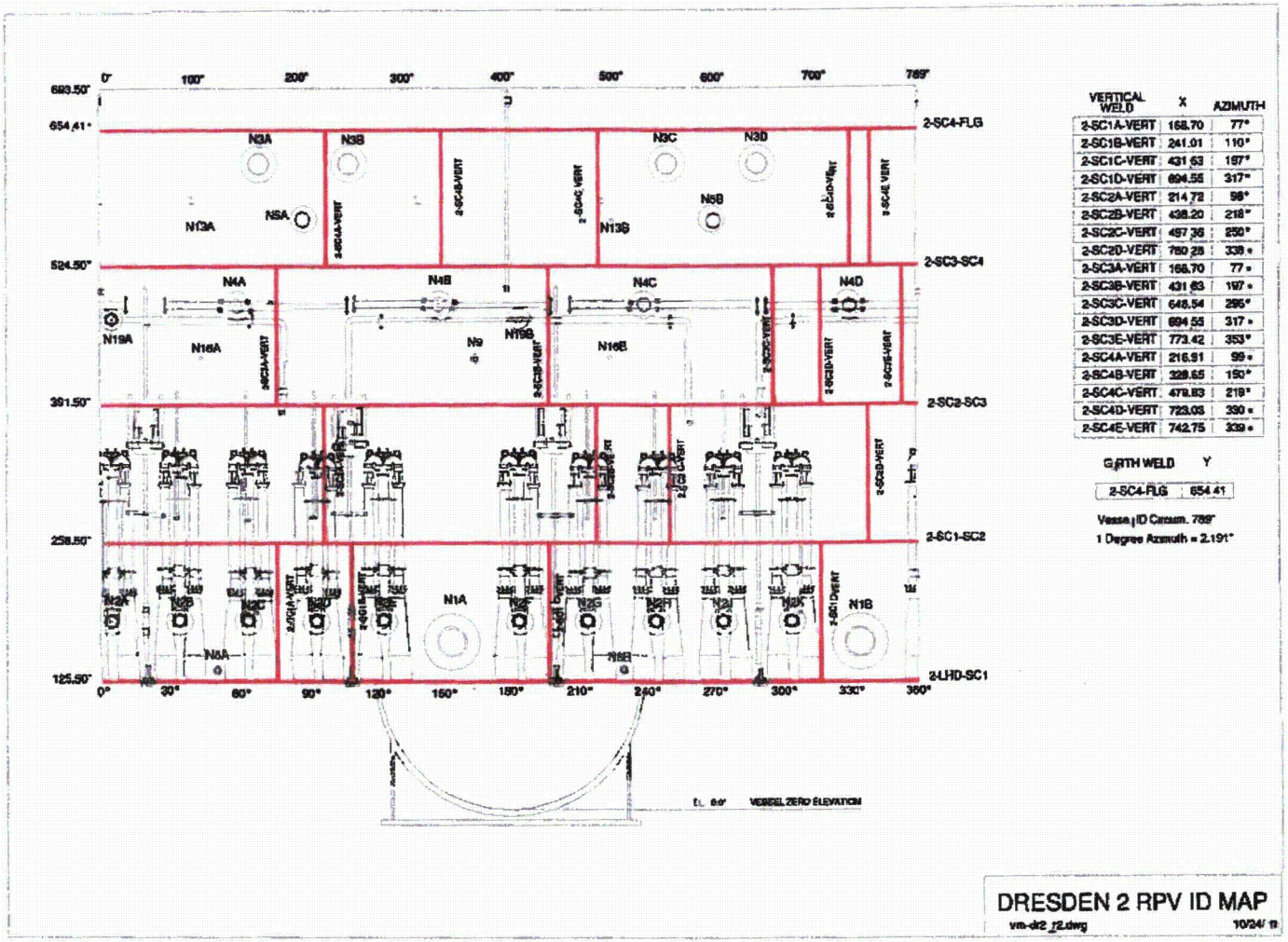
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	168.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.63	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	438.20	218°
2-SC2C-VERT	457.36	250°
2-SC2D-VERT	760.28	338°
2-SC3A-VERT	168.70	77°
2-SC3B-VERT	431.63	197°
2-SC3C-VERT	648.54	295°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.83	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

GIRTH WELD	Y
2-SC4-FLG	654.41

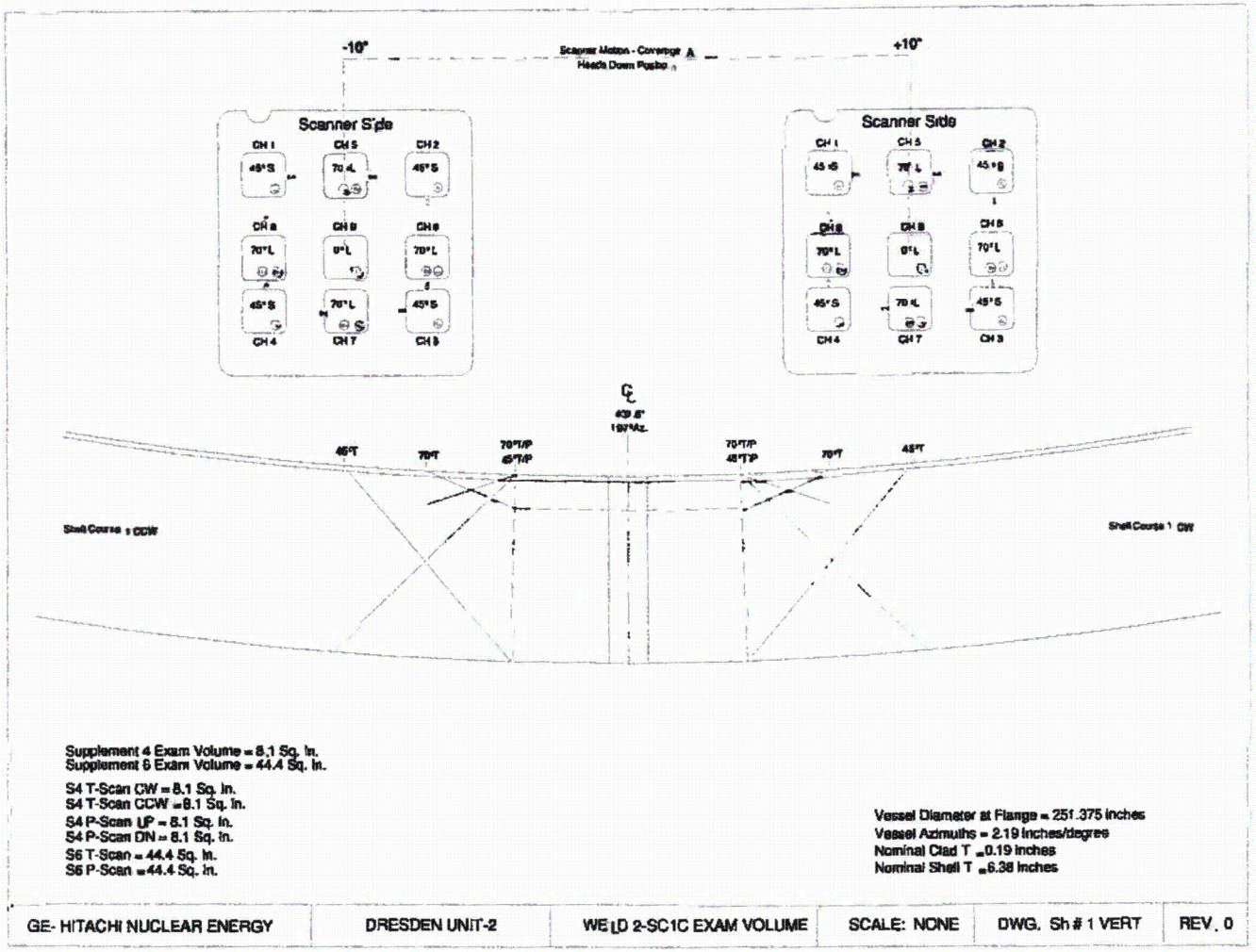
Vessel ID Circum. 789"
1 Degree Azimuth = 2.191"

DRESDEN 2 RPV ID MAP
vm-dr2_r2.dwg 10/24/ 1

Weld Location Map

HITACHI

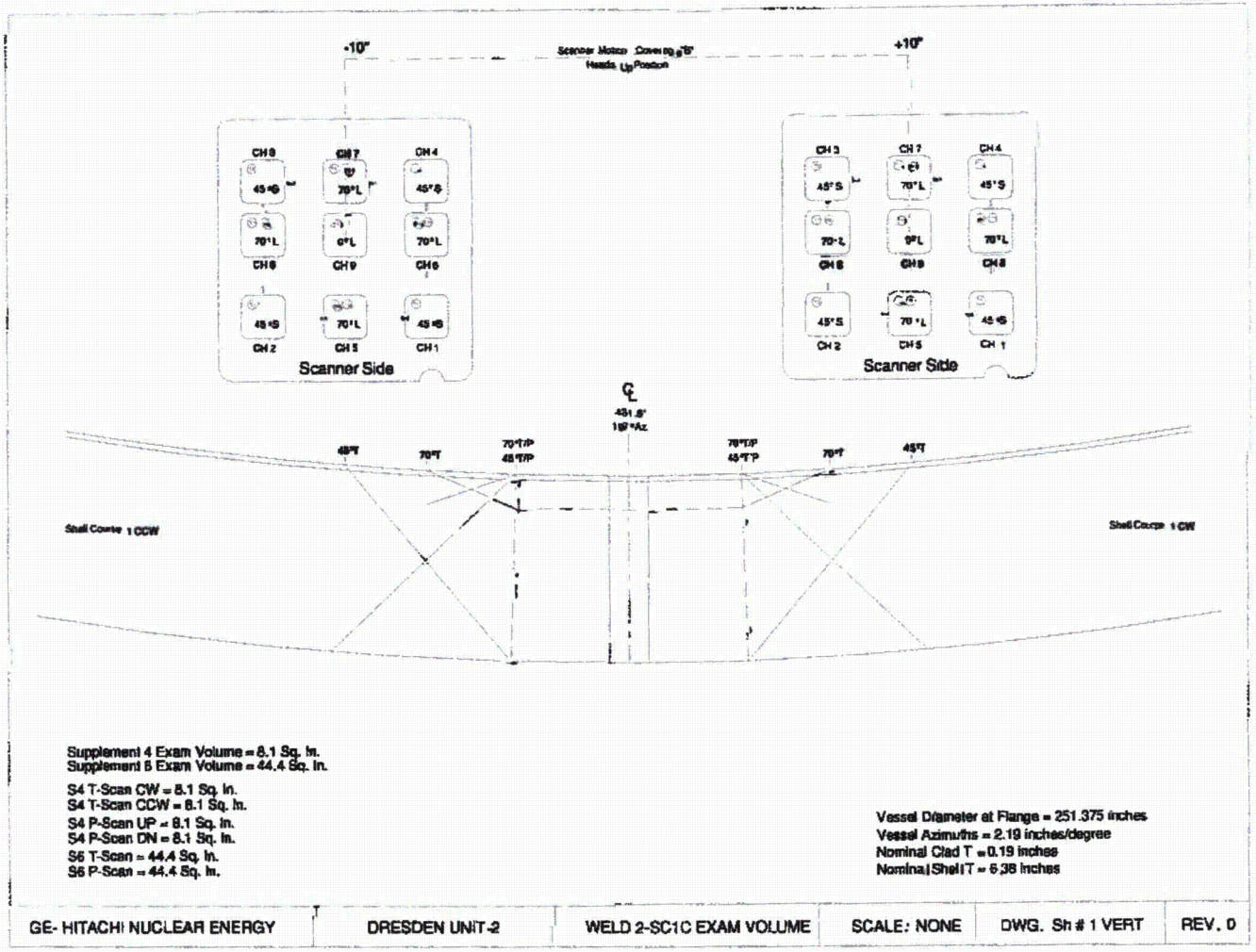
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

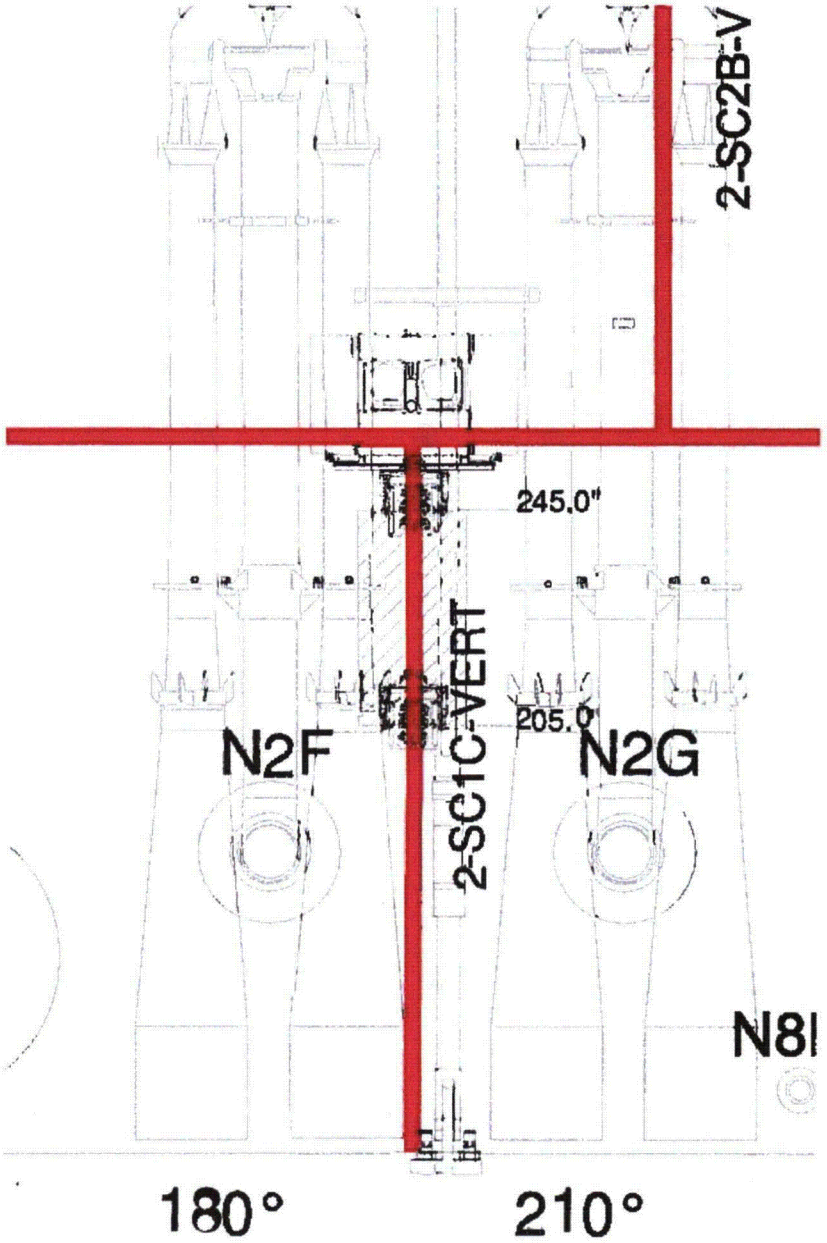
HITACHI

Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

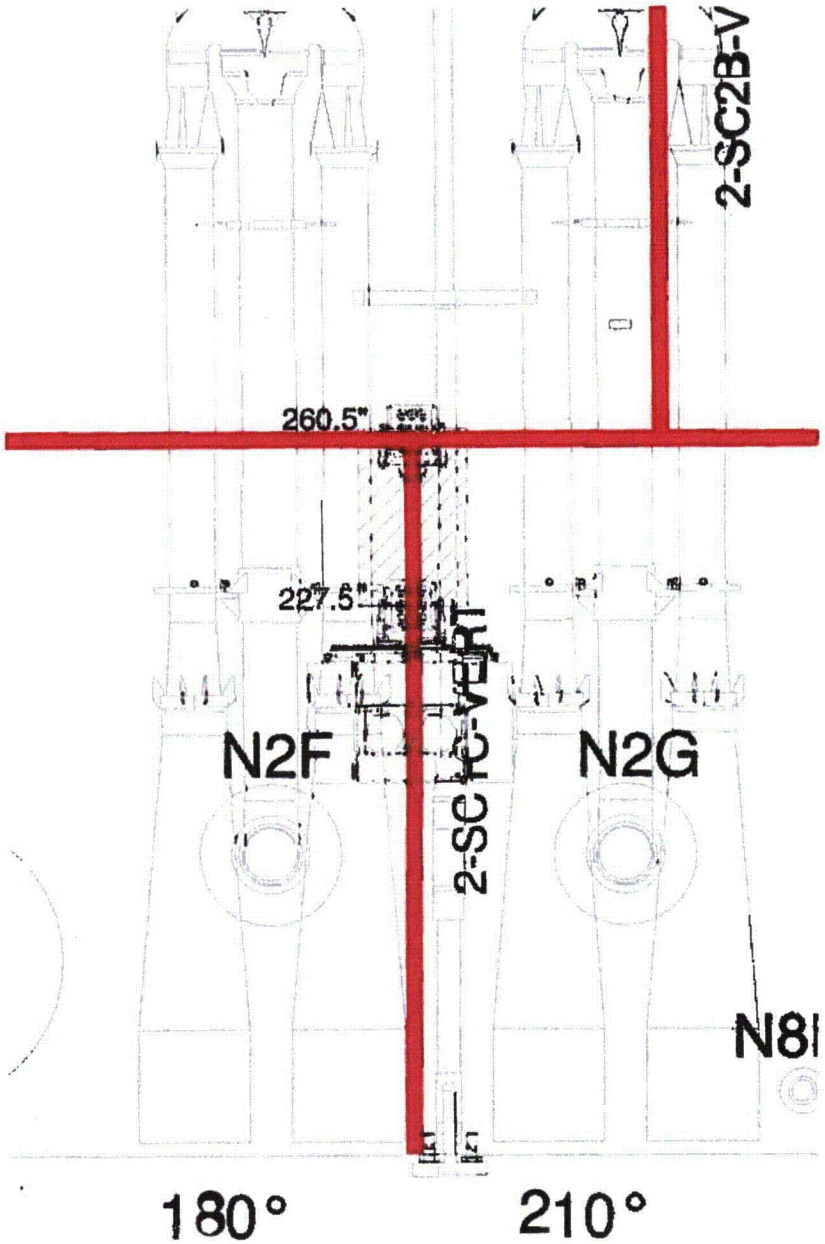
Dresden
Reference Drawings



Scanned Patches – Coverage "A"

HITACHI

Dresden
Reference Drawings



Scanned Patches – Coverage "B"

HITACHI

HITACHI Examination Summary Sheet

Report No.: D2R22-078

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC1D-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 1 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	C.Gauthier	II	10/27/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	C.Gauthier	II	10/27/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	C.Gauthier	II	10/27/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	C.Gauthier	II	10/27/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	C.Gauthier	II	10/27/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	C.Gauthier	II	10/27/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	C.Gauthier	II	10/27/11
70°L	RPV-ID-08	CAL-IIW2-043	GEH-UT-717 V3	C.Gauthier	II	10/27/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted due to the proximity of the jet pump restrainers and jet pump diffuser.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flaw indications were recorded.

The Auto coverage was calculated to be 71.4%.

Previous data was reviewed with no changes.

The examination results were compared with data report 000400 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By: _____ Level: II Date: 11/6/11

Utility Review By: _____ Date: 11-5-11

ANII Reviewed By: _____ Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1D-VERT

Report No.: D2R22-078

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC1D_1	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC1D_2	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC1D_3	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".
Scan file 2-SC1D_1 is 9 inches offset from weld CL. Resconned as 2-SC1D_2.

Analyzed by: Chris Minor Level III 10/27/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-078

DRESDEN UNIT-2
Weld 2-SC1D

Weld Length = 133. / Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A	8.1	8.1	7.7%	70.4	2.0%
70° T-Scan CCW (S4 NS)	A	8.1	8.1	7.7%	70.4	2.0%
45° T-Scan (S6 FV)	A	44.4	44.4	84.6%	70.4	22.4%
70° P-Scan UP (S4 NS)	A	8.1	8.1	7.7%	70.4	2.0%
70° P-Scan DN (S4 NS)	A	8.1	8.1	7.7%	70.4	2.0%
45° P-Scan (S6 FV)	A	44.4	44.4	84.6%	70.4	22.4%
70° T-Scan CW (S4 NS)	B	8.1	2.2	2.1%	20.6	0.2%
70° T-Scan CCW (S4 NS)	B	8.1	5.7	5.4%	20.6	0.4%
45° T-Scan (S6 FV)	B	44.4	29.8	56.8%	20.6	4.4%
70° P-Scan UP (S4 NS)	B	8.1	6.9	6.6%	20.6	0.5%
70° P-Scan DN (S4 NS)	B	8.1	1.1	1.0%	20.6	0.1%
45° P-Scan (S6 FV)	B	44.4	38.2	72.8%	20.6	5.6%
70° T-Scan CW (S4 NS)	C	8.1	3.5	3.3%	11	0.1%
70° T-Scan CCW (S4 NS)	C	8.1	7.2	6.9%	11	0.3%
45° T-Scan (S6 FV)	C	44.4	37.1	70.7%	11	2.9%
70° P-Scan UP (S4 NS)	C	8.1	8.1	7.7%	11	0.3%
70° P-Scan DN (S4 NS)	C	8.1	2.5	2.4%	11	0.1%
45° P-Scan (S6 FV)	C	44.4	44.4	84.6%	11	3.5%
				% Total Composite Coverage =		71.4%

Rev.0 9/23/05

Comments:
A- Automated scanning was not restricted.
B - Automated scanning was restricted due to jet pump restrainers.
C - Automated scanning was restricted due to the jet pump diffuser.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in mm.

HITACHI

SP2000 RPV Examination Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC1D-VERT
Report No.: D2R22-078

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC1D_1	10/27/11	270.00	235.75	DN (Rev)	-34.25	0242	0318
2-SC1D_2	10/27/11	280.00	200.00	DN (Rev)	-80.00	0354	0451
2-SC1D_3	10/27/11	201.00	158.50	DN (Rev)	-42.50	0501	0532

Comments: Rotation angles specified are for the head down configuration.
Scanning was restricted due to the proximity of the jet pump difffuser and jet pump restrainer bracket.
All scans are offset down 5 inches as determined by UT.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 112°F **Couplant:** Water

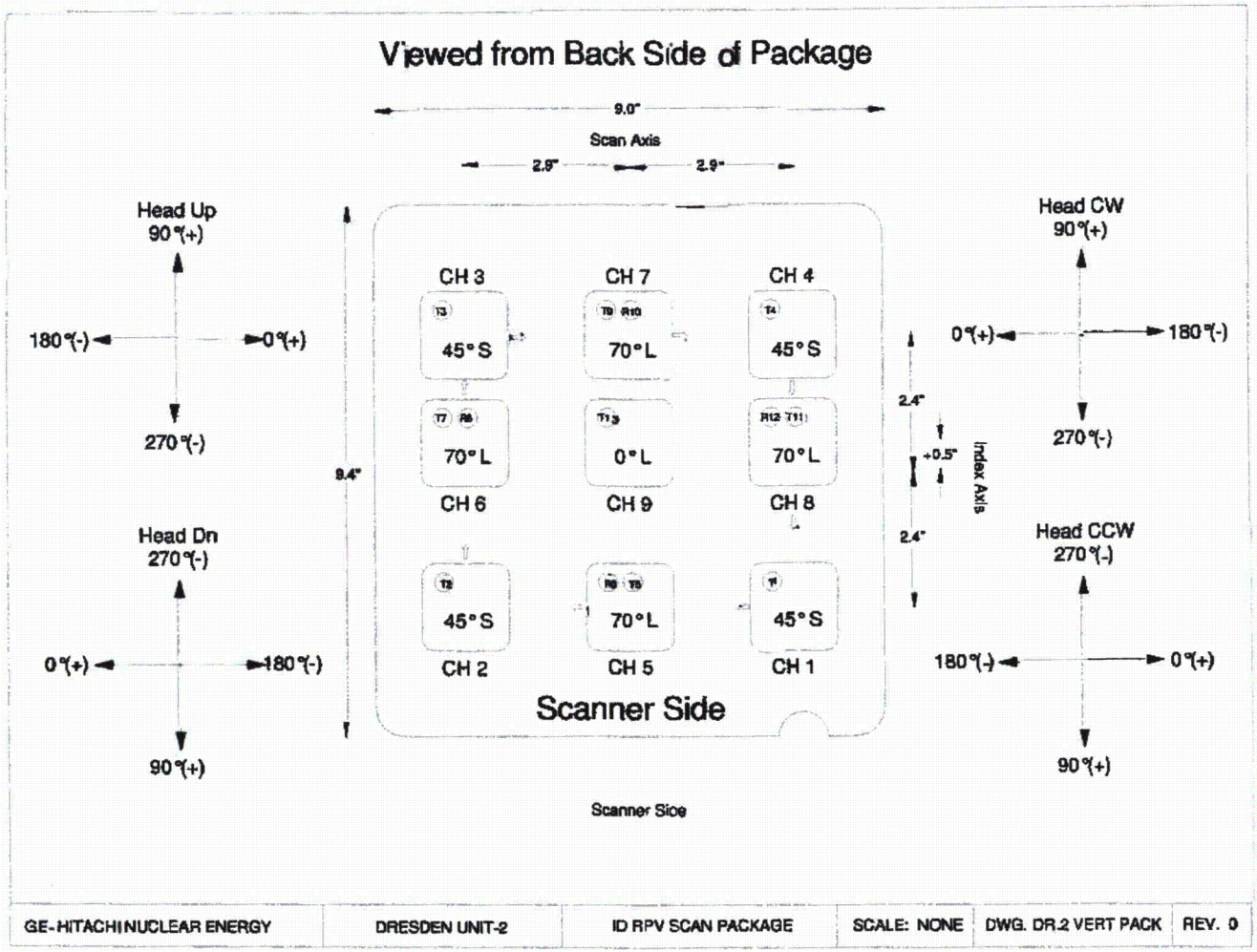
Operators: Clint Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N9	70°L	2(12 x 25)mm	2.25	90°

HITACHI

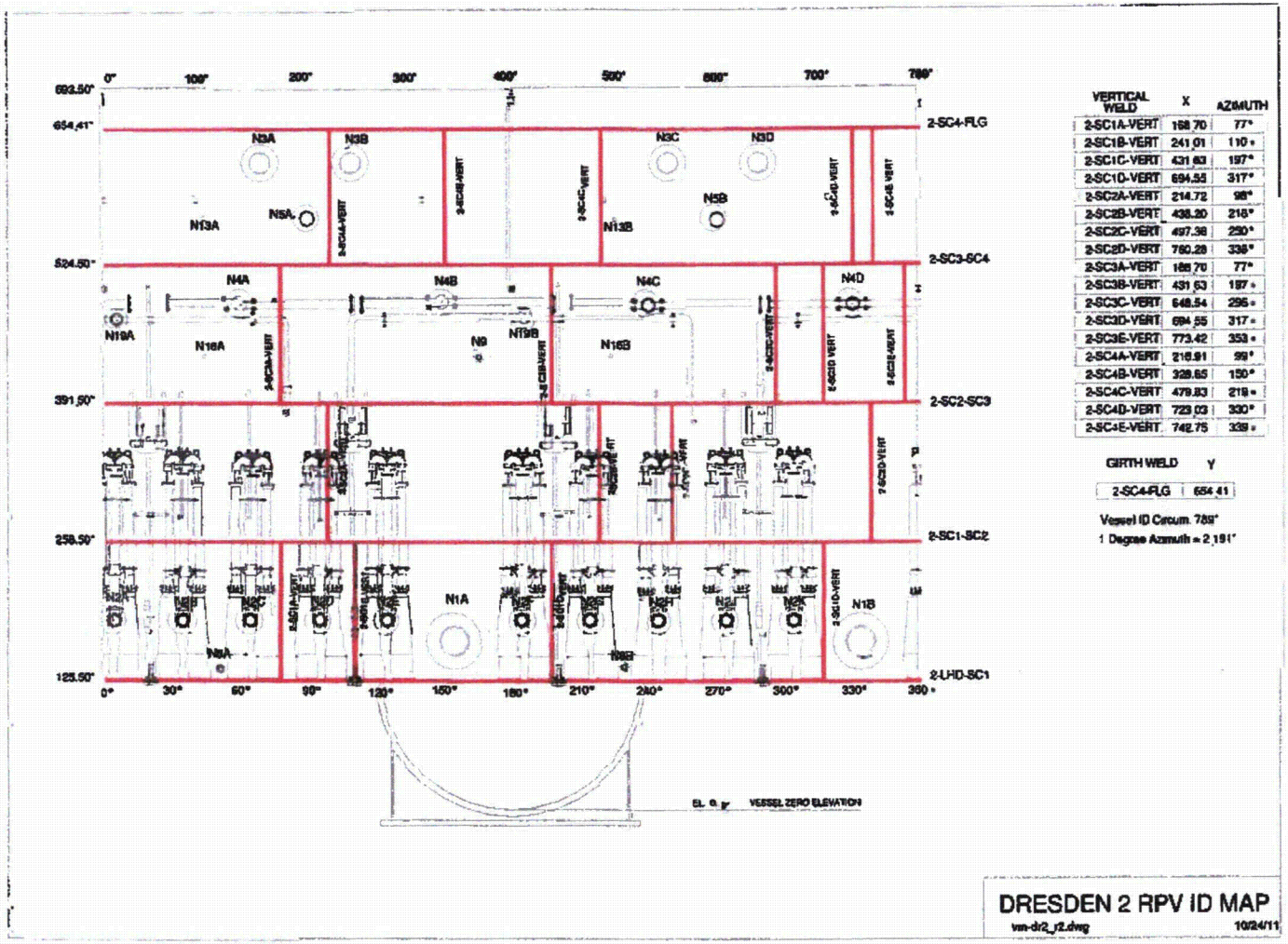
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	168.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.63	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	438.20	218°
2-SC2C-VERT	497.38	250°
2-SC2D-VERT	760.28	338°
2-SC3A-VERT	168.70	77°
2-SC3B-VERT	431.63	197°
2-SC3C-VERT	648.54	296°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.83	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

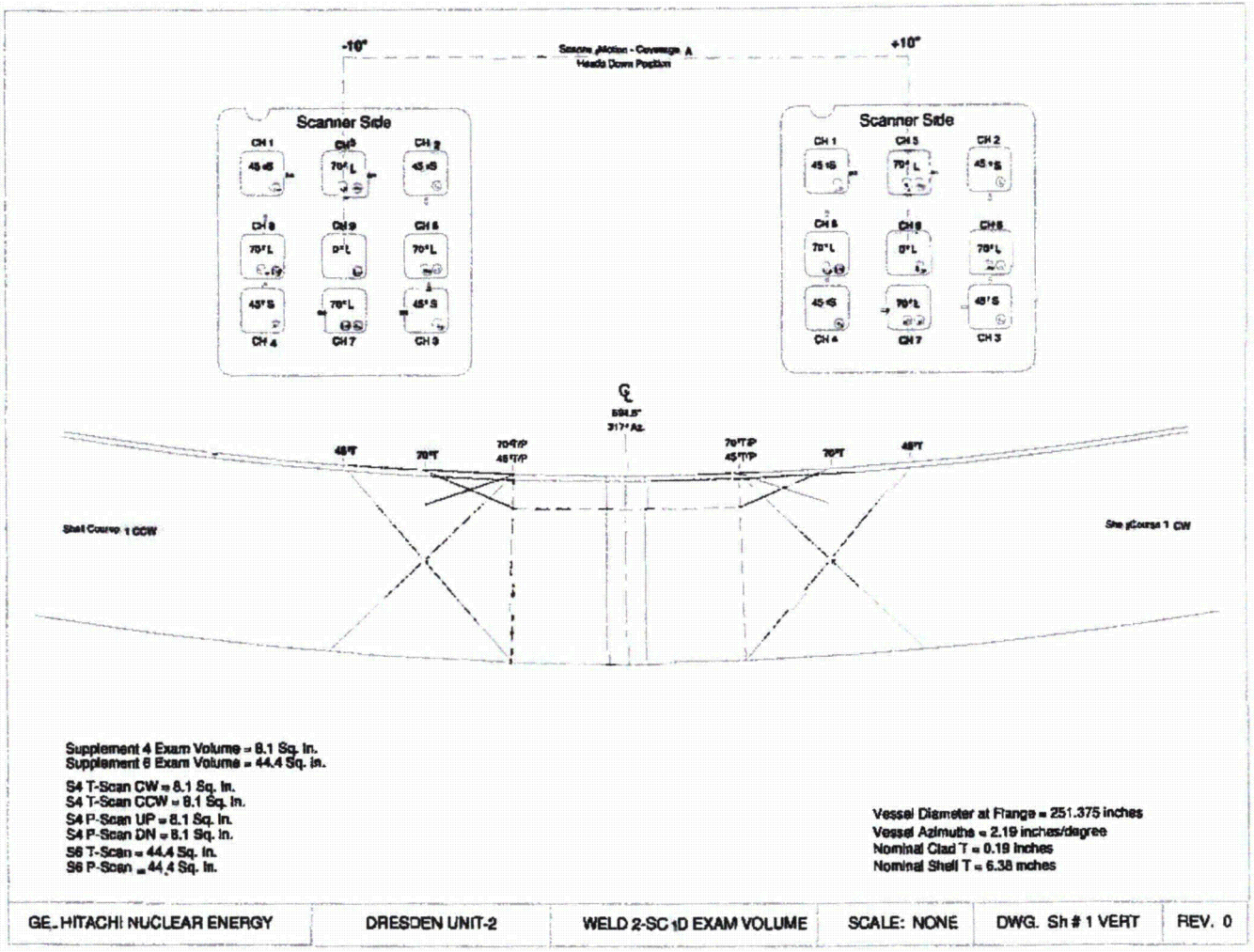
GIRTH WELD	Y
2-SC4-FLG	654.41

Vessel ID Circum. 789"
1 Degree Azimuth = 2.191"

Weld Location Map

HITACHI

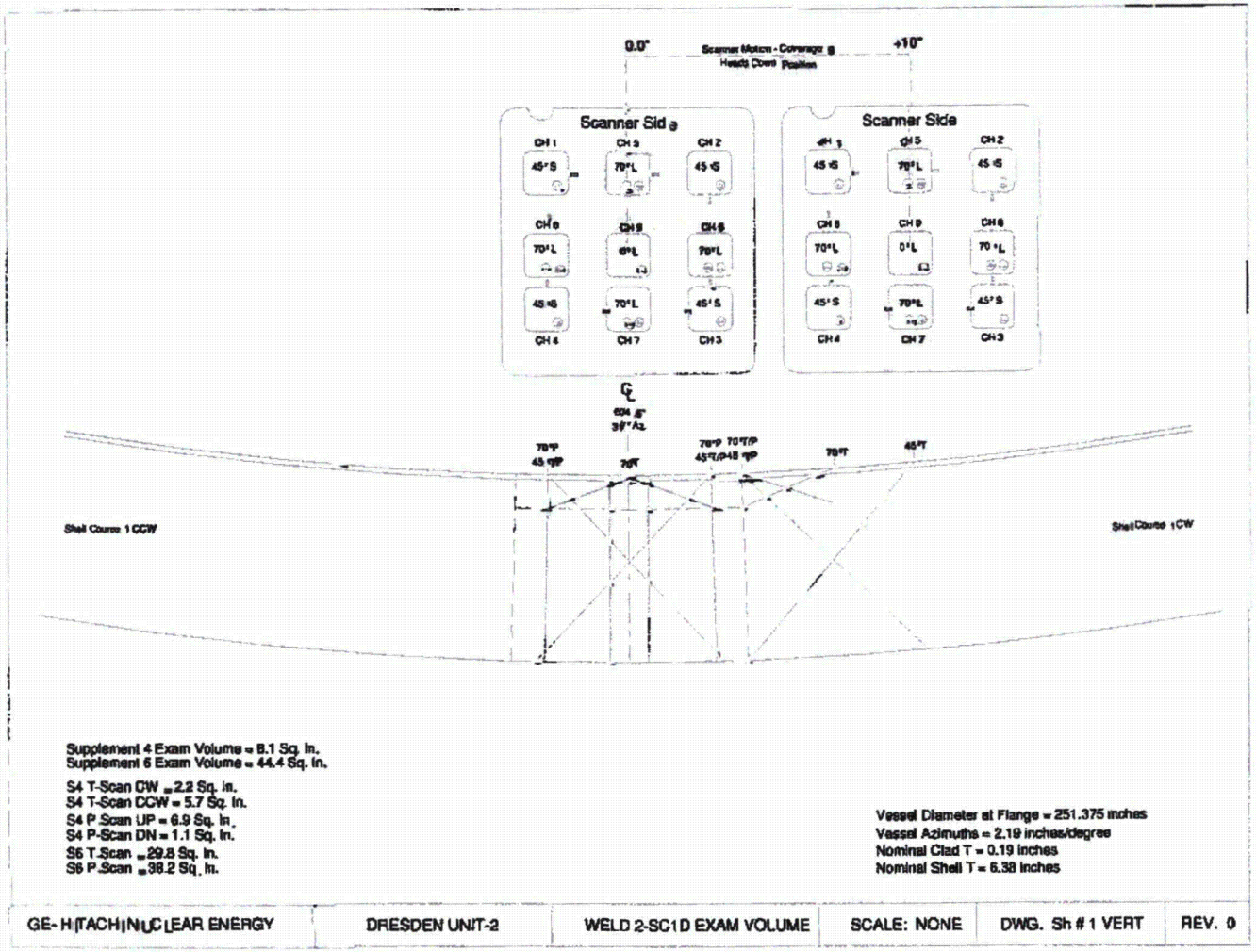
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

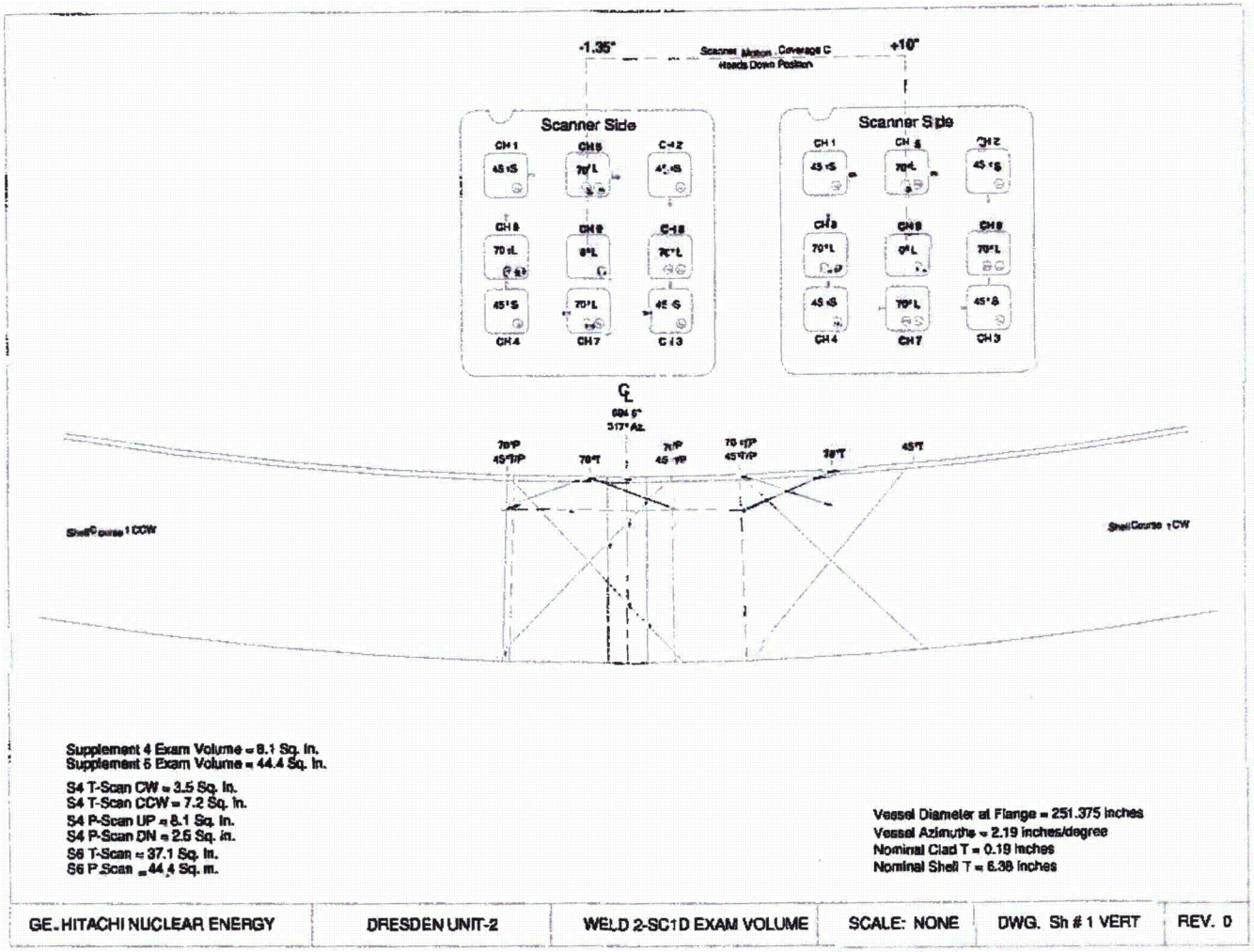
Dresden
Reference Drawings



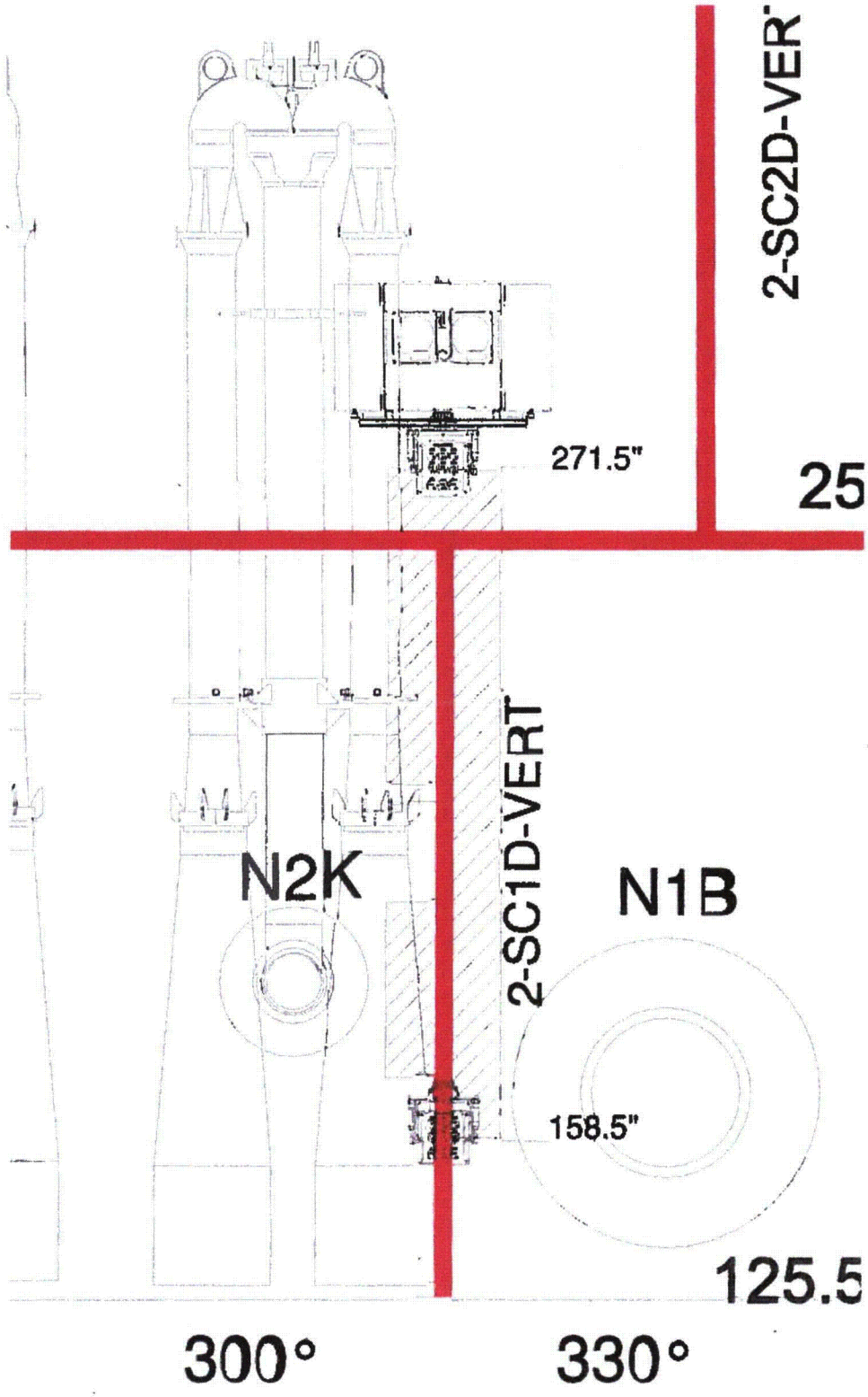
Cross Section of Achieved Coverage "B"

HITACHI

Dresden
Reference Drawings



Cross Section of Achieved Coverage "C"



Dresden
Reference Drawings

Scanned Patches

HITACHI

HITACHI Examination Summary Sheet

Report No.: D2R22-079

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC2A-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 2 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/29/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/29/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/29/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/29/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/29/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/29/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/29/11
70°L	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/29/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted by the proximity of the jet pump riser brace, lower specimen and upper specimen brackets.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

One (1) acceptable flaw indication was recorded. The indication is characteristic of fabrication artifacts in the original plate base material. The indication was recorded for reference purposes only and was not recorded during the previous examination.

The Auto coverage was calculated to be 69.0%.

Previous data was reviewed with no changes.

The examination results were compared with data report 000500 from D2R18 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change
This summary and the following data sheets have been reviewed and accepted by the following personnel

Prepared By:	Level: II	Date: 11/4/11	Utility Review By:		Date: 11-5-11
			ANII Reviewed By:		Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC2A-VERT

Report No.: D2R22-079

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC2A_1	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2A_2	Head Down	RI (1)	RI (1)	RI (1)	RI (1)	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2A_3	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".

Analyzed by: John Gilliard Level III 11/01/2011

HITACHI

SP2000 RPV Examination Indication Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC2A-VERT
Report: D2R22-079

			Maximum Amplitude Position				Indication Length Information				
Ind. No.	File	Channel	Amp dB	L Pos	W Pos	Depth	L Min	L Max	Length	Axis	Remarks
1	2-SC2A_2	1	-12.3	322.65	4.60	3.70	322.05	322.88	0.83	Circ.	No determinable thruwall
1	2-SC2A_2	2	-10.7	322.15	5.15	3.68	321.94	323.45	1.51	Circ.	No determinable thruwall
1	2-SC2A_2	3	-9.1	323.35	3.90	3.72	322.10	323.24	1.14	Circ.	No determinable thruwall
1	2-SC2A_2	4	-9.5	322.85	5.10	3.67	322.60	323.74	1.14	Circ.	No determinable thruwall

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". Measurements in Inches.
Indication #1 was seen with Ch's 1,2,3 and 4 and is similar to other reflectors located in the plate base material.
Indication 1 was recorded for reference purposes only.

Analyzed by: John Gilliard Level III 10/31/2011

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project: Dresden Unit-2
Weld ID: 2-SC2A
Indication: 1

	Measured	Rounded
Flaw Through Wall =	0.075	0.1
Flaw Length "l" =	1.51	1.5
Surface Separation "S" =	2.72	2.7

	Measured	Rounded
"T" nominal =	6.25	6.2
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.97	2.13 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 1.97	Allowed 2.13

a = 0.050
a/l value = 0.033
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.1%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/05

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

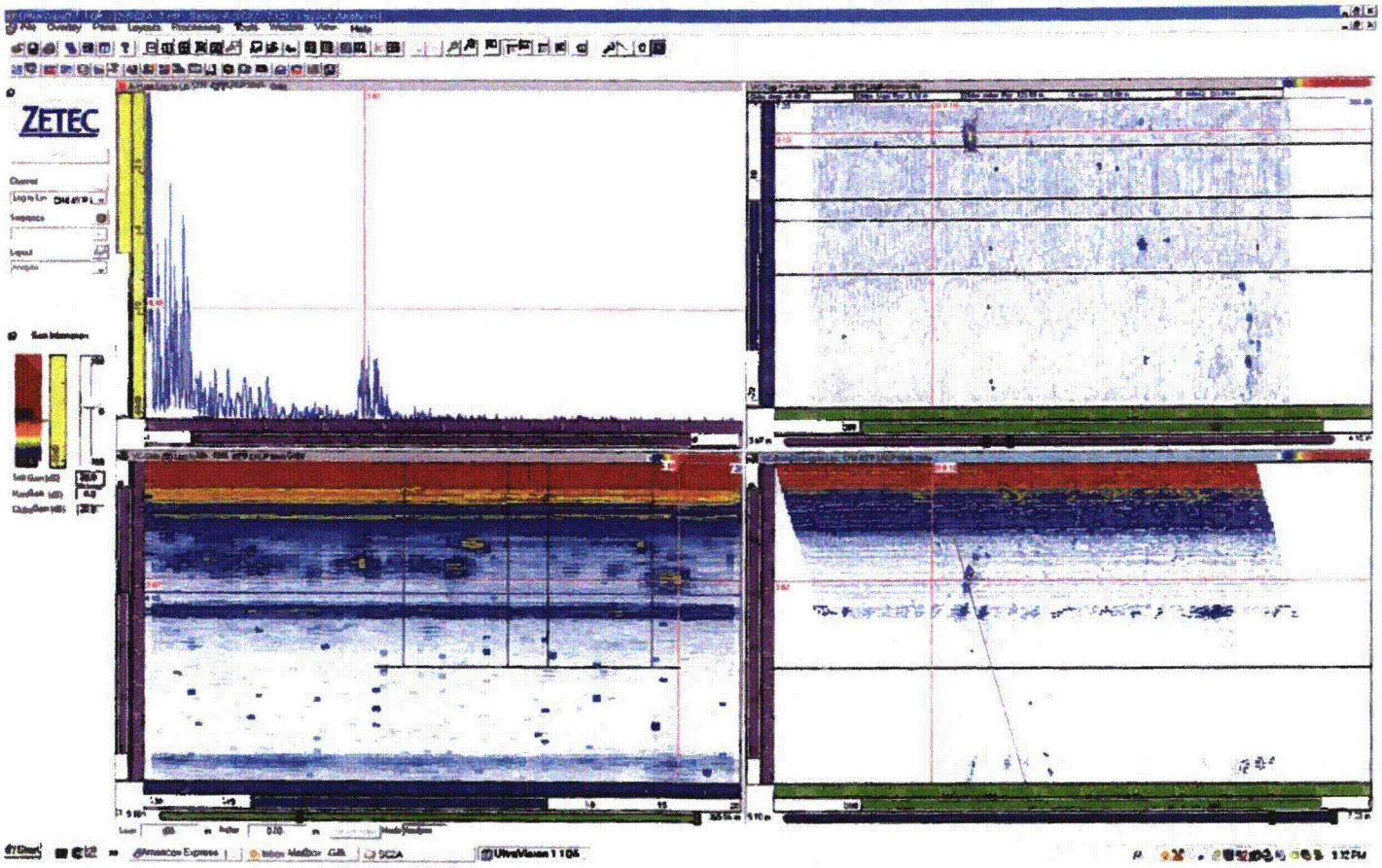
Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: _____

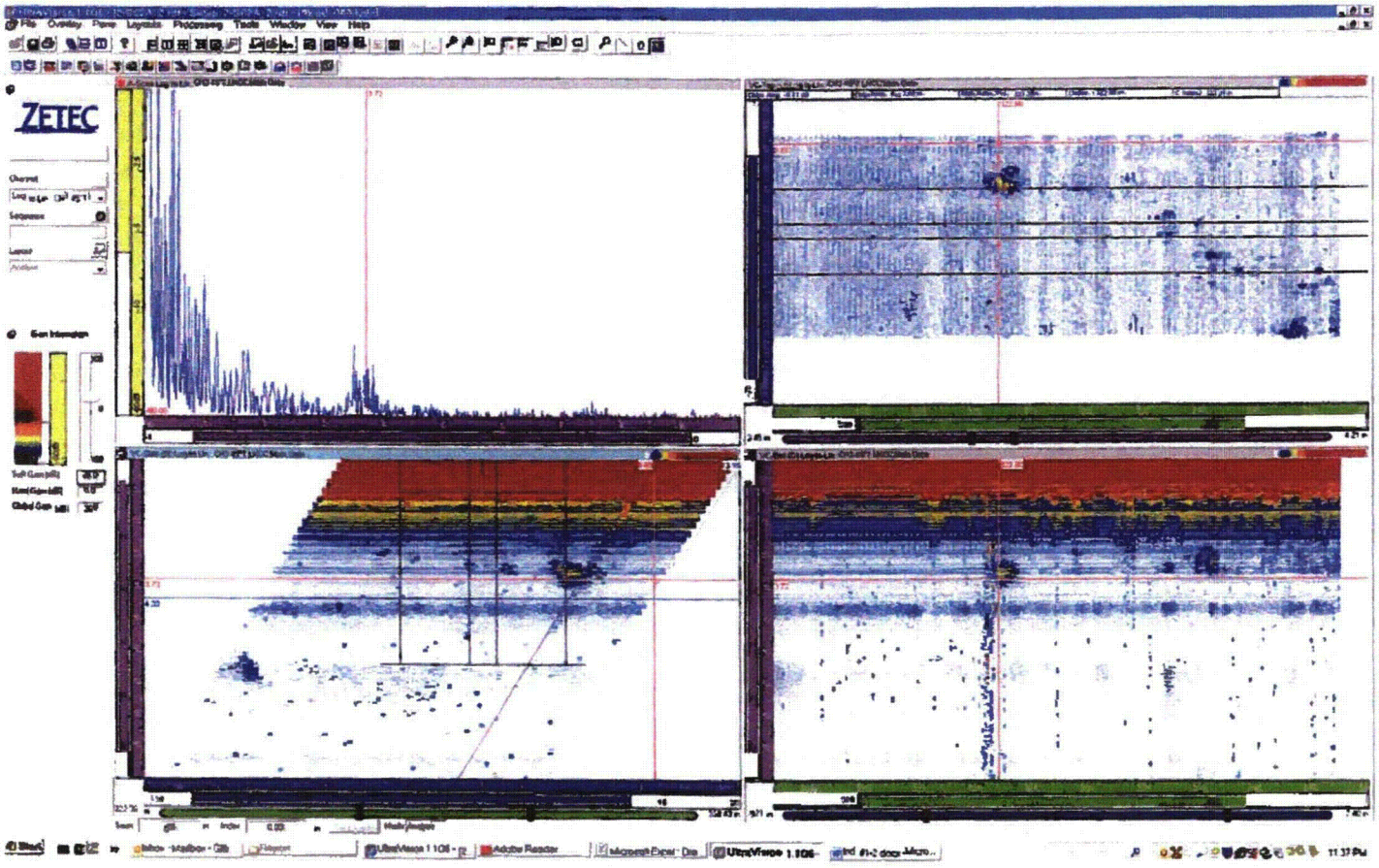
HITACHI

Dresden
Indication Prints



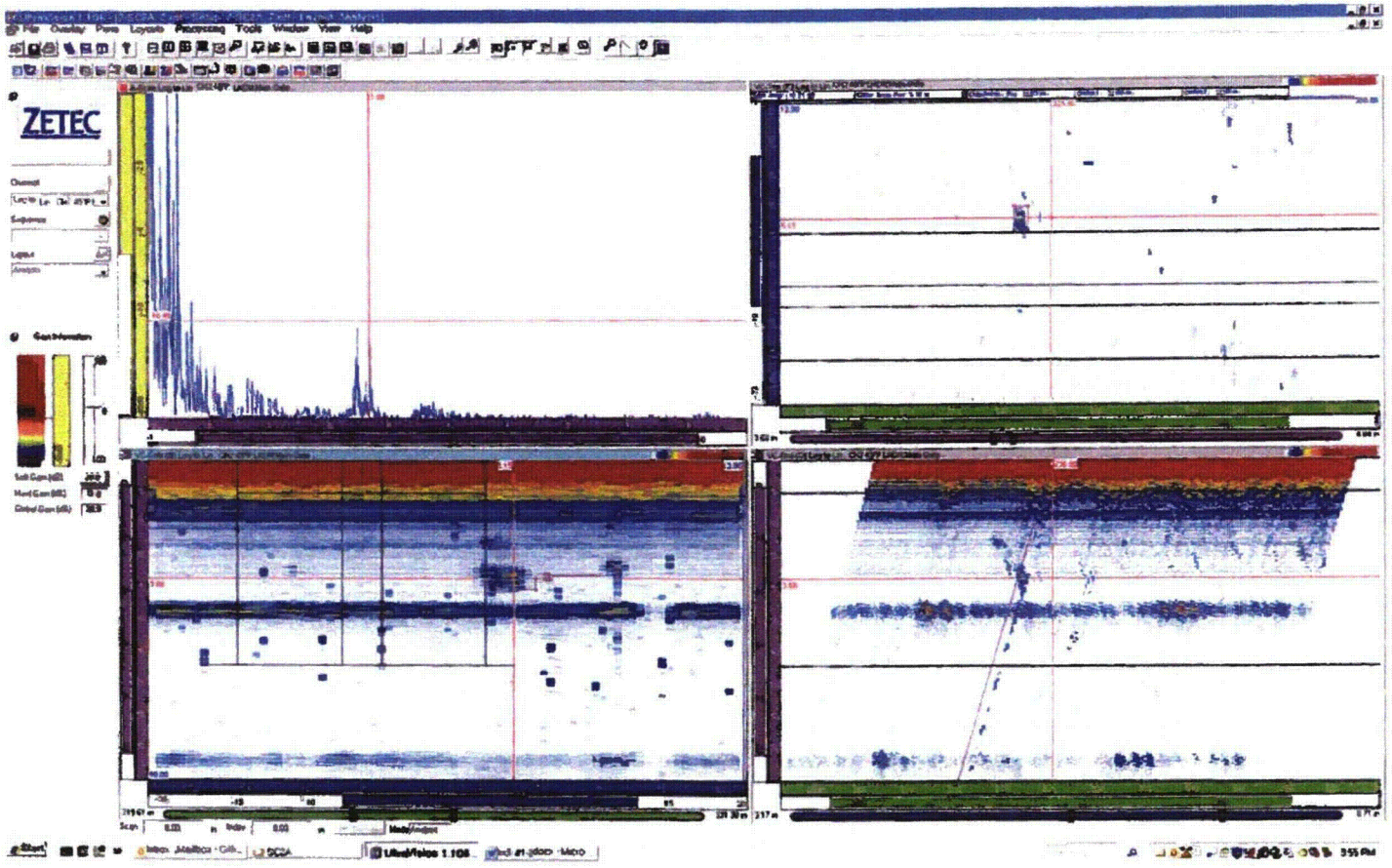
Indication 1 – Channel 1

Dresden
Indication Prints



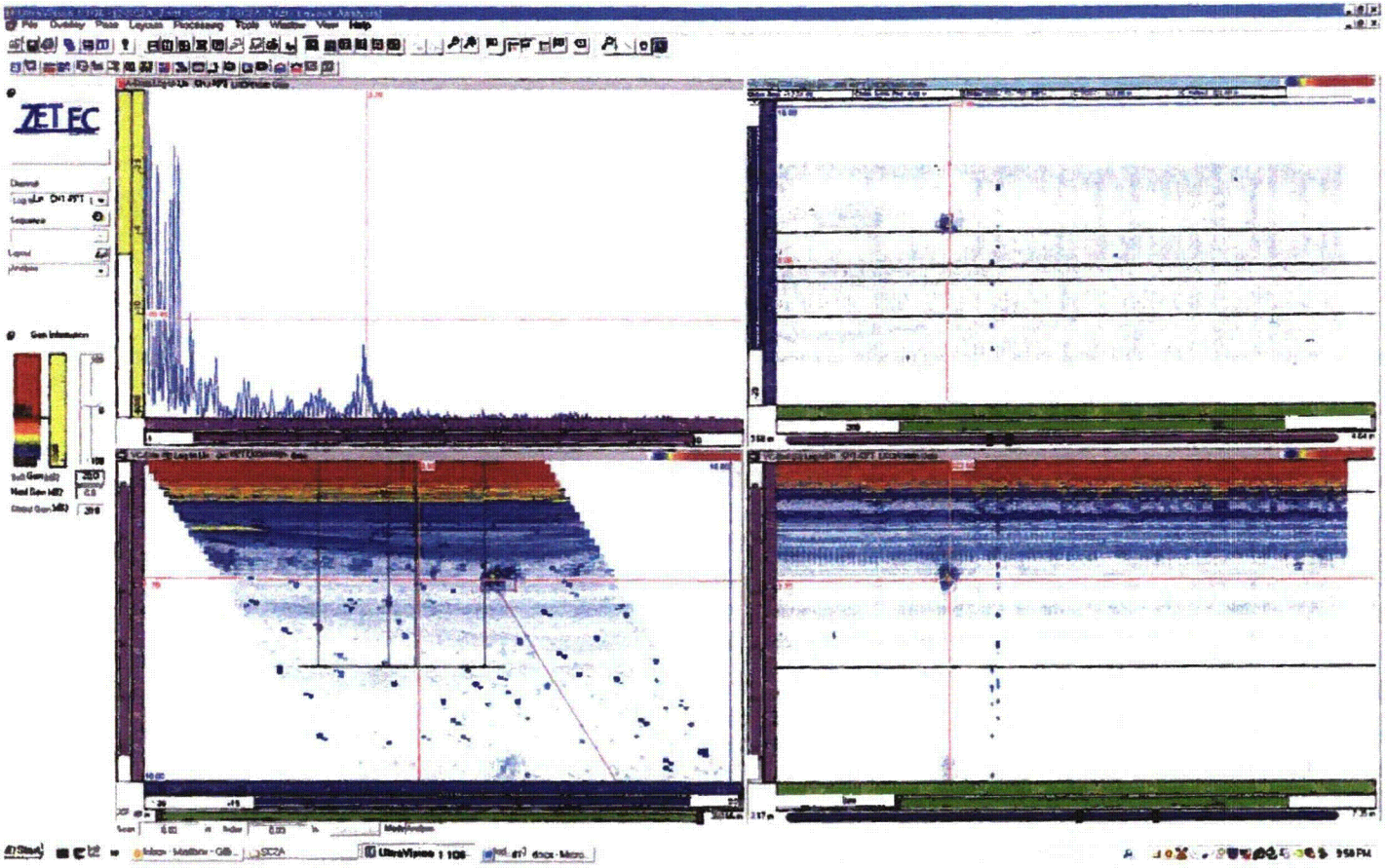
Indication 1 – Channel 2

Dresden
Indication Prints



Indication 1 - Channel 3

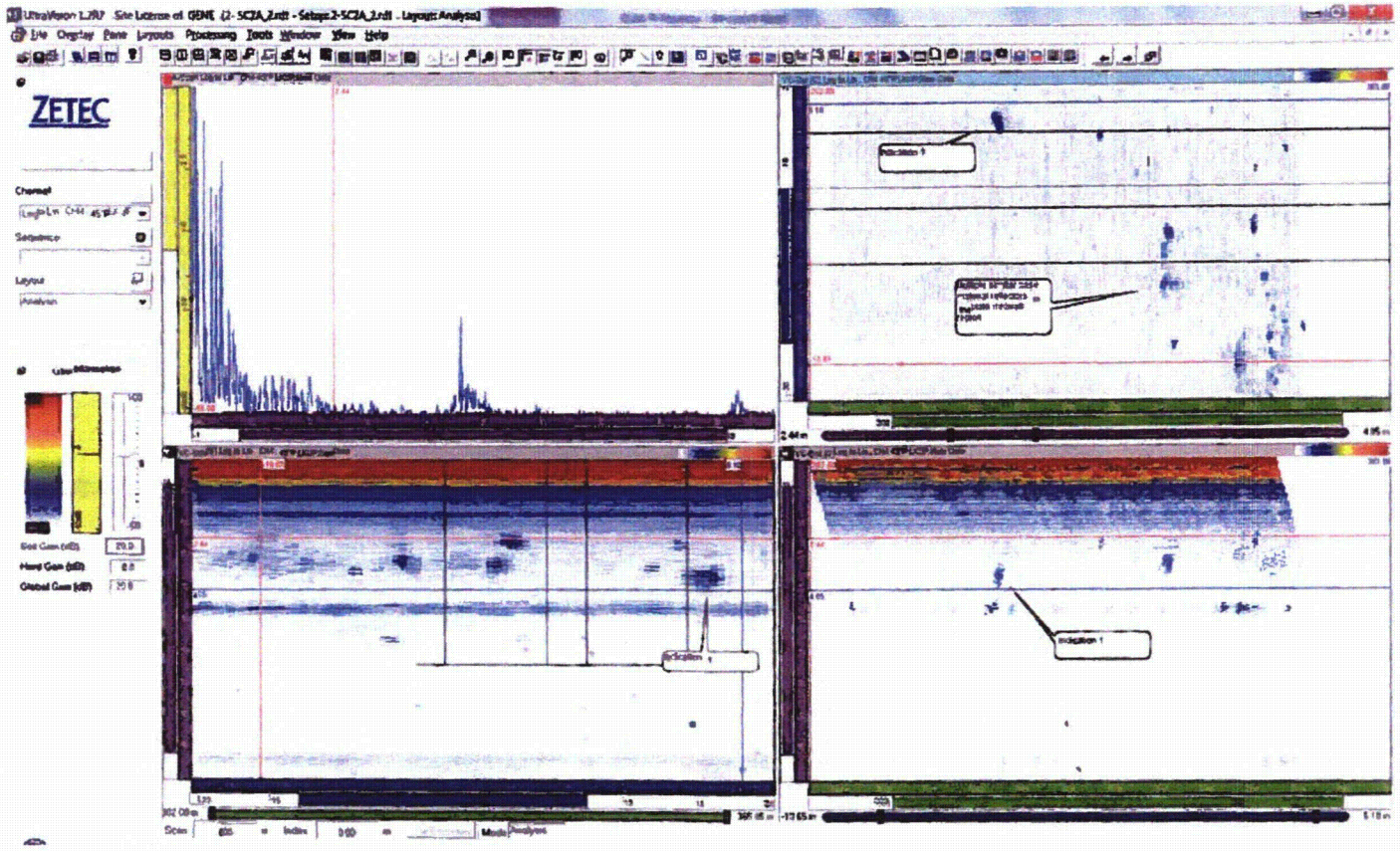
Dresden
Indication Prints



Indication 1 - Channel 4

HITACHI

Dresden
Indication Prints



Channel 4 – Typical base material reflectors similar to Indication 1.

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-079

DRESDEN UNIT-2
Weld 2-SC2A

		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
Weld Length = 133. Exam Volume = 52.5		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A/B	8.1	8.1	7.7%	89.5	2.6%
70° T-Scan CCW (S4 NS)	A/B	8.1	8.1	7.7%	89.5	2.6%
45° T-Scan (S6 FV)	A/B	44.4	44.4	84.6%	89.5	28.5%
70° P-Scan UP (S4 NS)	A/B	8.1	8.1	7.7%	89.5	2.6%
70° P-Scan DN (S4 NS)	A/B	8.1	8.1	7.7%	89.5	2.6%
45° P-Scan (S6 FV)	A/B	44.4	44.4	84.6%	89.5	28.5%
70° T-Scan CW (S4 NS)	C	8.1	0	0.0%	11	0.0%
70° T-Scan CCW (S4 NS)	C	8.1	1.4	1.3%	11	0.1%
45° T-Scan (S6 FV)	C	44.4	6.2	11.8%	11	0.5%
70° P-Scan UP (S4 NS)	C	8.1	2.4	2.3%	11	0.1%
70° P-Scan DN (S4 NS)	C	8.1	0	0.0%	11	0.0%
45° P-Scan (S6 FV)	C	44.4	13.4	25.5%	11	1.1%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 69.0%

Rev. 0 9/23/05

Comments:
A/B - Automated scanning was not restricted.
C - Automated scanning was restricted due to the proximity of the lower specimen bracket.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC2A-VERT
Report No.: D2R22-079

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC2A_1	10/28/11	386.00	334.00	UP (Rev)	-52.00	1852	1918
2-SC2A_2	10/28/11	305.00	355.70	DN (Fwd)	50.70	2050	2117
2-SC2A_3	10/29/11	282.00	246.00	UP (Rev)	-36.00	0004	0026

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the jet pump riser brace and the lower and upper surveilance specimen brackets.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 93°F **Couplant:** Water

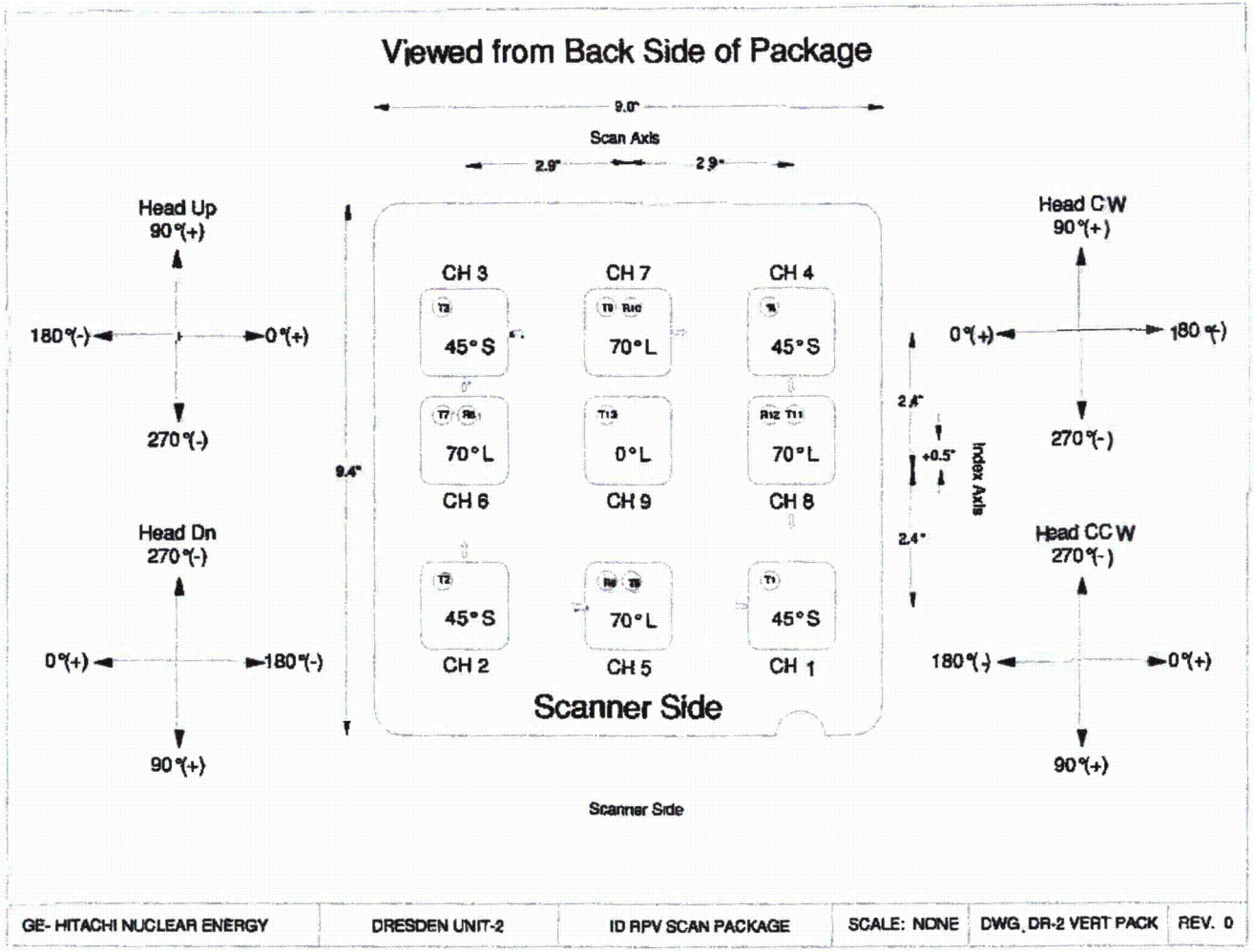
Operators: Clint Gauthier Level II
Shane Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

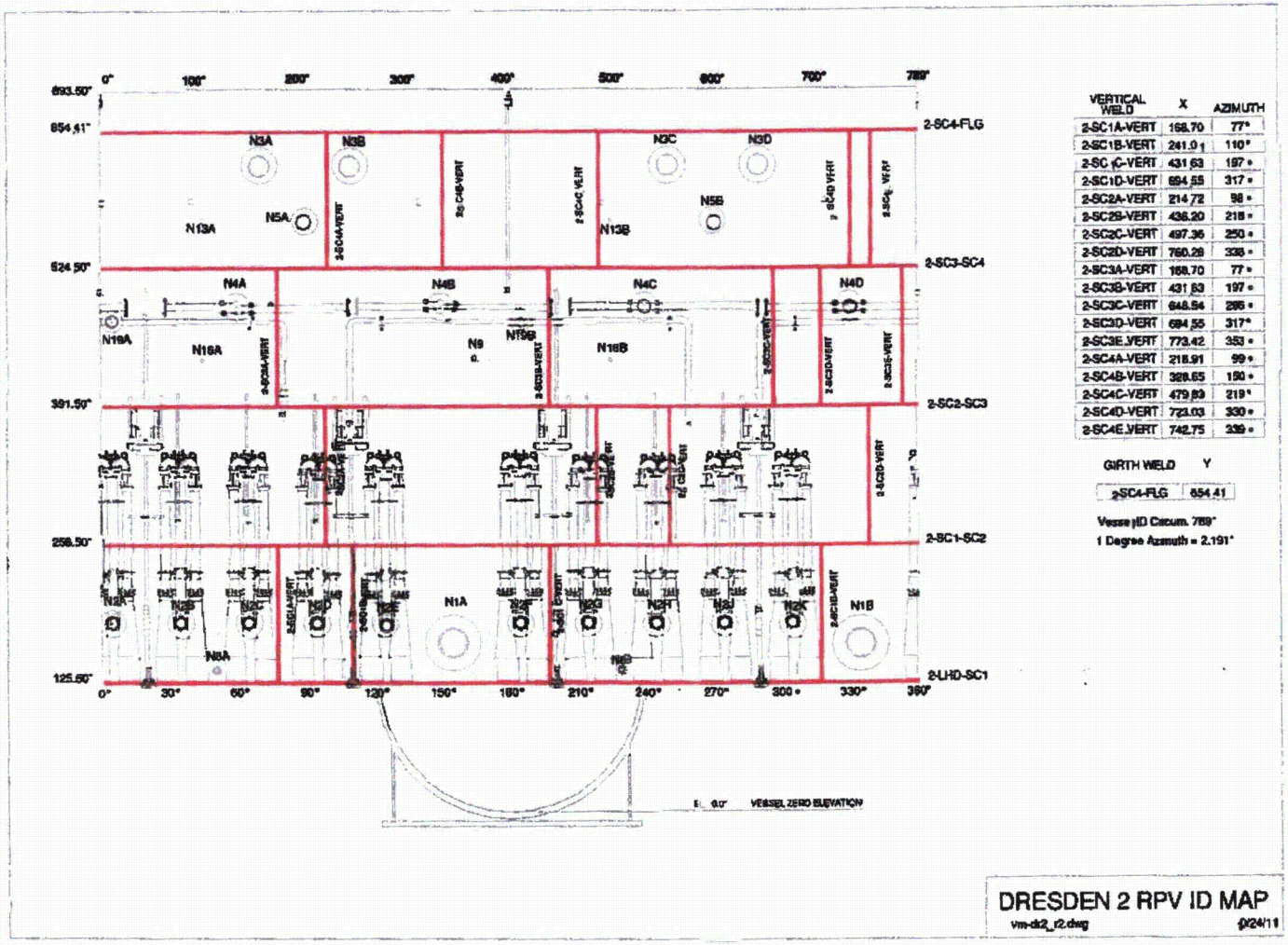
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	168.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.63	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	436.20	218°
2-SC2C-VERT	497.36	250°
2-SC2D-VERT	760.28	338°
2-SC3A-VERT	168.70	77°
2-SC3B-VERT	431.63	197°
2-SC3C-VERT	648.54	286°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	218.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.89	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

GIRTH WELD	Y
2SC4-FLG	654.41

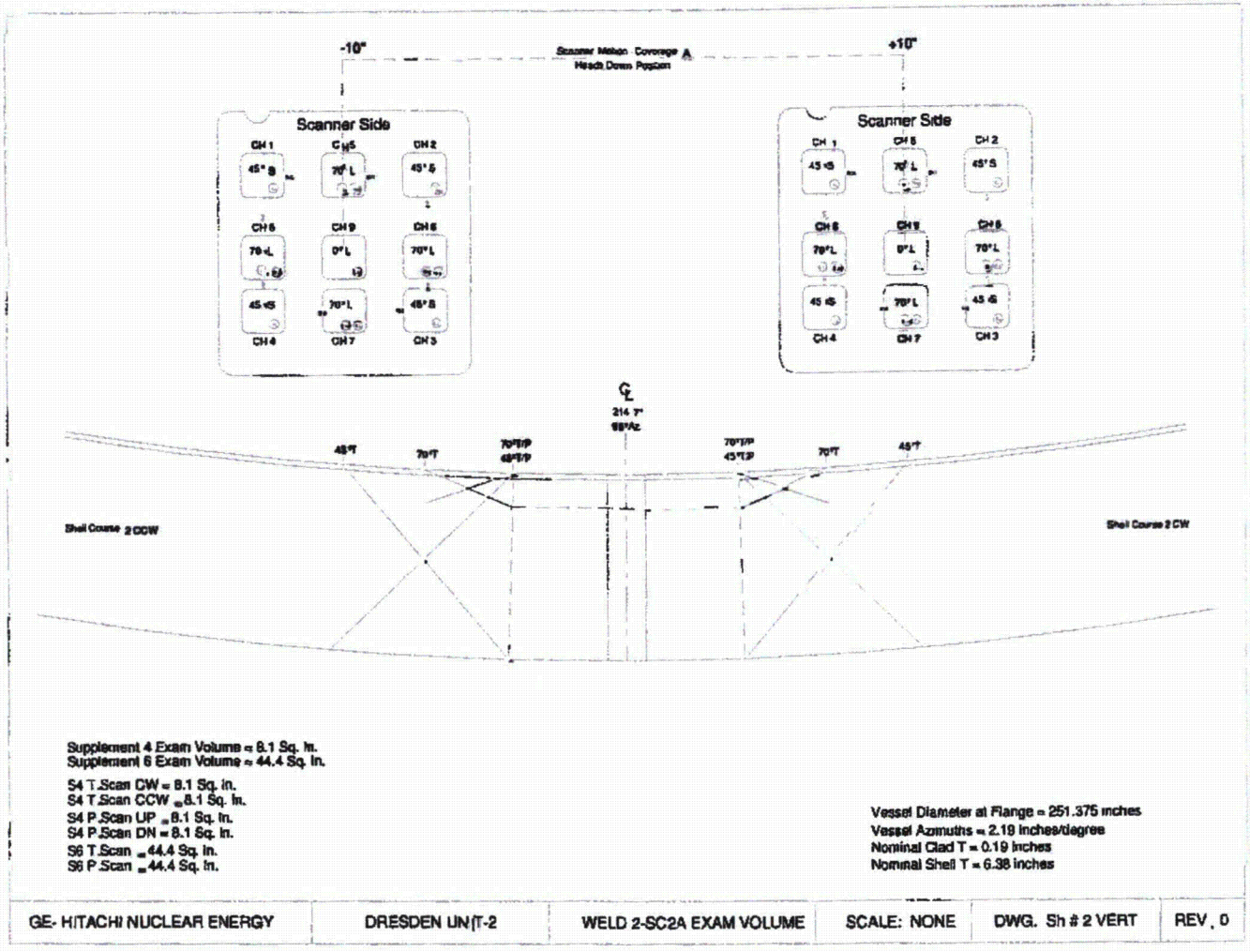
Vessel ID Circum. 789"
1 Degree Azimuth = 2.191"

DRESDEN 2 RPV ID MAP
vm-d2_r2.dwg 9/24/11

Weld Location Map

HITACHI

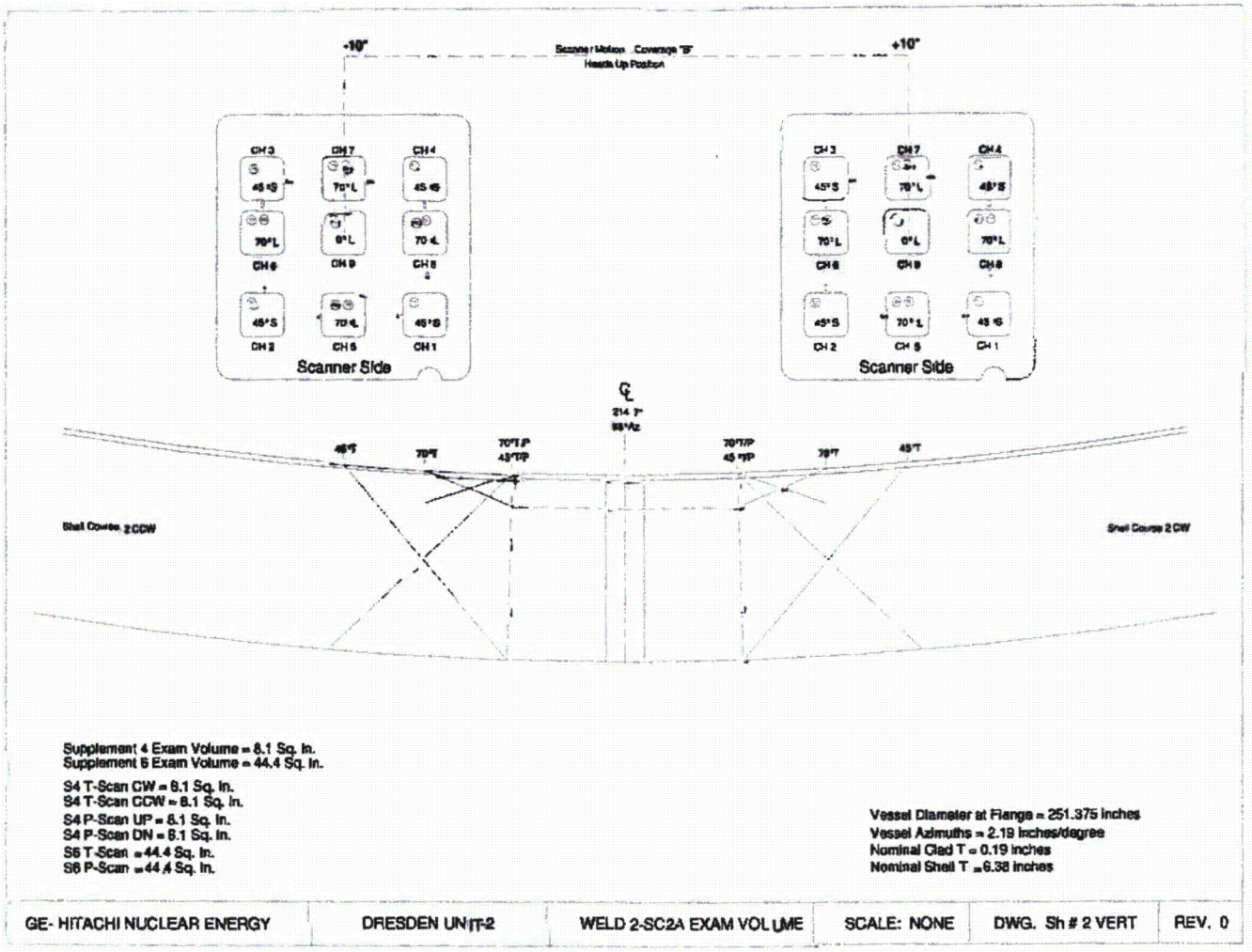
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

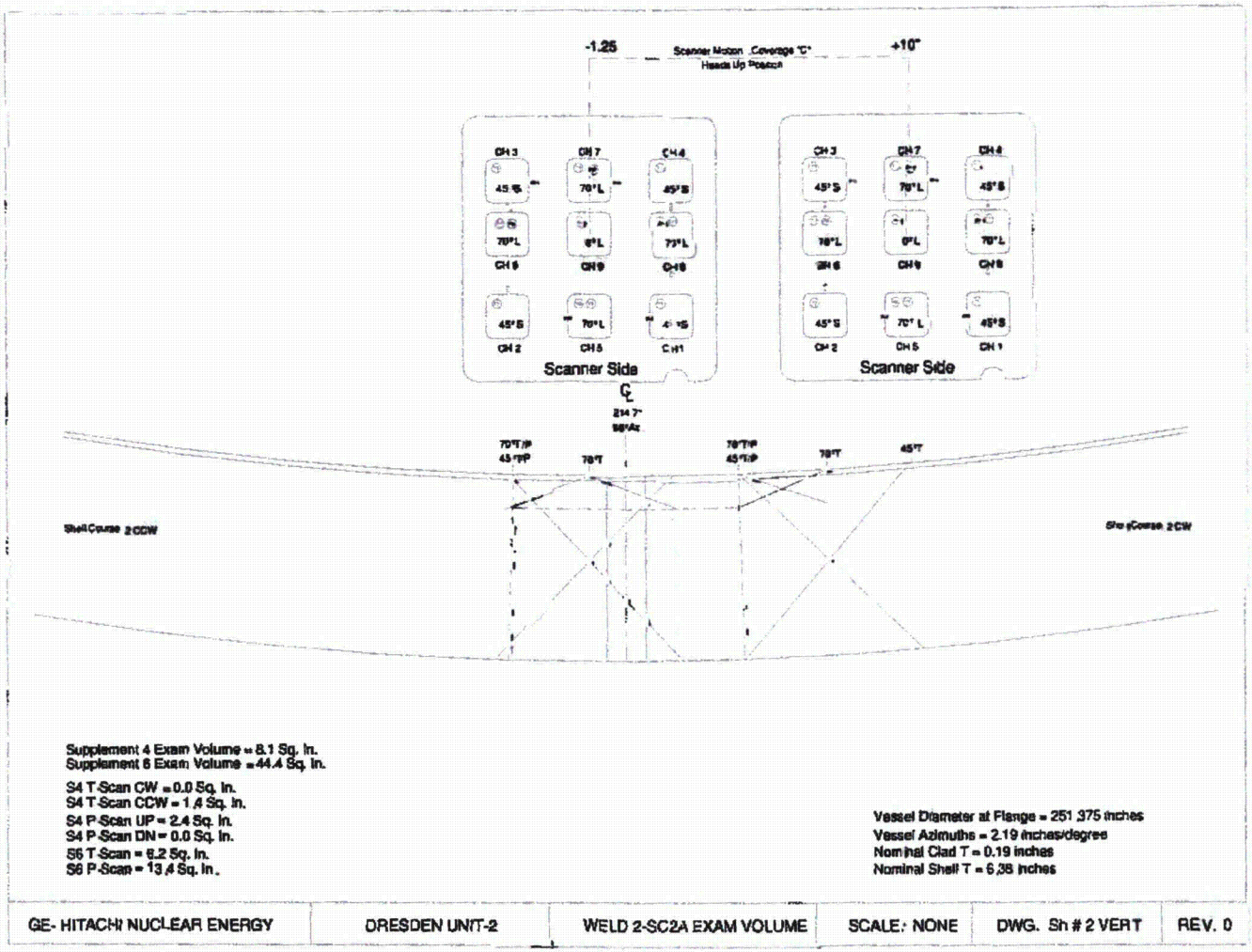
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

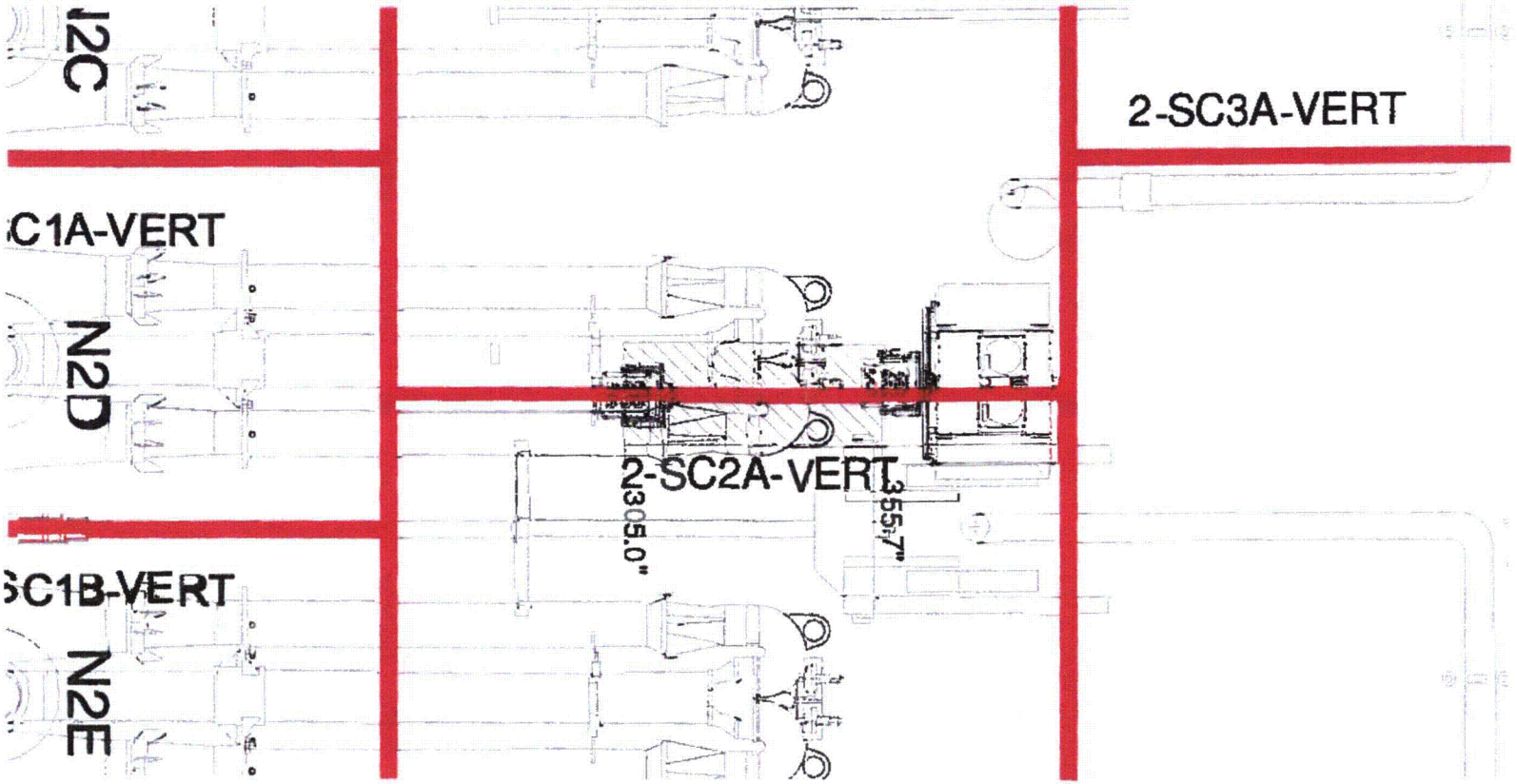
Dresden
Reference Drawings



Cross Section of Achieved Coverage "C"

HITACHI

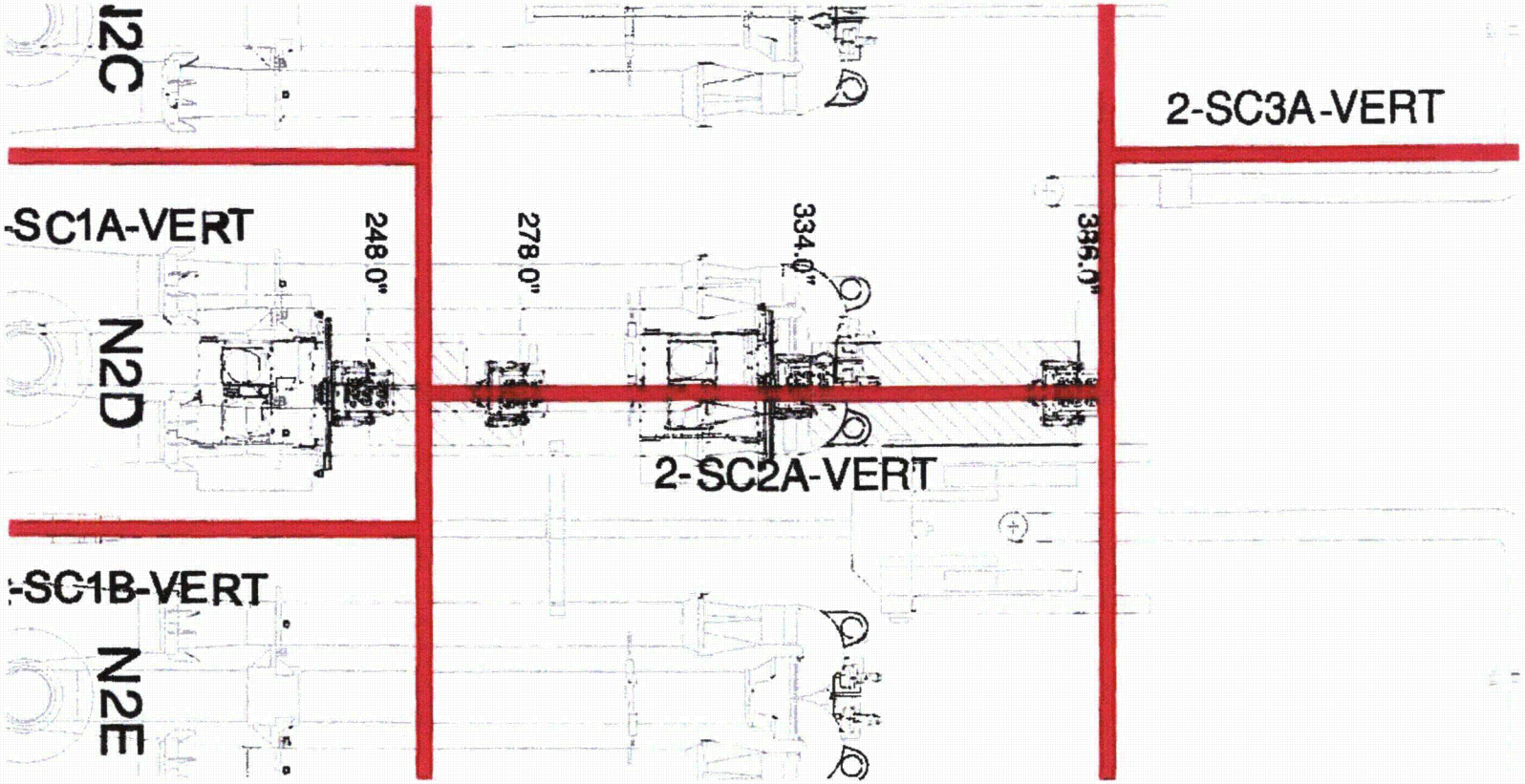
Dresden
Reference Drawings



Scanned Patches – Coverage "A"

HITACHI

Dresden
Reference Drawings



Scanned Patches – Coverage "B" and "C"

HITACHI Examination Summary Sheet

Report No.: D2R22-080

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC2B-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 2 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
70°L	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted by the proximity of the jet pump riser brace, lower specimen and upper specimen brackets.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flaw indications were recorded.

The Auto coverage was calculated to be 78.2%.

Previous data was reviewed with no changes.

The examination results were compared with data report 000600 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By:	Level: II	Date: 11/3/11	Utility Review By:	Date: 11-5-11
			ANII Reviewed By:	Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC2B-VERT

Report No.: D2R22-080

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC2B_1	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2B_2	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2B_3	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2B_4	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".

Analyzed by: Brad Dummer Level III 11/3/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-080

DRESDEN UNIT-2
Weld 2-SC2B

Weld Length = 133. / Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A/B	8.1	8.1	7.7%	102	3.0%
70° T-Scan CCW (S4 NS)	A/B	8.1	8.1	7.7%	102	3.0%
45° T-Scan (S6 FV)	A/B	44.4	44.4	84.6%	102	32.4%
70° P-Scan UP (S4 NS)	A/B	8.1	8.1	7.7%	102	3.0%
70° P-Scan DN (S4 NS)	A/B	8.1	8.1	7.7%	102	3.0%
45° P-Scan (S6 FV)	A/B	44.4	44.4	84.6%	102	32.4%
70° T-Scan CW (S4 NS)	C	8.1	0	0.0%	10	0.0%
70° T-Scan CCW (S4 NS)	C	8.1	1.4	1.3%	10	0.1%
45° T-Scan (S6 FV)	C	44.4	6.2	11.8%	10	0.4%
70° P-Scan UP (S4 NS)	C	8.1	2.4	2.3%	10	0.1%
70° P-Scan DN (S4 NS)	C	8.1	0	0.0%	10	0.0%
45° P-Scan (S6 FV)	C	44.4	13.4	25.5%	10	1.0%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 78.2%

Rev. 0 9/23/05

Comments:
A/B - Automated scanning was not restricted.
C - Automated scanning was restricted due to the proximity of the lower specimen bracket.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination
Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC2B-VERT
Report No.: D2R22-080

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC2B_1	10/29/11	362.00	305.50	DN (Fwd)	-56.50	0211	0251
2-SC2B_2	10/29/11	390.00	337.25	UP (Rev)	-52.75	0405	0433
2-SC2B_3	10/30/11	290.00	258.00	UP (Rev)	-32.00	1222	1242
2-SC2B_4	10/30/11	265.00	248.00	UP (Rev)	-17.00	1409	1436

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the jet pump riser brace and the lower and upper surveillance specimen brackets.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 93°F **Couplant:** Water

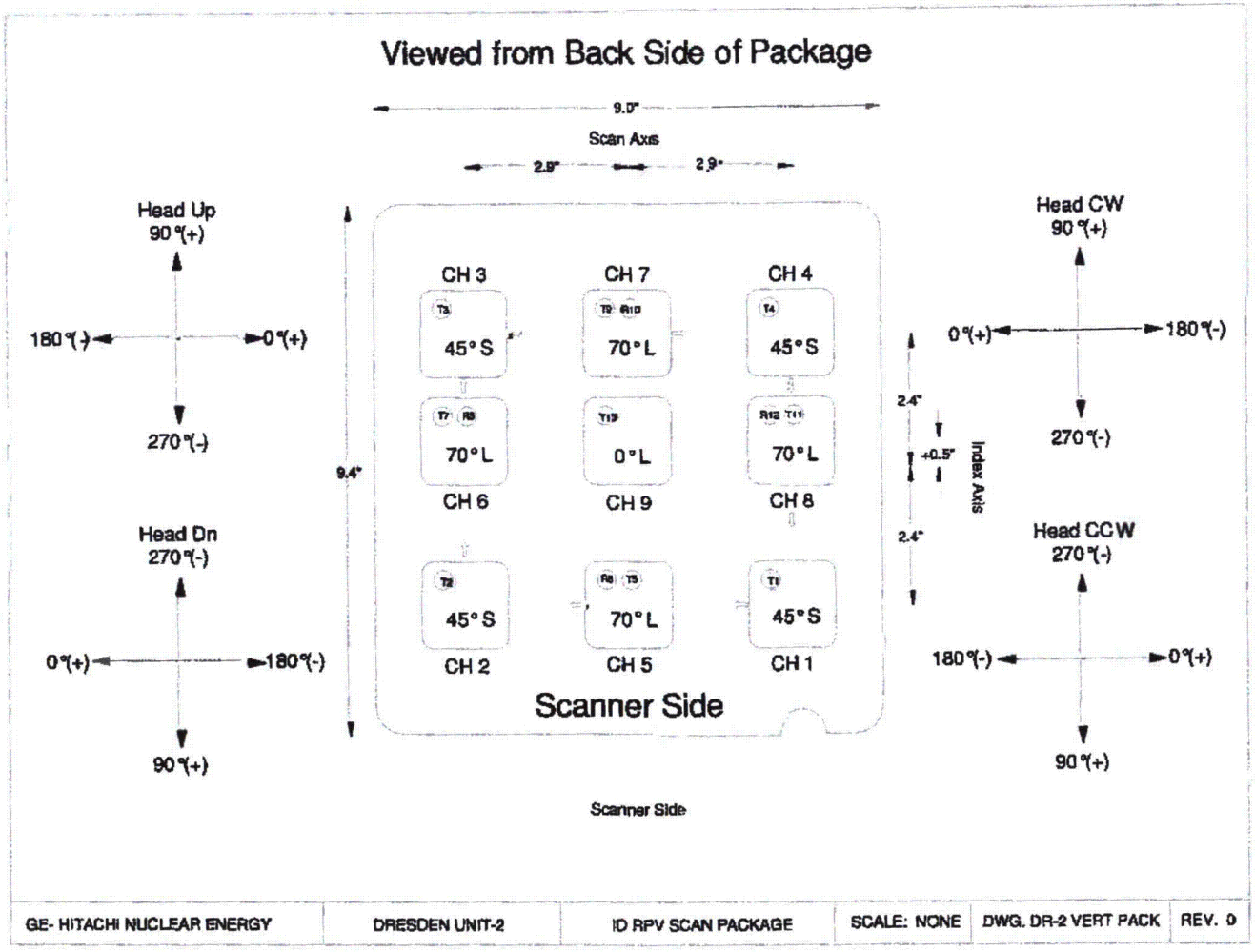
Operators: Clint Gauthier Level II
Shane Gauthier Level II

SEARCH UNIT DATA;

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

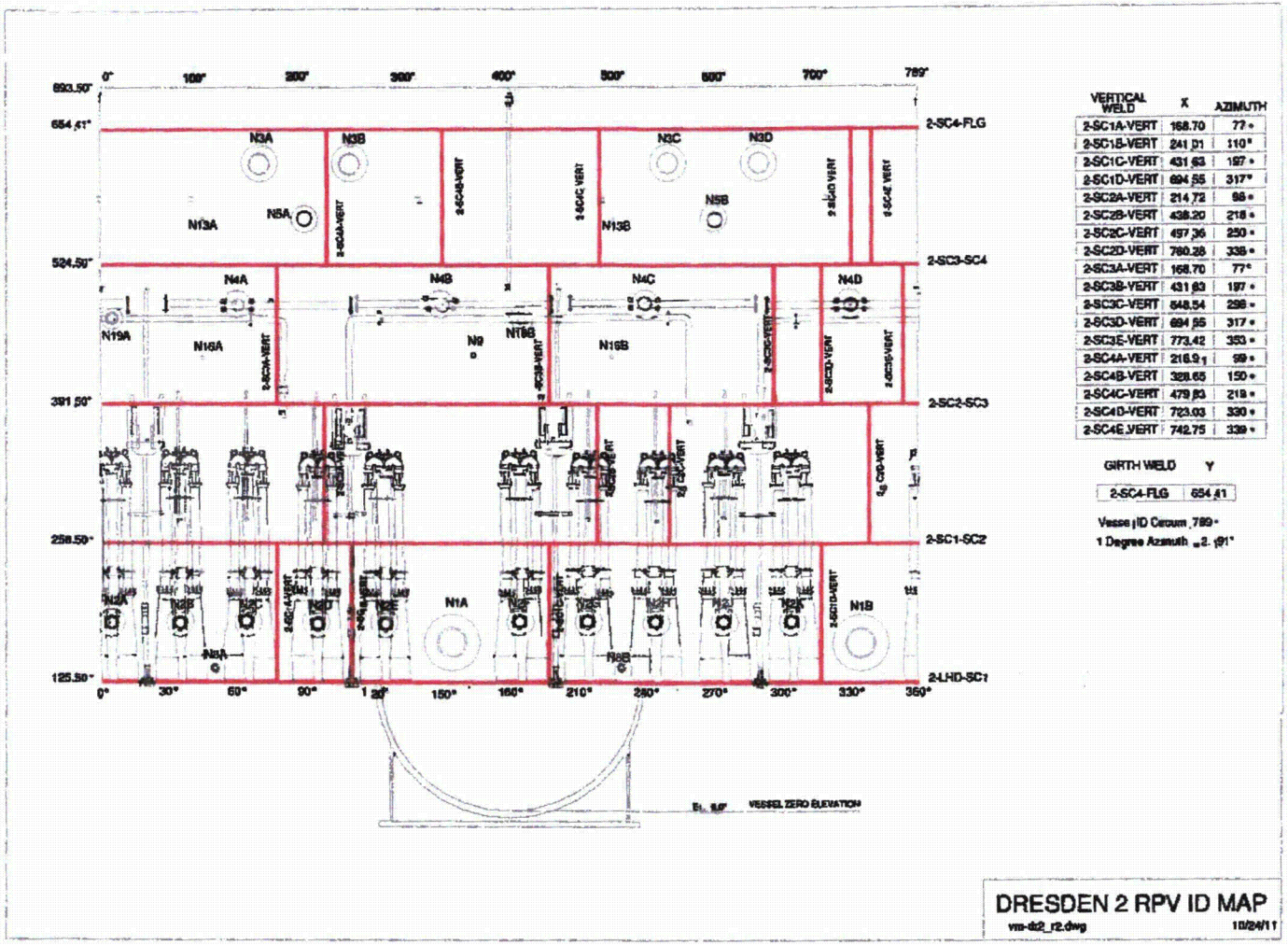
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	168.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.93	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	438.20	218°
2-SC2C-VERT	497.36	250°
2-SC2D-VERT	760.28	338°
2-SC3A-VERT	168.70	77°
2-SC3B-VERT	431.93	197°
2-SC3C-VERT	648.54	298°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.83	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

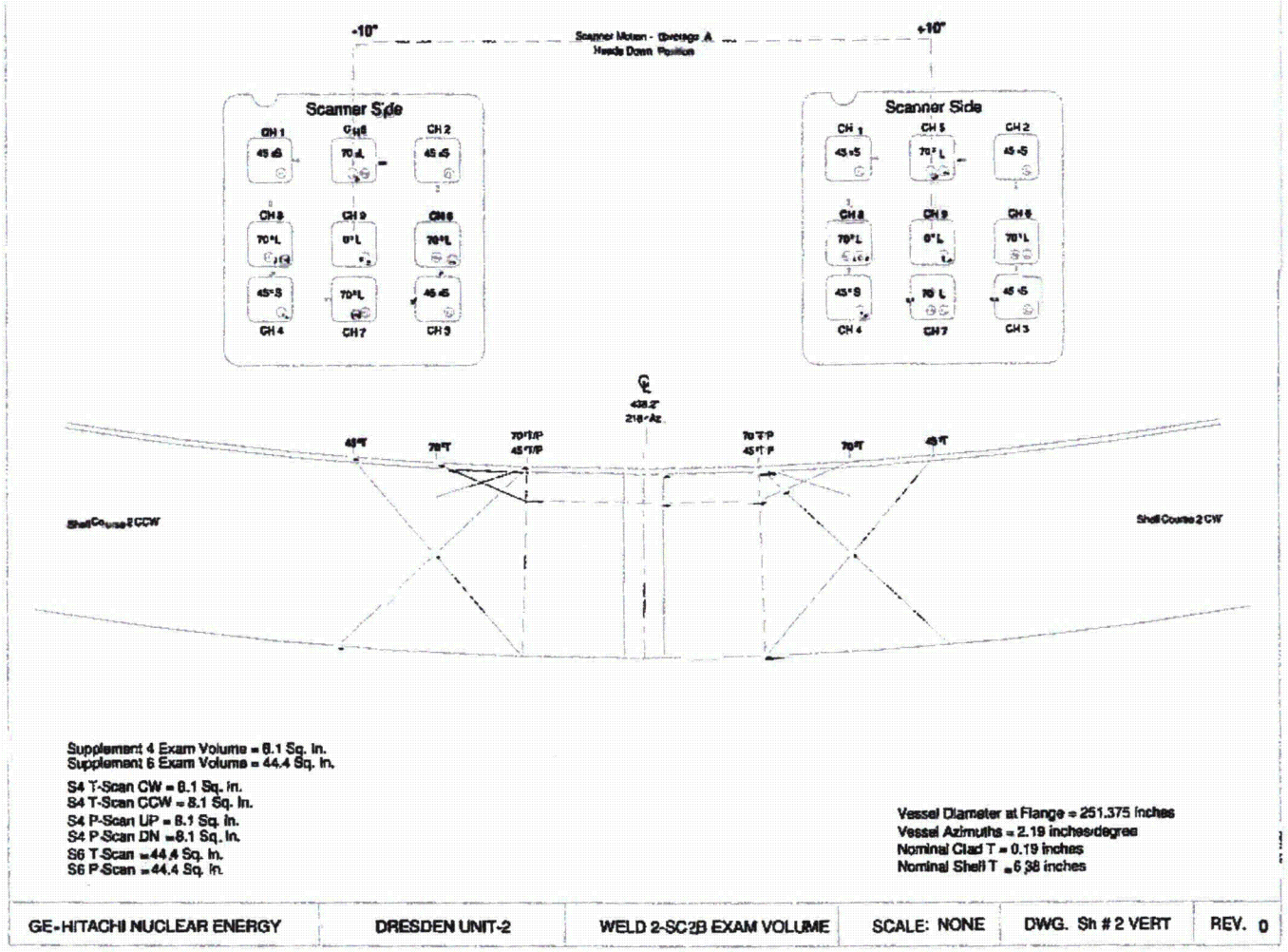
GIRTH WELD	Y
2-SC4-FLG	654.41

Vessel ID Circum. 789"
1 Degree Azimuth = 2.191"

Weld Location Map

HITACHI

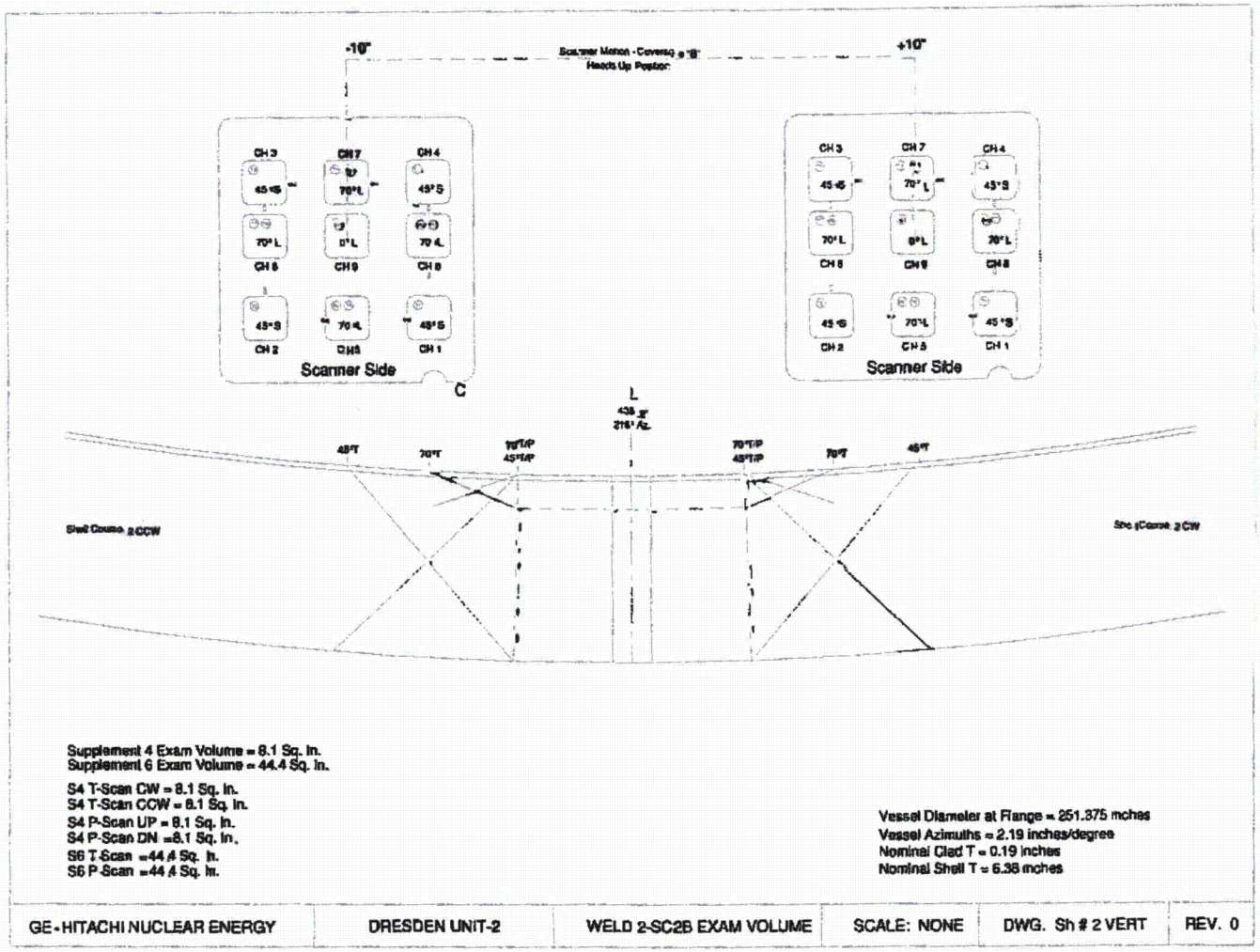
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

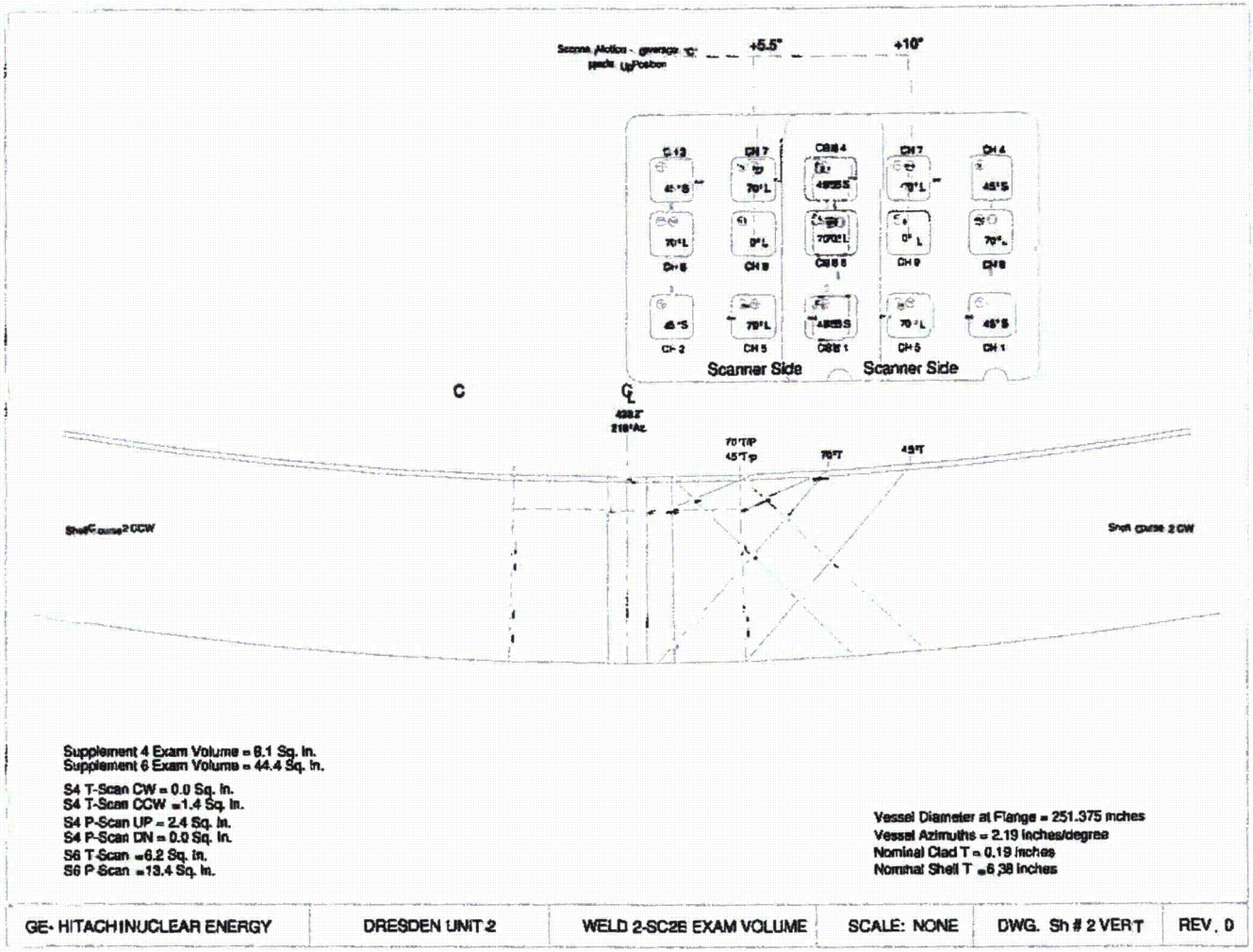
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

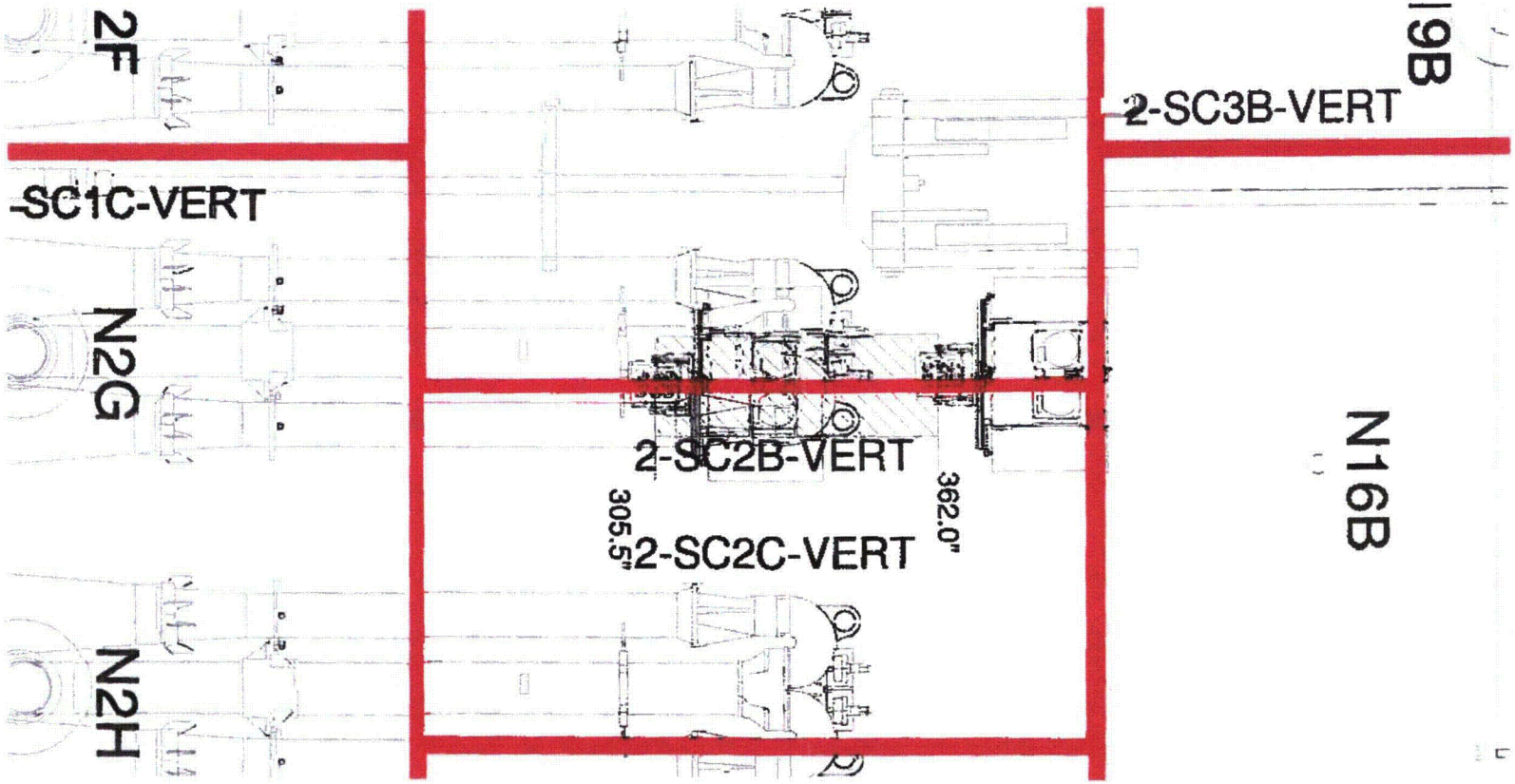
Dresden
Reference Drawings



Cross Section of Achieved Coverage "C"

HITACHI

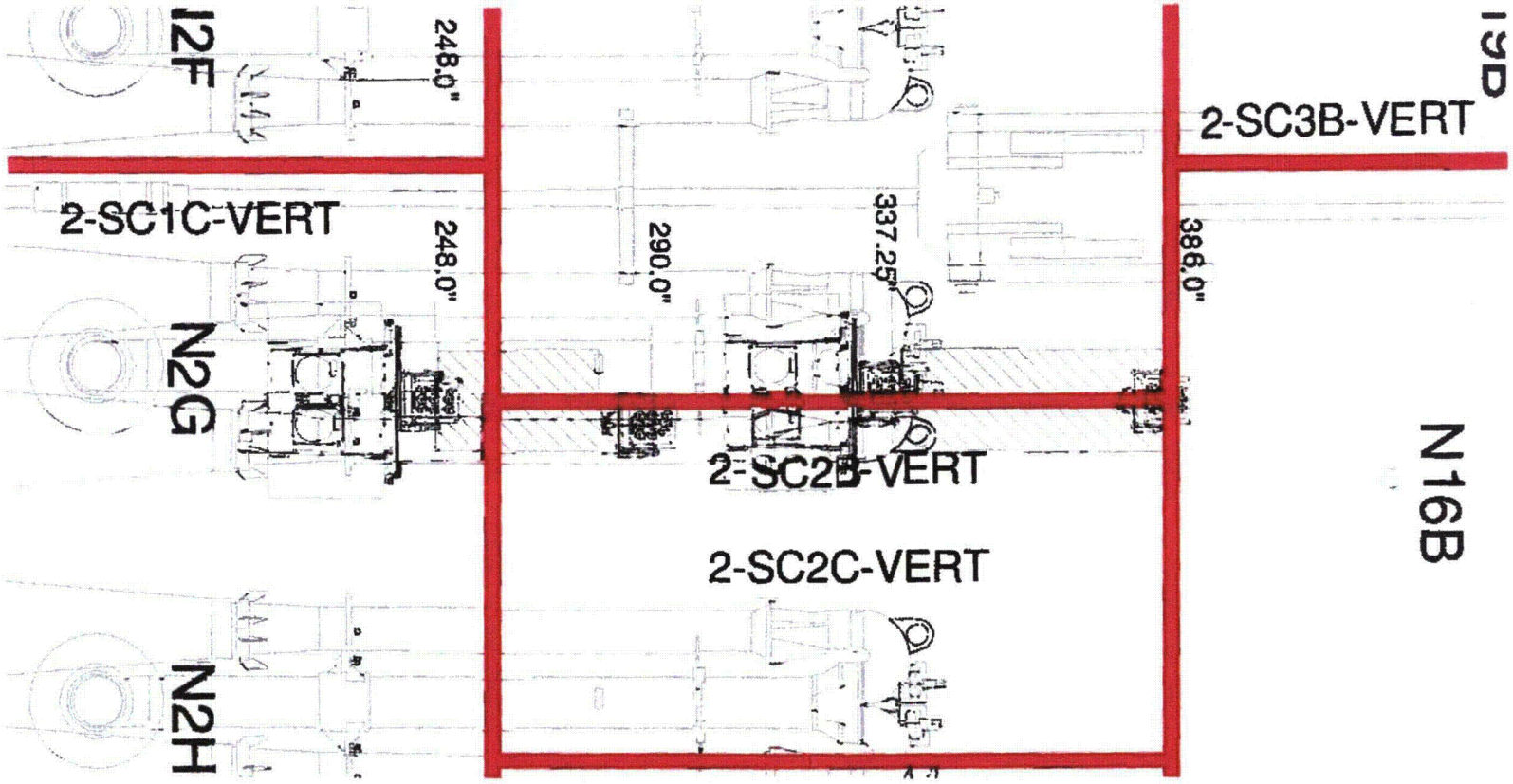
Dresden
Reference Drawings



Scanned Patches – Coverage "A"

HITACHI

Dresden
Reference Drawings



Scanned Patches – Coverage "B" and "C"

HITACHI Examination Summary Sheet

Report No.: D2R22-081

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC2C-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 2 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11
70°L	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S. Gauthier	II	10/30/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave and 70° RL-search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted by the proximity of the jet pump riser brace, lower specimen and upper specimen brackets.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flaw indications were recorded.

The Auto coverage was calculated to be 87.0%.

Previous data was reviewed with no changes.

The examination results were compared with data report 000700 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By:	Level III	Date: 11/3/11	Utility Review By:		Date: 11-5-11
			ANII Reviewed By:		Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC2C-VERT

Report No.: D2R22-081

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC2C_1	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2C_2	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2C_3	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2C_4	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2C_5	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2C_6	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC2C_7	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".

Analyzed by: Brad Dummer Level III 11/3/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-081

DRESDEN UNIT-2
Weld 2-SC2C

Weld Length = 133. Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A/B	8.1	8.1	7.7%	97.5	2.8%
70° T-Scan CCW (S4 NS)	A/B	8.1	8.1	7.7%	97.5	2.8%
45° T-Scan (S6 FV)	A/B	44.4	44.4	84.6%	97.5	31.0%
70° P-Scan UP (S4 NS)	A/B	8.1	8.1	7.7%	97.5	2.8%
70° P-Scan DN (S4 NS)	A/B	8.1	8.1	7.7%	97.5	2.8%
45° P-Scan (S6 FV)	A/B	44.4	44.4	84.6%	97.5	31.0%
70° T-Scan CW (S4 NS)	C	8.1	8.1	7.7%	5.5	0.2%
70° T-Scan CCW (S4 NS)	C	8.1	8.1	7.7%	5.5	0.2%
45° T-Scan (S6 FV)	C	44.4	44.4	84.6%	5.5	1.7%
70° P-Scan UP (S4 NS)	C	8.1	8.1	7.7%	5.5	0.2%
70° P-Scan DN (S4 NS)	C	8.1	8.1	7.7%	5.5	0.2%
45° P-Scan (S6 FV)	C	44.4	44.4	84.6%	5.5	1.7%
70° T-Scan CW (S4 NS)	D	8.1	6.2	5.9%	13	0.3%
70° T-Scan CCW (S4 NS)	D	8.1	8.1	7.7%	13	0.4%
45° T-Scan (S6 FV)	D	44.4	44.4	84.6%	13	4.1%
70° P-Scan UP (S4 NS)	D	8.1	8.1	7.7%	13	0.4%
70° P-Scan DN (S4 NS)	D	8.1	5.1	4.9%	13	0.2%
45° P-Scan (S6 FV)	D	44.4	44.4	84.6%	13	4.1%
				% Total Composite Coverage =		87.0%

Rev. 0 9/23/05

Comments:
A/B - Automated scanning was not restricted.
C - Automated scanning was restricted due to the proximity of the upper specimen bracket.
D - Automated scanning was restricted due to the proximity of the lower specimen bracket.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination
Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC2C-VERT
Report No.: D2R22-081

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC2C_1	10/29/11	400.00	341.50	DN (Fwd)	-58.50	0547	0617
2-SC2C_2	10/29/11	390.00	341.00	DN (Fwd)	-49.00	0600	0731
2-SC2C_3	10/30/11	307.00	358.00	UP (Fwd)	51.00	0814	0840
2-SC2C_4	10/30/11	361.00	352.00	UP (Rev)	-9.00	0848	0853
2-SC2C_5	10/30/11	361.00	307.00	DN (Fwd)	-54.00	0933	1001
2-SC2C_6	10/30/11	290.00	248.00	UP (Rev)	-42.00	1830	1851
2-SC2C_7	10/30/11	250.00	282.60	UP (Fwd)	32.60	1826	1842

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the jet pump riser bracket.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 93°F **Couplant:** Water

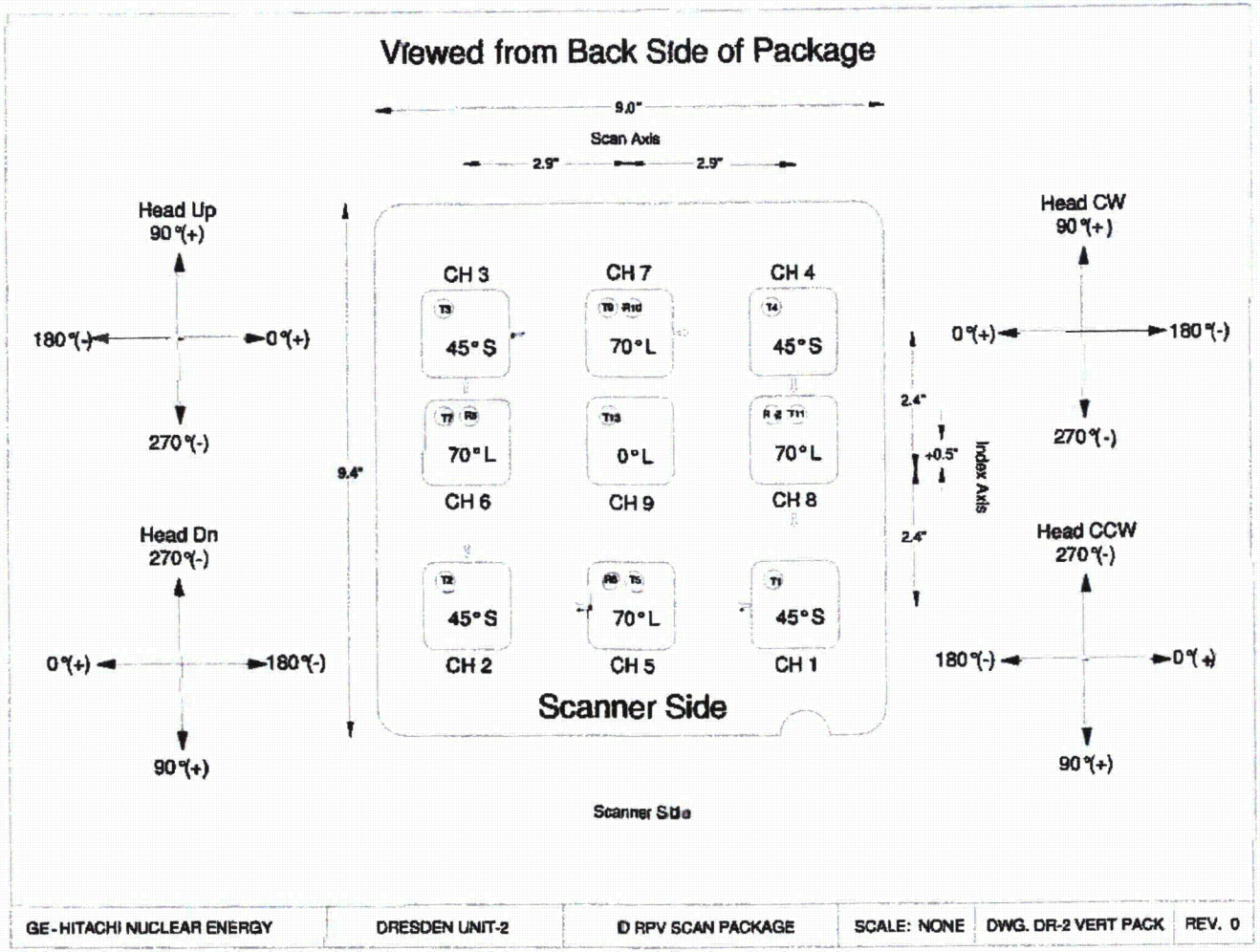
Operators: Clint Gauthier Level II
Shane Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

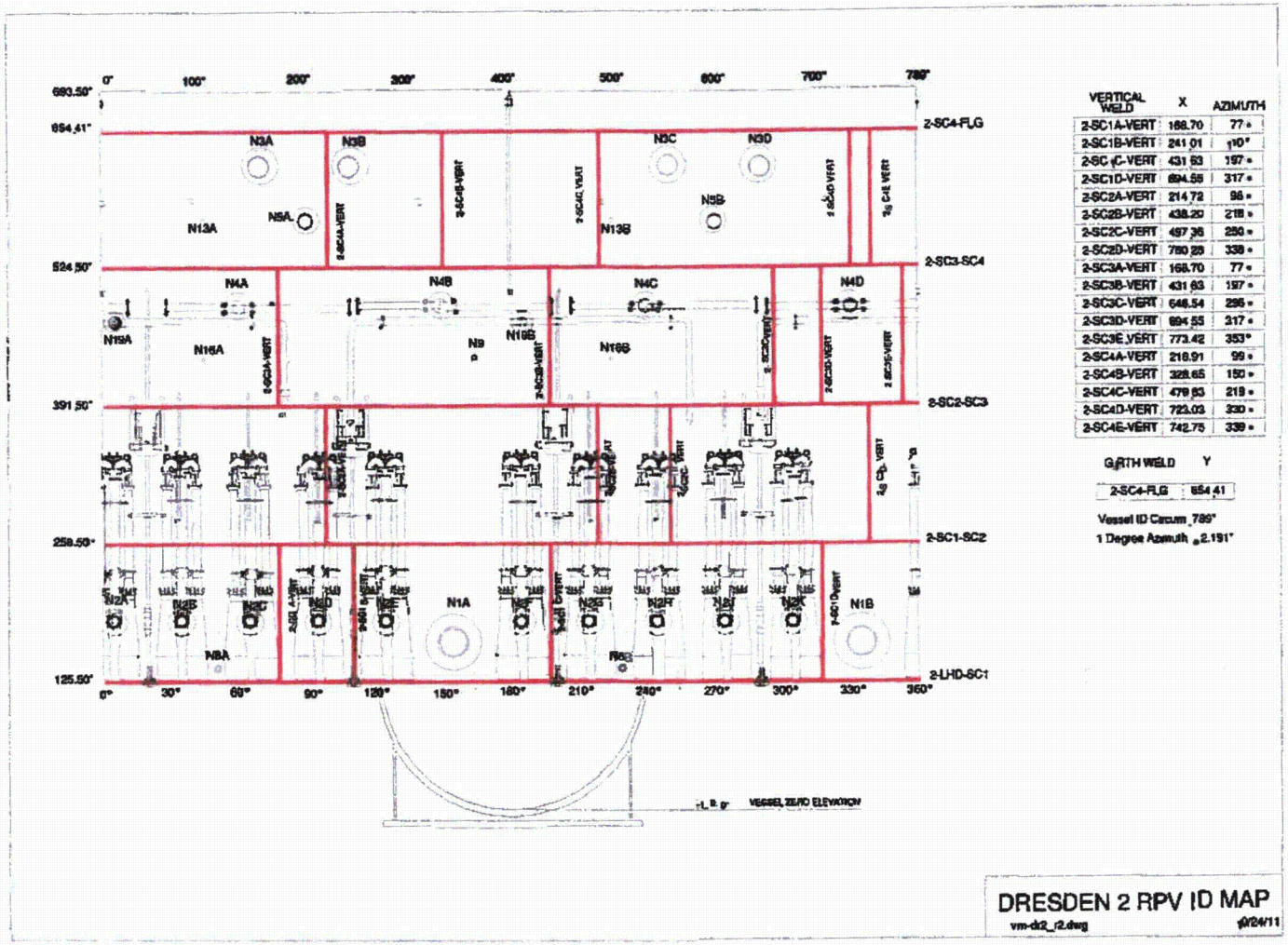
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	168.70	77 •
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.63	197 •
2-SC1D-VERT	694.55	317 •
2-SC2A-VERT	214.72	98 •
2-SC2B-VERT	438.20	218 •
2-SC2C-VERT	497.36	250 •
2-SC2D-VERT	780.28	338 •
2-SC3A-VERT	168.70	77 •
2-SC3B-VERT	431.63	197 •
2-SC3C-VERT	648.54	296 •
2-SC3D-VERT	694.55	317 •
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	218.91	99 •
2-SC4B-VERT	328.65	150 •
2-SC4C-VERT	479.93	219 •
2-SC4D-VERT	723.03	330 •
2-SC4E-VERT	742.75	339 •

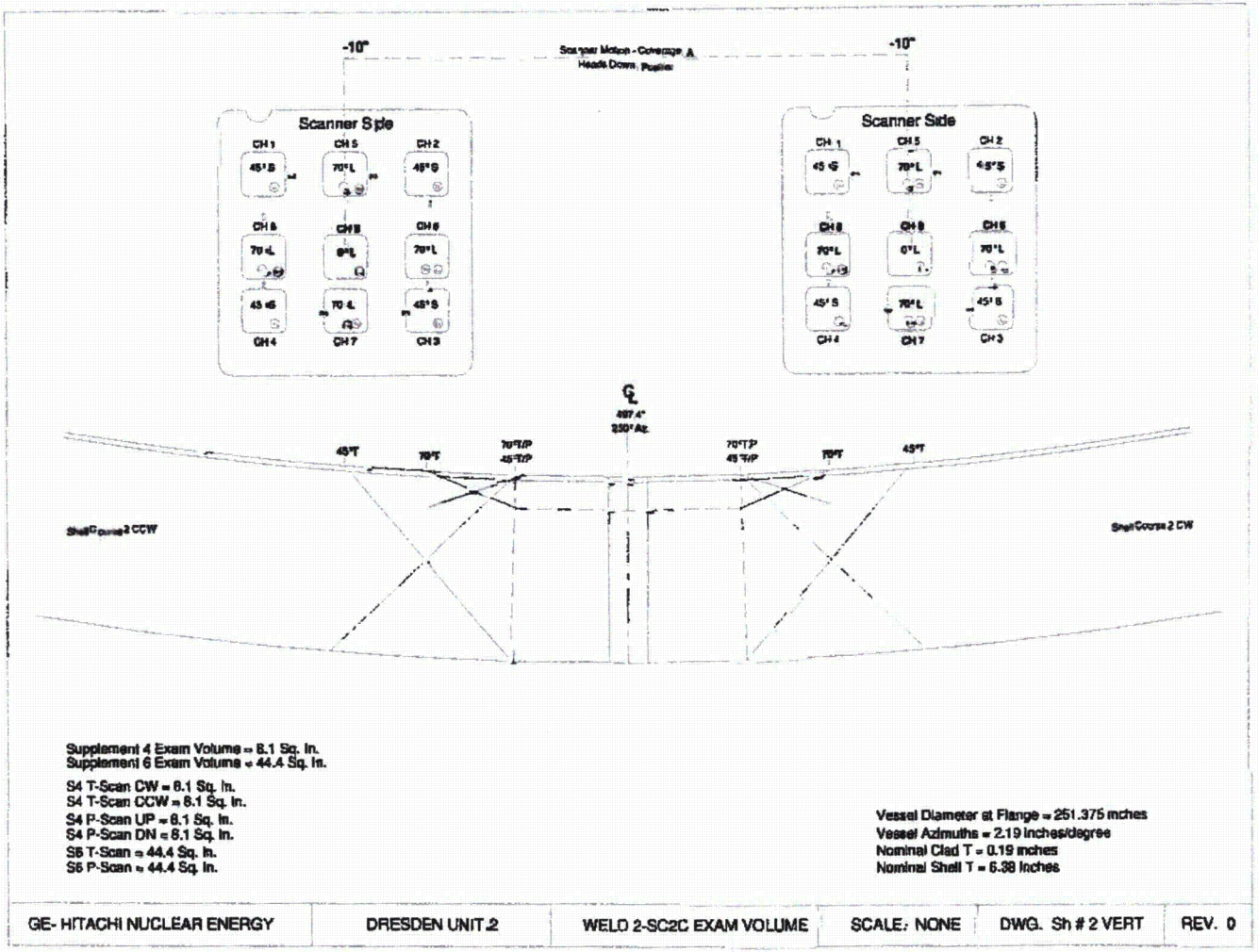
GIRTH WELD	Y
2-SC4-FLG	654.41

Vessel ID Circum. 789"
1 Degree Azimuth = 2.191"

Weld Location Map

HITACHI

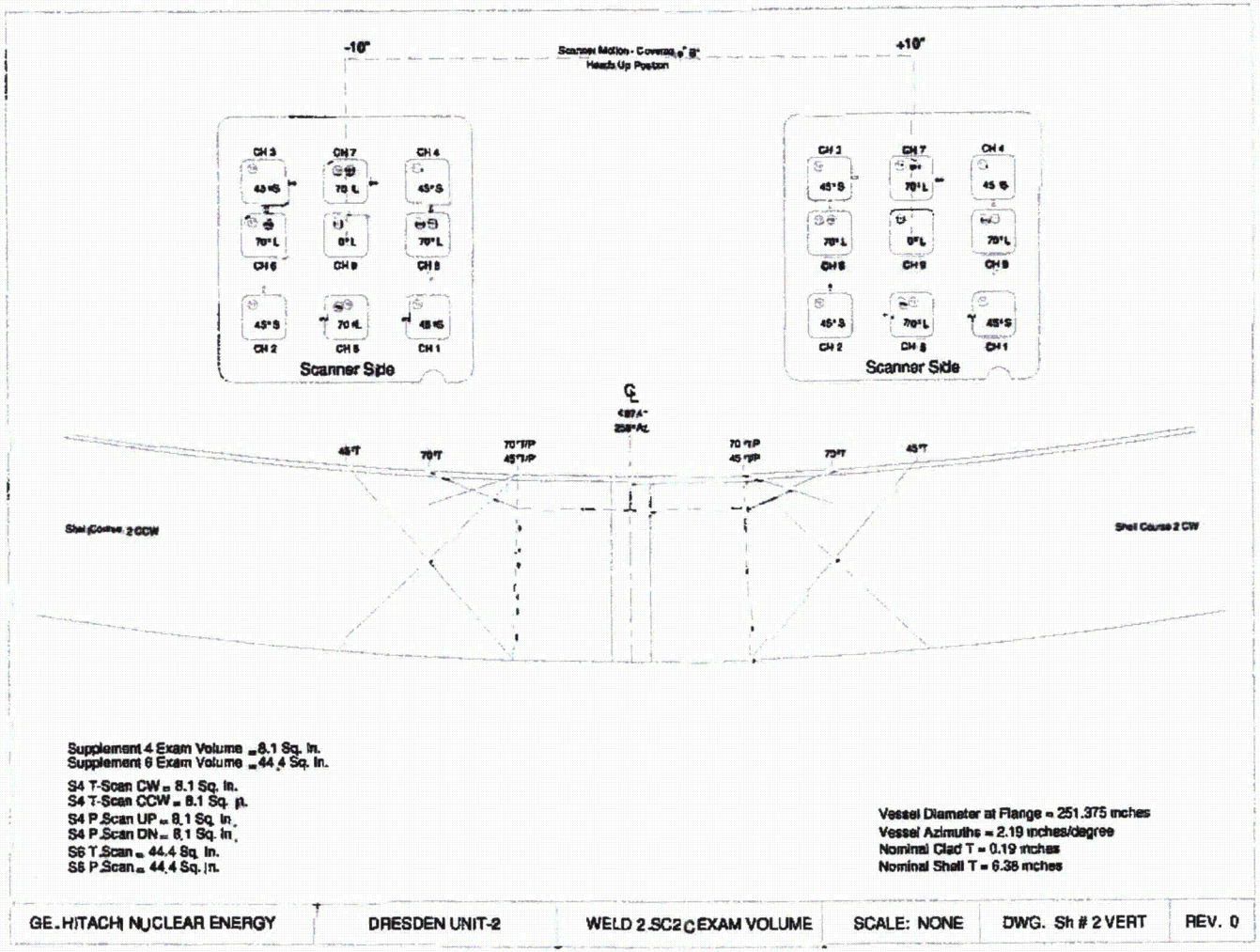
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

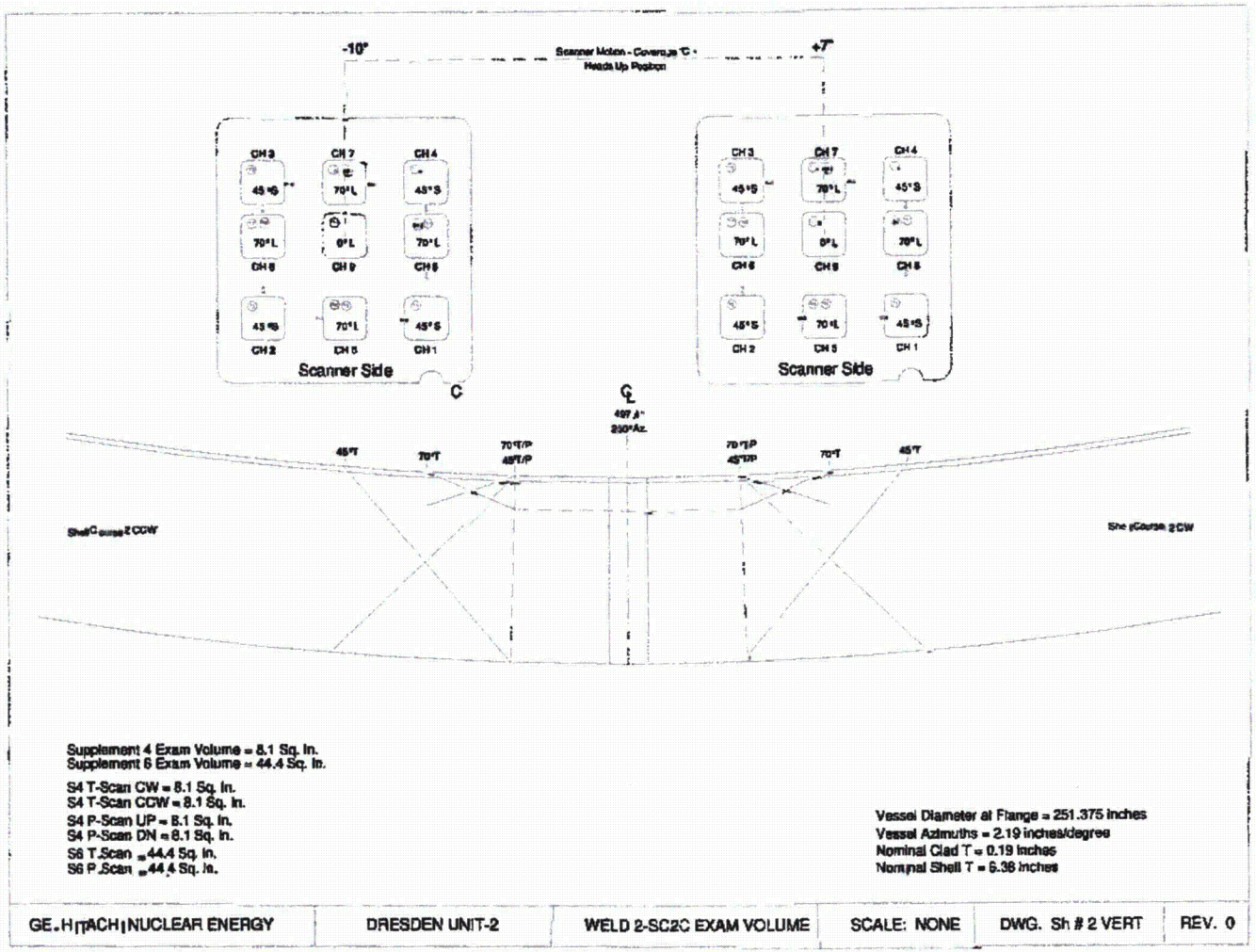
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

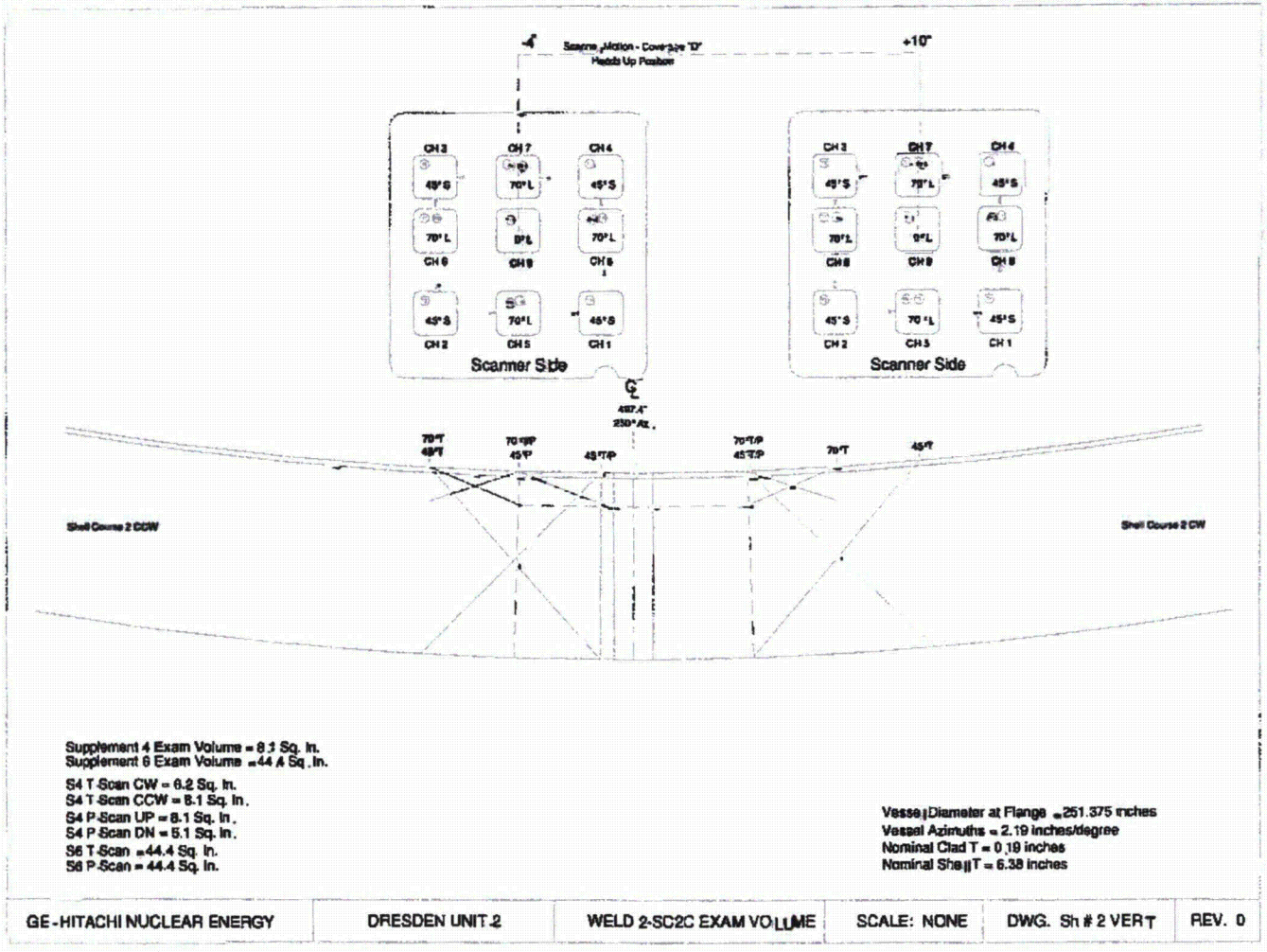
Dresden
Reference Drawings



Cross Section of Achieved Coverage "C"

HITACHI

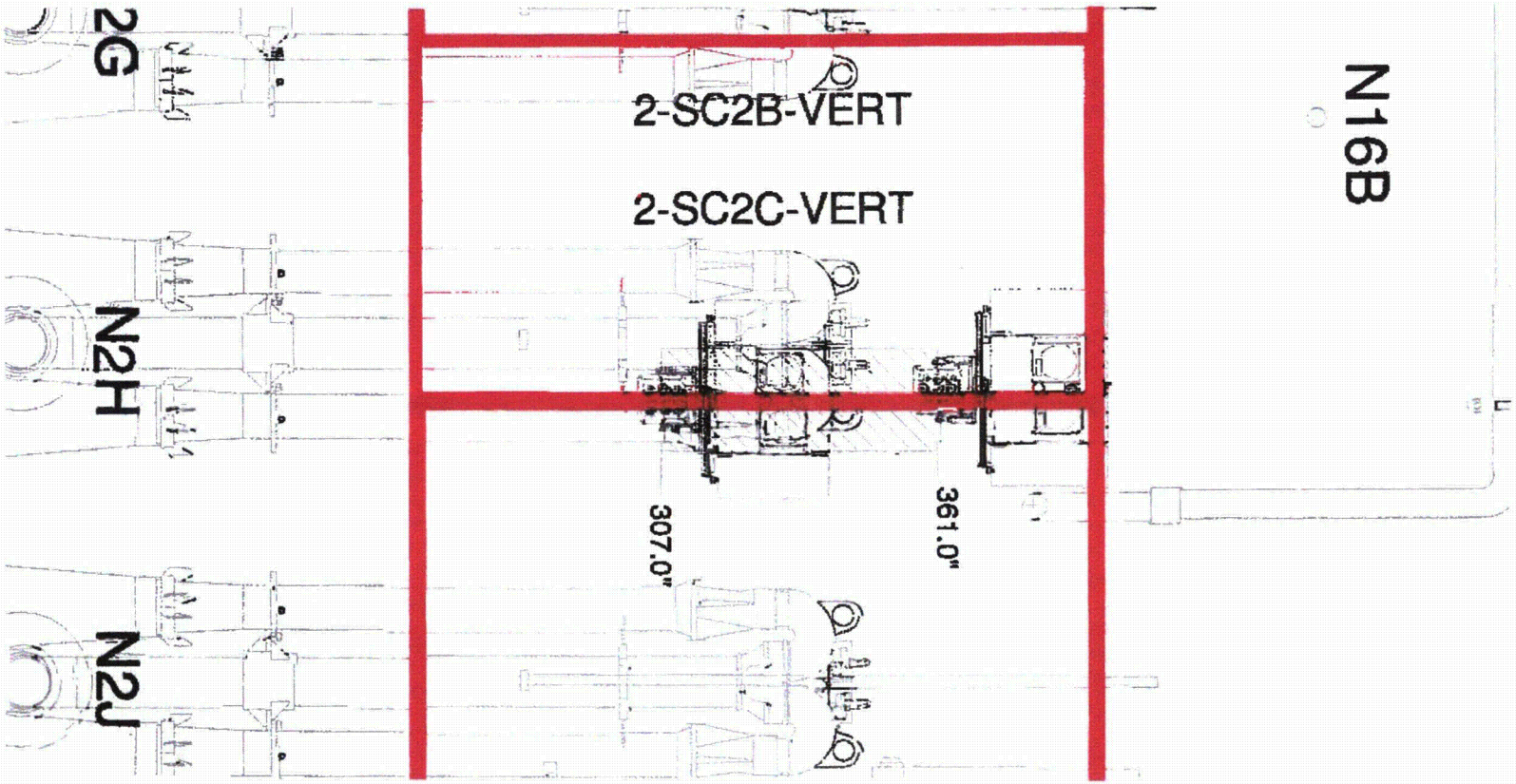
Dresden
Reference Drawings



Cross Section of Achieved Coverage "D"

HITACHI

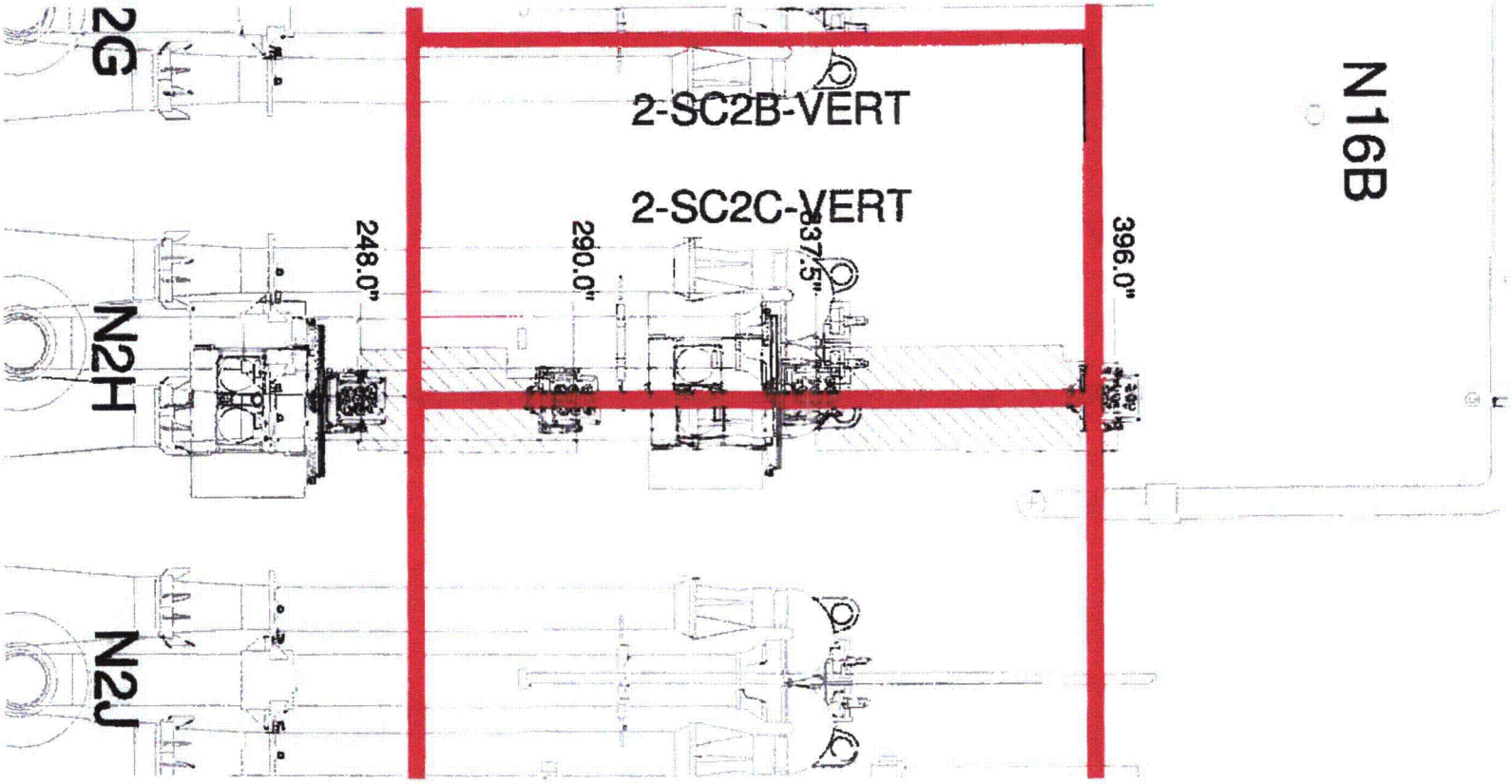
Dresden
Reference Drawings



Scanned Patches – Coverage "A"

HITACHI

Dresden
Reference Drawings



Scanned Patches – Coverage "B", "C" and "D"

HITACHI Examination Summary Sheet

Report No.: D2R22-083

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC3A-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 3 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	S.Gauthier / C.Gauthier	II	10/24/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	S.Gauthier / C.Gauthier	II	10/24/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	S.Gauthier / C.Gauthier	II	10/24/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	S.Gauthier / C.Gauthier	II	10/24/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	S.Gauthier / C.Gauthier	II	10/24/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	S.Gauthier / C.Gauthier	II	10/24/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	S.Gauthier / C.Gauthier	II	10/24/11
70°L	RPV-ID-08	CAL-IIW2-043	GEH-UT-717 V3	S.Gauthier / C.Gauthier	II	10/24/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted due to the proximity of the feedwater sparger and core spray downcomer piping.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flaw indications were recorded.

The Auto coverage was calculated to be 69.1%.

Previous data was reviewed with no changes.

The examination results were compared with data report 000900 from D2R18 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By: Level: Date: 11/6/11

Utility Review By: Date: 11-5-11

ANII Reviewed By: Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3A-VERT

Report No.: D2R22-083

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC3A_1	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3A_2	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3A_3	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3A_4	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".

Analyzed by: Brad Dummer Level III 11/1/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-083

DRESDEN UNIT-2
Weld 2-SC3A

Weld Length = 133. Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A	8.1	8.1	7.7%	26.5	0.8%
70° T-Scan CCW (S4 NS)	A	8.1	8.1	7.7%	26.5	0.8%
45° T-Scan (S6 FV)	A	44.4	44.4	84.6%	26.5	8.4%
70° P-Scan UP (S4 NS)	A	8.1	8.1	7.7%	26.5	0.8%
70° P-Scan DN (S4 NS)	A	8.1	8.1	7.7%	26.5	0.8%
45° P-Scan (S6 FV)	A	44.4	44.4	84.6%	26.5	8.4%
70° T-Scan CW (S4 NS)	B/C	8.1	7.6	7.2%	71.5	1.9%
70° T-Scan CCW (S4 NS)	B/C	8.1	4.2	4.0%	71.5	1.1%
45° T-Scan (S6 FV)	B/C	44.4	40.1	76.4%	71.5	20.5%
70° P-Scan UP (S4 NS)	B/C	8.1	3.1	3.0%	71.5	0.8%
70° P-Scan DN (S4 NS)	B/C	8.1	8.1	7.7%	71.5	2.1%
45° P-Scan (S6 FV)	B/C	44.4	44.4	84.6%	71.5	22.7%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 69.1%

Rev. 0 9/23/05

Comments:
A - Automated scanning was not restricted.
B/C - Automated scanning was restricted due to the proximity of the core spray downcomer piping.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3A-VERT
Report No.: D2R22-083

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC3A_1	10/22/11	539.00	498.00	DN (Fwd)	-41.00	0809	0830
2-SC3A_2	10/24/11	400.00	424.00	DN (Fwd)	24.00	1805	1824
2-SC3A_3	10/24/11	414.00	431.00	DN (Fwd)	17.00	1829	1839
2-SC3A_4	10/24/11	463.00	431.00	UP (Fwd)	-32.00	2024	2100

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the feedwater sparger and core spray piping downcomer

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 92°F **Couplant:** Water

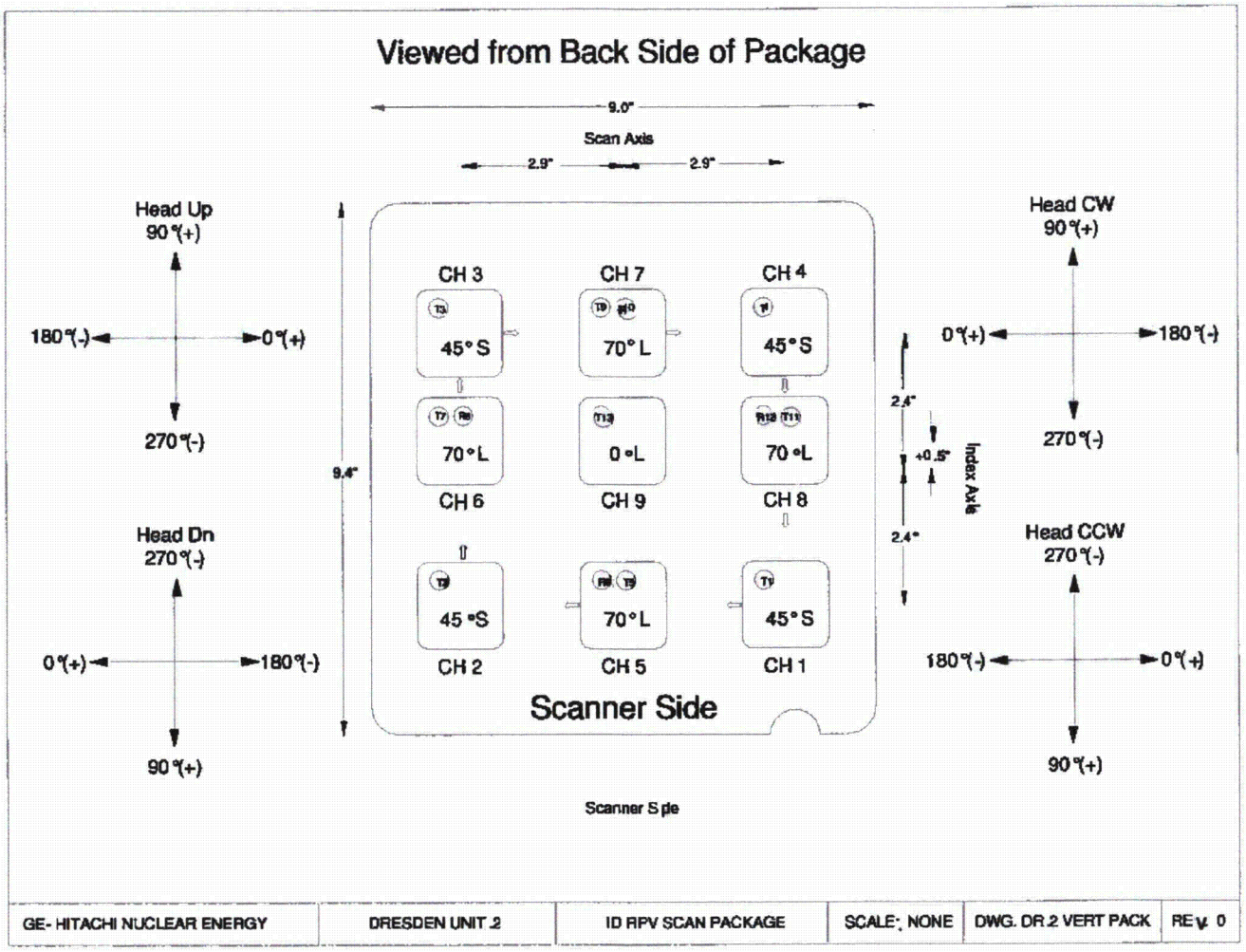
Operators: Shane Gauthier Level II
Clint Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N9	70°L	2(12 x 25)mm	2.25	90°

HITACHI

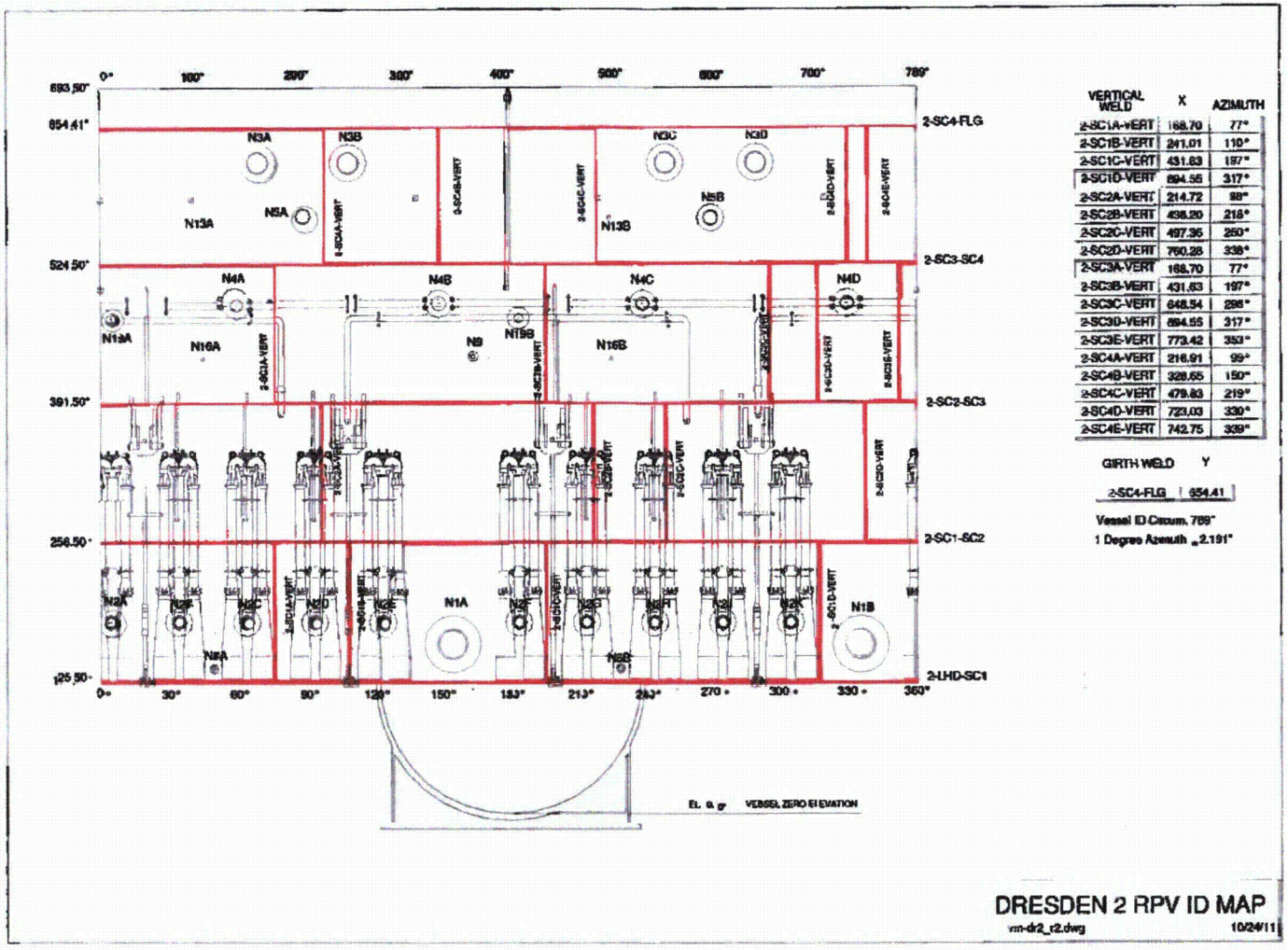
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	168.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.83	197°
2-SC1D-VERT	894.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	498.20	218°
2-SC2C-VERT	497.36	250°
2-SC2D-VERT	760.28	338°
2-SC3A-VERT	168.70	77°
2-SC3B-VERT	431.83	197°
2-SC3C-VERT	648.54	286°
2-SC3D-VERT	894.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.83	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

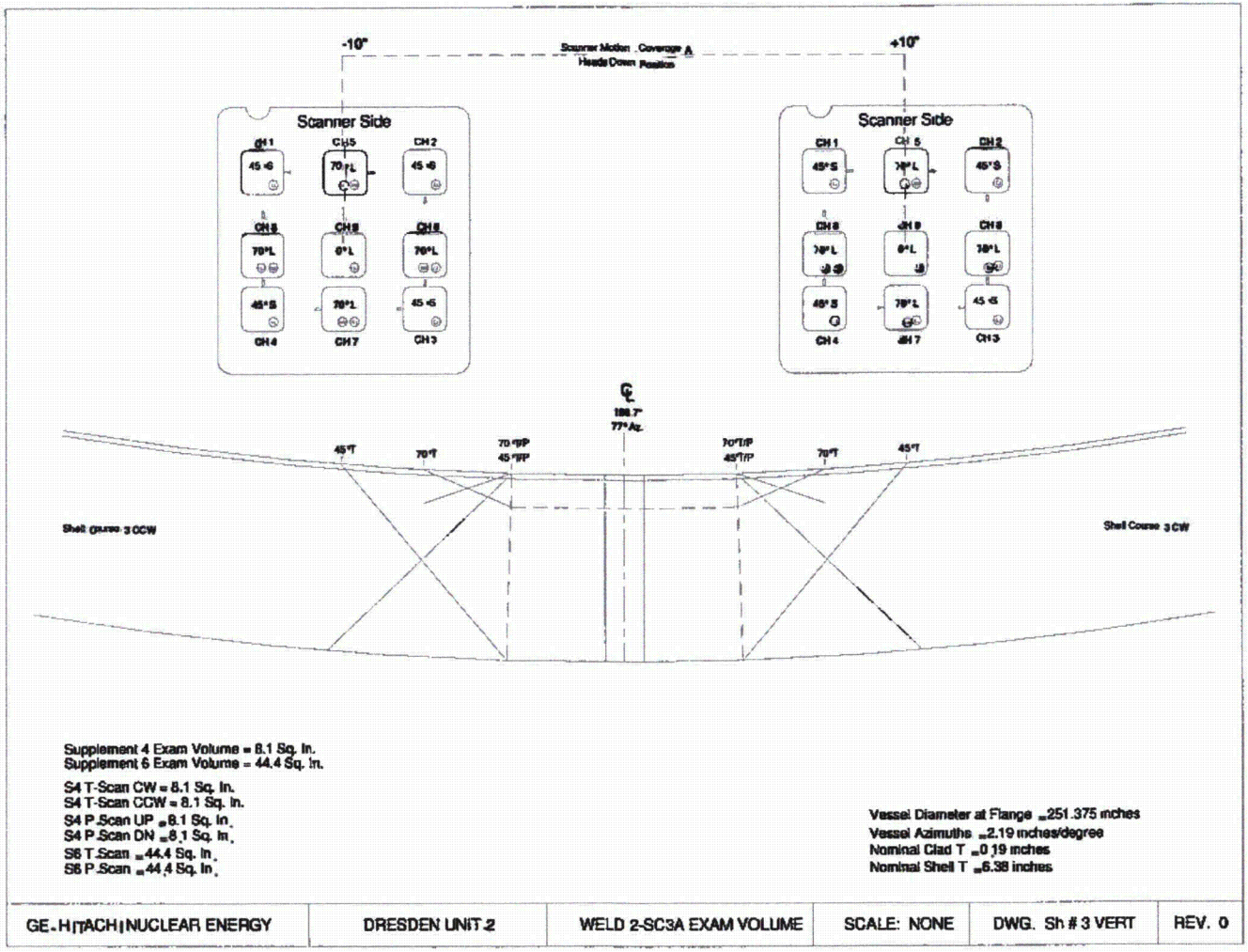
GIRTH WELD	Y
2-SC4-FLG	654.41

Vessel ID Circum. 789"
1 Degree Azimuth = 2.191"

Weld Location Map

HITACHI

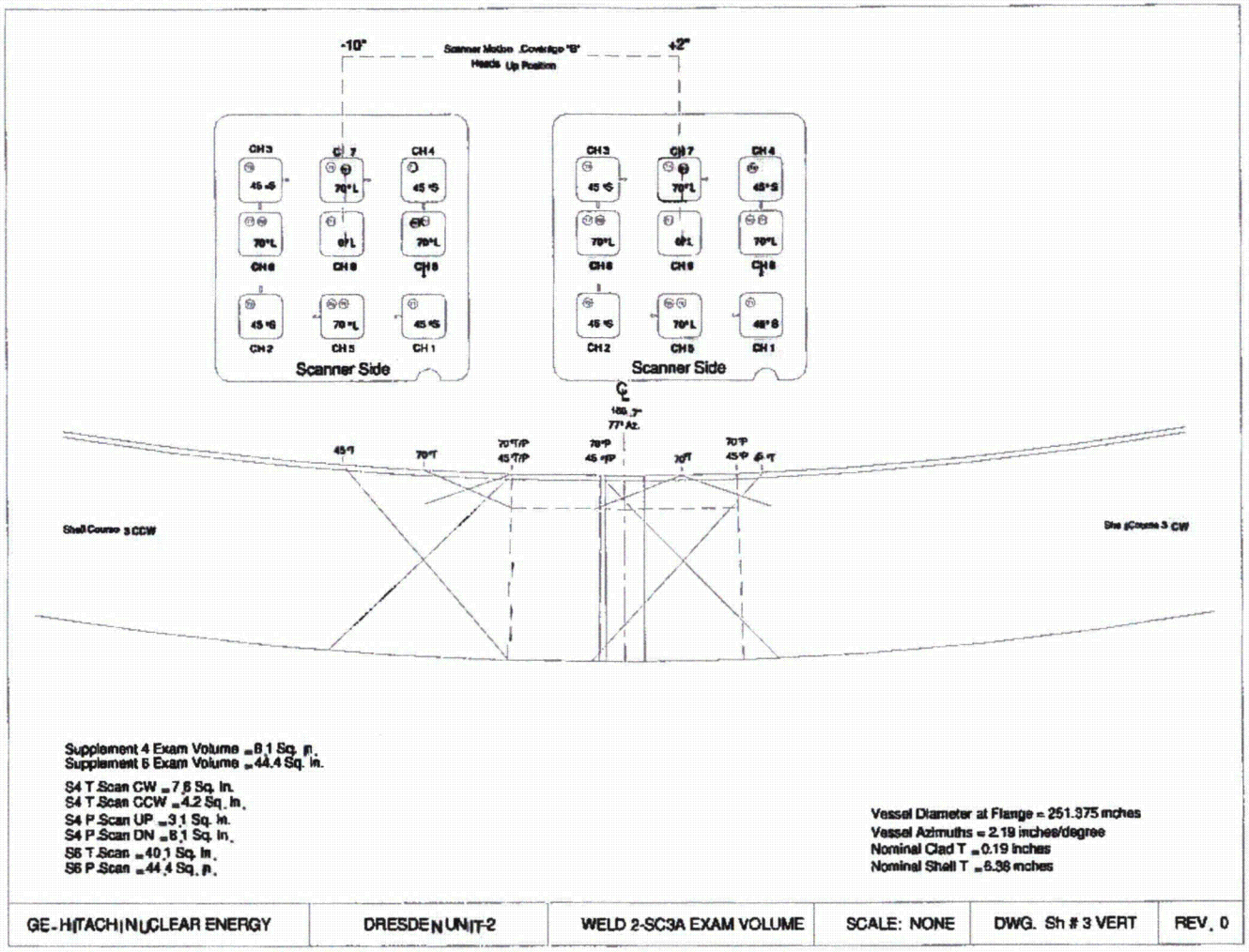
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

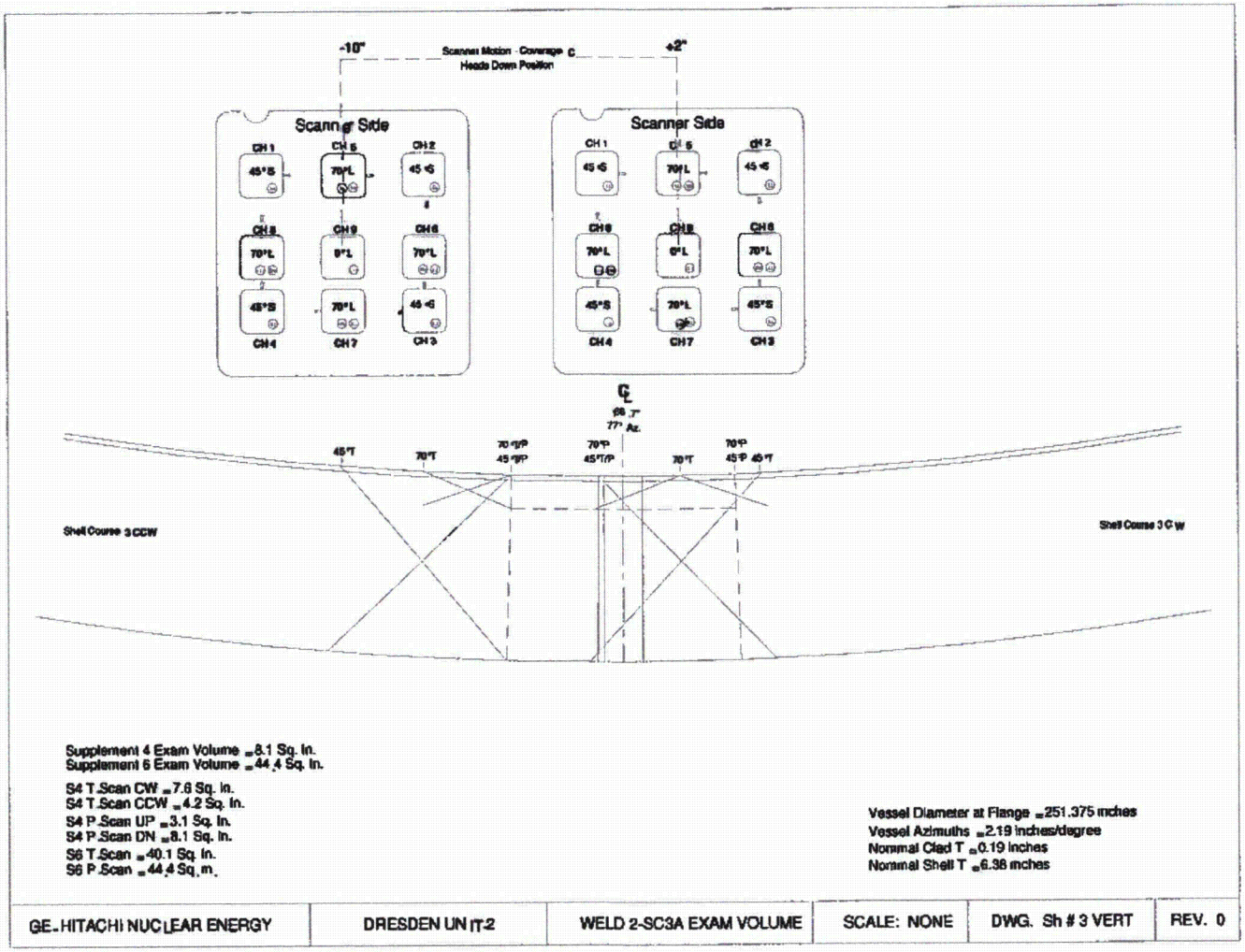
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

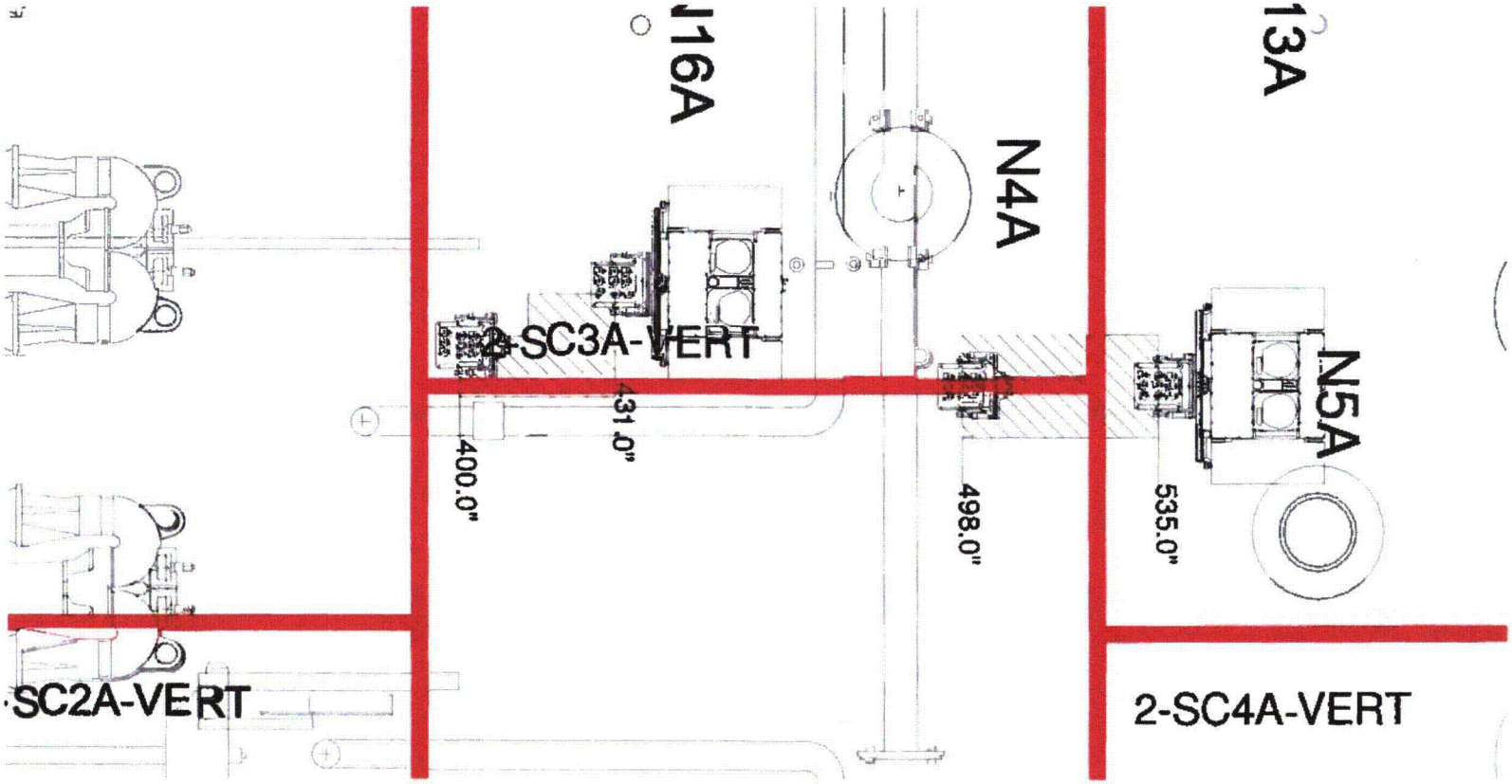
Dresden
Reference Drawings



Cross Section of Achieved Coverage "C"

HITACHI

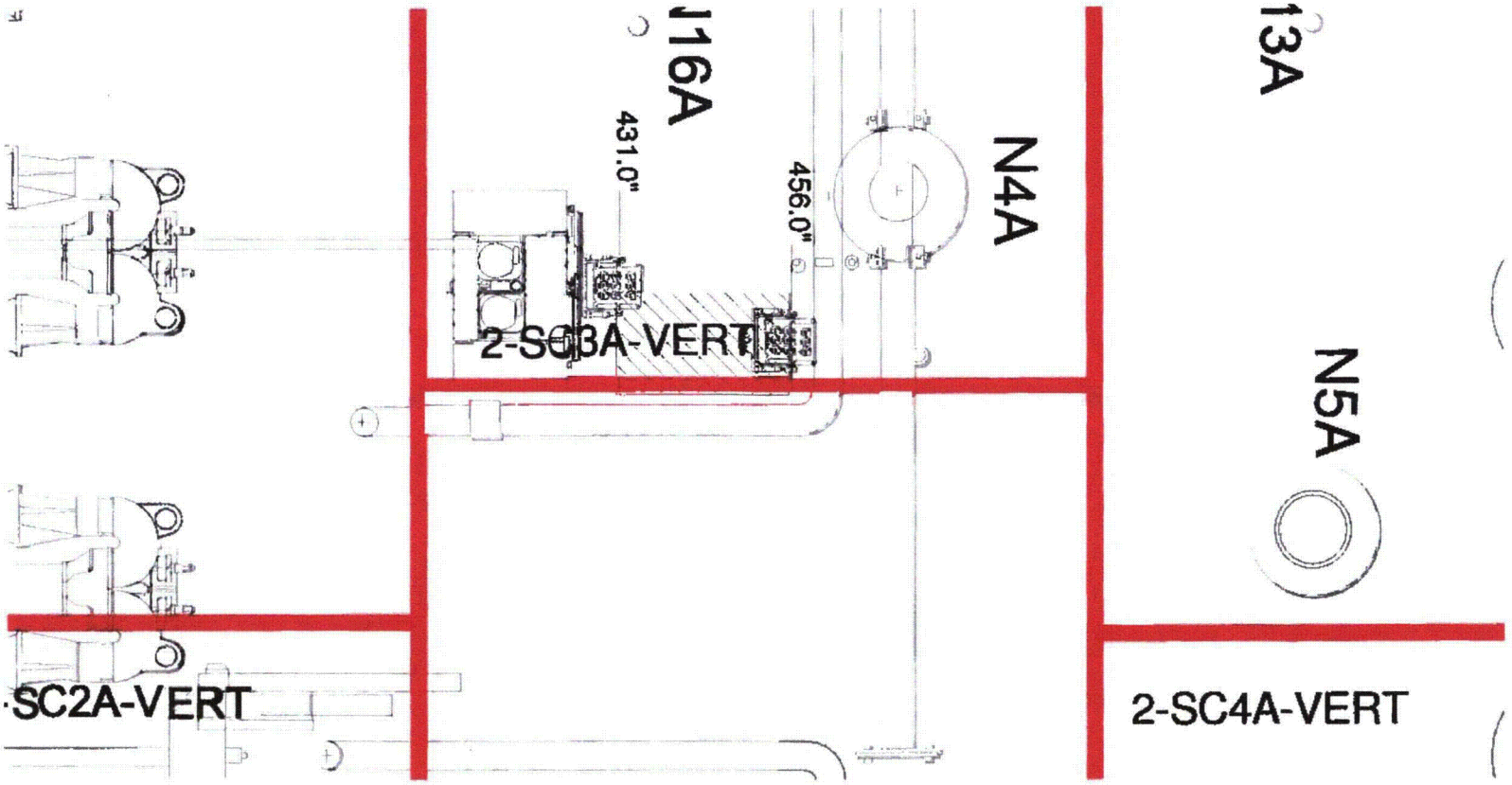
Dresden
Reference Drawings



Scanned Patches Coverage "A" and "C"

HITACHI

Dresden
Reference Drawings



Scanned Patches Coverage "B"

HITACHI Examination Summary Sheet

Report No.: D2R22-084

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC3B-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 3 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11
70°L	RPV-ID-08	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11
45°S	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier/C.Gauthier	II/II	10/29/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted due to the proximity of the lower guide rod, feedwater sparger and core spray piping.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flaw indications were recorded.

The Auto coverage was calculated to be 72.9%.

Previous data was reviewed with no changes.

The examination results were compared with data report 001000 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By: _____ Level: III Date: 11/6/11

Utility Review By: _____ Date: 11-5-11

ANII Reviewed By: _____ Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3B-VERT

Report No.: D2R22-084

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC3B_1	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3B_3	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3B_4	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".
Scan files 2-SC3B_2 was voided.

Analyzed by: Brad Dummer Level III 11/1/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-084

DRESDEN UNIT-2
Weld 2-SC3B

Weld Length = 133. / Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A	8.1	8.1	7.7%	97	2.8%
70° T-Scan CCW (S4 NS)	A	8.1	8.1	7.7%	97	2.8%
45° T-Scan (S6 FV)	A	44.4	44.4	84.6%	97	30.8%
70° P-Scan UP (S4 NS)	A	8.1	8.1	7.7%	97	2.8%
70° P-Scan DN (S4 NS)	A	8.1	8.1	7.7%	97	2.8%
45° P-Scan (S6 FV)	A	44.4	44.4	84.6%	97	30.8%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 72.9%

Rev. 0 9/23/05

Comments:
A- Automated scanning was not restricted.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in mm.

HITACHI

SP2000 RPV Examination
Scan Files Data Sheet

Project : Dresden Unit-2, 2R22
Component : 2-SC3B-VERT
Report No. : D2R22-084

Procedure No. : GEH-UT-717
Revision : V. 3
DRR No. : 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC3B_1	10/23/11	497.50	539.50	DN (Fwd)	42.00	1052	1114
2-SC3B_3	10/29/11	461.00	421.00	UP (Fwd)	-40.00	2147	2212
2-SC3B_4	10/29/11	389.50	429.25	DN (Fwd)	39.75	2307	2327

Comments : Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the feedwater sparger and tie rod repair bracket.
*8 search unit was replaced 10-29-11 prior to 2-SC3B_3 exam.
Scan file 2-SC3B_2 was voided.

Thermometer S/N : Control Room **Software Rev. :** V1.1Q6
Vessel Temp. (°F) : 92°F **Couplant :** Water

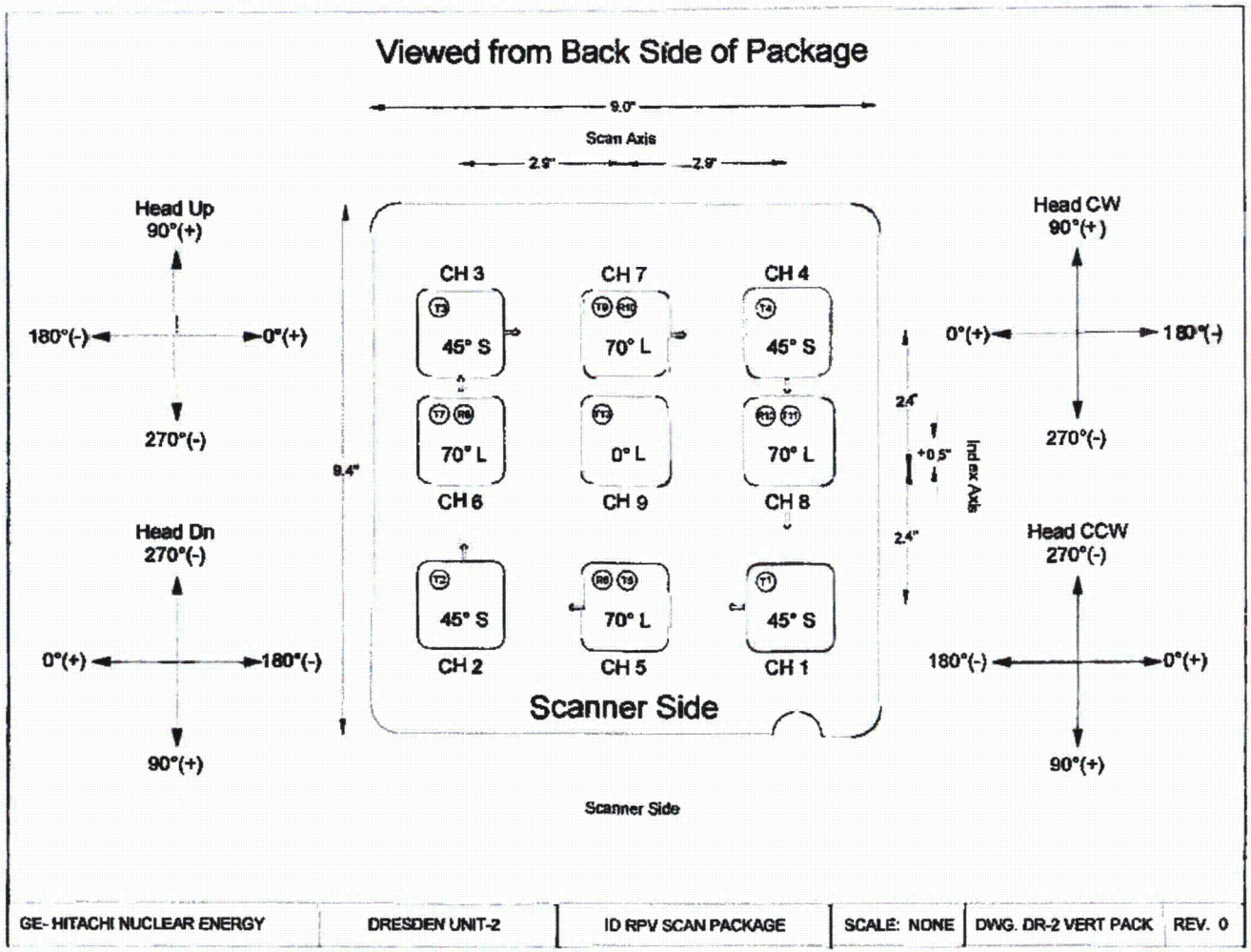
Operators : Shane Gauthier Level II
Clint Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N9	70°L	2(12 x 25)mm	2.25	90°
*8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

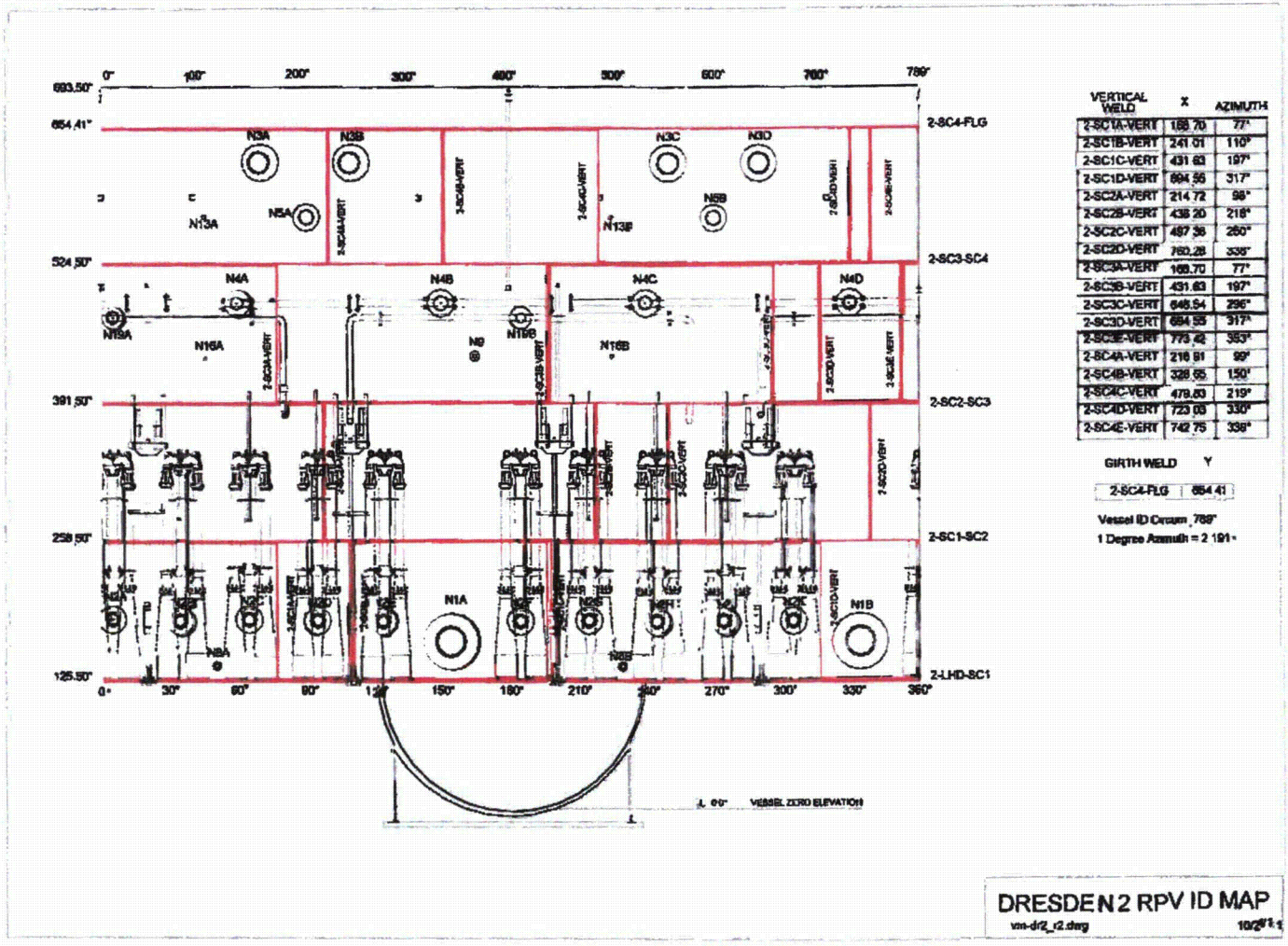
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	155.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.63	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	436.20	216°
2-SC2C-VERT	487.36	250°
2-SC2D-VERT	760.28	336°
2-SC3A-VERT	169.70	77°
2-SC3B-VERT	431.63	197°
2-SC3C-VERT	646.54	296°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.55	150°
2-SC4C-VERT	479.83	219°
2-SC4D-VERT	723.05	330°
2-SC4E-VERT	742.75	338°

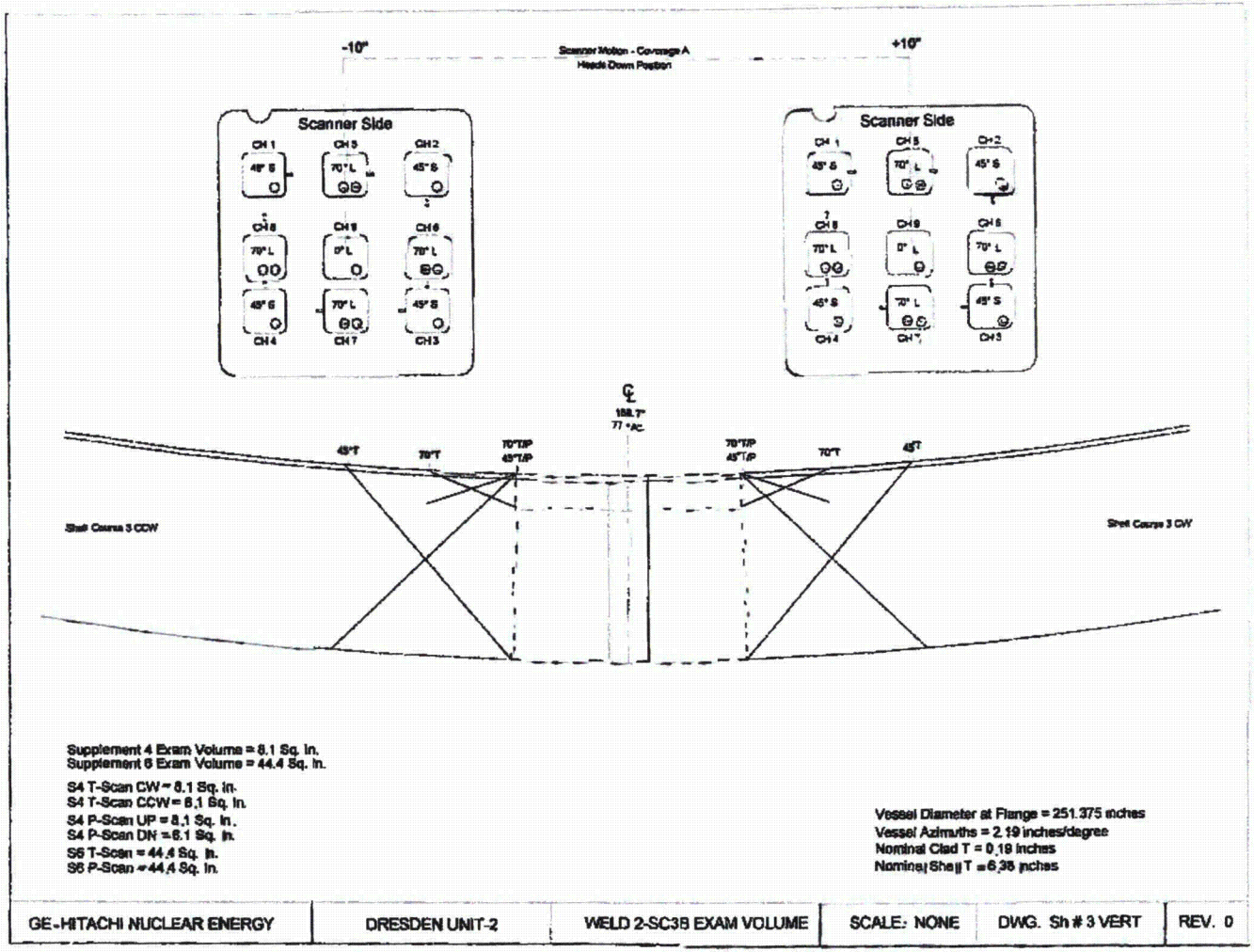
GIRTH WELD	Y
2-SC4-FLG	654.41

Vessel ID Datum = 789"
1 Degree Azimuth = 2.191"

Weld Location Map

HITACHI

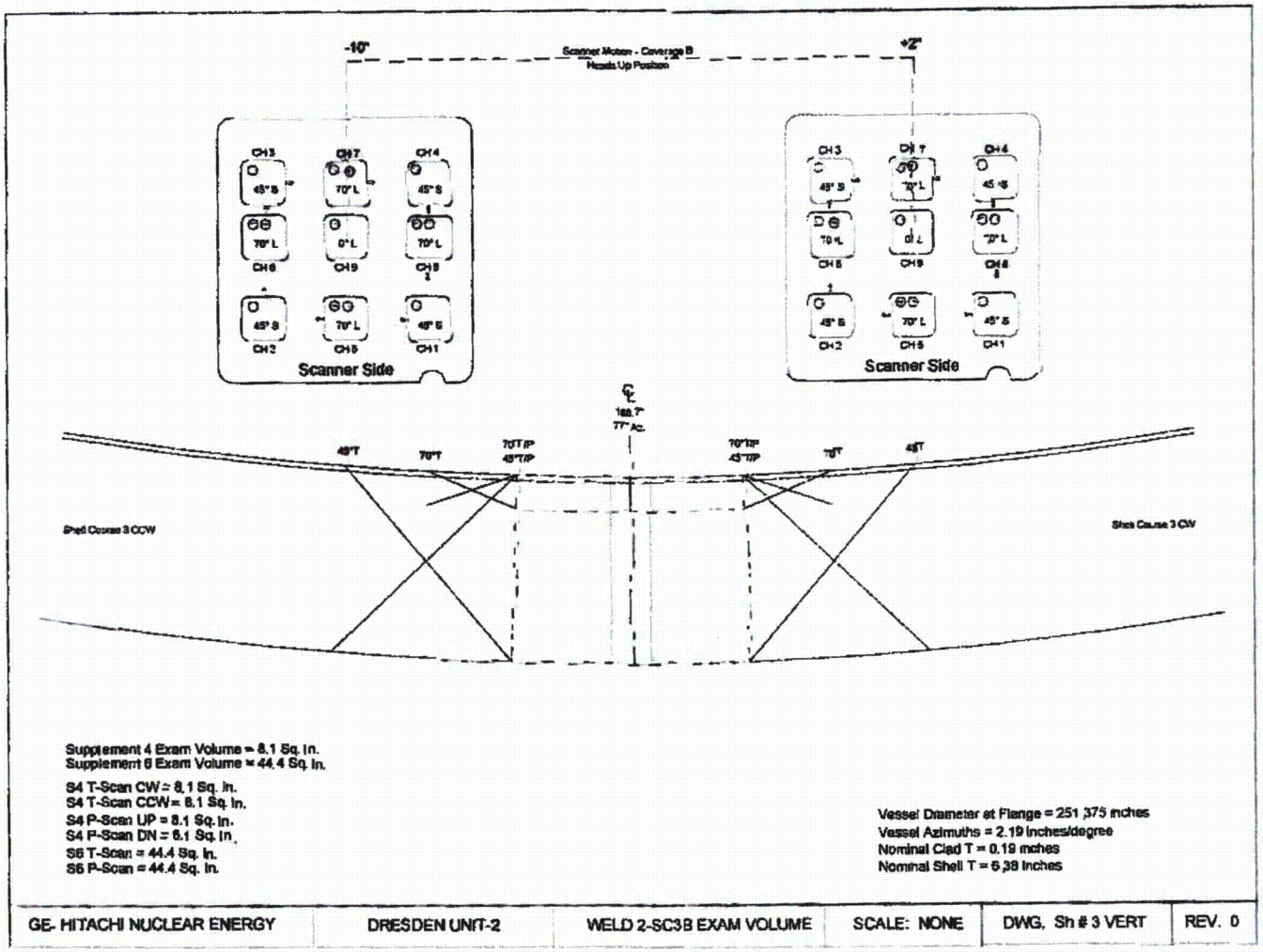
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

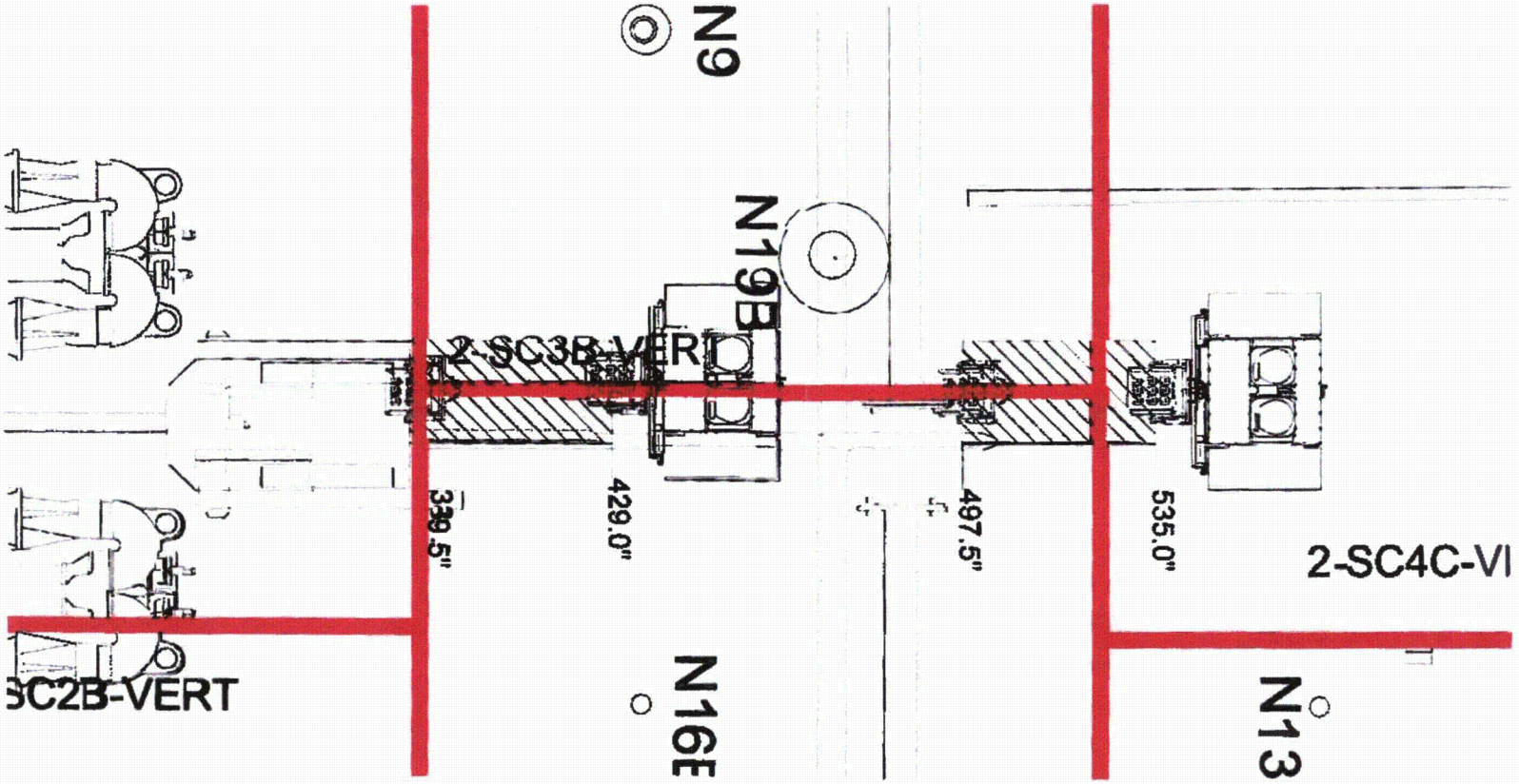
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

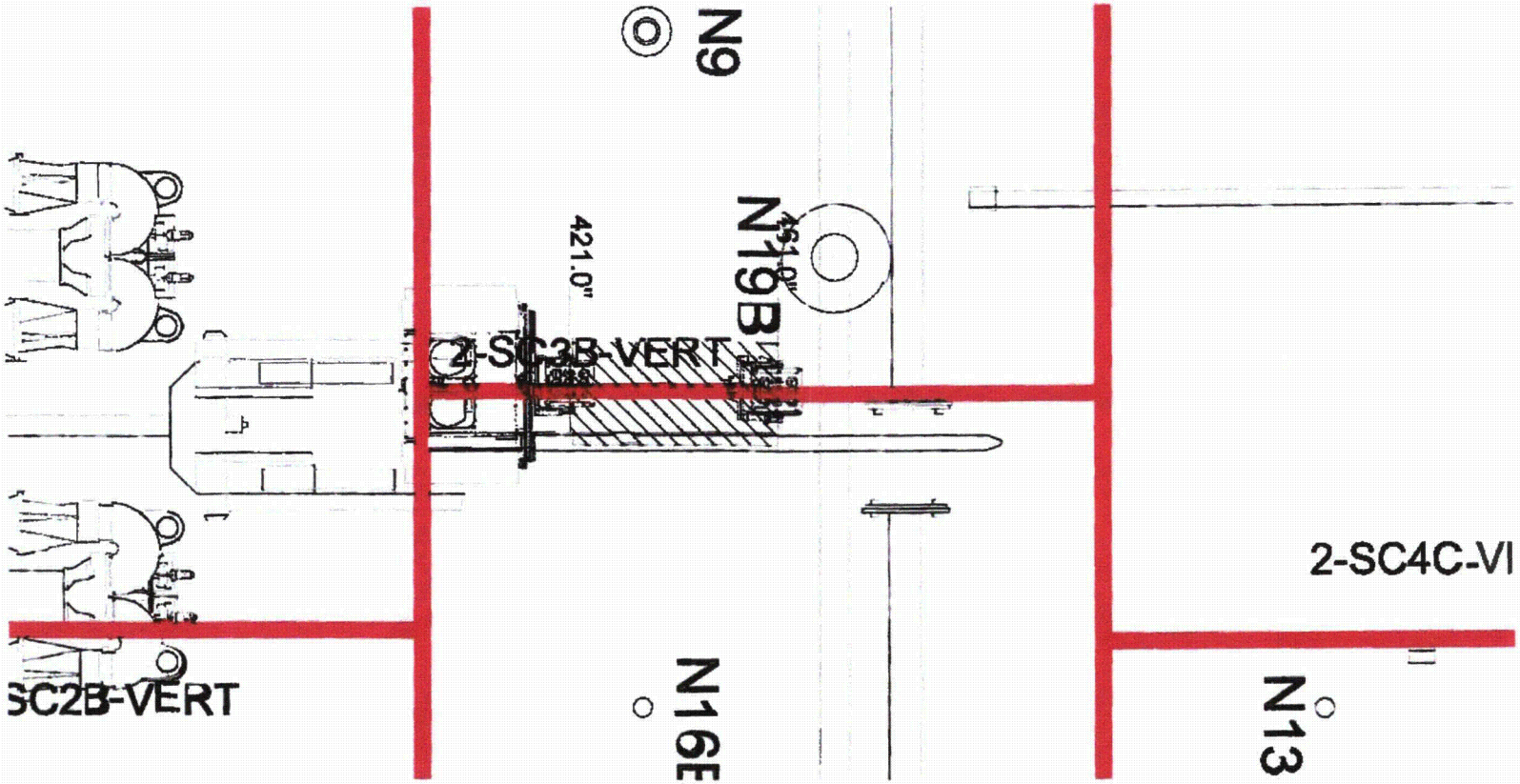
Dresden
Reference Drawings



Scanned Patches Coverage "A"

HITACHI

Dresden
Reference Drawings



Scanned Patches Coverage "B"

HITACHI Examination Summary Sheet

Report No.: D2R22-085

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC3C-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 3 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-08	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
45°S	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted due to the proximity of the shroud repair tie rod, feedwater sparger and core spray piping.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flow indications were recorded.

The Auto coverage was calculated to be 68.7%.

Previous data was reviewed with no changes.

The examination results were compared with data report 001100 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By:	Level:	Date:	Utility Review By:	Date:	
			ANII Reviewed By:	Date:	

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3C-VERT

Report No.: D2R22-085

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC3C_2	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3C_3	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3C_4	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3C_5	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3C_6	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".
Scan files 2-SC3C_1 was voided.

Analyzed by: Brad Dummer Level III 10/31/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-085

DRESDEN UNIT-2
Weld 2-SC3C

Weld Length = 133. Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. in.	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A/B	8.1	8.1	7.7%	85.5	2.5%
70° T-Scan CCW (S4 NS)	A/B	8.1	8.1	7.7%	85.5	2.5%
45° T-Scan (S6 FV)	A/B	44.4	44.4	84.6%	85.5	27.2%
70° P-Scan UP (S4 NS)	A/B	8.1	8.1	7.7%	85.5	2.5%
70° P-Scan DN (S4 NS)	A/B	8.1	8.1	7.7%	85.5	2.5%
45° P-Scan (S6 FV)	A/B	44.4	44.4	84.6%	85.5	27.2%
70° T-Scan CW (S4 NS)	C	8.1	8.1	7.7%	6	0.2%
70° T-Scan CCW (S4 NS)	C	8.1	6.4	6.1%	6	0.1%
45° T-Scan (S6 FV)	C	44.4	44.4	84.6%	6	1.9%
70° P-Scan UP (S4 NS)	C	8.1	5.4	5.1%	6	0.1%
70° P-Scan DN (S4 NS)	C	8.1	8.1	7.7%	6	0.2%
45° P-Scan (S6 FV)	C	44.4	44.4	84.6%	6	1.9%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 68.7%

Rev. 0 9/23/05

Comments:
A/B- Automated scanning was not restricted.
B - Automated scanning was restricted due to the proximity of the shroud repair bracket.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3C-VERT
Report No.: D2R22-085

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC3C_2	10/22/11	535.00	515.00	DN (Fwd)	-20.00	1708	1719
2-SC3C_3	10/22/11	516.00	494.00	DN (Fwd)	-22.00	1734	1745
2-SC3C_4	10/28/11	463.00	431.00	UP (Rev)	-32.00	1329	1357
2-SC3C_5	10/28/11	432.00	419.00	UP (Rev)	-13.00	1407	1414
2-SC3C_6	10/28/11	397.00	430.00	UP (Fwd)	33.00	1513	1530

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the feedwater sparger, core spray piping bracket and tie rod repair bracket.
*8 search unit was replaced 10-27-11 prior to 2-SC3C_4 exam.
Scan file 2-SC3C_1 was voided.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 89°F **Couplant:** Water

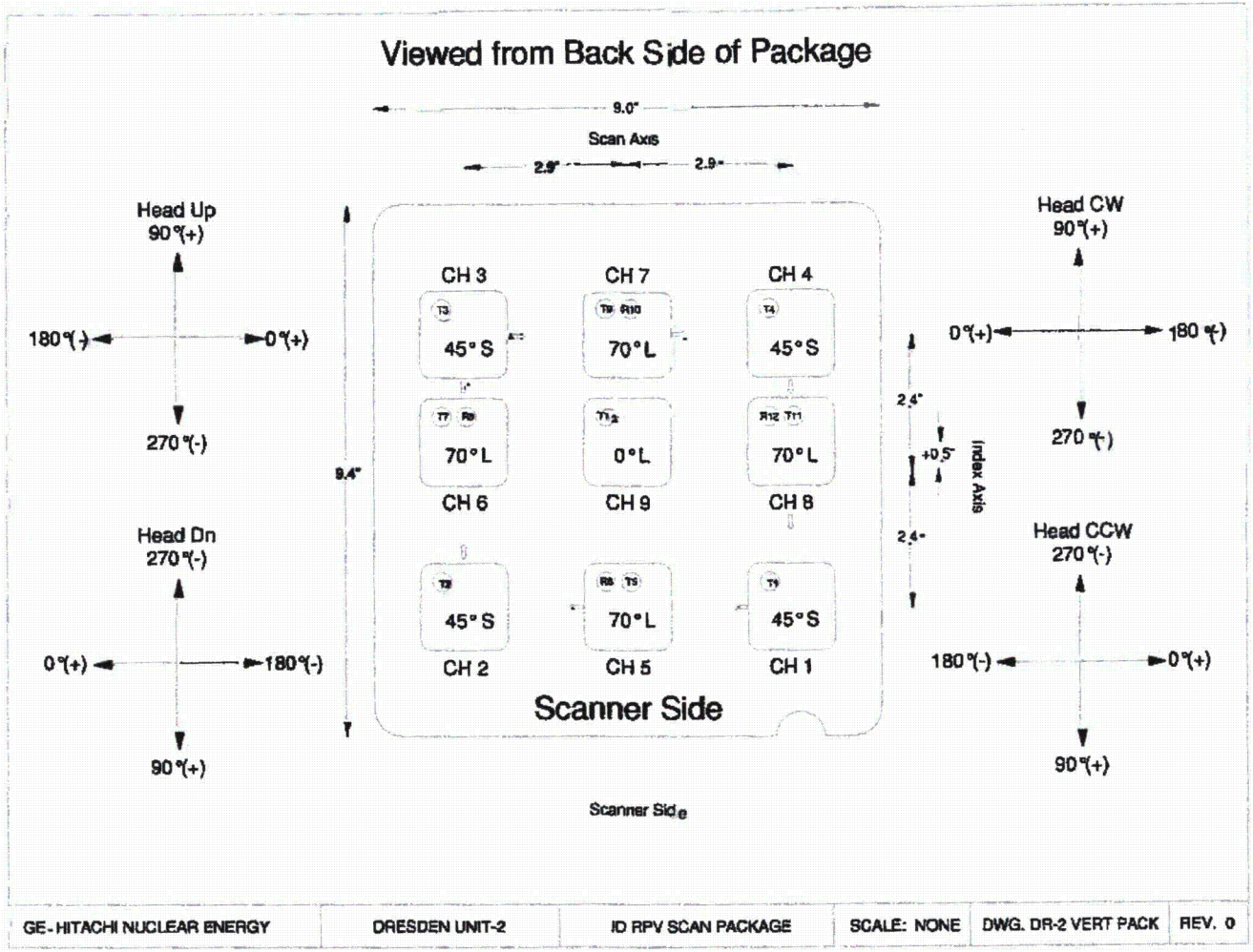
Operators: Shane Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N9	70°L	2(12 x 25)mm	2.25	90°
*8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

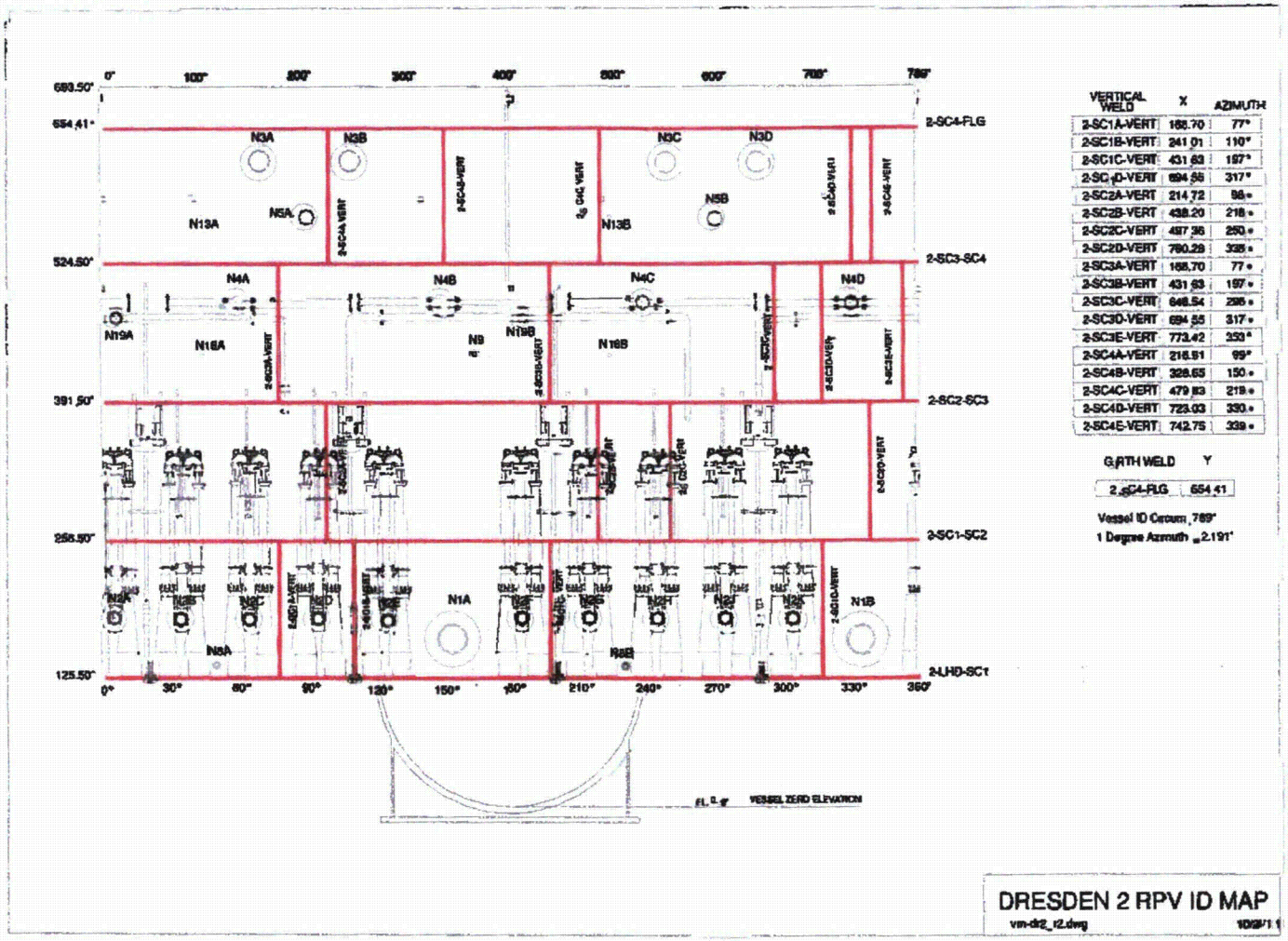
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

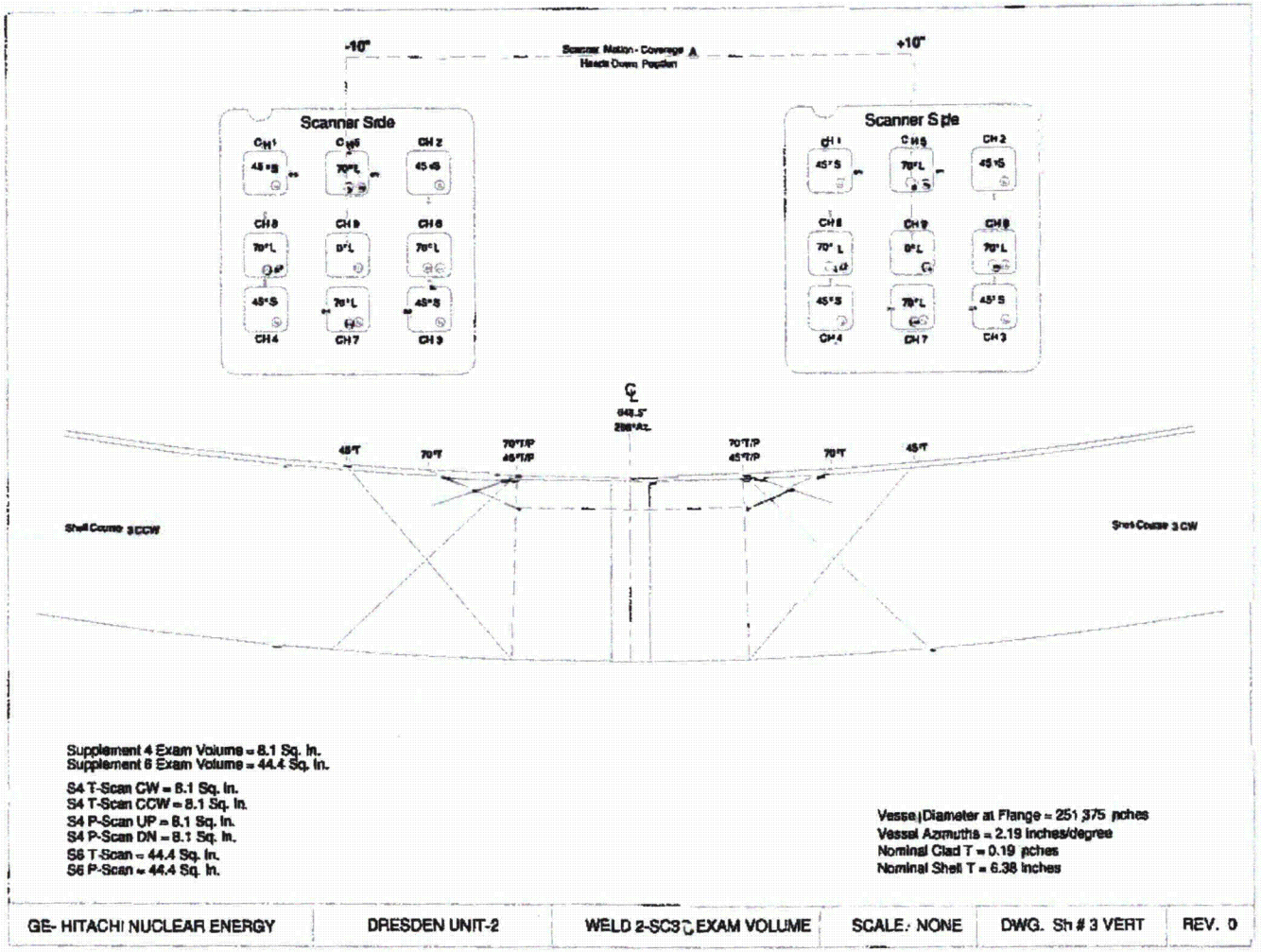
Dresden
Reference Drawings



Weld Location Map

HITACHI

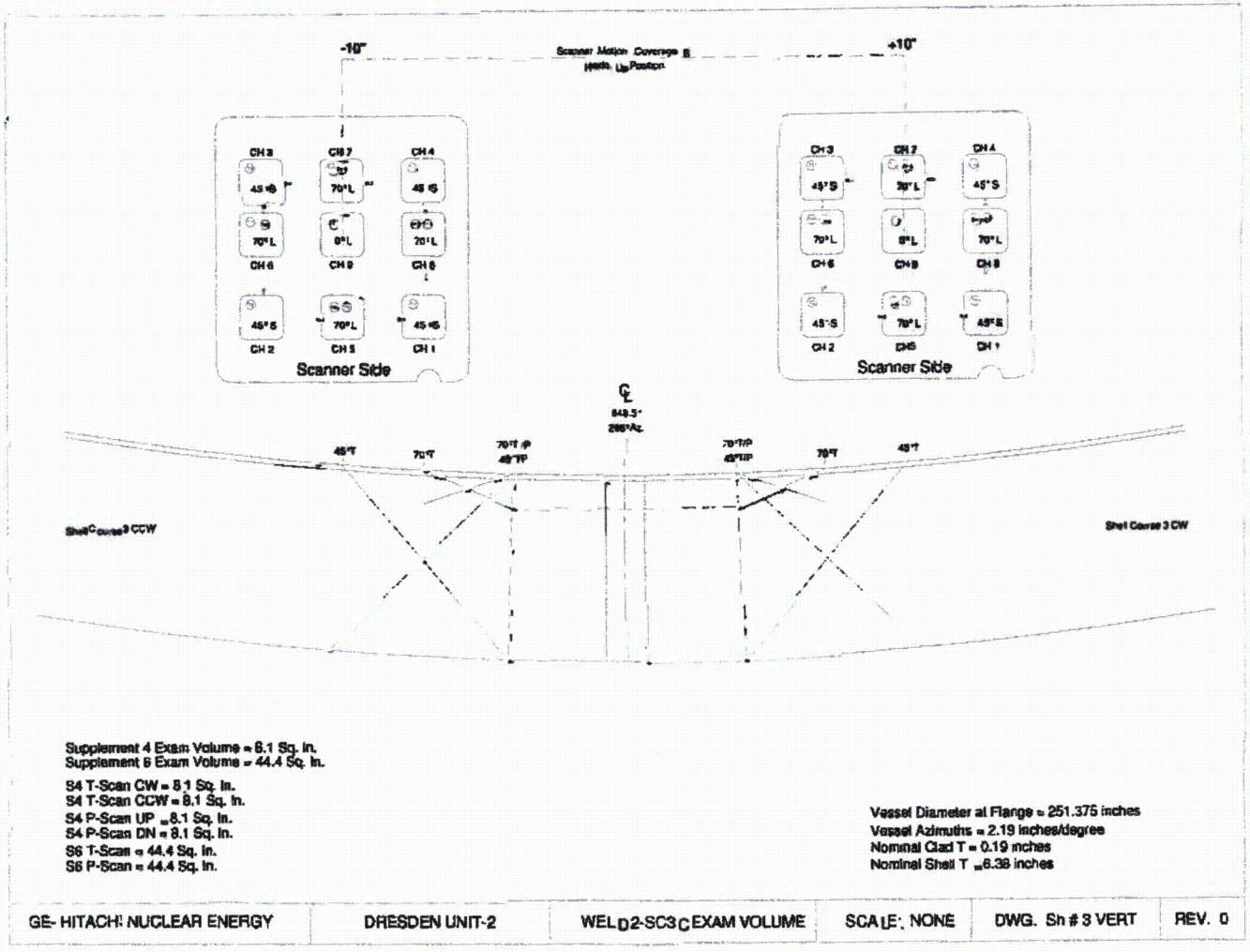
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

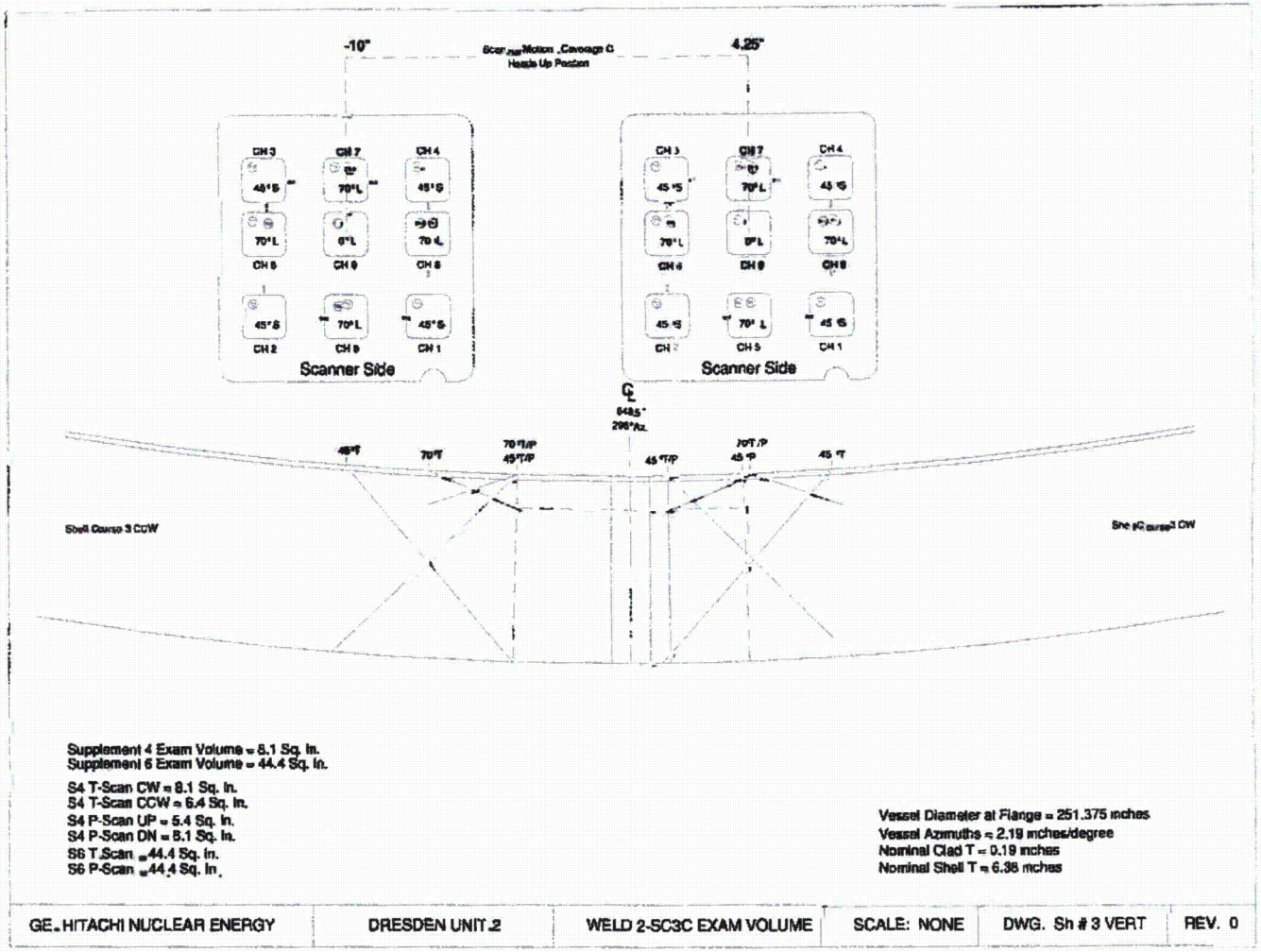
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

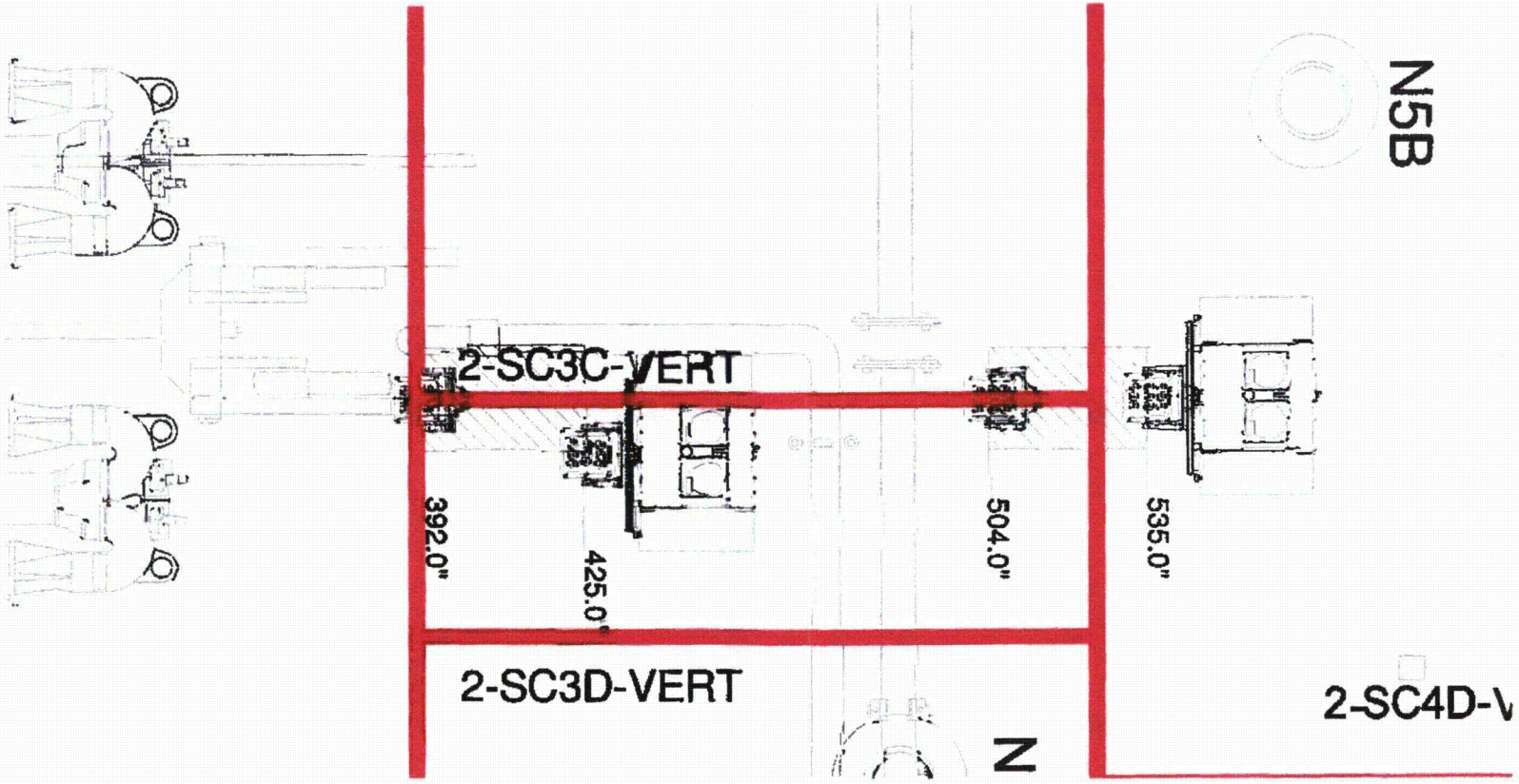
Dresden
Reference Drawings



Cross Section of Achieved Coverage "C"

HITACHI

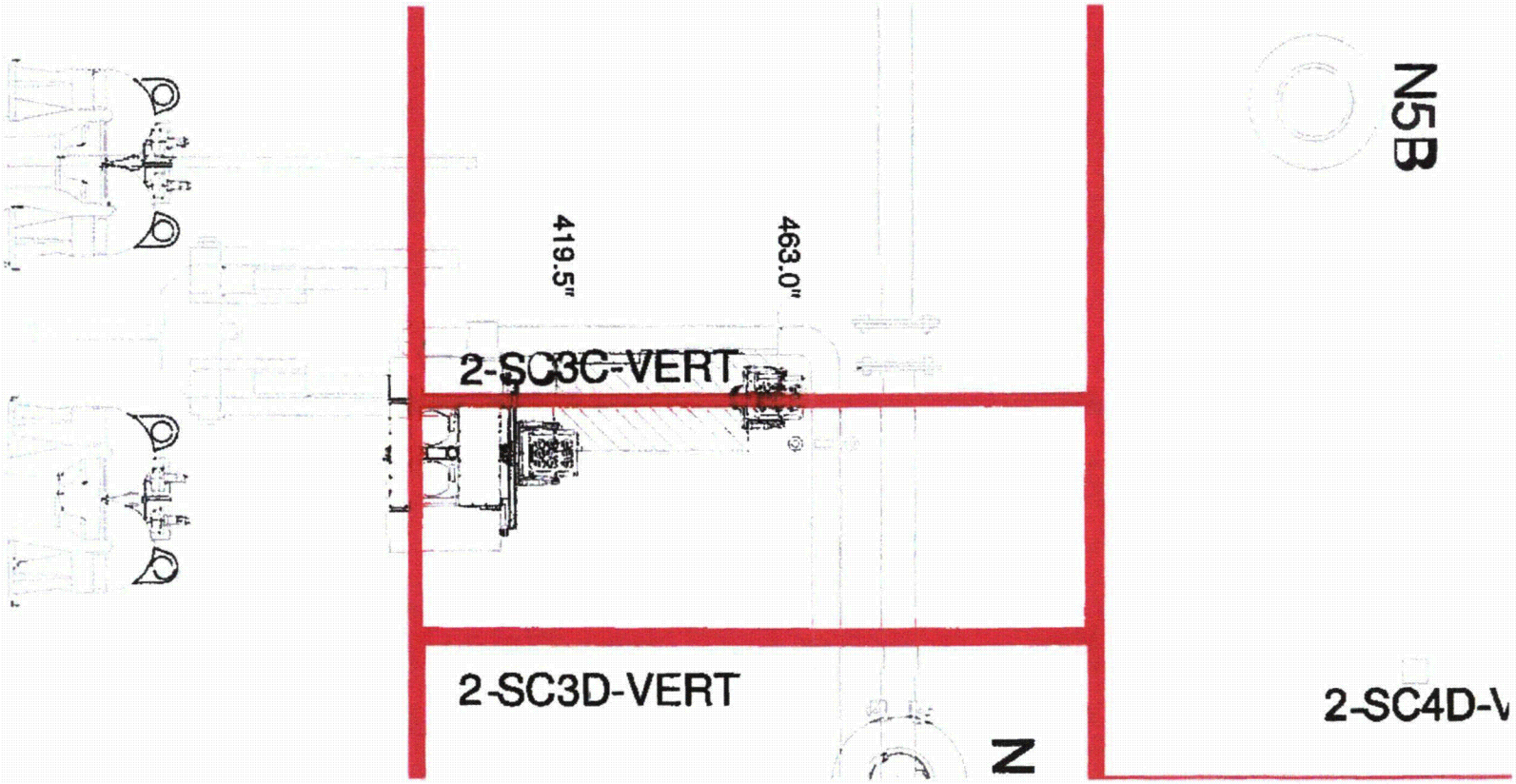
Dresden
Reference Drawings



Scanned Patches Coverage "A"

HITACHI

Dresden
Reference Drawings



Scanned Patches Coverage "B" and "C"

HITACHI Examination Summary Sheet

Report No.: D2R22-086

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC3D-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 3 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-08	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11
70°L	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/28/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted by the proximity of the core spray piping and feed water spargers.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

Eight (8) acceptable flaw indications were recorded. The indications are characteristic of fabrication artifacts and were not recorded during the previous examinations. This is attributed to differences in procedure recording critiria.

The Auto coverage was calculated to be 73.7%.

Previous data was reviewed with no changes.

The examination results were compared with data report 001200 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By:	Level:	Date: 11/4/11	Utility Review By:	Date: 11-5-11
			ANII Reviewed By:	Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3D-VERT

Report No.: D2R22-086

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC3D_1	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3D_3	Head Up	RI (2)	RI (1)	RI (1)	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3D_4	Head Up	RI (2)	RI (2)	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3D_5	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".
Scan file 2-SC3D_2 was voided.

Analyzed by: John Gilliard Level III 10/31/2011

HITACHI

SP2000 RPV Examination Indication Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3D-VERT

Report: D2R22-086

			Maximum Amplitude Position				Indication Length Information				
Ind. No.	File	Channel	Amp dB	L Pos	W Pos	Depth	L Min	L Max	Length	Axis	Remarks
1	2-SC3D_3	1	-8.2	397.59	0.15	4.83	397.08	398.18	1.10	Axial	No determinable thruwall
2	2-SC3D_3	1	-11.7	414.85	0.15	4.83	413.97	415.25	1.28	Axial	No determinable thruwall
3	2-SC3D_3	2	-11.7	405.10	1.35	5.05	404.23	405.62	1.39	Circ.	No determinable thruwall
4	2-SC3D_3	3	-7.9	410.65	-1.15	5.53	409.43	411.17	1.74	Axial	No determinable thruwall
5	2-SC3D_4	1	-13.0	415.6	0.65	4.83	414.75	415.95	1.20	Axial	No determinable thruwall
6	2-SC3D_4	1	-12.3	419.4	0.15	4.92	419.02	419.80	0.78	Axial	No determinable thruwall
7	2-SC3D_4	2	-7.3	432.4	0.60	3.50	431.77	433.13	1.36	Circ.	No determinable thruwall
8	2-SC3D_4	2	-9.3	453.9	1.35	3.24	453.17	454.17	1.00	Circ.	No determinable thruwall

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". Measurements in Inches.

Analyzed by: John Gilliard Level III 10/31/2011

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project: Dresden Unit-2
Weld ID: 2-SC3D

Indication: 1

	Measured	Rounded
Flaw Through Wall =	0.075	0.1
Flaw Length "l" =	1.10	1.1
Surface Separation "S" =	1.61	1.6

	Measured	Rounded
"T" nominal =	6.25	6.2
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.99	2.18 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed	Allowed
			1.99	2.18

a = 0.050
a/l value = 0.045
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.2%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/05

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: JMiller

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project : Dresden Unit-2
Weld ID : 2-SC3D

Indication : 2

	Measured	Rounded		Measured	Rounded
Flaw Through Wall =	0.075	0.1	***"T" nominal =***	6.25	6.2
Flaw Length "l" =	1.28	1.3	***"T" measured =***	N/A	N/A
Surface Separation "S" =	1.61	1.6			

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.98	2.15 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 1.98	Allowed 2.15

a = 0.050
a/l value = 0.038
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.2%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: _____

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project : Dresden Unit-2
Weld ID : 2-SC3D

Indication : 3

	Measured	Rounded
Flaw Through Wall =	0.075	0.1
Flaw Length "l" =	1.39	1.4
Surface Separation "S" =	1.39	1.4

	Measured	Rounded
"T" nominal =	6.25	6.2
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.97	2.14 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed	Allowed
			1.97	2.14

a = 0.050
a/l value = 0.036
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.1%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: JMcCue

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project: Dresden Unit-2
Weld ID: 2-SC3D

Indication: 4

	Measured	Rounded
Flaw Through Wall =	0.075	0.1
Flaw Length "l" =	1.74	1.7
Surface Separation "S" =	0.91	0.9

	Measured	Rounded
"T" nominal =	6.25	6.2
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.96	2.12 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 1.96	Allowed 2.12

a = 0.050
a/l value = 0.029
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.1%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: [signature]

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project : Dresden Unit-2
Weld ID : 2-SC3D

Indication : 5

	Measured	Rounded
Flaw Through Wall =	0.075	0.1
Flaw Length "l" =	1.20	1.2
Surface Separation "S" =	1.64	1.6

	Measured	Rounded
"T" nominal =	6.25	6.2
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.98	2.17 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 1.98	Allowed 2.17

a = 0.050
a/l value = 0.042
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.2%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: _____

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project : Dresden Unit-2
Weld ID : 2-SC3D

Indication : 6

	Measured	Rounded
Flaw Through Wall =	0.075	0.1
Flaw Length "l" =	0.78	0.8
Surface Separation "S" =	1.54	1.5

	Measured	Rounded
"T" nominal =	6.25	6.2
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	~	~
0.05	2.0	2.2	2.05	2.28 Y
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 2.05	Allowed 2.28

a = 0.050
a/l value = 0.063
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.3%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: _____

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project: Dresden Unit-2
Weld ID: 2-SC3D

Indication: 7

	Measured	Rounded		Measured	Rounded
Flaw Through Wall =	0.075	0.1	***"T" nominal =***	6.25	6.2
Flaw Length "l" =	1.36	1.4	***"T" measured =***	N/A	N/A
Surface Separation "S" =	2.94	2.9			

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.97	2.14 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed	Allowed
			1.97	2.14

a = 0.050
a/l value = 0.036
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.1%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: _____

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project : Dresden Unit-2
Weld ID : 2-SC3D

Indication : 8

	Measured	Rounded
Flaw Through Wall =	0.075	0.1
Flaw Length "l" =	1.00	1.0
Surface Separation "S" =	3.20	3.2

	Measured	Rounded
"T" nominal =	6.25	6.2
"T" measured =	N/A	N/A

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	~	~
0.05	2.0	2.2	2.00	2.20 Y
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 2.00	Allowed 2.20

a = 0.050
a/l value = 0.050
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.2%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

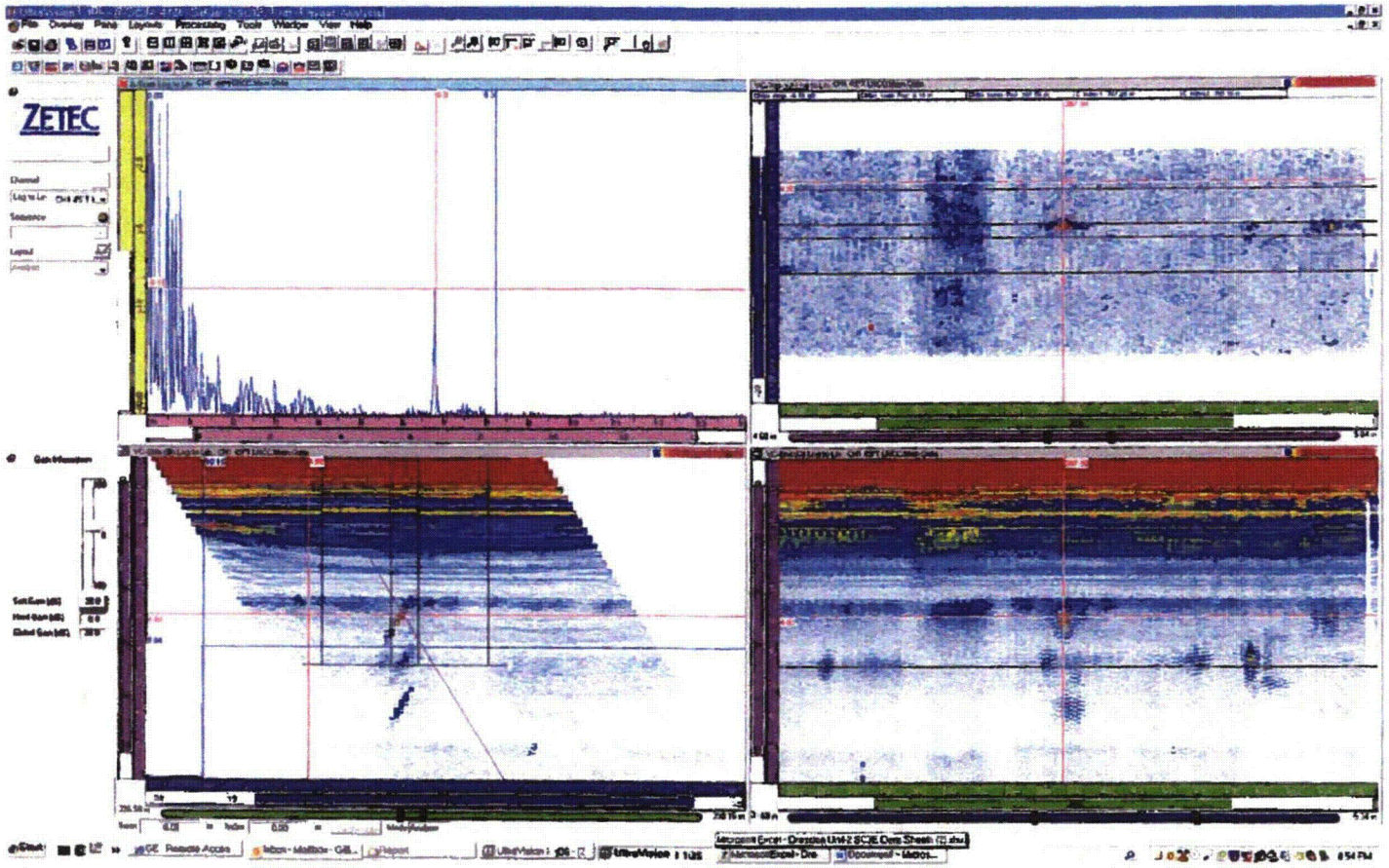
Evaluation by: John Gilliard Level III JCG

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: _____

HITACHI

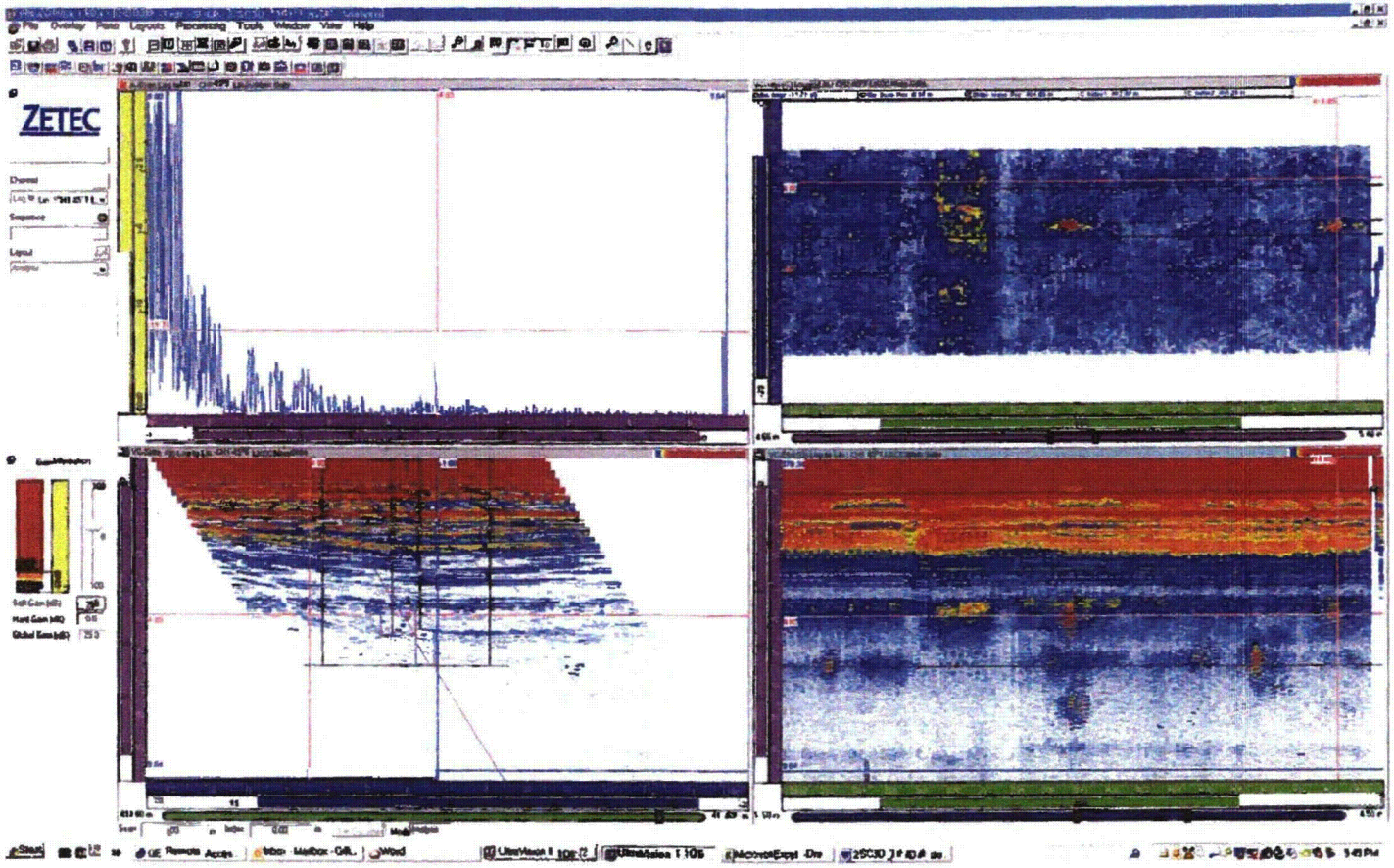
Dresden
Indication Prints



Indication 1 – Channel 1

HITACHI

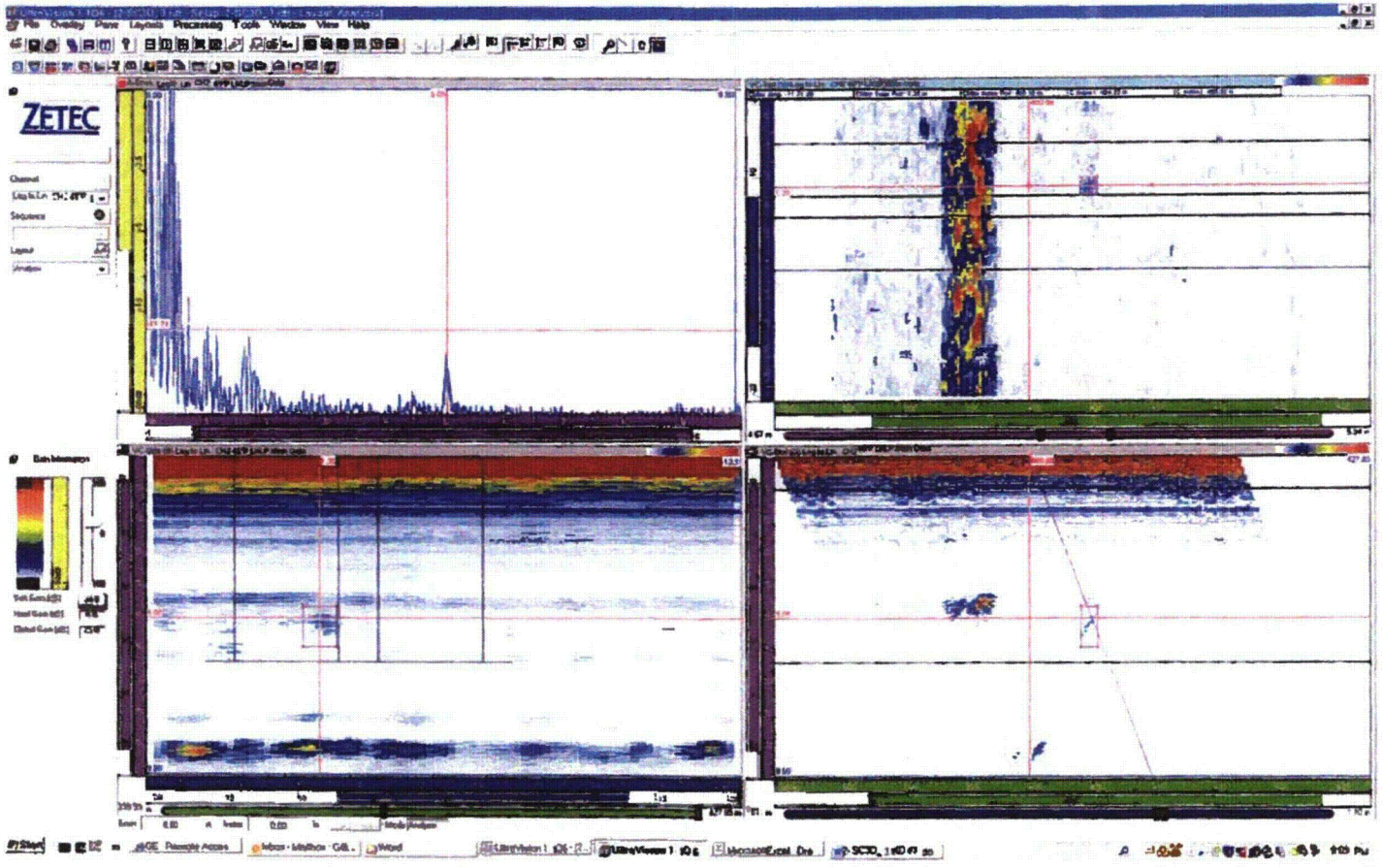
Dresden
Indication Prints



Indication 2 – Channel 1

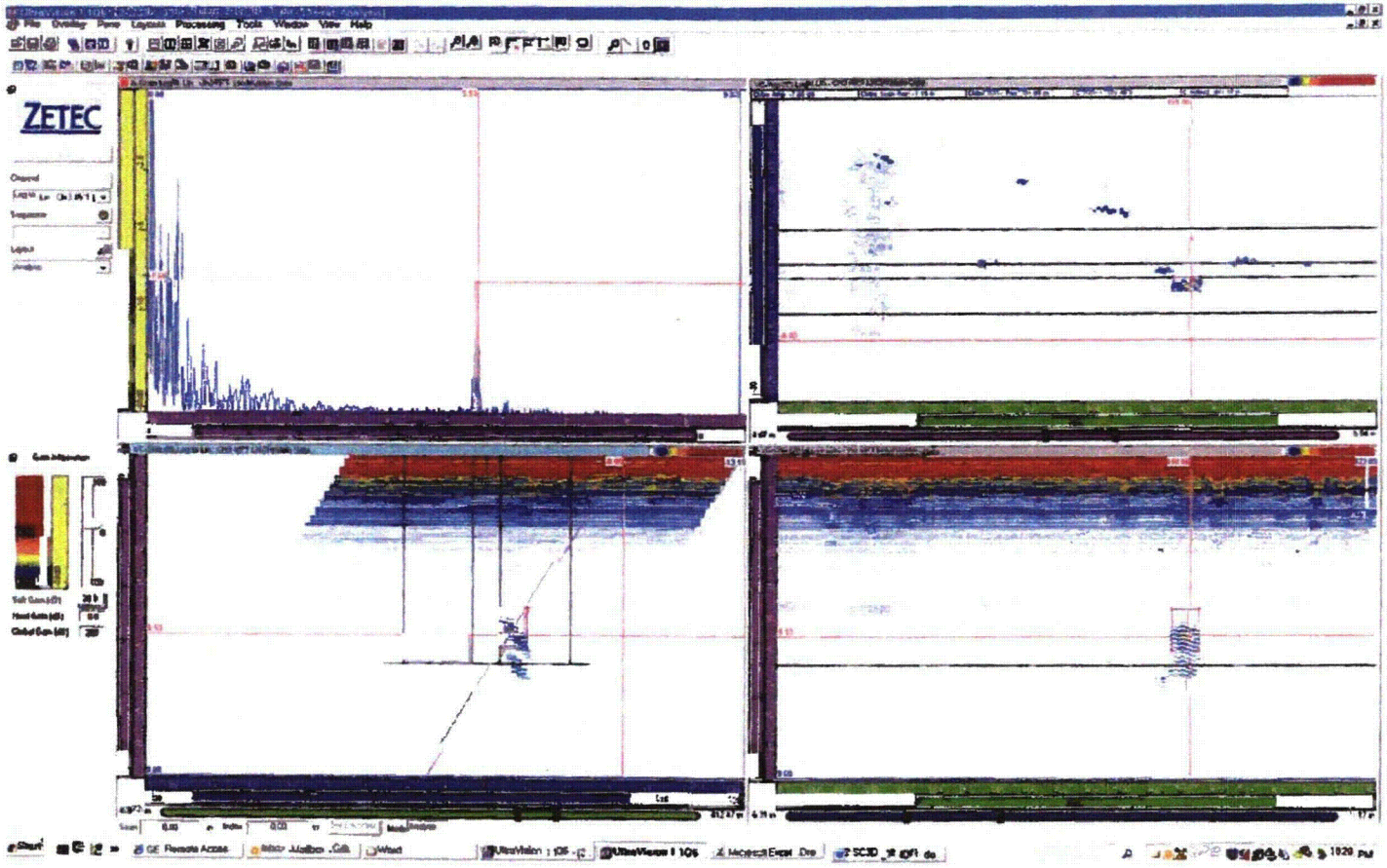
HITACHI

Dresden
Indication Prints



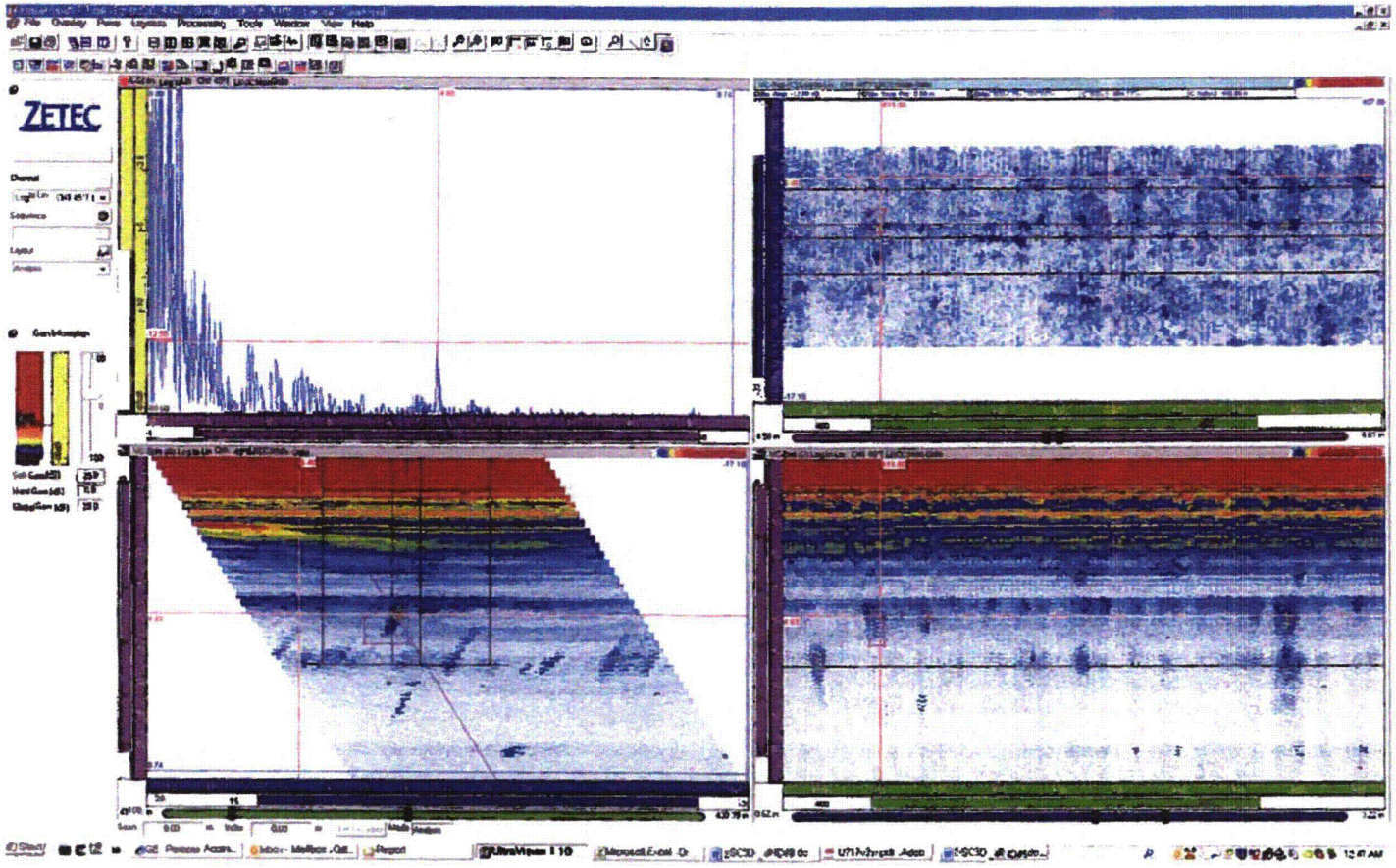
Indication 3 – Channel 2

Dresden
Indication Prints



Indication 4 - Channel 3

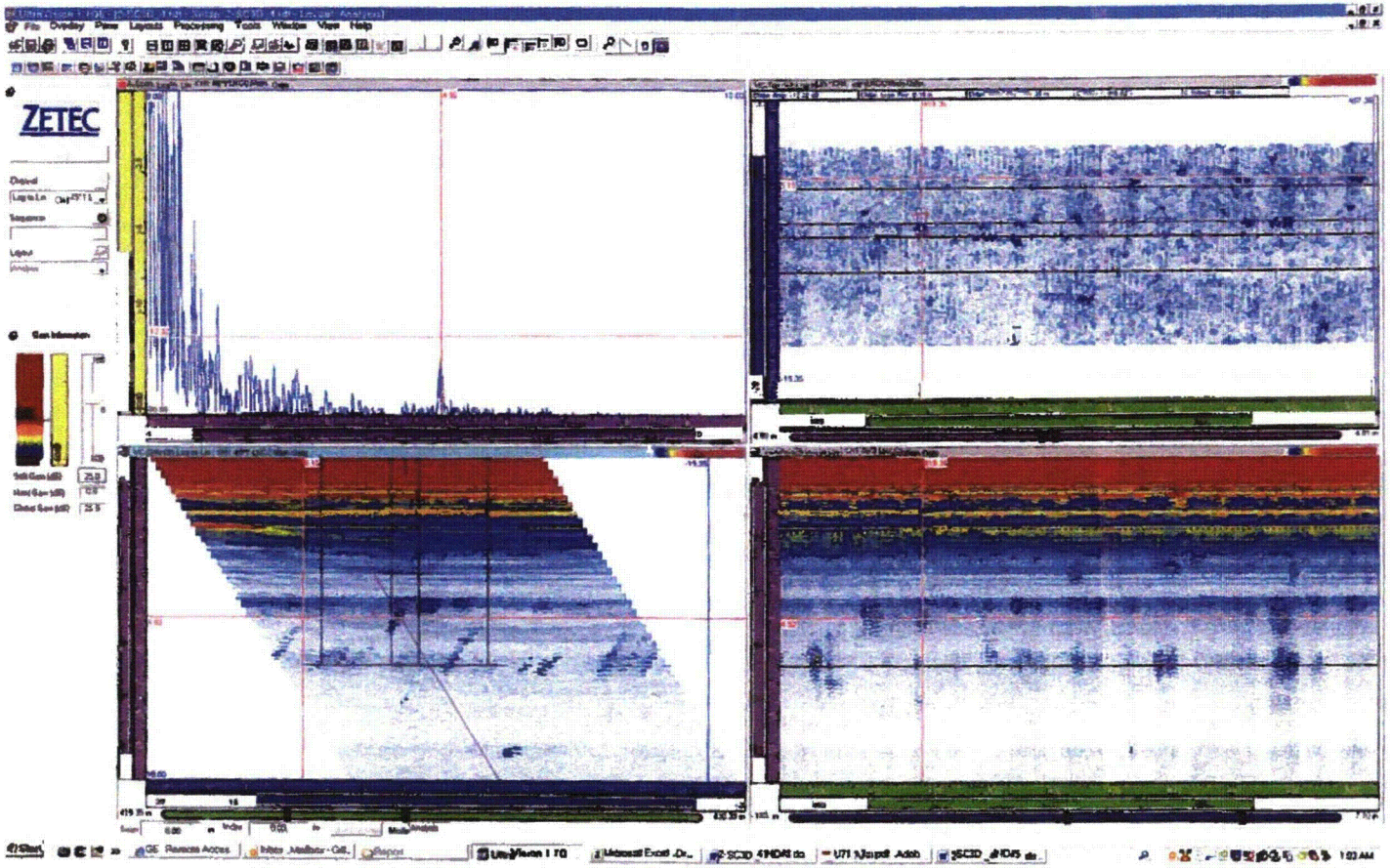
Dresden
Indication Prints



Indication 5 - Channel 1

HITACHI

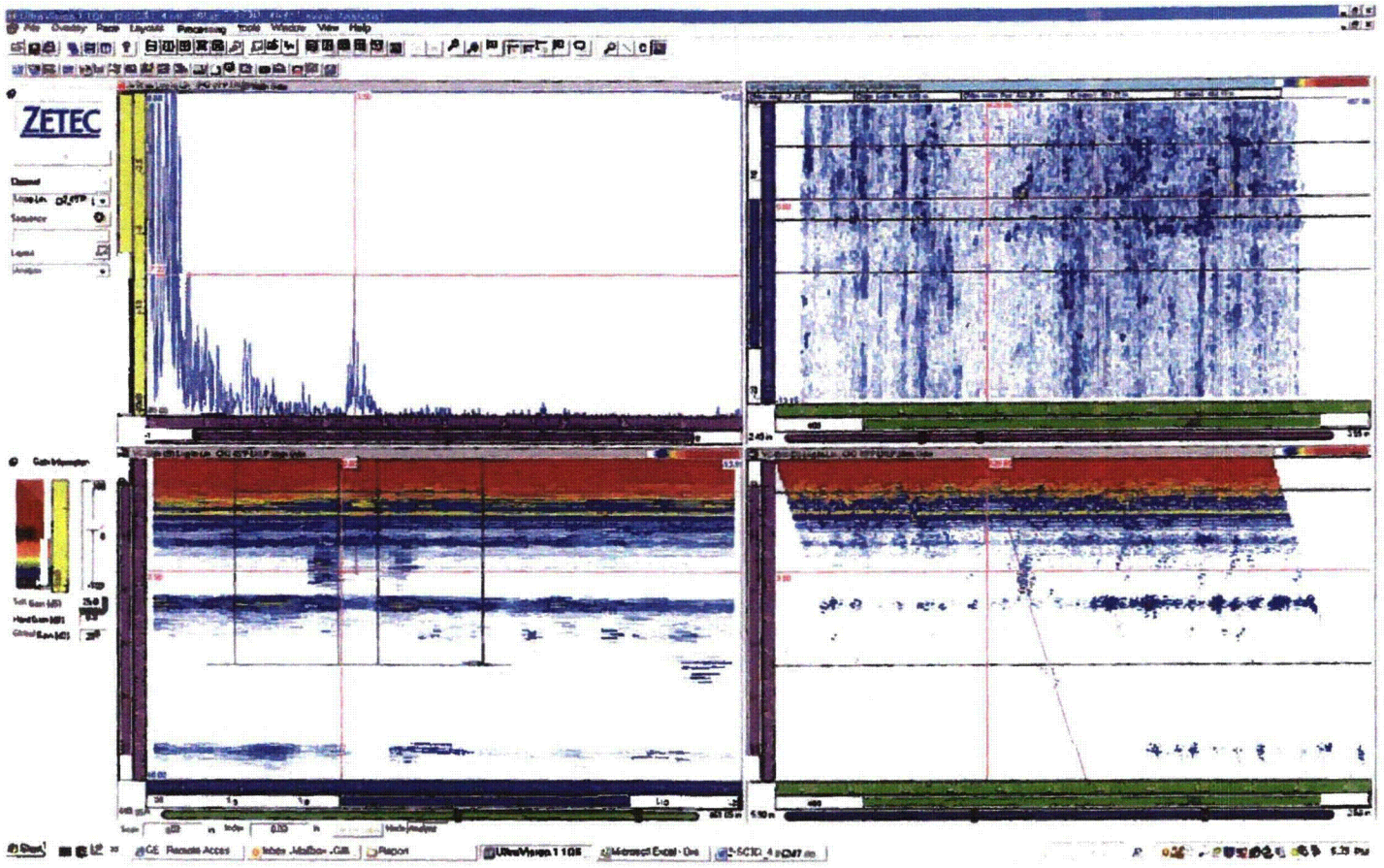
Dresden
Indication Prints



Indication 6 - Channel 1

HITACHI

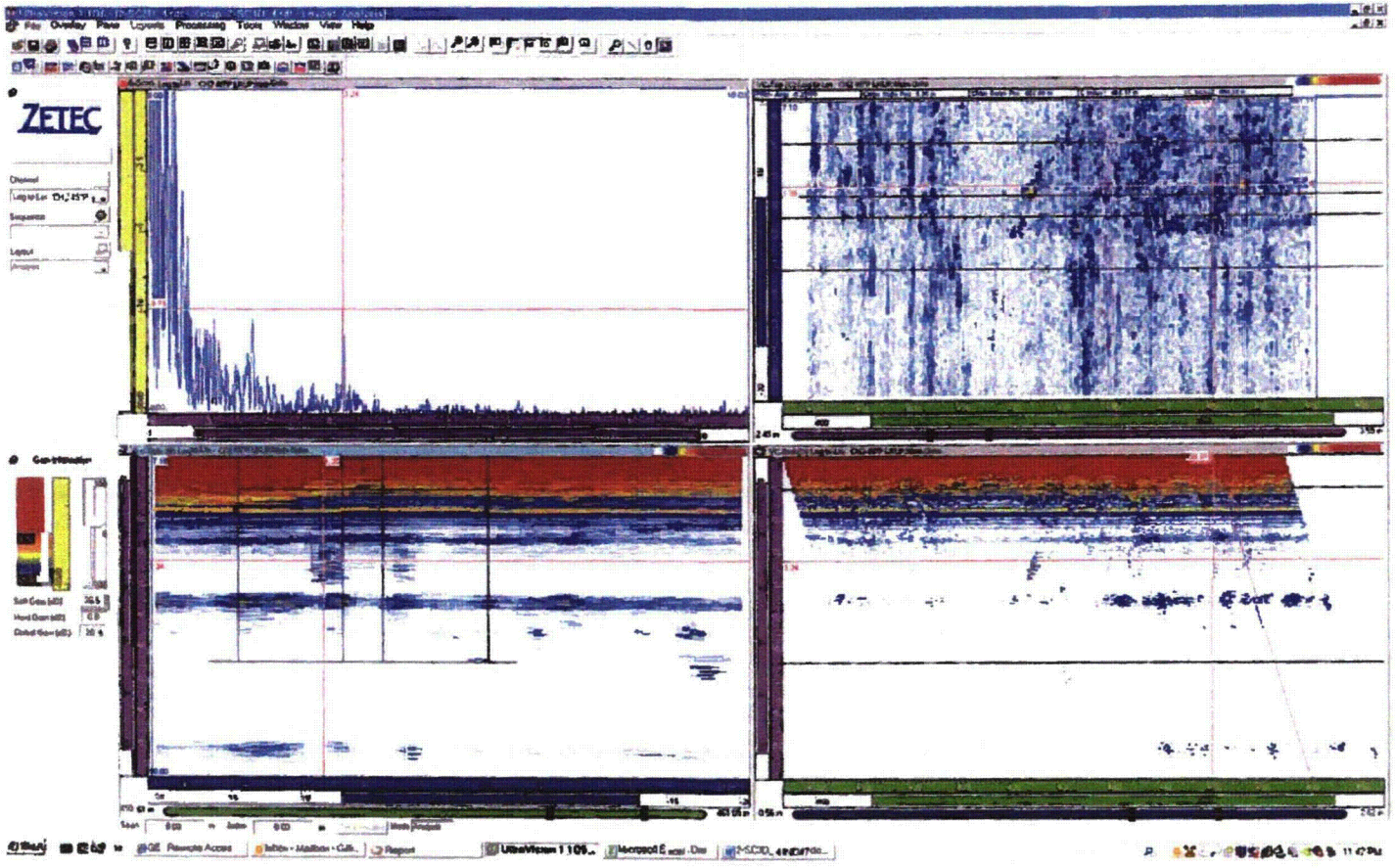
Dresden
Indication Prints



Indication 7 - Channel 2

HITACHI

Dresden
Indication Prints



Indication 8 - Channel 2

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-086

DRESDEN UNIT-2
Weld 2-SC3D

Weld Length = 133. Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A/B	8.1	8.1	7.7%	98	2.8%
70° T-Scan CCW (S4 NS)	A/B	8.1	8.1	7.7%	98	2.8%
45° T-Scan (S6 FV)	A/B	44.4	44.4	84.6%	98	31.2%
70° P-Scan UP (S4 NS)	A/B	8.1	8.1	7.7%	98	2.8%
70° P-Scan DN (S4 NS)	A/B	8.1	8.1	7.7%	98	2.8%
45° P-Scan (S6 FV)	A/B	44.4	44.4	84.6%	98	31.2%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 73.7%

Rev. 0 9/23/05

Comments:
A/B- Automated scanning was not restricted.
Scanning was limited due to the proximity of the feed water sparger and core spray piping.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in mm.

HITACHI

SP2000 RPV Examination Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3D-VERT
Report No.: D2R22-086

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC3D_1	10/22/11	498.00	541.00	DN (Rev)	43.00	1239	1306
2-SC3D_3	10/28/11	420.00	382.00	UP (Rev)	-38.00	1118	1137
2-SC3D_4	10/28/11	410.00	460.00	UP (Fwd)	50.00	1150	1219
2-SC3D_5	10/28/11	455.00	463.00	UP (Fwd)	8.00	1227	1232

Comments: Rotation angles specified are for the head down configuration. Scanning was restricted due to the proximity of the feedwater sparger, and core spray piping bracket.
*8 search unit was replaced 10-27-11 prior to 2-SC3D_3, 4 and 5 exams.
Scan file 2-SC3D_2 was voided.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 90°F **Couplant:** Water

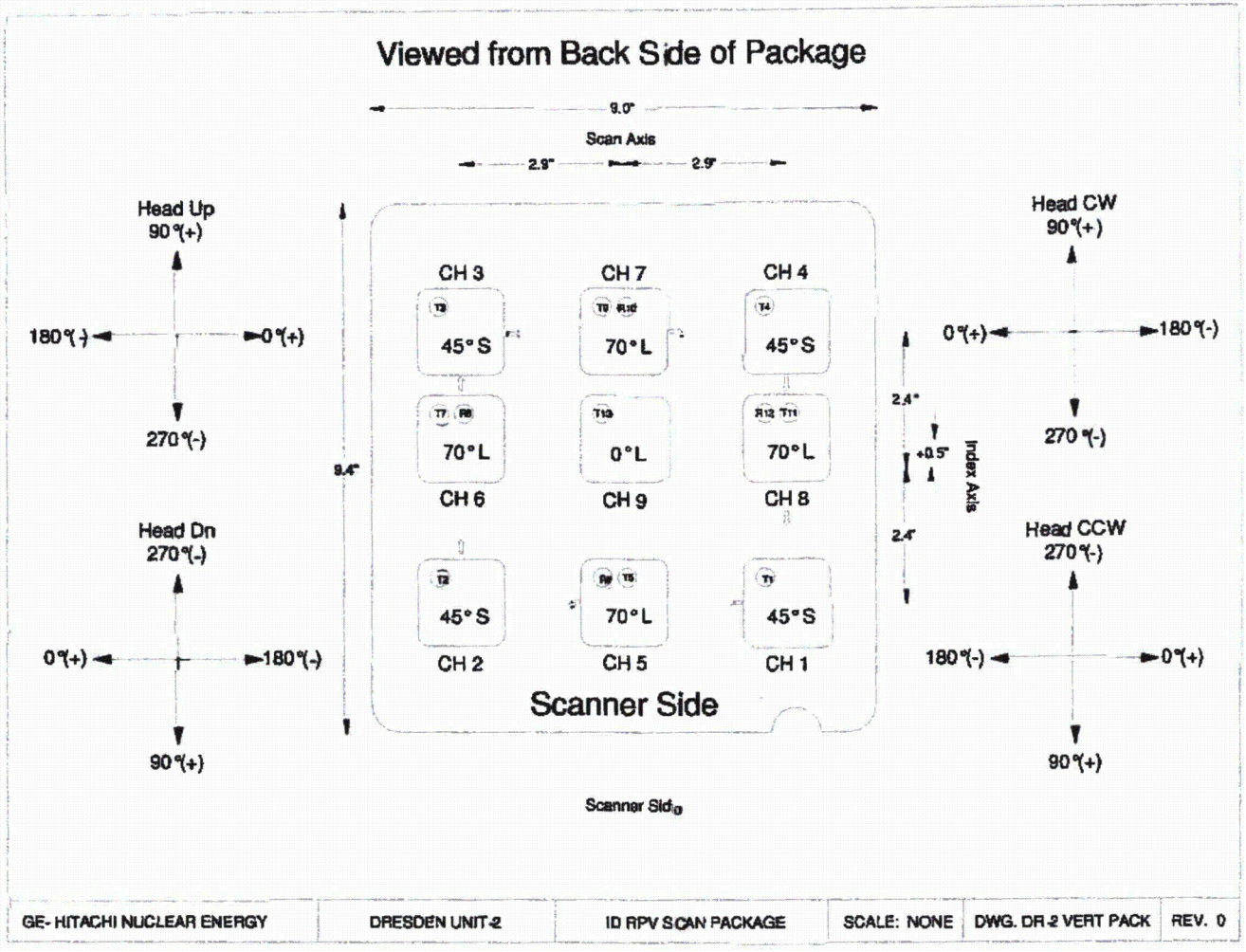
Operators: Shane Gauthier Level II

SEARCH UNIT DATA;

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N9	70°L	2(12 x 25)mm	2.25	90°
*8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

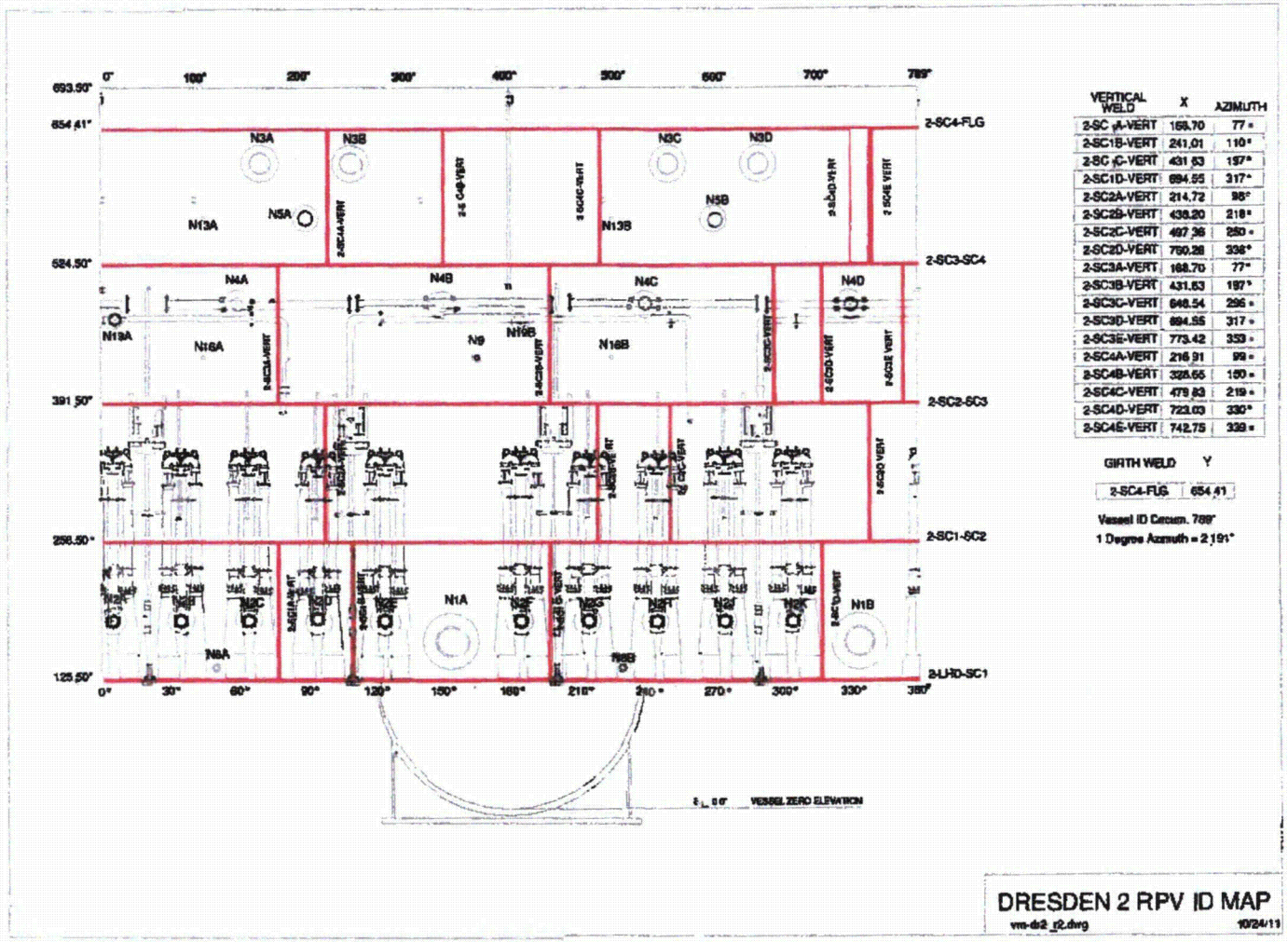
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	155.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.53	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	438.20	218°
2-SC2C-VERT	497.36	250°
2-SC2D-VERT	760.28	336°
2-SC3A-VERT	155.70	77°
2-SC3B-VERT	431.53	197°
2-SC3C-VERT	648.54	296°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.83	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

GIRTH WELD	Y
2-SC4-FLG	654.41

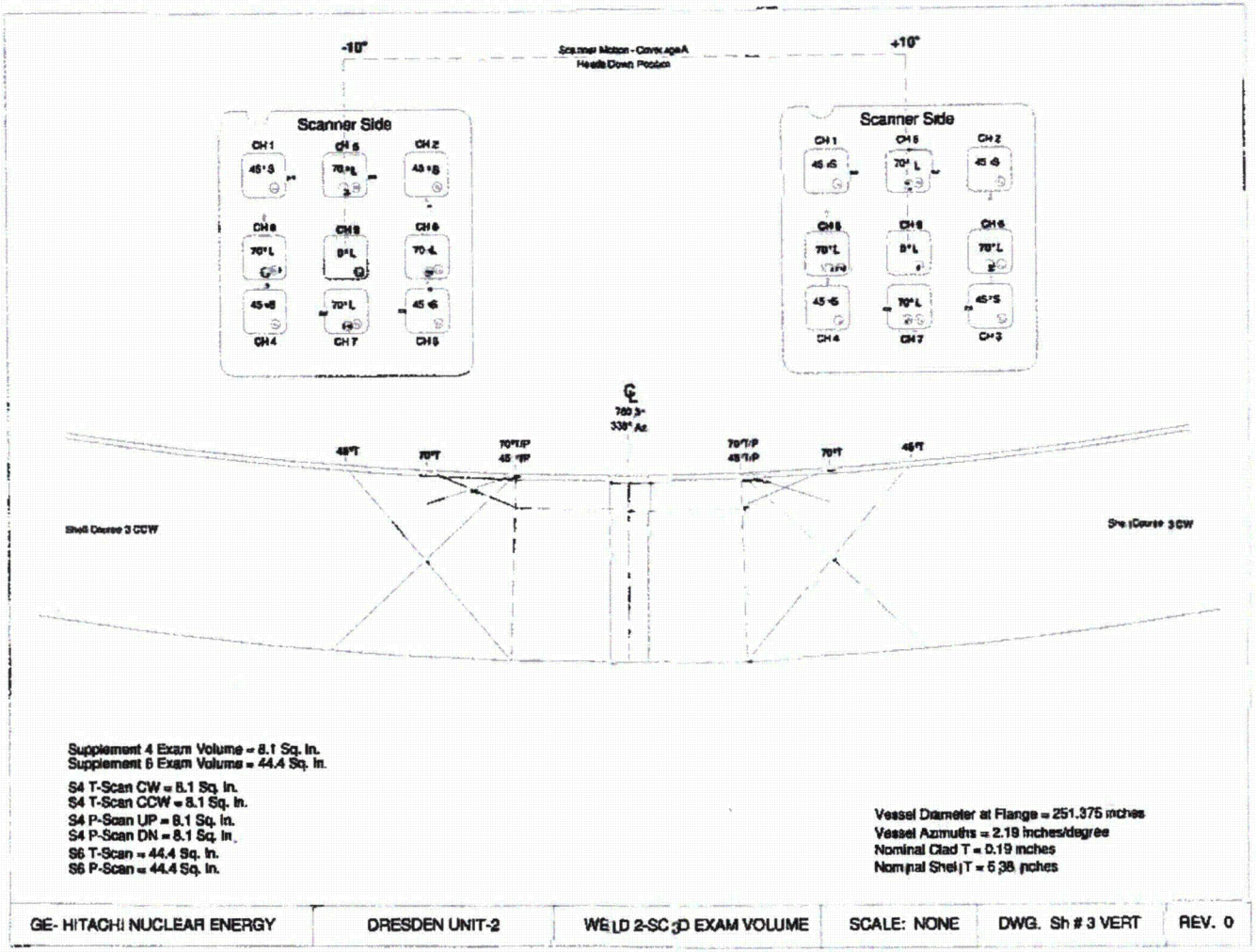
Vessel ID Circum. 769"
1 Degree Azimuth = 2.191"

DRESDEN 2 RPV ID MAP
vm-ds2_r2.dwg 10/24/11

Weld Location Map

HITACHI

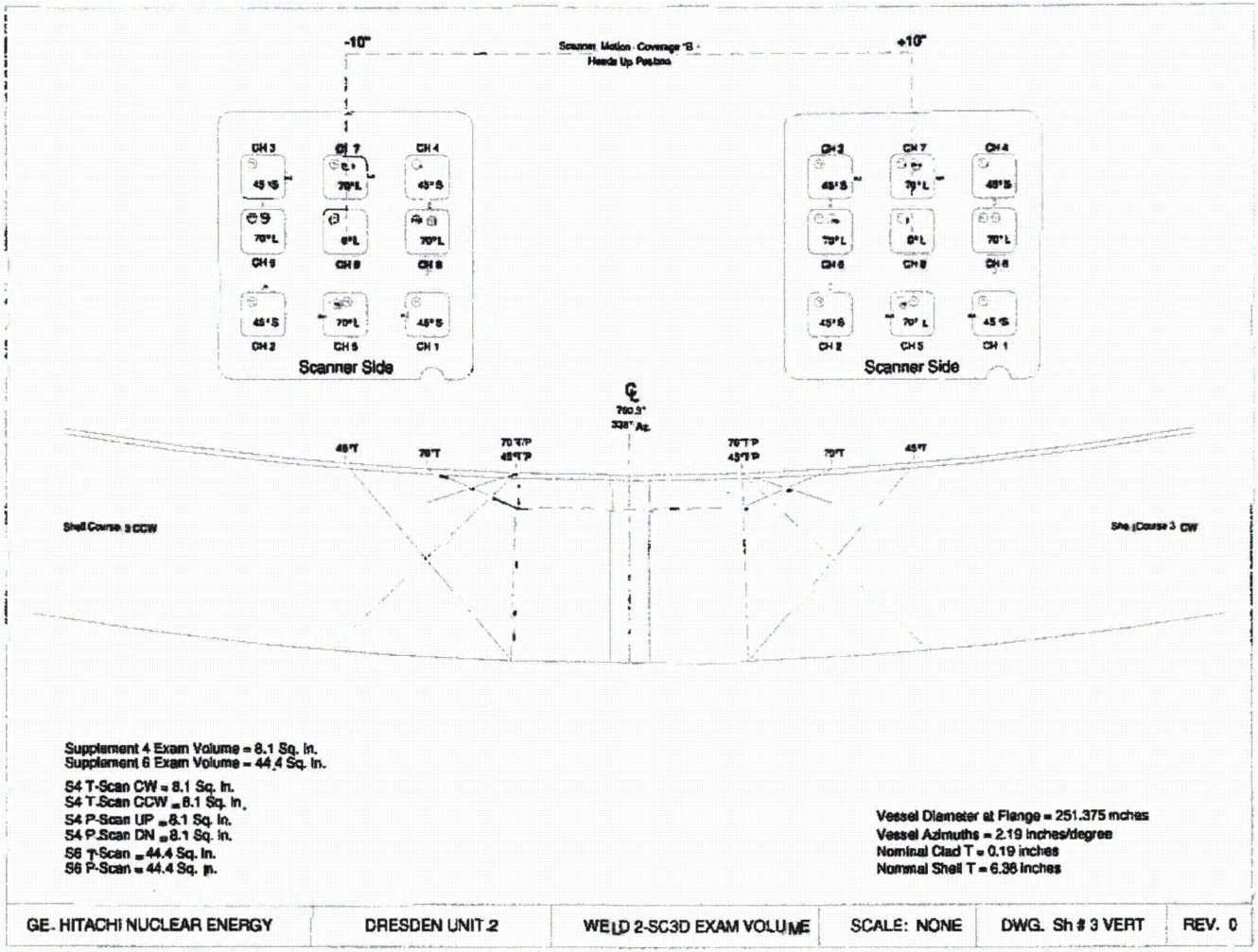
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

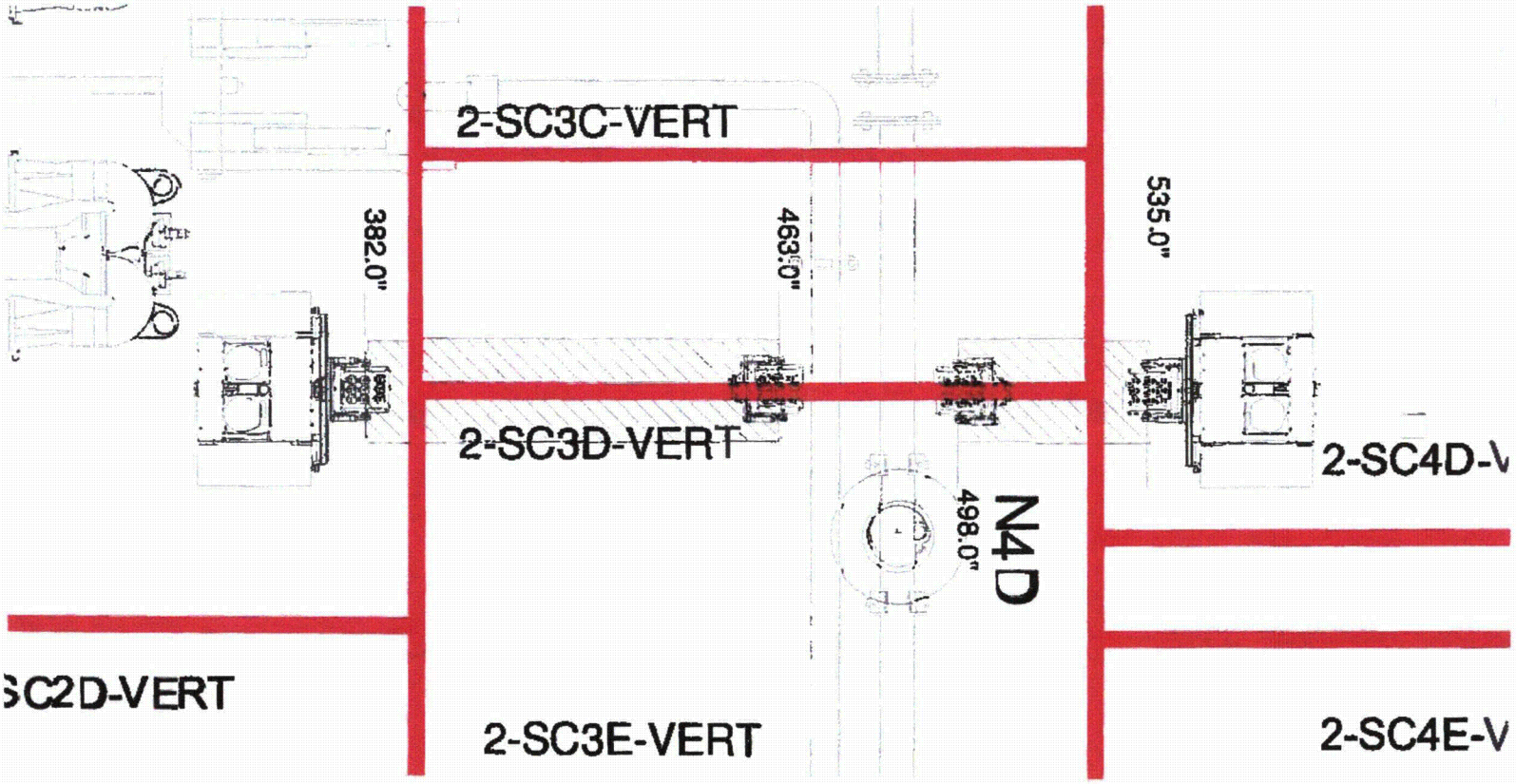
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

Dresden
Reference Drawings



Scanned Patches

HITACHI Examination Summary Sheet

Report No.: D2R22-087

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC3E-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 4 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11
70°L	RPV-ID-08	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11
70°L	RPV-ID-10	CAL-IIW2-043	GEH-UT-717 V3	S. Gauthier	II	10/27/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted by the proximity of the upper guide rod, core spray piping and feed water spargers.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

Two (2) acceptable flaw indications were recorded. The indications are characteristic of fabrication artifacts and were not recorded during the previous examinations. This is attributed to differences in procedure recording critiria.

The Auto coverage was calculated to be 74.2%.

Previous data was reviewed with no changes.

The examination results were compared with data report 001300 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By:	Level:	Date:	Utility Review By:	Date:	
ANII Reviewed By:				Date:	

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3E-VERT

Report No.: D2R22-087

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC3E_2	Head Down	RI (2)	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC3E_4	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".
Scan files 2-SC3E_1, 3 were voided.

Analyzed by: Brad Dummer Level III 10/30/2011

HITACHI

SP2000 RPV Examination Indication Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3E-VERT

Report: D2R22-087

			Maximum Amplitude Position				Indication Length Information				
Ind. No.	File	Channel	Amp dB	L Pos	W Pos	Depth	L Min	L Max	Length	Axis	Remarks
1	2-SC3E_2	1	-18.5	517.39	0.35	3.05	505.89	519.39	13.50	Axial	No determinable thruwall
2	2-SC3E_2	1	-24.8	513.89	-0.90	2.14	513.89	515.89	2.00	Axial	No determinable thruwall

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". Measurements in inches.

Analyzed by: Brad Dummer Level III 10/30/2011

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project : Dresden Unit-2
Weld ID : 2-SC3E

Indication : 1

	Measured	Rounded		Measured	Rounded
Flaw Through Wall =	0.075	0.1	***"T" nominal =***	6.375	6.4
Flaw Length "l" =	13.50	13.5	***"T" measured =***	N/A	N/A
Surface Separation "S" =	2.8625	2.9			

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.91	2.01 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed 1.91	Allowed 2.01

a = 0.050
a/l value = 0.004
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.0%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

Evaluation by: Brad Dummer Level III BD

Reviewed by: Chris Minor Level III CAM

Utility Reviewed by: _____

HITACHI

Reactor Pressure Vessel Flaw Evaluation Sheet

Project : Dresden Unit-2
Weld ID : 2-SC3E

Indication : 2

	Measured	Rounded		Measured	Rounded
Flaw Through Wall =	0.075	0.1	***"T" nominal =***	6.375	6.4
Flaw Length "l" =	2.00	2.0	***"T" measured =***	N/A	N/A
Surface Separation "S" =	1.95	2.0			

ASME Section XI, 1995 Edition, with the 1996 Addenda
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.9	2.0	1.95	2.10 Y
0.05	2.0	2.2	~	~
0.10	2.2	2.5	~	~
0.15	2.5	2.9	~	~
0.20	2.8	3.3	~	~
0.25	3.3	3.8	~	~
0.30	3.8	4.4	~	~
0.35	4.4	5.1	~	~
0.40	5.0	5.8	~	~
0.45	5.1	6.7	~	~
0.50	5.2	7.6	~	~
			Allowed	Allowed
			1.95	2.10

a = 0.050
a/l value = 0.025
Y = 1.000

Flaw is Subsurface

Allowed a/t = 2.1%
a/t = 0.8%

Flaw is acceptable by Table IWB-3510-1.

Revised: 1/27/06

Comments: ASME Section XI rounding performed in accordance with IWA-3200 and ASTM E29.
This indication had no determinable through wall dimension. The 0.075" dimension is an assigned value for evaluation purposes only.

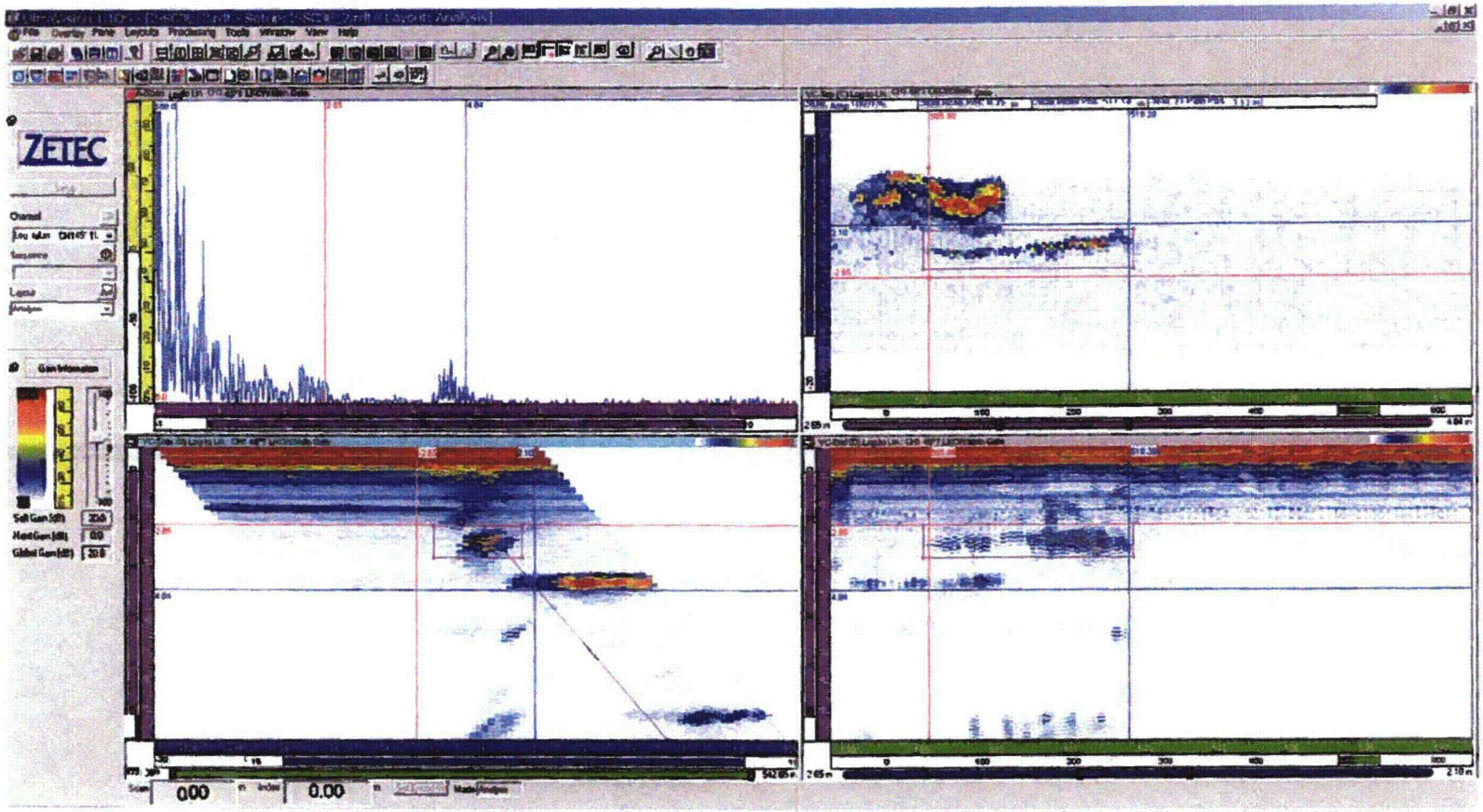
Evaluation by: Brad Dummer Level III BD

Reviewed by: Chris Minor Level III CM

Utility Reviewed by: _____

HITACHI

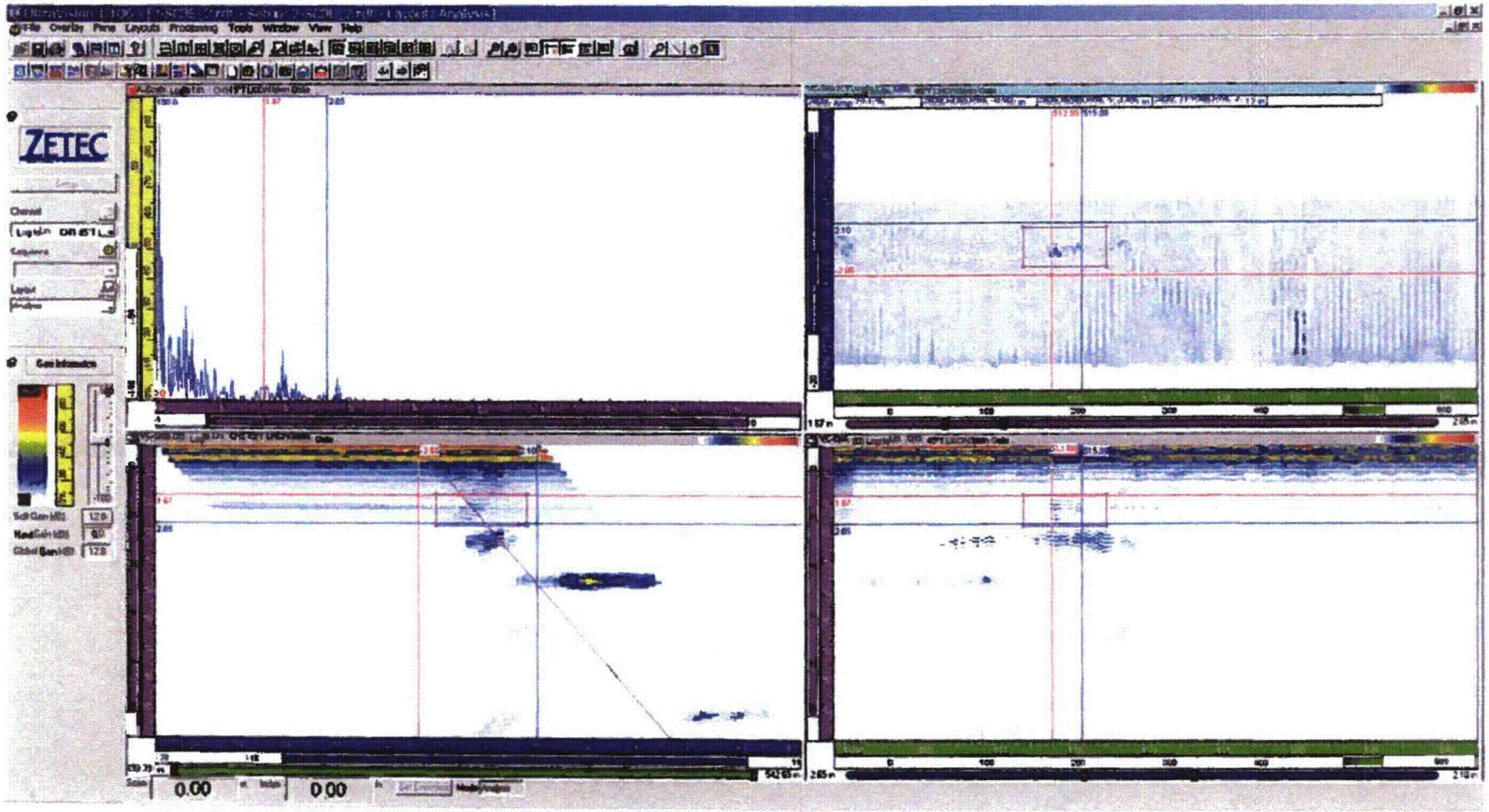
Dresden
Indication Prints



Indication 1

HITACHI

Dresden
Indication Prints



Indication 2

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-087

DRESDEN UNIT-2
Weld 2-SC3E

Weld Length = 133. Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. mm	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A	8.1	8.1	7.7%	71.5	2.1%
70° T-Scan CCW (S4 NS)	A	8.1	8.1	7.7%	71.5	2.1%
45° T-Scan (S6 FV)	A	44.4	44.4	84.6%	71.5	22.7%
70° P-Scan UP (S4 NS)	A	8.1	8.1	7.7%	71.5	2.1%
70° P-Scan DN (S4 NS)	A	8.1	8.1	7.7%	71.5	2.1%
45° P-Scan (S6 FV)	A	44.4	44.4	84.6%	71.5	22.7%
70° T-Scan CW (S4 NS)	B	8.1	8.1	7.7%	27.5	0.8%
70° T-Scan CCW (S4 NS)	B	8.1	7.5	7.1%	27.5	0.7%
45° T-Scan (S6 FV)	B	44.4	44.4	84.6%	27.5	8.7%
70° P-Scan UP (S4 NS)	B	8.1	6.7	6.4%	27.5	0.7%
70° P-Scan DN (S4 NS)	B	8.1	8.1	7.7%	27.5	0.8%
45° P-Scan (S6 FV)	B	44.4	44.4	84.6%	27.5	8.7%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 74.2%

Rev. 0 9/23/05

Comments:
A- Automated scanning was not restricted.
B - Automated scanning was restricted due to the proximity of the upper guide rod.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination
Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC3E-VERT
Report No.: D2R22-087

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC3E_2	10/22/11	540.00	497.00	DN (Fwd)	-43.00	1101	1120
2-SC3E_4	10/27/11	463.00	382.00	DN (Fwd)	-81.00	1155	0040

Comments: Rotation angles specified are for the head down configuration.
Scanning was restricted due to the proximity of the feedwater sparger, lower guide rod and core spray piping bracket.
*8 search unit was replaced 10-27-11 prior to 2-SC3E_4 exam.
Scan files 2-SC3E_1, 3 were voided.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 90°F **Couplant:** Water

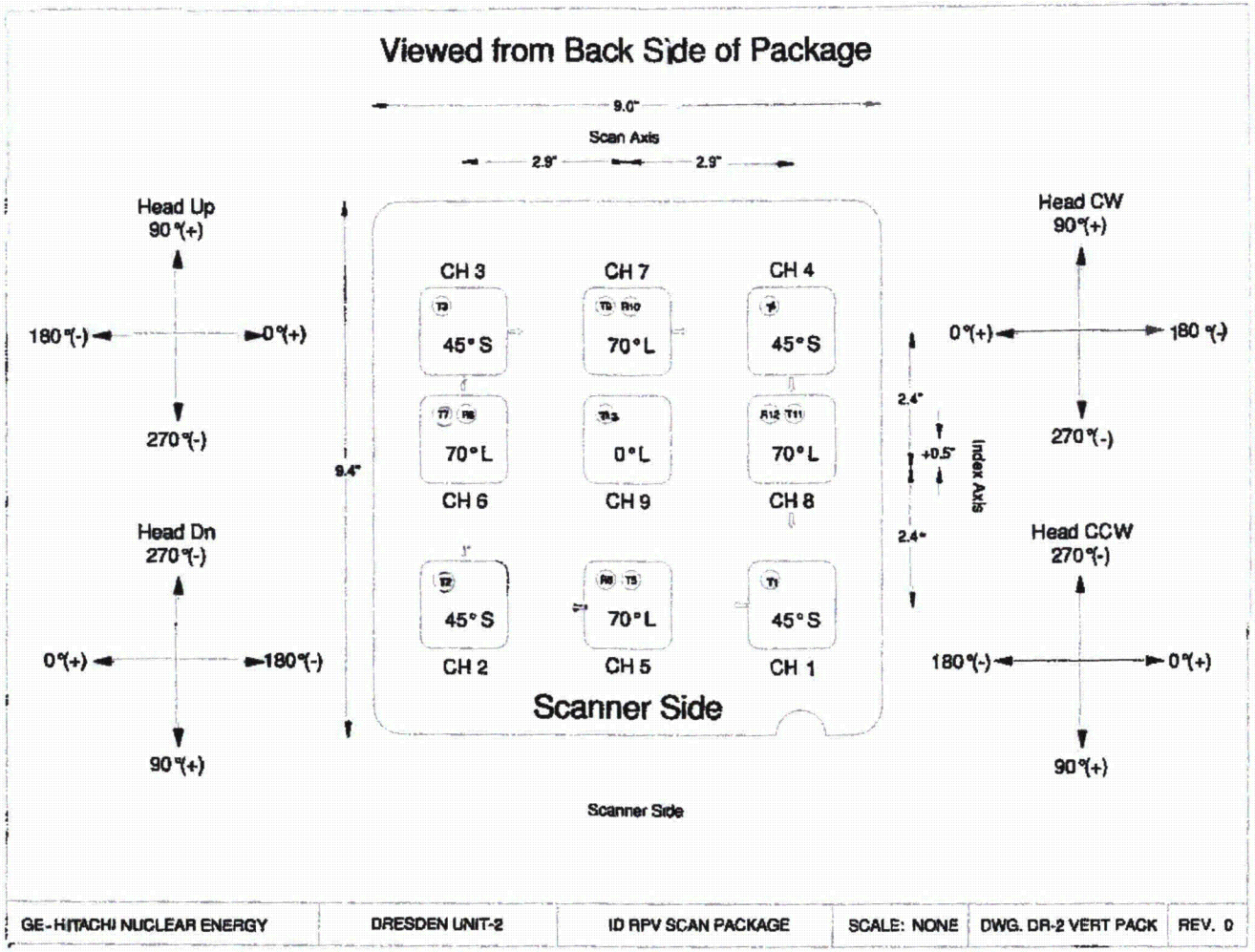
Operators: Clint Gauthier Level II
Shane Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N9	70°L	2(12 x 25)mm	2.25	90°
*8	GEIT	01V5N6	70°L	2(12 x 25)mm	2.25	90°

HITACHI

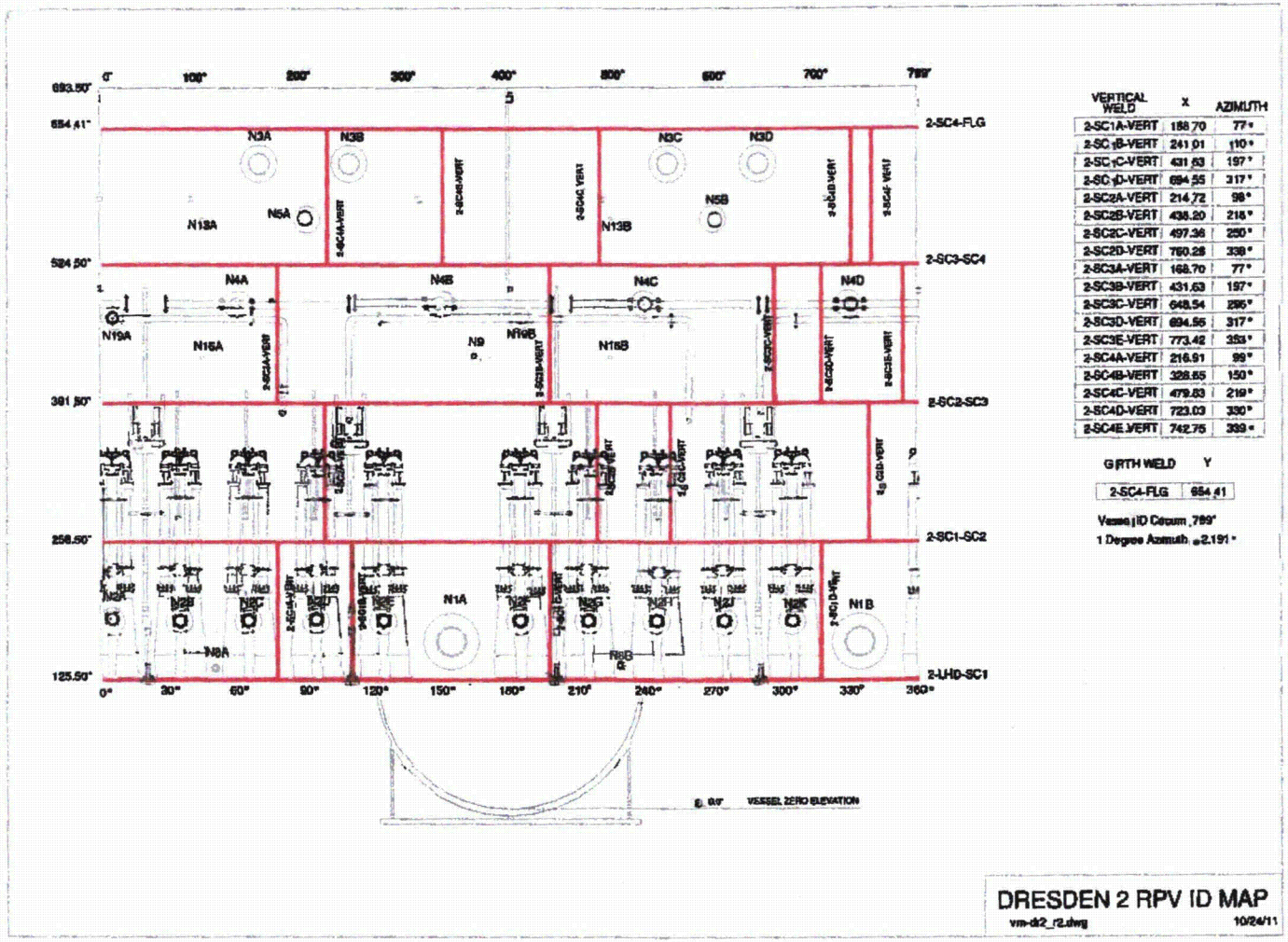
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	158.70	77°
2-SC1B-VERT	241.01	110°
2-SC1C-VERT	431.63	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	438.20	216°
2-SC2C-VERT	497.36	250°
2-SC2D-VERT	760.28	338°
2-SC3A-VERT	168.70	77°
2-SC3B-VERT	431.63	197°
2-SC3C-VERT	648.54	286°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	99°
2-SC4B-VERT	328.65	150°
2-SC4C-VERT	479.83	219°
2-SC4D-VERT	723.03	330°
2-SC4E-VERT	742.75	339°

GIRTH WELD	Y
2-SC4-FLG	654.41

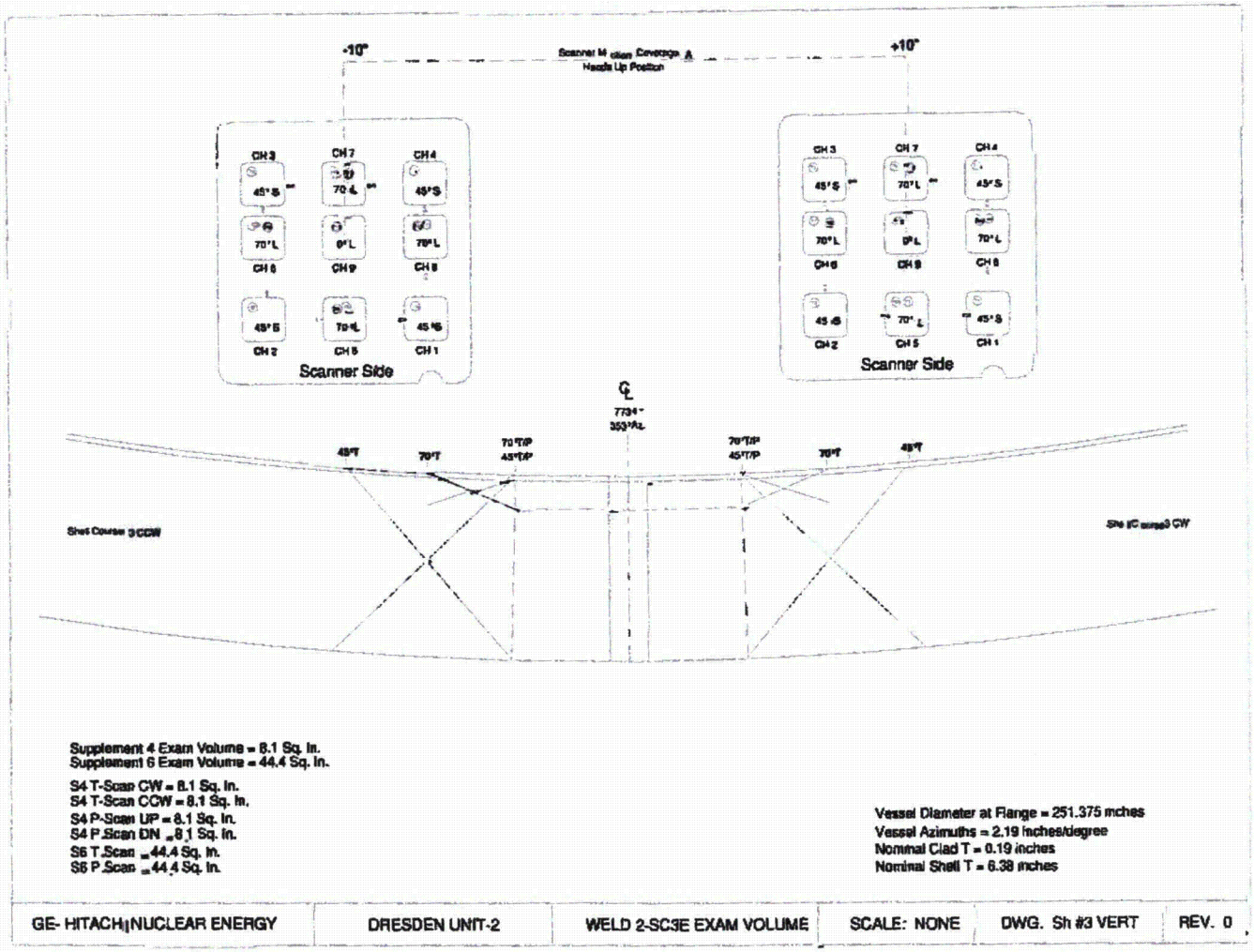
Vessel ID Datum 799"
1 Degree Azimuth = 2.191"

DRESDEN 2 RPV ID MAP
vm-d2_r2.dwg 10/24/11

Weld Location Map

HITACHI

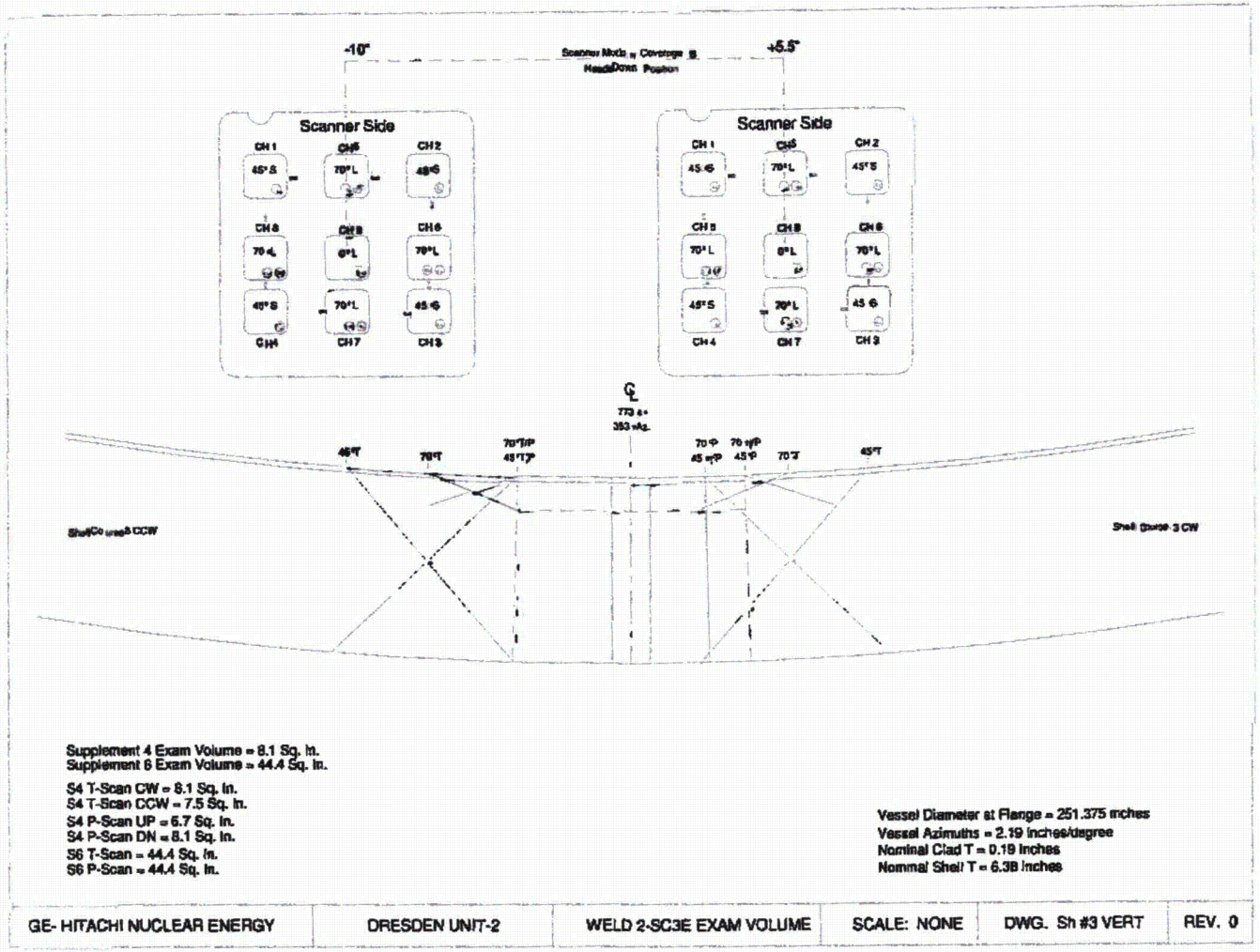
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

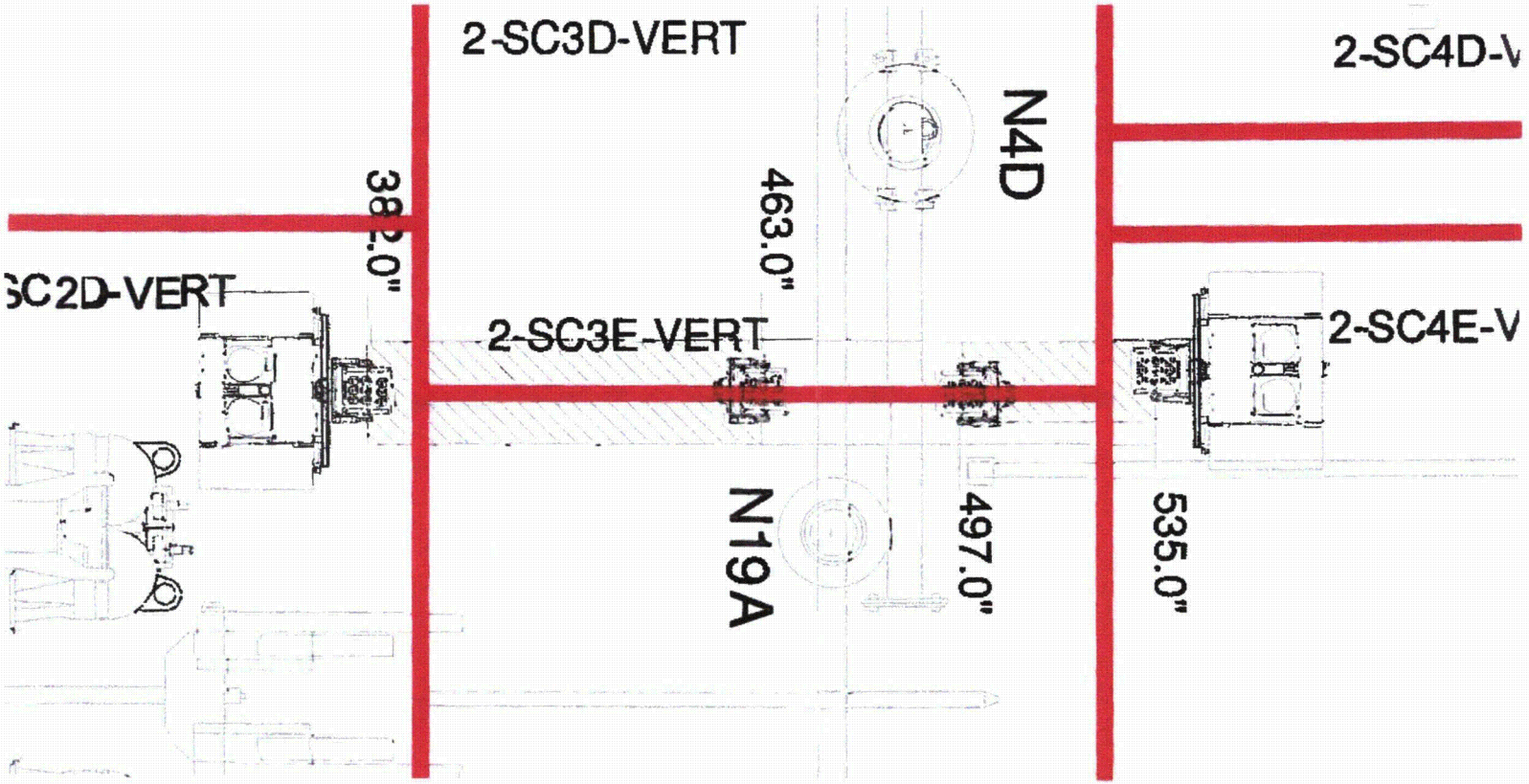
Dresden
Reference Drawings



Cross Section of Achieved Coverage "B"

HITACHI

Dresden
Reference Drawings



Scanned Patches

HITACHI Examination Summary Sheet

Report No.: D2R22-090

Site:	Dresden Unit-2	Component ID:	2/1/RPV SHELL/2-SC4C-Vert Long Seam				
Outage:	D2R22	Configuration:	Shell 4 Vert Weld				
System:	RPV	ASME Cat:	B-A	ASME Item:	B1.12	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45°S	RPV-ID-01	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S.Gauthier	II / II	10/24/11
45°S	RPV-ID-02	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S.Gauthier	II / II	10/24/11
45°S	RPV-ID-09	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S.Gauthier	II / II	10/24/11
45°S	RPV-ID-04	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S.Gauthier	II / II	10/24/11
70°L	RPV-ID-05	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S.Gauthier	II / II	10/24/11
70°L	RPV-ID-06	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S.Gauthier	II / II	10/24/11
70°L	RPV-ID-07	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S.Gauthier	II / II	10/24/11
70°L	RPV-ID-08	CAL-IIW2-043	GEH-UT-717 V3	C. Gauthier/S.Gauthier	II / II	10/24/11

Comments:
Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-717 V3, DRR-11-20 R1, using 45° Shear wave, and 70° RL search units. Automated UT scanning was performed from the vessel ID surface.

Automated scanning was performed on the left and right side of the weld simultaneously.

Automated scanning was restricted due to the proximity of the steam dryer support.

For Auto RPV ID Calibrations refer to calibration report D2R22-150.

No flaw indications were recorded.

The Auto coverage was calculated to be 85.7%.

Previous data was reviewed with no changes.

The examination results were compared with data report 001600 from D2R17 outage with ☒ No Change
These examinations were performed under Work Order: 1289140-1 ☐ Change

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

Prepared By:	Level:	Date:	Utility Review By:	Date: 11-5-11
			ANII Reviewed By:	Date: 11-7-11

HITACHI

SP2000 RPV Examination Data Sheet

Project: Dresden Unit-2, D2R22
Component: 2-SC4C-VERT

Report No.: D2R22-090

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
2-SC4C_4	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC4C_5	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC4C_6	Head Up	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~
2-SC4C_9	Head Down	NRI	NRI	NRI	NRI	NRI	NRI	NRI	NRI	~	~	~	~

Comments: The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications". RI indicates "Recordable Indications".
Scan Files 2-SC4C_1, 2, 3, 7, and 8 were voided.

Analyzed by:Chris Minor Level III 10/24/2011

HITACHI

SP2000 RPV Examination Coverage Calculation Sheet

Report No.: D2R22-090

Dresden Unit-2, D2R22
Weld 2-SC4C-VERT

Weld Length = 133. / Exam Volume = 52.5		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. in.	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
70° T-Scan CW (S4 NS)	A/B	8.1	8.1	7.7%	114	3.3%
70° T-Scan CCW (S4 NS)	A/B	8.1	8.1	7.7%	114	3.3%
45° T-Scan (S6 FV)	A/B	44.4	44.4	84.6%	114	36.2%
70° P-Scan UP (S4 NS)	A/B	8.1	8.1	7.7%	114	3.3%
70° P-Scan DN (S4 NS)	A/B	8.1	8.1	7.7%	114	3.3%
45° P-Scan (S6 FV)	A/B	44.4	44.4	84.6%	114	36.2%
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						
70° T-Scan CW (S4 NS)						
70° T-Scan CCW (S4 NS)						
45° T-Scan (S6 FV)						
70° P-Scan UP (S4 NS)						
70° P-Scan DN (S4 NS)						
45° P-Scan (S6 FV)						

% Total Composite Coverage = 85.7%

Rev. D 9/23/05

Comments: A/B - Automated scanning was not restricted.
Scanning was limited due to the proximity of the steam dryer support.

Note - Rounding methods may affect calculated values. FV-Full volume, NS-Near Surface. Weld length in inches.

HITACHI

SP2000 RPV Examination
Scan Files Data Sheet

Project: Dresden Unit-2, 2R22
Component: 2-SC4C-VERT
Report No.: D2R22-090

Procedure No.: GEH-UT-717
Revision: V. 3
DRR No.: 11-20

Scan File	Date	Drive Start (in.)	Drive Stop (in.)	Drive Direction	Drive Distance (in.)	Start Time	Stop Time
2-SC4C_4	10/22/11	508.00	552.00	UP (Rev)	44.00	2239	2303
2-SC4C_5	10/23/11	578.00	560.00	DN(Fwd)	-18.00	1506	1556
2-SC4C_6	10/23/11	562.00	521.00	DN(Fwd)	-41.00	1607	1707
2-SC4C_9	10/24/11	597.00	660.00	UP (Rev)	63.00	1319	1356

Comments: Rotation angles specified are for the head down configuration.
Scan files 2-SC4C_1, 2, 3, 7 and 8 were voided.

Thermometer S/N: Control Room **Software Rev.:** V1.1Q6
Vessel Temp. (°F): 98°F **Couplant:** Water

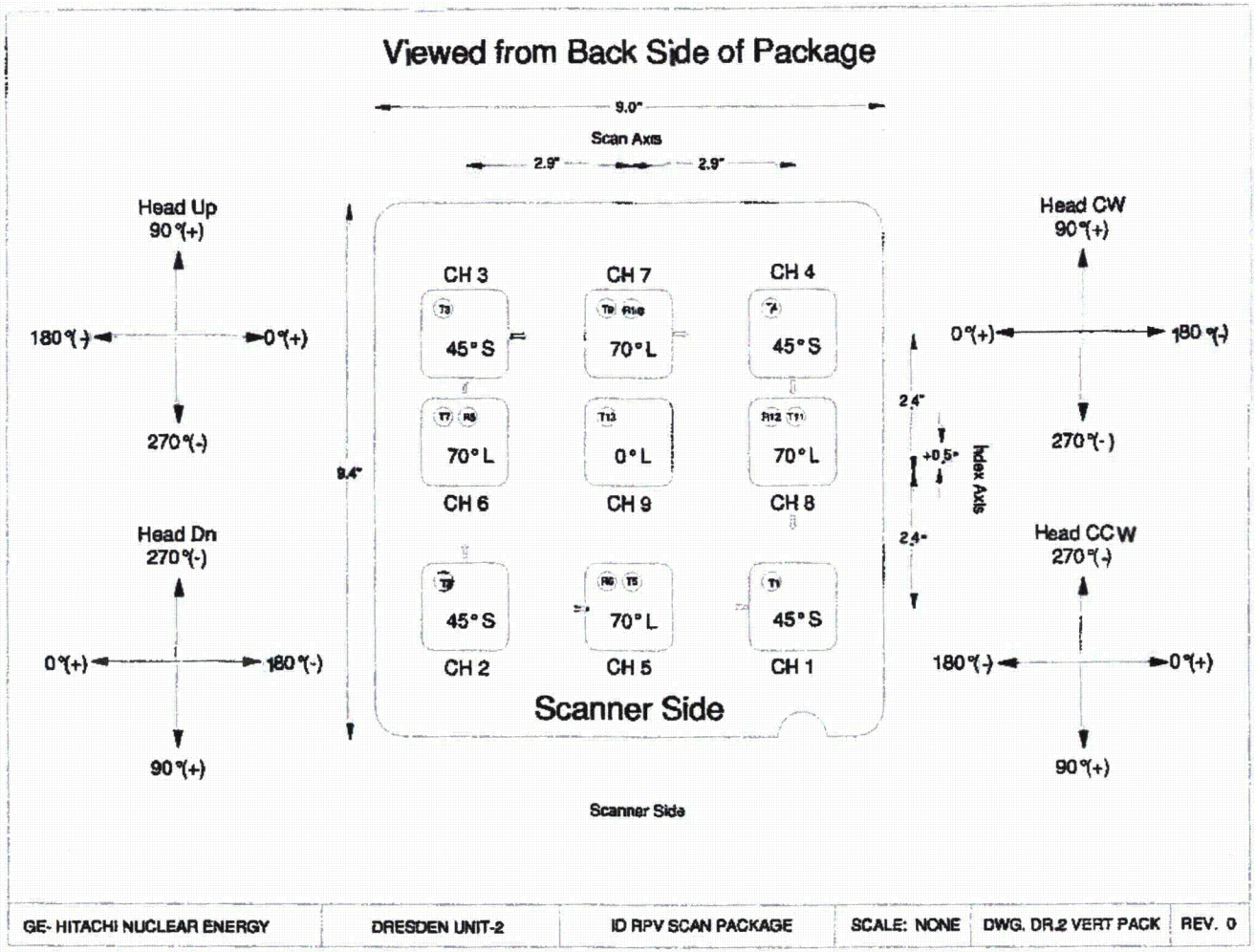
Operators: Clint Gauthier Level II
Shane Gauthier Level II

SEARCH UNIT DATA:

No.	Mfg.	S/N	Angle Mode	Size	Freq.	Rotation
1	GEIT	01V5NC	45°S	23 x 25mm	2.25	0°
2	GEIT	01V5ND	45°S	23 x 25mm	2.25	270°
3	GEIT	01V5NJ	45°S	23 x 25mm	2.25	180°
4	GEIT	01V5NH	45°S	23 x 25mm	2.25	90°
5	GEIT	01V5NB	70°L	2(12 x 25)mm	2.25	0°
6	GEIT	01V5N7	70°L	2(12 x 25)mm	2.25	270°
7	GEIT	01V5N8	70°L	2(12 x 25)mm	2.25	180°
8	GEIT	01V5N9	70°L	2(12 x 25)mm	2.25	90°

HITACHI

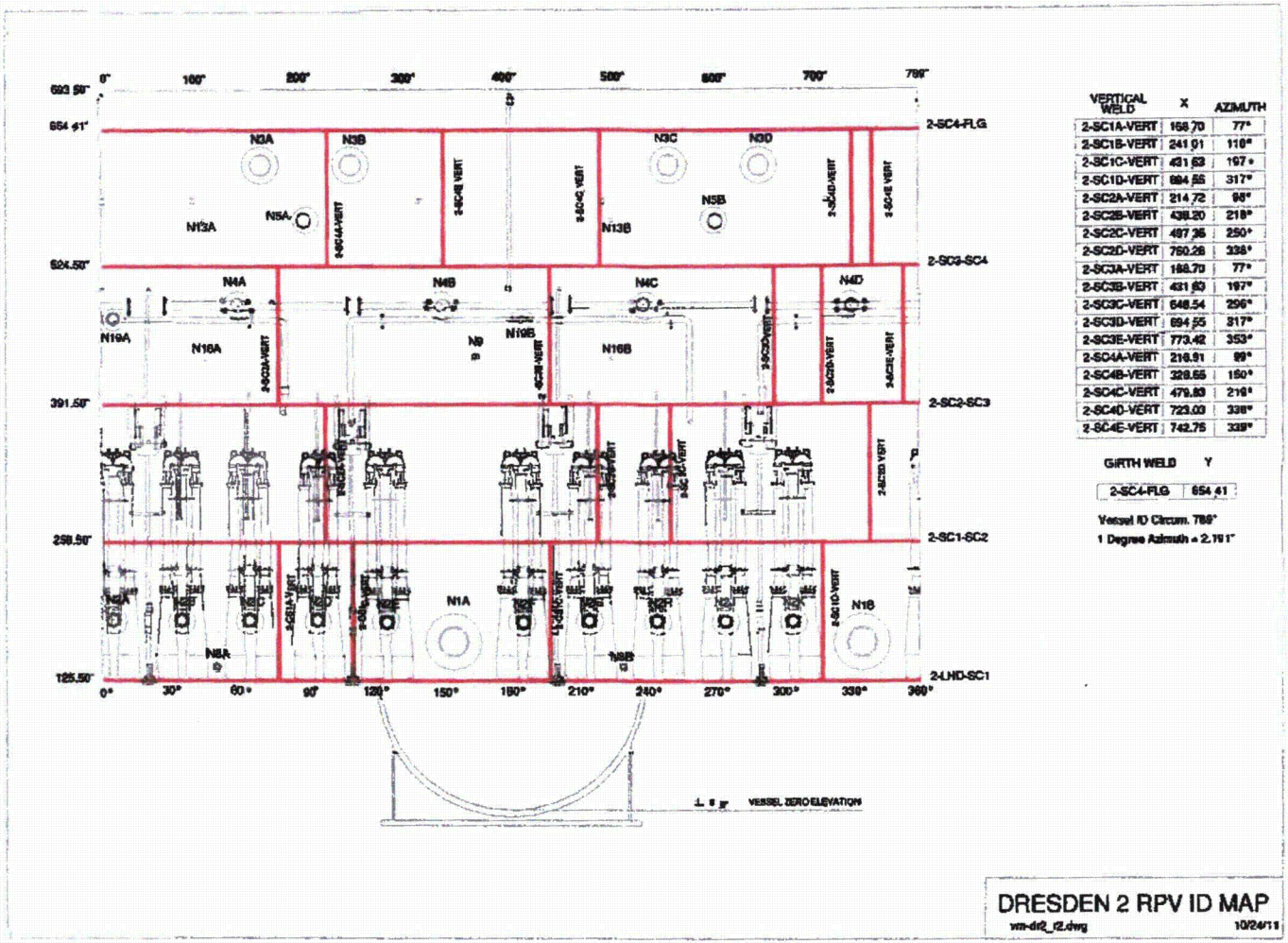
Dresden
Reference Drawings



ID RPV Vessel Scanner Package Configuration for Vertical Weld Scans

HITACHI

Dresden
Reference Drawings



VERTICAL WELD	X	AZIMUTH
2-SC1A-VERT	158.70	77°
2-SC1B-VERT	241.91	118°
2-SC1C-VERT	431.63	197°
2-SC1D-VERT	694.55	317°
2-SC2A-VERT	214.72	98°
2-SC2B-VERT	438.20	218°
2-SC2C-VERT	497.36	250°
2-SC2D-VERT	760.28	338°
2-SC3A-VERT	158.70	77°
2-SC3B-VERT	431.63	197°
2-SC3C-VERT	648.54	256°
2-SC3D-VERT	694.55	317°
2-SC3E-VERT	773.42	353°
2-SC4A-VERT	216.91	89°
2-SC4B-VERT	329.65	150°
2-SC4C-VERT	479.83	216°
2-SC4D-VERT	723.03	338°
2-SC4E-VERT	742.75	339°

GIRTH WELD	Y
2-SC4-FLG	654.41

Vessel ID Circum. 789"
1 Degree Azimuth = 2.191"

DRESDEN 2 RPV ID MAP
vm-drf2_r2.dwg 10/24/11

Weld Location Map

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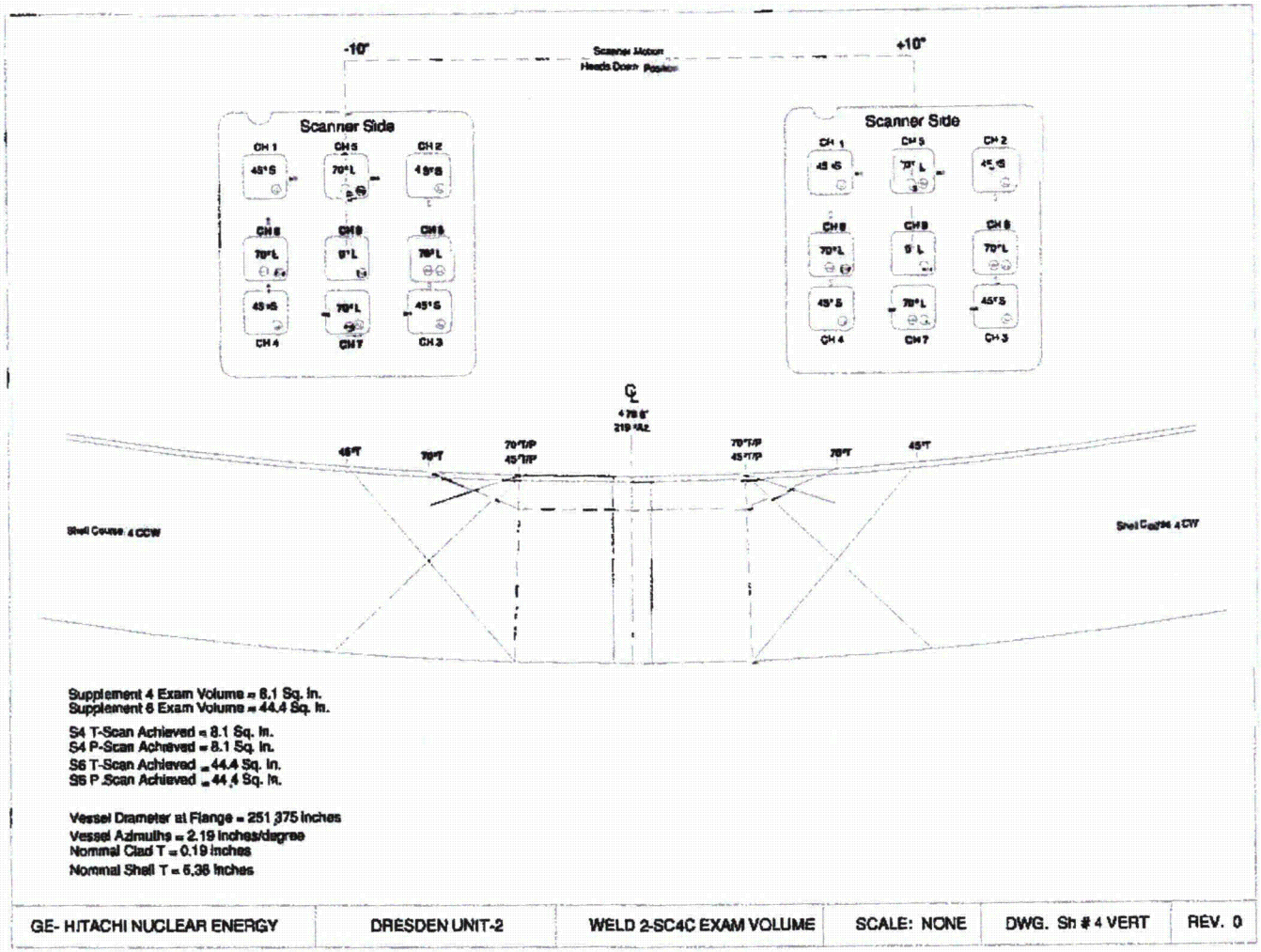
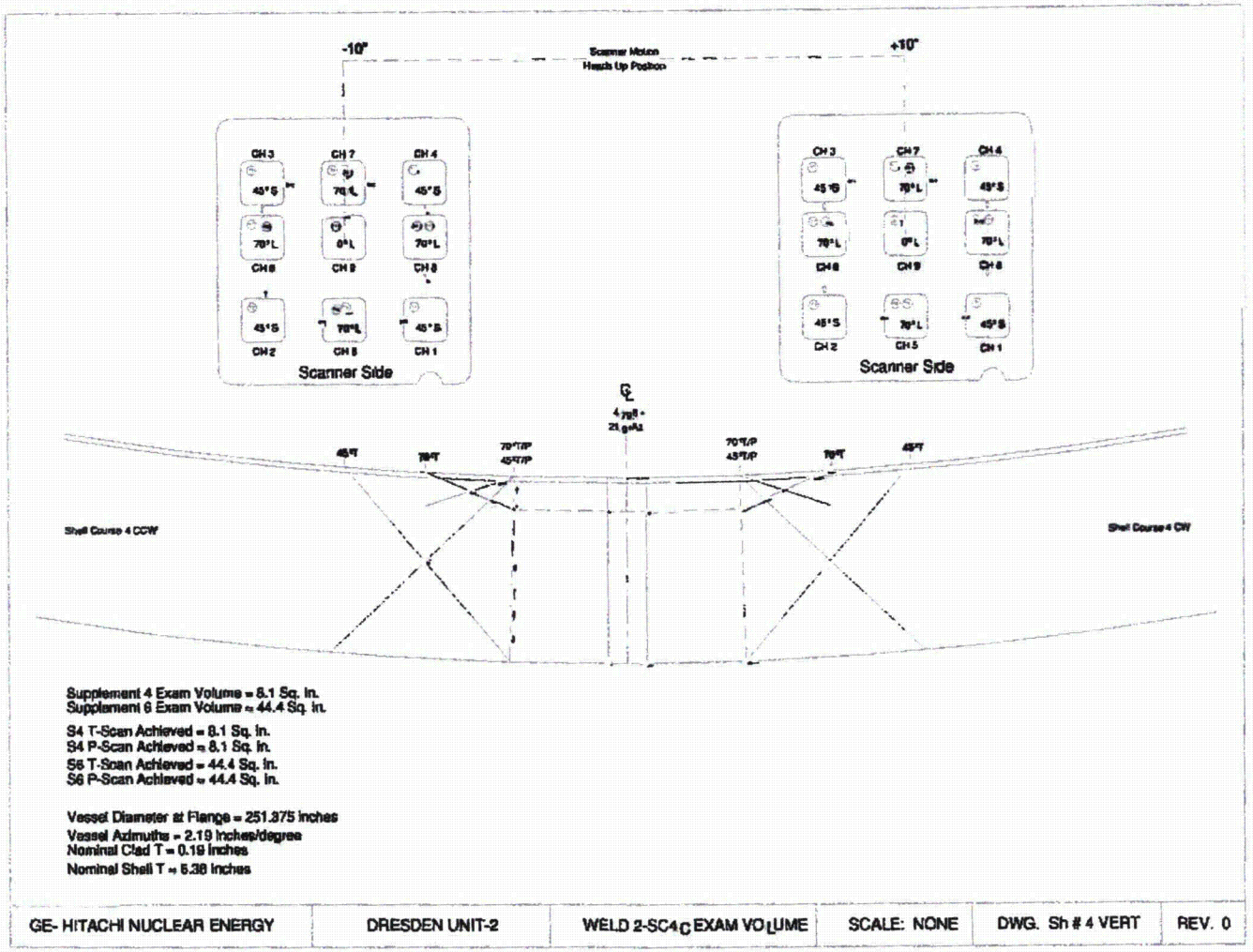
Dresden
Reference Drawings



Cross Section of Achieved Coverage "A"

HITACHI

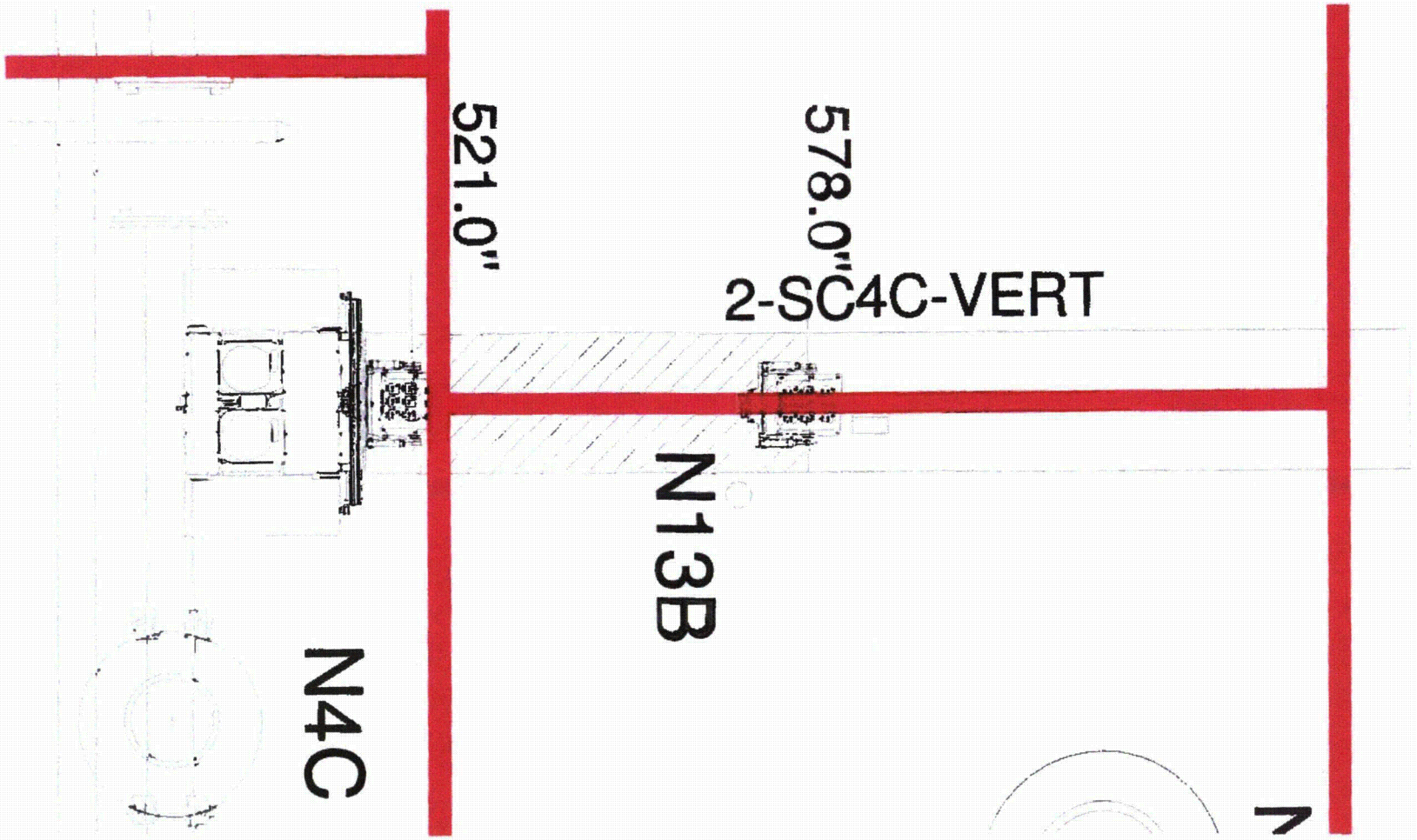
Dresden
Reference Drawings



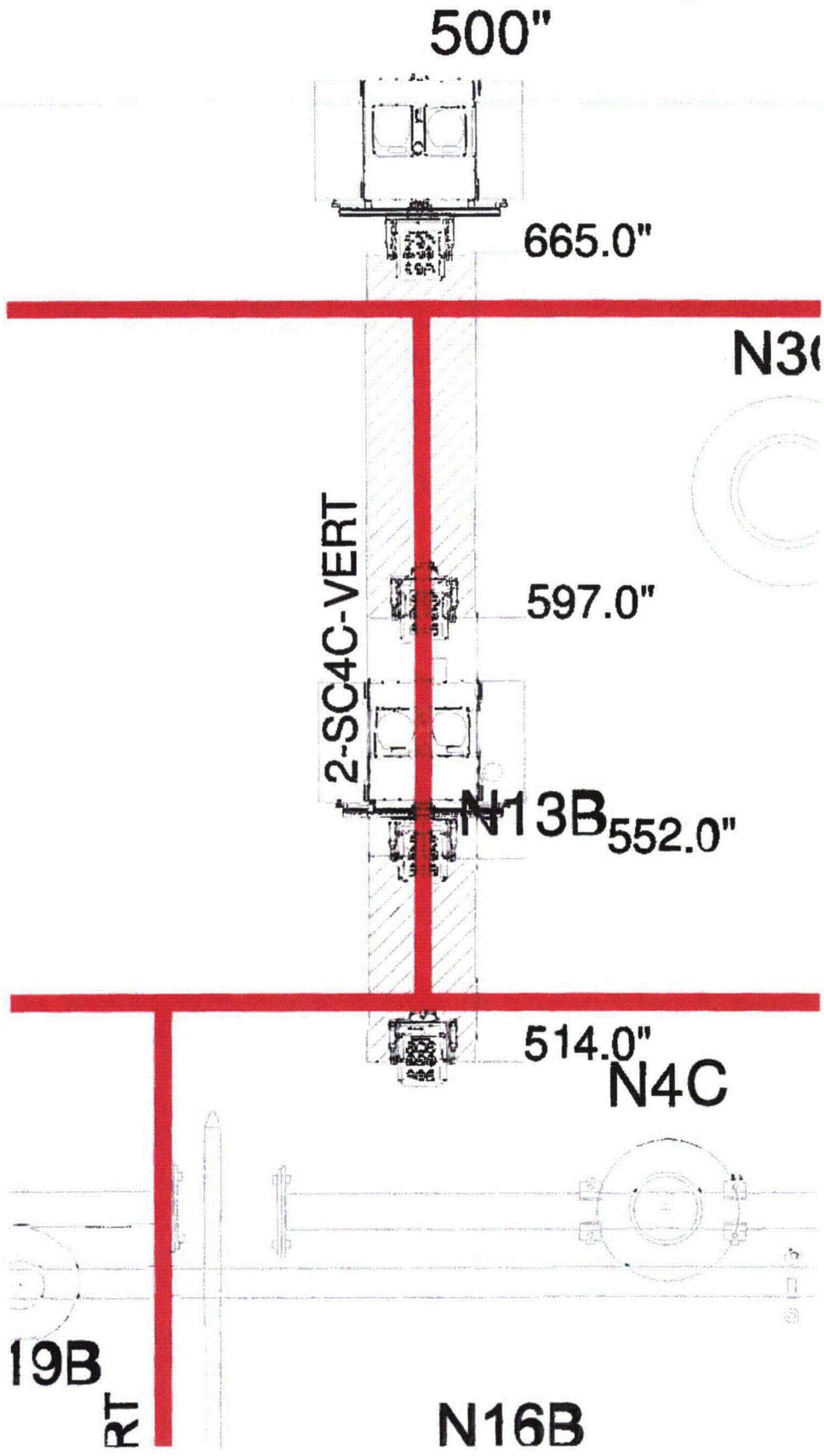
Cross Section of Achieved Coverage "B"

HITACHI

Dresden
Reference Drawings



Scanned Patches – Head Up Configuration



Dresden
Reference Drawings

HITACHI

Scanned Patches - Head Down Configuration

GE Energy Nuclear

Examination Summary Sheet

Report No.: N19A-2

Site:	Dresden Unit 2	Component ID:	2/1/RPV SHELL/N19A-2				
Outage:	D2R20	Configuration:	Nozz-Shell / N/V IRS				
System:	Core Spray	ASME Cat:	B-D	ASME Item:	B3.90	Aug. Requirements:	N/A

Exams Performed:	Calibration Sheet(s):	Calibration Block:	Procedure:	Examination Personnel:	NDE Level:	Date:
45/S	D-COD-001 thru 012	99978AQC	GE-UT-716 V1	C. Gauthier	LV II	11/03/07
60/L			GE-UT-718 V0	J. Guillote	LV II	
70/L				M. Hilborn	LV II	
60/S						
60/L	D-037, D-038	99978AQC	GE-UT-300 V10	C. Gauthier	LV II	11/04/07
60/S	D-039		GE-UT-311 V15	C. Gauthier	LV II	11/04/07

Comments:

Ultrasonic examination results were acceptable to the requirements of ASME B&PV Code Section XI, 1995 Edition with the 1996 Addenda as modified by the PDI program description and the Federal Register, Part II, Nuclear Regulatory Commission, 10 CFR Part 50 for Category B-D Reactor Pressure Vessel (RPV) Nozzle-to-Vessel Weld.

Automated transverse and parallel scans were performed in accordance with procedure GE-UT-716, V1, using 45° Shear wave, 60° RL, and 70° RL search units, supplemental 0° L-Wave scans were also performed. Supplemental Manual exams were performed in accordance with procedure GE-UT-300 V10, using 60° RL search units

Automated 60° Shear Inner Radius Nozzle to Vessel examinations were performed in accordance with procedure GE-UT-718 V0, DRR No. 07-07 and validated by modeling; Reference, "The General Electric Dresden Nozzle Modeling Document". Supplemental Manual 60° Shear Inner Radius Nozzle to Vessel examinations were performed in accordance with procedure GE-UT-311 V15 and validated by modeling; Reference, "The General Electric Dresden Nozzle Modeling Document".

Automated UT scanning was performed from the vessel OD surface and was restricted due to the nozzle configuration and insulation support interference. Manual UT scanning was performed from the vessel OD surface and was restricted due to the nozzle configuration.

Supplemental manual exams were performed in the restricted area of the insulation support.

The SP 2000 OD automated UT system 0 reference is located at TDC of nozzle.

For SP 2000 automated calibrations refer to report CAL-01.

No relevant indications were recorded.

Previous examination data was reviewed, with no significant changes noted.
Automated and Manual UT Composite Coverage = 47.7%.

The examination results were compared with data report N19A-2 from 1998 outage with ☒ No Change
These examinations were performed under Work Order: 871143-06 ☐ Change

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

Prepared By: _____ Level: III Date: 11-5-07

Utility Review By: _____ Date: 11-8-07

ANII Reviewed By: _____ Date: 11/11/07

GE Hitachi Nuclear Energy

SP2000
Examination Data Sheet

Project : Dresden Unit-2
Component : Feedwater Nozz-Shell

Summary No.: N19A-2
Exam Data Sheet: N19A-2-01

File	Scan Type	Ch. 1	Ch. 2	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch.10	Ch.11	Ch.12
n19a_tl_01	TL	NRI	NRI	NRI	NRI	~	~	~	~	~	~	~	~
n19a_tl_02	TL	NRI	NRI	NRI	NRI	~	~	~	~	~	~	~	~
n19a_p1_01	P	NRI	NRI	NRI	NRI	~	~	~	~	~	~	~	~
n19a_n/z1_01	N/V/Z1	NRI	NRI	NRI	NRI	~	~	~	~	~	~	~	~

Comments: Analyzed by Brad Dummer Level III 11/04/07 BD

The symbol ~ indicates "No entry required" or "Not Applicable". NRI indicates "No Recordable Indications".

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GE ENERGY, NUCLEAR

Ultrasonic Calibration and Examination Record RPV Components

Site/Unit: Dresden / 2 | Data Report Number: N19A-2 NOZ-RPV | Linearity Sheet: L-004
Outage: D2R20 | Data Sheet Number: D-037
Procedure: GE-UT-300 | Rev.: 10 | DRR: N/A

Calibration Block: 99978AQC

CS	Flat	7.0"
Material	Size	Thickness

Initial Cal: 2030 | Exam Start: 21:30
Cal Check: N/A | Exam End: 22:43
Cal Check: N/A | Ultragel II (Couplant) | 02125 (Batch)
Final Cal: 0103

255152	75° F	75° F
Thermometer	Initial Cal Temp.	Final Cal Temp:

DAC Construction

Reflector	Hole Depth	Gain @ 1X	Max Amp	"W" Dim.	Sweep	Screen Div.
ID Notch	7.0	1X	80	11.79	13.62	6.8
		1X				
		1X				
		1X				
		1X				

DAC 1X= 70.1
Sweep 0-10 = 10 Depth
Note: N/A dB difference between 3/8 and 5/8 Vee

Exam Data for Weld: 2/1/RPV SHELL/N19A-2
NOZ-RPV (Configuration:)

OD	98° F
Exam Surface:	Component Temperature

Weld Examination Area:	Exam Access	Scan dB	Recordable Indications	Exam Angle
Plate	T&P	60	NRI	60

Search Unit Data

Sigma	22BC-02005	2(1.1x.62) / Rect.
Manufacturer:	Serial Number:	Size / Shape:

0.50"	60°	60°
Incident Point:	Nominal Angle:	Measured Angle:

3.0 MHz	SDC-3	RL
Frequency:	Model:	Mode:

Search Unit Cable

RG-174	9'	0
Cable Type:	Length:	Connectors:

Instrument Settings

Panametrics / Epoch 4 (Manufacturer/Model:) | 031572811 (Serial Number:)

7.655 µs	0.2245 in./µsec.	0.8 - 3.0 MHz
Delay/Zero:	Velocity:	Narrowband Filter:

Auto	Fullwave	20.0 in.	Sq. / Med
Rep Rate:	Rectification:	Range:	Pulser:

400 Ohms	0%	3.03 MHz	Dual
Damping:	Reject:	Frequency:	Mode:

Off:	Off:	Off:	Off:
DAC:	TVG:	CSC:	DGS:

Calibration Verification

Field Simulator Block S/N: N/A

Reflector	N/A	N/A	N/A
Amplitude	N/A	N/A	N/A
Gain (dB)	N/A	N/A	N/A
Sweep (SD)	N/A	N/A	N/A

Acceptable Linearity performed: 10/19/2007

Comments: Cal/Exam Date is the date of initial calibration. See coverage sheet for limitations. 0% Reject = Off.
Calibration for full volume examination. Calibration for nozzle to vessel weld (N/V).
Exams performed to maintain a minimum 10-20% FSH clad roll.
Exam performed from 65° to 268° clockwise and counter-clockwise in automated limited area.

CB	Clint Gauthier	II	11/4/2007
Initials:	Examiner	Level:	Cal/Exam Date:

	N/A	N/A	
Initials:	Examiner	Level:	

GE Reviewed By: XII 11-5-07
Level: Date:

Utility Reviewed By: 11-9-07
Date:

ANI Reviewed By: 11/11/07
Date:

GE ENERGY, NUCLEAR

Ultrasonic Calibration and Examination Record
RPV Components

Site/Unit: Dresden / 2 | Data Report Number: N19A-2 NOZ-RPV | Linearity Sheet: L-004
Outage: D2R20 | Data Sheet Number: D-038
Procedure: GE-UT-300 | Rev.: 10 | DRR: N/A

Calibration Block: CAL-IIW2-047

CS	Flat	4.0"
Material	Size	Thickness

Initial Cal: 2025 | Exam Start: 21:10
Cal Check: N/A | Exam End: 22:43
Cal Check: N/A | Ultragel II (Couplant:) | 02125 (Batch)
Final Cal: 0055

255152	75° F	75° F
Thermometer	Initial Cal Temp.	Final Cal Temp:

DAC Construction

Reflector	Hole Depth	Gain @ 1X	Max Amp	"W" Dim.	Sweep	Screen Div.
SDH	.60	1X	80	1.17	1.17	3.4
		1X				
		1X				
		1X				
		1X				

DAC 1X= 55.1
Sweep 0-10 = 2 Depth
Note: N/A dB difference between 3/8 and 5/8 Vee

Exam Data for Weld: 2/1/RPV SHELL/N19A-2
NOZ-RPV
Configuration:

OD	98° F
Exam Surface:	Component Temperature

Weld Examination Area:	Exam Access	Scan dB	Recordable Indications	Exam Angle
Plate	T&P	69.1	NRI	60

Search Unit Data

Sigma	22BC-02005	2(1.1x.62) / Rect.
Manufacturer:	Serial Number:	Size / Shape:

0.50"	60°	60°
Incident Point:	Nominal Angle:	Measured Angle:

3.0 MHz	SDC-3	RL
Frequency:	Model:	Mode:

Search Unit Cable

RG-174	9'	0
Cable Type:	Length:	Connectors:

Instrument Settings

Panametrics / Epoch 4			031572811
Manufacturer/Model:			Serial Number:
7.655 µs	0.2245 in./µsec.		0.8 - 3.0 MHz
Delay/Zero:	Velocity:		Narrowband Filter:
Auto	Fullwave	4.0 in.	Sq. / Med
Rep Rate:	Rectification:	Range:	Pulser:
400 Ohms	0%	3.03 MHz	Dual
Damping:	Reject:	Frequency:	Mode:
Off:	Off:	Off:	Off:
DAC:	TVG:	CSC:	DGS:

Calibration Verification

Field Simulator Block S/N: N/A

Reflector	N/A	N/A	N/A
Amplitude	N/A	N/A	N/A
Gain (dB)	N/A	N/A	N/A
Sweep (SD)	N/A	N/A	N/A

Acceptable Linearity performed: 10/19/2007

Comments: Cal/Exam Date is the date of initial calibration. See coverage sheet for limitations. 0% Reject = Off.
Calibration for near surface examination. Calibration for nozzle to vessel weld (N/V).
Exams performed a minimum of 14 dB above reference.
Exam performed from 65° to 268° clockwise and counter-clockwise in automated limited area.

Clint Gauthier	II	11/4/2007		11-7-07
Initials: Examiner	Level:	Cal/Exam Date:	Utility Reviewed By:	Date:
CD N/A	N/A			
Initials: Examiner	Level:		ANII Reviewed By:	11/11/07 Date:
GE Reviewed By:	Level:	11-5-07 Date:		

GE ENERGY, NUCLEAR

Ultrasonic Calibration and Examination Record
Inner Radius Examinations

Site/Unit: Dresden / 2
Outage: D2R20
Data Report Number: N19A-2
Data Sheet Number: D-039
Linearity Sheet: L-004
Procedure: GE-UT-311
Rev: 15
DRR: N/A

Calibration Data for Block: 99978AQC

CS	Flat	7.0"
Material	Site	Thickness

Initial Cal: 2037 — Exam Start: 2110
Cal Check: N/A — Exam End: 2243
Cal Check: N/A — Ultragel II Couplant: — 02125 Batch
Final Cal: 0109

255152	75° F	75° F
Thermometer	Initial Cal Temp.	Final Cal Temp:

DAC Construction

Side	Depth	Gain @ 1X	Max Amp	"W" Dim.	Sweep	Screen Div.
ID	7.0	1X	80	11.63	13.42	6.8
		1X				

DAC @ 1X= 45.7

Sweep 0-10 = 20" Metal Path

Acceptable Linearity performed: 10/19/2007

Search Unit Data

KBA	001323	.50" x 1.0"/Rect.
Manufacturer:	Serial No.:	Size/Shape:
0.65 in.	60°	60°
Incident Point:	Nominal Angle:	Measured Angle:
1.0 MHz	113-291-600	Shear
Frequency:	Model:	Mode:

Search Unit Cable

RG-174	9'	0
Cable Type:	Length:	Connectors:

Instrument Settings

Panametrics / Epoch 4	031572811
Manufacturer/Model:	Serial No.:

15.62 µs	0.1277 in /µsec	0.8 - 3.0 MHz
Zero:	Velocity:	Narrowband Filter:

Auto	Fullwave	20.0 in.	Sq. / Med
Rep Rate:	Rectification:	Range:	Pulser/Energy
400 Ohms	0%	1.0 MHz	Pulse/Echo
Damping:	Reject:	Frequency:	Mode:
Off:	Off:	Off:	Off:
DAC:	TVG:	CSC:	DGS:

Exam Data for Component: 2/1/RPV SHELL/N19A-1

N/V / Zone 1
Configuration:

OD	98° F
Exam Surface:	Component Temp.

Examination Area	Exam Angle	Rotation Angle	Wedge S/N	Scan dB	Recordable Indications
0" - 7"	60°	±15°-55°	N/A	56	NRI

Calibration Verification

Field Simulator Block S/N: N/A

Reflector	N/A	N/A	N/A
Amplitude	N/A	N/A	N/A
Gain (dB)	N/A	N/A	N/A
Sweep (SD)	N/A	N/A	N/A

Comments: Cal/Exam Date is the date of initial calibration. See coverage sheet for limitations. 0% Reject = Off.

Calibration for Zone 1.
Calibration for nozzle to vessel weld (NV-IRS)
Calibration for nozzle inner radius exam.
Exams performed to maintain 20-30% FSH clad roll.
Exam performed from 65° to 268° clockwise and counter-clockwise in automated limited area.

CB Clint Gauthier	II	11/4/2007		11-7-07
Initials: Examiner:	Level:	Cal/Exam Date:	Utility Reviewed By:	Date:
	III	11-5-07		11/11/07
GE Reviewed By:	Level:	Date:	ANII Reviewed By:	Date:

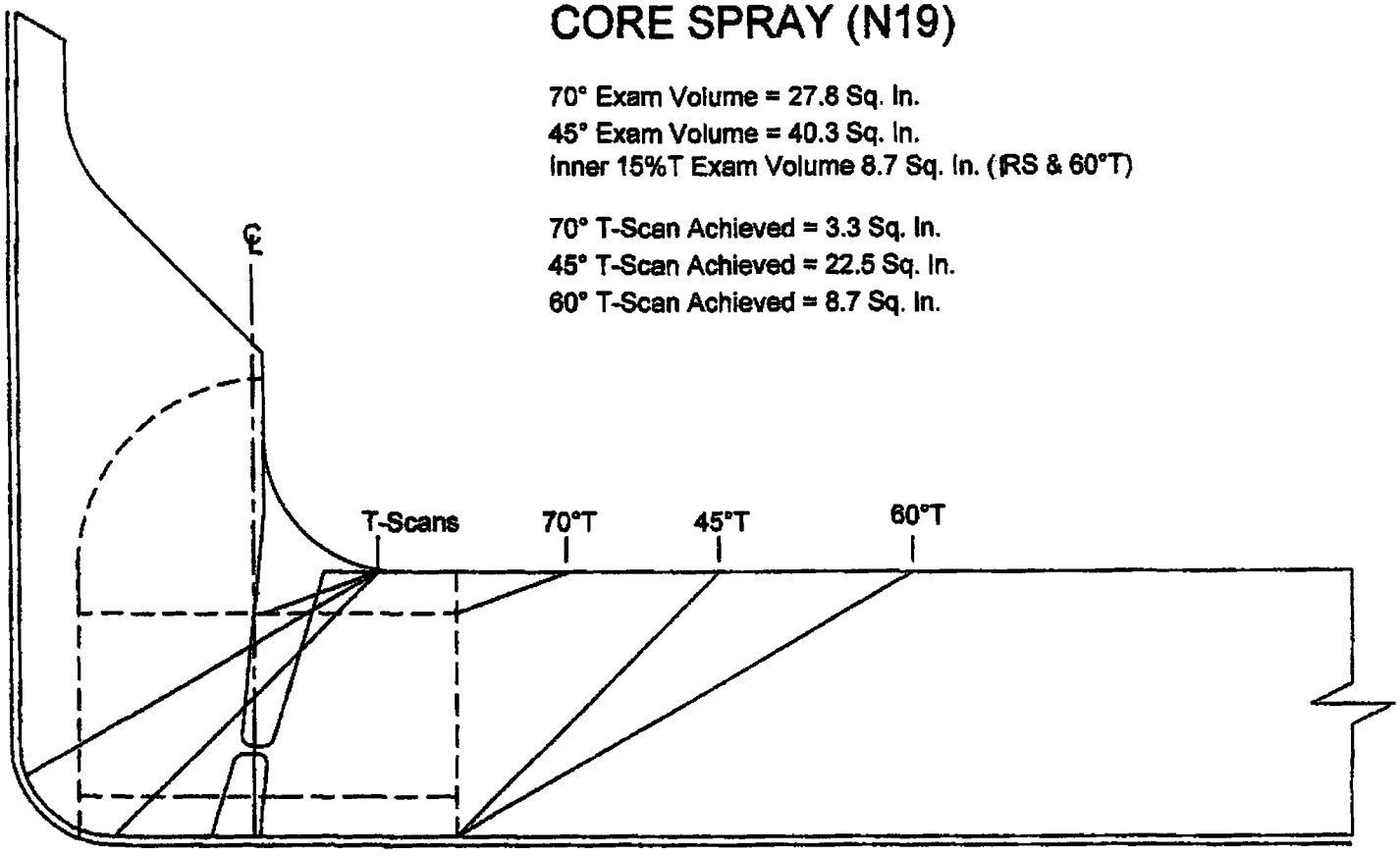
Page 5 of 15

Dresden 2

CORE SPRAY (N19)

70° Exam Volume = 27.8 Sq. In.
45° Exam Volume = 40.3 Sq. In.
Inner 15%T Exam Volume 8.7 Sq. In. (IRS & 60°T)

70° T-Scan Achieved = 3.3 Sq. In.
45° T-Scan Achieved = 22.5 Sq. In.
60° T-Scan Achieved = 8.7 Sq. In.

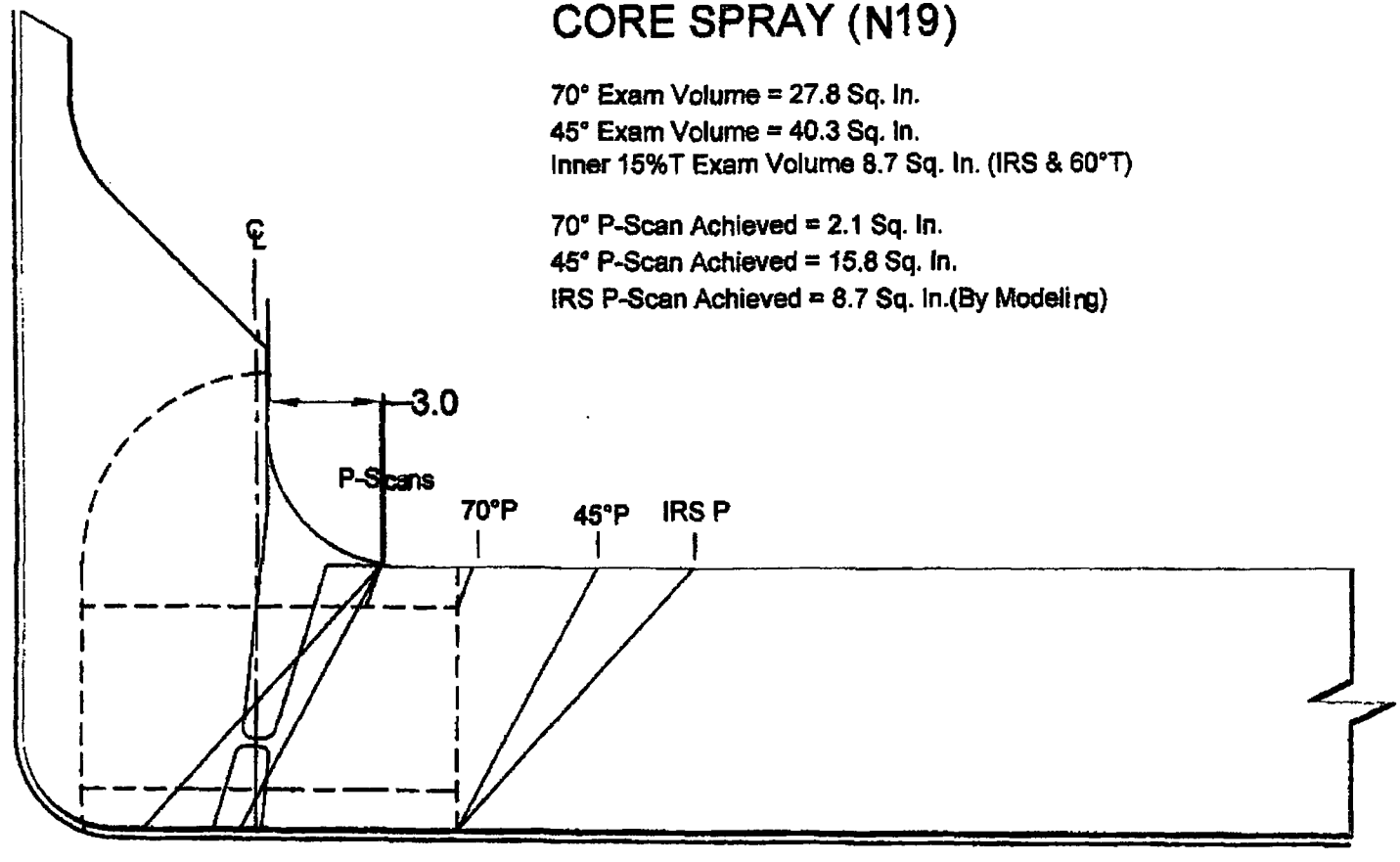


Dresden 2

CORE SPRAY (N19)

70° Exam Volume = 27.8 Sq. In.
45° Exam Volume = 40.3 Sq. In.
Inner 15%T Exam Volume 8.7 Sq. In. (IRS & 60°T)

70° P-Scan Achieved = 2.1 Sq. In.
45° P-Scan Achieved = 15.8 Sq. In.
IRS P-Scan Achieved = 8.7 Sq. In.(By Modeling)



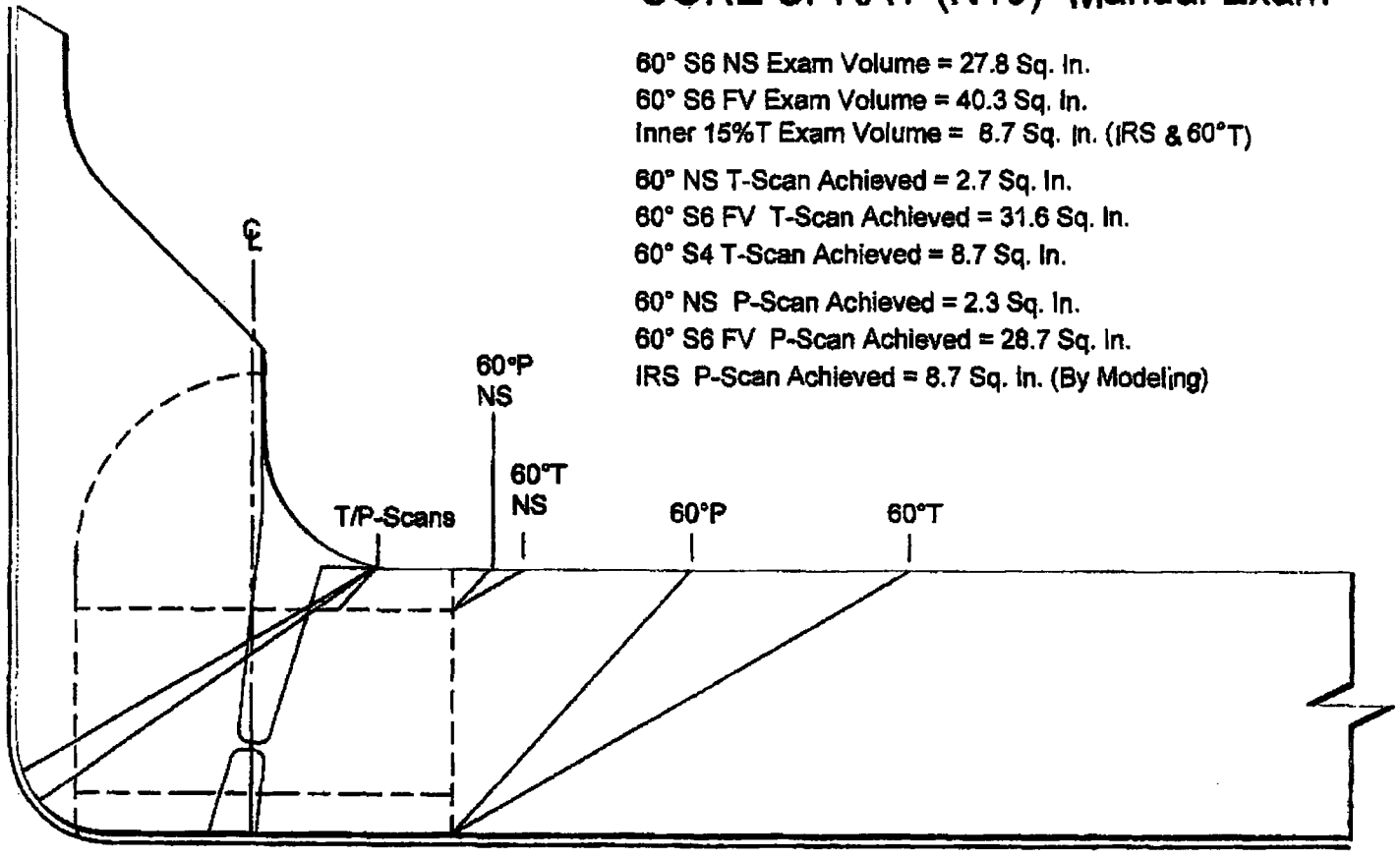
Dresden 2

CORE SPRAY (N19) Manual Exam

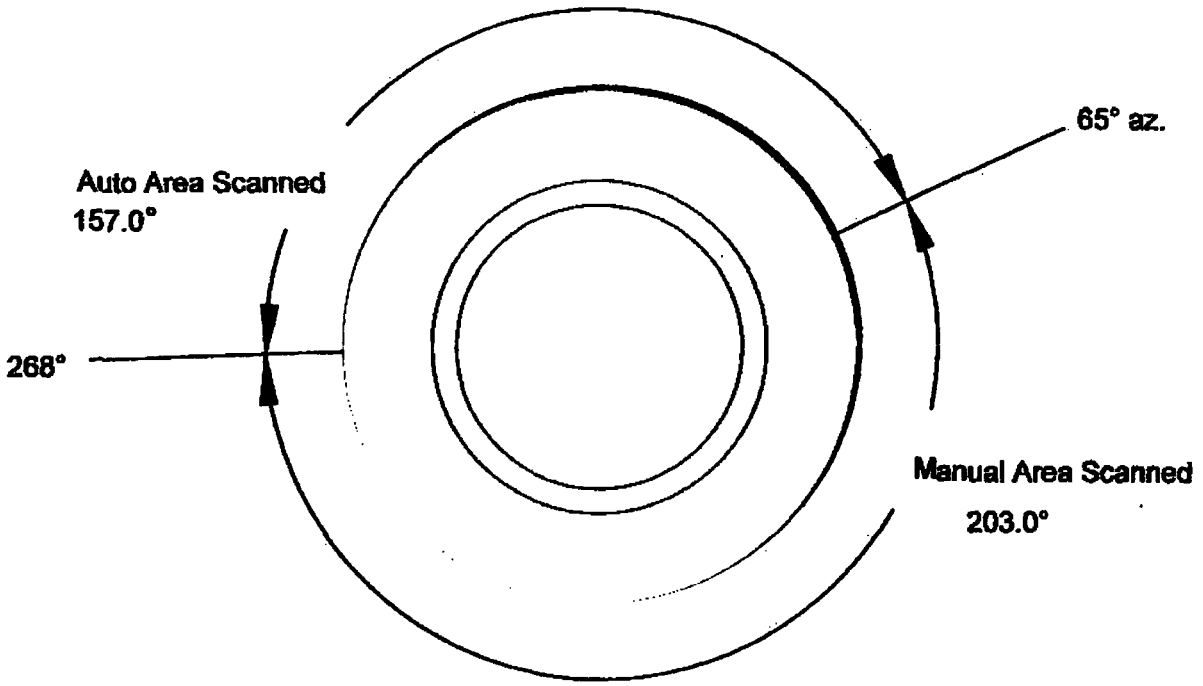
60° S6 NS Exam Volume = 27.8 Sq. In.
60° S6 FV Exam Volume = 40.3 Sq. In.
Inner 15%T Exam Volume = 8.7 Sq. In. (IRS & 60°T)

60° NS T-Scan Achieved = 2.7 Sq. In.
60° S6 FV T-Scan Achieved = 31.6 Sq. In.
60° S4 T-Scan Achieved = 8.7 Sq. In.

60° NS P-Scan Achieved = 2.3 Sq. In.
60° S6 FV P-Scan Achieved = 28.7 Sq. In.
IRS P-Scan Achieved = 8.7 Sq. In. (By Modeling)



Dresden 2
Core Spray
N19A Nozzle



N19A nozzle, Automated UT Nozz-Shell and N/V scans, restricted due to insulation support.

GE Hitachi Nuclear Energy

Reactor Pressure Vessel Coverage Calculation Sheet

Dresden Unit 2 / D2R20
N19A-2 Core Spray (Noz-Shell)
Fall / 2007

Weld Length = 360. Exam Volume = 76.8		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. in.	Area Scanned Automated	Percent of Area Automated	Weld Length Automated	Percent Automated
60° T-Scan (S4 UC)	A	8.7	8.7	11.3%	157	2.5%
45° T-Scan (S6 FV)	A	40.3	22.5	29.3%	157	6.4%
70° T-Scan (S6 NS)	A	27.8	3.3	4.3%	157	0.9%
IRS P-Scan (S4 UC)	A*	8.7	8.7	11.3%	157	2.5%
45° P-Scan (S6 FV)	A	40.3	15.8	20.6%	157	4.5%
70° P-Scan (S6 NS)	A	27.8	2.1	2.7%	157	0.6%
60° T-Scan (S4 UC)			0		0	
45° T-Scan (S6 FV)			0		0	
70° T-Scan (S6 NS)			0		0	
IRS P-Scan (S4 UC)			0		0	
45° P-Scan (S6 FV)			0		0	
70° P-Scan (S6 NS)			0		0	
60° T-Scan (S4 UC)			0		0	
45° T-Scan (S6 FV)			0		0	
70° T-Scan (S6 NS)			0		0	
IRS P-Scan (S4 UC)			0		0	
45° P-Scan (S6 FV)			0		0	
70° P-Scan (S6 NS)			0		0	
				% Total Composite Coverage =		17.3%

Rev. C 9/23/08

Comments: A - Automated scanning was restricted due to insulation support, manual pick-ups required.

A* - Single side access, 50% credit of the achieved Supplement 4 T-scan volume claimed.
Note - Rounding methods may affect calculated values. UC-Underclad, FV-Full volume, NS-Near Surface. Weld length in degrees.

GE Hitachi Nuclear Energy

Reactor Pressure Vessel Coverage Calculation Sheet

Dresden Unit 2 / D2R20
N19A-2 Core Spray (Noz-Shell)
Fall / 2007

Weld Length = 360. Exam Volume = 76.8		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Manual	Percent of Area Manual	Weld Length Manual	Percent Manual
60° T-Scan (S4 UC)	A	8.7	8.7	11.3%	203	3.2%
60° T-Scan (S6 FV)	A	40.3	31.6	41.1%	203	11.6%
60° T-Scan (S6 NS)	A	27.8	2.7	3.5%	203	1.0%
IRS P-Scan (S4 UC)	A	8.7	8.7	11.3%	203	3.2%
60° P-Scan (S6 FV)	A	40.3	28.7	37.4%	203	10.5%
60° P-Scan (S6 NS)	A	27.8	2.3	3.0%	203	0.8%
60° T-Scan (S4 UC)						
60° T-Scan (S6 FV)						
60° T-Scan (S6 NS)						
IRS P-Scan (S4 UC)						
60° P-Scan (S6 FV)						
60° P-Scan (S6 NS)						
60° T-Scan (S4 UC)						
60° T-Scan (S6 FV)						
60° T-Scan (S6 NS)						
IRS P-Scan (S4 UC)						
60° P-Scan (S6 FV)						
60° P-Scan (S6 NS)						
				% Total Composite Coverage =		30.4%

Rev. 0 9/23/09

Comments: A - Supplemental manual exam scanning was not restricted.

A* - Single side access, 50% credit of the achieved Supplement 4 T-scan volume claimed.
Note - Rounding methods may affect calculated values. UC-Underclad, FV-Full volume, NS-Near Surface. Weld length in inches or degrees.

GE Hitachi Nuclear Energy

SP2000 - RPV OD
Scan Plan for Nozzle Welds

Dresden Unit 2 / D2R20

Component: N19 Core Spray Nozzle N19A-2
ASME Volume OD Radius: 21.0
Description: Nozz Shell
Weld Centerline Radius: 10.3
Nominal Thickness: 6.4

SP2000 Quad Package - Radial TL- Scan Table - GE-UT-716

Channel	Probe ID	Cable (Jack)	Skew		Scan Offset	Index		Freq. (MHz)
			Entry	Fixture		Entry	Fixture	
1-0°L	~	1 (P1)	180°	0°	0.0	-12.3°	-4.5	2.25
2-45°S T	~	2 (P2)	180°	5°	0.0	-4.1°	-1.5	1.0
3-60°L T	~	4 (P3)	180°	356°	0.0	4.1°	1.5	2.0
4-70°L T	~	5(P4) / 6(R4)	180°	340°	0.0	12.3°	4.5	2.0

Radial TL-Scans
Index Start: -5°
Index Stop: 365°
Max. Index Increment: ≤ 0.5°
Scanner Start: Onset of liftoff
Scanner Stop: MAX
Max. Scanner Resolution: ≤ .25 in
Max. Scanner Velocity: ≤ 6.0 in./sec.

SP2000 Quad Package - Circumferential P-Scan Table - GE-UT-716

Channel	Probe ID	Cable (Jack)	Skew		Scan Offset	Index		Freq. (MHz)
			Entry	Fixture		Entry	Fixture	
1-45°S LKCC	~	1 (P1)	180°	306°	0.0	-4.1°	-1.5	1.0
2-70°L LKCC	~	2(P2) / 3(R2)	180°	297°	0.0	-12.3°	-4.5	2.0
3-45°S LKCW	~	4 (P3)	180°	54°	0.0	4.1°	1.5	1.0
4-70°L LKCW	~	5(P4) / 6(R4)	180°	63°	0.0	12.3°	4.5	2.0

Circumferential P-Scans
Index Start: -5°
Index Stop: 365°
Max. Index Increment: ≤ 0.6°
Scanner Start: Onset of liftoff
Scanner Stop: MAX
Max. Scanner Resolution: ≤ .25 in
Max. Scanner Velocity: ≤ 6.0 in./sec.

GE Hitachi Nuclear Energy

SP2000 - RPV OD
Scan Plan for Nozzle Welds

Dresden Unit 2 / D2R20

Component: N19A-1 Core Spray Nozz
ASME Volume OD Radius: 21.0
Description: Nozzle Inner Radius
Weld Centerline Radius: 10.3
Nominal Thickness: 6.4

ATTENTION - CHANGE OF PROCEDURE, INDEX INCREMENT AND SCANNER VELOCITY

SP2000 Quad Package - Circumferential N/V IRS-Scan Table - GE-UT-718

Channel	Probe ID	Cable	Skew Entry	Skew Fixture	Scan Offset	Index Entry	Index Fixture	Freq. (MHz)
1-60° LKCC NV/Z1	~	1 (P1)	180°	335.1°	0.0	-4.1°	-1.5	1.0
2-60° LKCC NV	~	2 (P2)	180°	331.5°	0.0	-12.3°	-4.5	1.0
3-60° LKCW NV/Z1	~	4 (P3)	180°	24.9°	0.0	4.1°	1.5	1.0
4-60° LKCW NV	~	5 (P4)	180°	28.5°	0.0	12.3°	4.5	1.0

Circumferential N/V IRS-Scans

Index Start: -5°
Index Stop: 365°
Max. Index Increment: ≤ 1.3°
Scanner Start: Onset of liftoff
Scanner Stop: MAX
Max. Scanner Resolution: ≤ .25 in.
Max. Scanner Velocity: ≤ 3.9

SP2000-SCP-NOZ Rev.3

Detection NIR_MDI_Dr2_Rev.5

MANUAL / AUTOMATED DETECTION
NOZZLE INNER RADIUS AND BORE INSPECTION REQUIREMENTS

PLANT Dresden 2

PREPARED BY S.C. MORTENSON DATE 10/28/07

NOZZLE EXAM ZONE	SCAN SURFACE	SCAN AREA	BEAM ANGLE	OFFSET	ROTATION ANGLE	WEDGE RADIUS	MAX MP	FREQ	
RECIRC INLET									
N/V Weld (M)	PLATE	0 - 5.5"	60.0°	-	± 30° - 60°	FLAT	14.0"	1 MHz	
Zone 1 (M)	PLATE	0 - 9.0"	70.0°	-	± 30°	FLAT	24.6"	1 MHz	
Zone 2a (M)	ODBR	55° - 90°	67.5°	-	18.1°	3.5"	12.0"	1 MHz	W-025, W-026
FEEDWATER									
N/V Weld	PLATE	0 - 8.0"	60.0°	1.5"	48.2° (43.7°)	FLAT	14.0"	1 MHz	
N/V Weld	PLATE	0 - 8.0"	60.0°	4.5"	38.9° (23.2°)	FLAT	14.0"	1 MHz	
N/V Weld / Zone 1	ODBR	50° - 90°	43.8°	2.5"	40.3° (31.8°)	3.5"	14.5"	1 MHz	W-027, W-028
Zone 2a	ODBR	50° - 90°	67.5°	2.5"	21.7° (13.2°)	3.5"	12.5"	1 MHz	W-029, W-030
Zone 2b	NOZOD	ALL	28.0°	2.5"	68.0°	FLAT	8.7"	2 MHz	
Zone 3	NOZOD	ALL	20.0°	2.5"	90°	FLAT	7.4"	2 MHz	
FEEDWATER									
N/V Weld (M)	PLATE	0 - 6.0"	60.0°	-	35° - 55°	FLAT	14.0"	1 MHz	
N/V Weld / Zone 1-2A (M)	ODBR	50° - 90°	43.8°	-	40.3°	3.5"	14.5"	1 MHz	W-027, W-028
Zone 2A (M)	ODBR	50° - 90°	67.5°	-	21.7°	3.5"	12.5"	1 MHz	W-029, W-030
Zone 2b (M)	NOZOD	ALL	28.0°	-	68.0°	FLAT	8.7"	2 MHz	
Zone 3 (M)	NOZOD	ALL	20.0°	-	90°	FLAT	7.4"	2 MHz	
CORE SPRAY									
N/V Weld/Zone 1	PLATE	0 - 8.0"	60.0°	1.5"	31.1° (24.9°)	FLAT	14.0"	1 MHz	
N/V Weld	PLATE	0 - 10.0"	60.0°	4.5"	45.9° (28.5°)	FLAT	14.0"	1 MHz	
Zone 1	PLATE	0 - 10.0"	65.0°	4.5"	23.0° (5.7°)	FLAT	17.5"	1 MHz	
Zone 1	PLATE	0 - 10.0"	70.0°	1.5"	12.3° (8.5°)	FLAT	22.2"	1 MHz	
Zone 2A	ODBR	55° - 90°	66.3°	2.5"	16.7° (5.1°)	3.1"	10.8"	1 MHz	W-031, W-032
CORE SPRAY									
N/V Weld/Zone 1 (M)	PLATE	0 - 7.0"	60.0°	-	± 15° - 55°	FLAT	14.0"	1 MHz	
Zone 1 (M)	PLATE	0 - 6.0"	70.0°	-	± 23°	FLAT	19.6"	1 MHz	
Zone 2A (M)	ODBR	55° - 90°	66.3°	-	16.7°	3.1"	10.6"	1 MHz	W-031, W-032

NOTES: (M) MANUAL
XX.X° (XX.X°) WEDGE / (FIXTURE) ROTATION ANGLE

Questions on this NIR requirements sheet shall be directed to S.C. Mortenson @ 704 577-3770

Chris Minor
SME Review / Date

11-28-07
Site Review / Date

DRESDEN UNIT 2, D2R20

GE Hitachi Nuclear Energy

SP2000 OD Examination Scan Files Data Sheet

Project : Dresden Unit-2
Component : N19A-2
Procedure No.: GE-UT-716 V1 — **Revision** N/A
GE-UT-718 V0 — **Revision** N/A

Calibration Report No.: CAL 01
DRR No.: N/A
DRR No.: 07-07

File Name	Date	Drive Start (deg)	Drive Stop (deg)	Drive Direction	Drive Distance (deg)	Start Time	Stop Time
n19a_tl_01	11/4/07	79	245	CCW	194	1244	1314
n19a_tl_02	11/4/07	65	268	CCW	157	1810	1825
n19a_p_01	11/4/07	79	245	CCW	194	1601	1624
n19a_nv/z1_01	11/4/07	79	245	CCW	194	1533	1550

COMMENTS: * Rotation angles per the SP2000 scan plan.

Software Revision: 2.2Q14
Couplant: Water
Thermometer S/N: 255152
Vessel Temp.(°F) 92°

OPERATORS:
Jonathan Guillote Lv. II
Clint Gauthier Lv. II
Mark Hilborn Lv. III

SEARCH UNIT DATA;

No.	Mfg.	S/N	Angle/ Mode	Size	Freq.	Rotation
1	RTD	07-189	0°L	1.0"	2.25	*
2	RTD	07-1645	45°S	32 x 22 mm	1.0	*
3	RTD	07-192	60°L	30 x 25 mm	2.0	*
4	RTD	07-1651	70°L	2(12 x 25)mm	2.0	*
1	RTD	07-782	45°S	32 x 22 mm	1.0	*
2	RTD	07-1649	70°L	2(12 x 25)mm	2.0	*
3	RTD	07-783	45°S	32 x 22 mm	1.0	*
4	RTD	07-1650	70°L	2(12 x 25)mm	2.0	*
1	KBA	01LW0V	60°S	0.5 x 1.0"	1.0	*
2	KBA	01LW0W	60°S	0.5 x 1.0"	1.0	*
3	KBA	01LW0X	60°S	0.5 x 1.0"	1.0	*
4	KBA	01LW0Y	60°S	0.5 x 1.0"	1.0	*

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GE NUCLEAR ENERGY

EXAMINATION SUMMARY SHEET

Report No.: 2R18-009

Site and Unit: **Dresden Unit 2** Component ID: **2/1/RPV SHELL/N19B-2 NOZ-RPV**

Outage: **D2R18**

System: **RPV** ASME Cat.: **B-D** ASME Item **B3.90** Aug Requirements: **Section XI**

Exams Performed	Data Sheet	Cal Sheet	Procedure	Calibration Block	Examination Personnel	Cert Level	Date
60° Shear	UT-085	UT-085	GE-UT-311	VESSEL SHELL	Jack Reisewitz	II	10/22/2003
60° Long.	UT-083	UT-083	GE-UT-300	CAL-IIW2-013	Jack Reisewitz	II	10/22/2003
60° Long.	UT-084	UT-084	GE-UT-300	VESSEL SHELL	Jack Reisewitz	II	10/22/2003

Examination Results:

During the manual ultrasonic examination of the above referenced component, no recordable indications were detected using 60° RL and 60° shear wave search units.

Scanning was limited due to the nozzle configuration and an insulation support bracket below the nozzle.

38% of the required examination volume was examined.

This examination meets the requirements of ASME B&PV Code Section XI, Section XI, 1995 Edition with the 1996 Addenda as modified by the PDI program description and the Federal Register, Part II, Nuclear Regulatory Commission, 10 CFR Part 50 for Category B-D Reactor Pressure Vessel (RPV) Assembly Welds.

Examination results were compared to data report D326 *from* 1995 *outage with* ☑ *No Change*

These examinations were performed under Work Order: 00813889-04 ☐ *Change*

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

Prepared By:	Level: III	Date: 10/25/03	Utility Reviewed By:	Title: III	Date: 10-26-03
Reviewed By: N/A	Level: N/A	Date: N/A	ANII Reviewed By:	Title:	Date: 10-31-03

Page 1 of 9

GE NUCLEAR ENERGY

Ultrasonic Calibration and Examination Record RPV Components

Site/Unit: Dresden / 2 | Data Report Number: 2R18-009 | Linearity Sheet: L-013
Outage: D2R18 | Data Sheet Number: UT-083 | Beam Spread: N/A
Procedure: GE-UT-300 | Ver.: 7 | DRR: N/A

Calibration Block: CAL-RW2-013

CS	N/A	4.0"
Material	Size	Thickness

Initial Cal: 1524 | Exam Start: 1645
Cal Check: N/A | Exam End: 1705
Cal Check: NA | Ultragel II (Couplant) | 02125 (Batch)
Final Cal: 1818

229344	72° F	74° F
Thermometer	Initial Cal Temp.	Final Cal Temp:

DAC Construction

Hole "I"	Hole Depth	Gain @ 1X	Max Amp	"W" Dim.	Sweep	Screen Div.
1/4	0.60	1X	80%	1.04	0.6	3.0
1/2	N/A	1X	N/A	N/A	N/A	N/A
3/4	N/A	1X	N/A	N/A	N/A	N/A
ID	N/A	1X	N/A	N/A	N/A	N/A
5/4	N/A	1X	N/A	N/A	N/A	N/A

DAC 1X= 60.0 dB
Sweep 0-10 2.0" Depth
Note N/A dB difference between 3/8 and 5/8 Vee

Search Unit Data

Sigma	22BC-03001	2(1.1x.62)/Rect.
Manufacturer:	Serial Number:	Size / Shape:

0.70"	60°	60°
Incident Point:	Nominal Angle:	Measured Angle:

3.0 MHz	SDC3	Long.
Frequency:	Model:	Mode:

Search Unit Cable

RG-174	12'	0
Cable Type:	Length:	Connectors:

Instrument Settings

Panametrics / EPOCH 4 (Manufacturer/Model:) | 031534305 (Serial Number:)

9.4 µs	0.233 in./µsec.	0.8 - 3.0 MHz	Auto
Delay:	Velocity:	Filter:	Rep Rate:

4.0 in.	Sq. / Med	400 Ohms
Range:	Pulser:	Damping:

Off	3.03 MHz	Dual
Reject:	Frequency:	Mode:

Exam Data for Weld: 2/1/RPV SHELL/N19B-2
Configuration: NOZ-RPV
Exam Surface: OD / Plate | Component Temperature: 94° F

Weld Examination Area:	Exam Access	Scan dB	Recordable Indications	Exam Angle
360°	T / P	74.0	NRI	60°

Calibration Verification

Field Simulator Block S/N: N/A

Reflector	N/A	N/A	N/A
Amplitude	N/A	N/A	N/A
Gain (dB)	N/A	N/A	N/A
Sweep (SD)	N/A	N/A	N/A

Acceptable Linearity performed : 10/15/2003

Comments: Cal/Exam Date is the date of initial calibration.
Rectification - Full wave; TVG, CSG and DGS disabled.
Calibration for near surface examination.
Exams performed a minimum of 14 dB above reference.

JAR | Jack Reisewitz | II | 10/22/2003
Initials: Examiner | Level: | Cal/Exam Date:

Utility Reviewed By: | 10-24-03 Date:

N/A | N/A
Initials: Examiner | Level:

ANII Reviewed By: | 10-30-03 Date:

GE Reviewed By: | Level: | 10/29/03 Date:

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GE NUCLEAR ENERGY

Ultrasonic Calibration and Examination Record RPV Components

Site/Unit: Dresden / 2 | Data Report Number: 2R18-009 | Linearity Sheet: L-013
Outage: D2R18 | Data Sheet Number: UT-084 | Beam Spread: N/A
Procedure: GE-UT-300 | Ver.: 7 | DRR: N/A

Calibration Block: VESSEL SHELL

CS	N/A	7.0"
Material	Size	Thickness

Initial Cal: 1525 | Exam Start: 1705
Cal Check: N/A | Exam End: 1725
Cal Check: NA | Ultragel II | 02125
Final Cal: 1820 | Couplant: | Batch

229344	72° F	74° F
Thermometer	Initial Cal Temp.	Final Cal Temp:

DAC Construction

Hole "t"	Hole Depth	Gain @ 1X	Max Amp	"W" Dim.	Sweep	Screen Div.
1/4	N/A	1X	N/A	N/A	N/A	N/A
1/2	N/A	1X	N/A	N/A	N/A	N/A
3/4	N/A	1X	N/A	N/A	N/A	N/A
ID	7.0	1X	80%	12.04	6.95	7.0
5/4	N/A	1X	N/A	N/A	N/A	N/A

DAC 1X= 73.0 dB
Sweep 0-10 10" Depth
Note N/A dB difference between 3/8 and 5/8 Vee

Search Unit Data

Sigma	22BC-03001	2(1.1x.62)/Rect.
Manufacturer:	Serial Number:	Size / Shape:

0.70"	60°	60°
Incident Point:	Nominal Angle:	Measured Angle:

3.0 MHz	SDC3	Long.
Frequency:	Model:	Mode:

Search Unit Cable

RG-174	12'	0
Cable Type:	Length:	Connectors:

Instrument Settings

Panametrics / EPOCH 4 | 031534305
Manufacturer/Model: | Serial Number:

7.88 µs	0.224 in./µsec.	0.8 - 3.0 MHz	Auto
Delay:	Velocity:	Filter:	Rep Rate:

20.0 in.	Sq. / Med	400 Ohms
Range:	Pulser:	Damping:

Off	3.03 MHz	Dual
Reject:	Frequency:	Mode:

Exam Data for Weld: 2/1/RPV SHELL/N19B-2
NOZ-RPV
Configuration:
OD / Plate | 94° F
Exam Surface: | Component Temperature

Weld Examination Area:	Exam Access	Scan dB	Recordable Indications	Exam Angle
360°	T / P	73.0	NRI	60°

Calibration Verification

Field Simulator Block S/N: N/A

Reflector	N/A	N/A	N/A
Amplitude	N/A	N/A	N/A
Gain (dB)	N/A	N/A	N/A
Sweep (SD)	N/A	N/A	N/A

Acceptable Linearity performed : 10/15/2003

Comments: Cal/Exam Date is the date of initial calibration.
Rectification - Full wave; TVG, CSG and DGS disabled.
Calibration for full volume examination.
Exams performed to maintain 10-20% clad roll.
Scanning limited due to insulation support.

JAR Jack Reisewitz | II | 10/22/2003
Initials: Examiner | Level: | Cal/Exam Date:

Utility Reviewed By: | 10-24-03 Date:

N/A | N/A
Initials: Examiner | Level:

ANII Reviewed By: | Date:

GE Reviewed By: | Level: | Date:

GE NUCLEAR ENERGY

Ultrasonic Calibration and Examination Record
Inner Radius Examinations

Site/Unit: Dresden / 2
Outage: D2R18
Procedure: GE-UT-311

Data Report Number: 2R18-009 Linearity Sheet: L-013
Data Sheet Number: UT-085
Rev: 10 DRR: N/A

Calibration Data for Block: VESSEL SHELL

CS	N/A	7.0"
Material	Size	Thickness

Initial Cal: 1503 Exam Start 1630
Cal Check: N/A Exam End: 1645
Cal Check: N/A Ultragel II 02125
Final Cal: 1832 Couplant: Batch

229344	72° F	74° F
Thermometer	Initial Cal Temp.	Final Cal Temp:

DAC Construction

Side	Depth	Gain @ 1X	Max Amp	"W" Dim.	Sweep	Screen Div.
ID	7.0	1X	80%	11.2	13.2	7.5
N/A	N/A	1X	N/A	N/A	N/A	N/A

DAC @ 1X 44.5 dB

Sweep 0-10 17.5" Metal Path

Acceptable Linearity performed : 10/15/2003

Exam Data for Component: 2/1/RPV SHELL/N19B-2

N0Z-RPV
Configuration:

OD / Plate	94° F
Exam Surface:	Component Temp.

Examination Area	Exam Angle	Rotation Angle	Wedge S/N	Scan dB	Recordable Indications
360°	60°	+55°	N/A	64.5	NRI
360°	60°	-55°	N/A	64.5	NRI

Search Unit Data

KBA	M21322	0.5"x1.0"/Rect.
Manufacturer:	Serial No.:	Size/Shape:
0.7 in.	60°	58°
Incident Point:	Nominal Angle:	Measured Angle:
1.0 MHz	113-291-600	Shear
Frequency:	Model:	Mode:

Search Unit Cable

RG-174	12'	0
Cable Type:	Length:	Connectors:

Instrument Settings

Panametrics / EPOCH 4	031534305
Manufacturer/Model:	Serial No.:

16.6 µs	0.1255 µ/sec	0.8 - 3.0 MHz	Auto
Delay:	Velocity:	Filter:	Rep Rate:

17.5 in.	Sq. / Med	400 ohms
Range:	Pulser:	Damping:

Off	1.0 MHz	P/E
Reject:	Frequency:	Mode:

Calibration Verification

Field Simulator Block S/N: N/A

Reflector	N/A	N/A	N/A
Amplitude	N/A	N/A	N/A
Gain (dB)	N/A	N/A	N/A
Sweep (SD)	N/A	N/A	N/A

Comments: Cal/Exam Date is the date of initial calibration.

Rectification - Full wave; TVG, CSG, and DGS disabled.
Calibration for nozzle to vessel weld (N/V).
Exams performed to maintain a 20-30% FSH clad roll.
Scanned CW and CCW.

JAR Jack Reisewitz	II	10/22/03		10-24-03
Initials: Examiner:	Level:	Cal/Exam Date:	Utility Reviewed By:	Date:
	III	10/24/03		10-30-03
GE Reviewed By:	Level:	Date:	ANII Reviewed By:	Date:

Dresden Unit-2, D2R18
N19B-2 - Core Spray
Fall 2003

Weld Length = 360. Exam Volume = 75.8		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Manual	Percent of Area Manual	Weld Length Manual	Percent Manual
60° T-Scan	A	75.8	39.5	52.1%	304.0	22.0%
60° P-Scan, 85%T	A	67.3	10.1	13.3%	304.0	5.6%
IRS-Scan, 15%T	A	8.5	8.5	11.2%	304.0	4.7%
60° T-Scan	B	75.8	36.7	48.4%	56.0	3.8%
60° P-Scan, 85%T	B	67.3	10.1	13.3%	56.0	1.0%
IRS-Scan, 15%T	B	8.5	8.5	11.2%	56.0	0.9%
60° T-Scan						
60° P-Scan, 85%T						
IRS-Scan, 15%T						
60° T-Scan						
60° P-Scan, 85%T						
IRS-Scan, 15%T						
60° T-Scan						
60° P-Scan, 85%T						
IRS-Scan, 15%T						
				% Total Composite Coverage =		38%

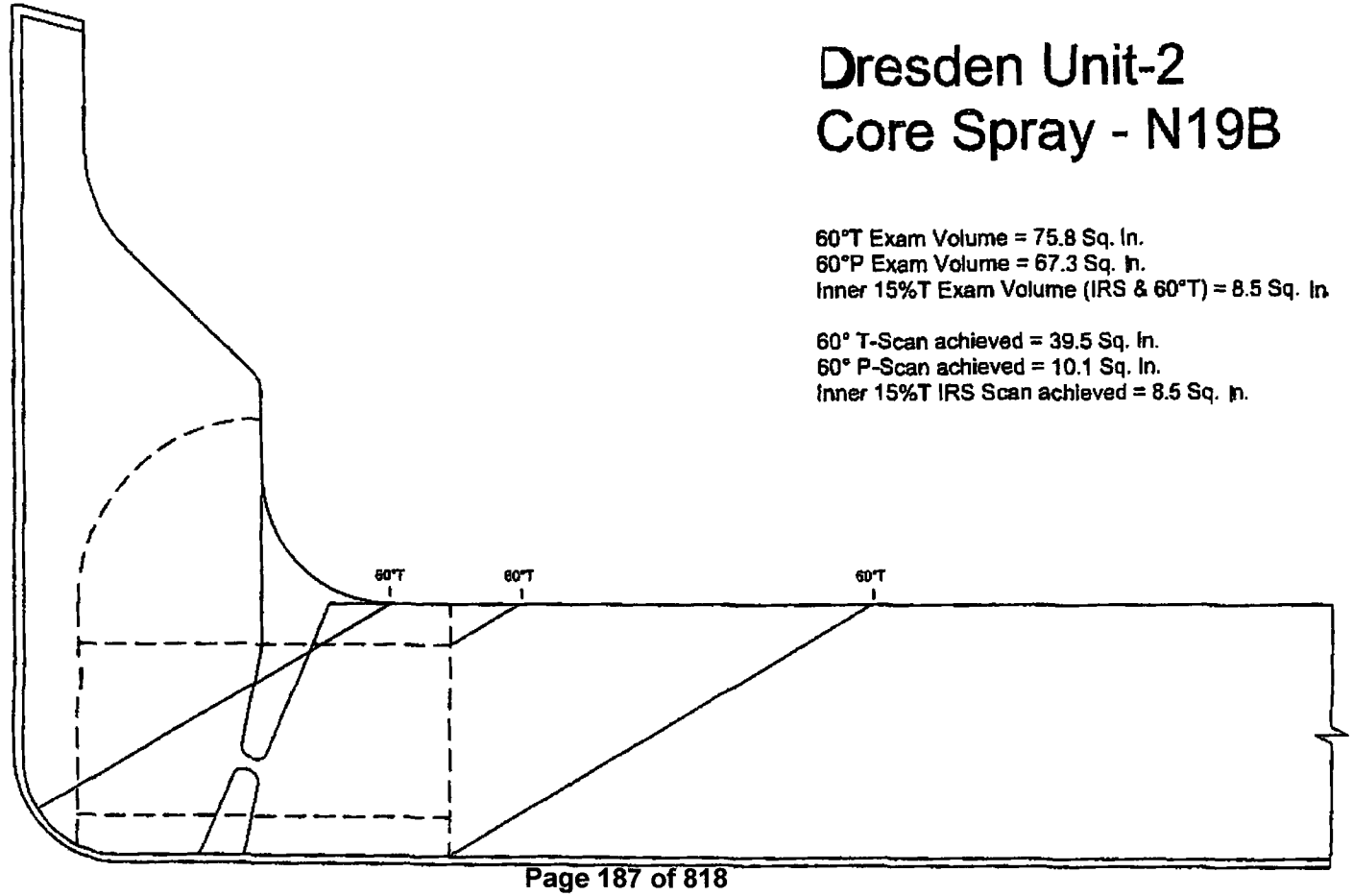
Comments: A - Examined 304° length. Scanning limited due to nozzle configuration.
B - Examined 56° length. Scanning limited due to nozzle configuration and insulation support below nozzle.
Weld length in degrees. IRS examination coverage determined by modeling.

Note - Rounding methods may make calculated values appear in error.

Dresden Unit-2
Core Spray - N19B

60°T Exam Volume = 75.8 Sq. In.
60°P Exam Volume = 67.3 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

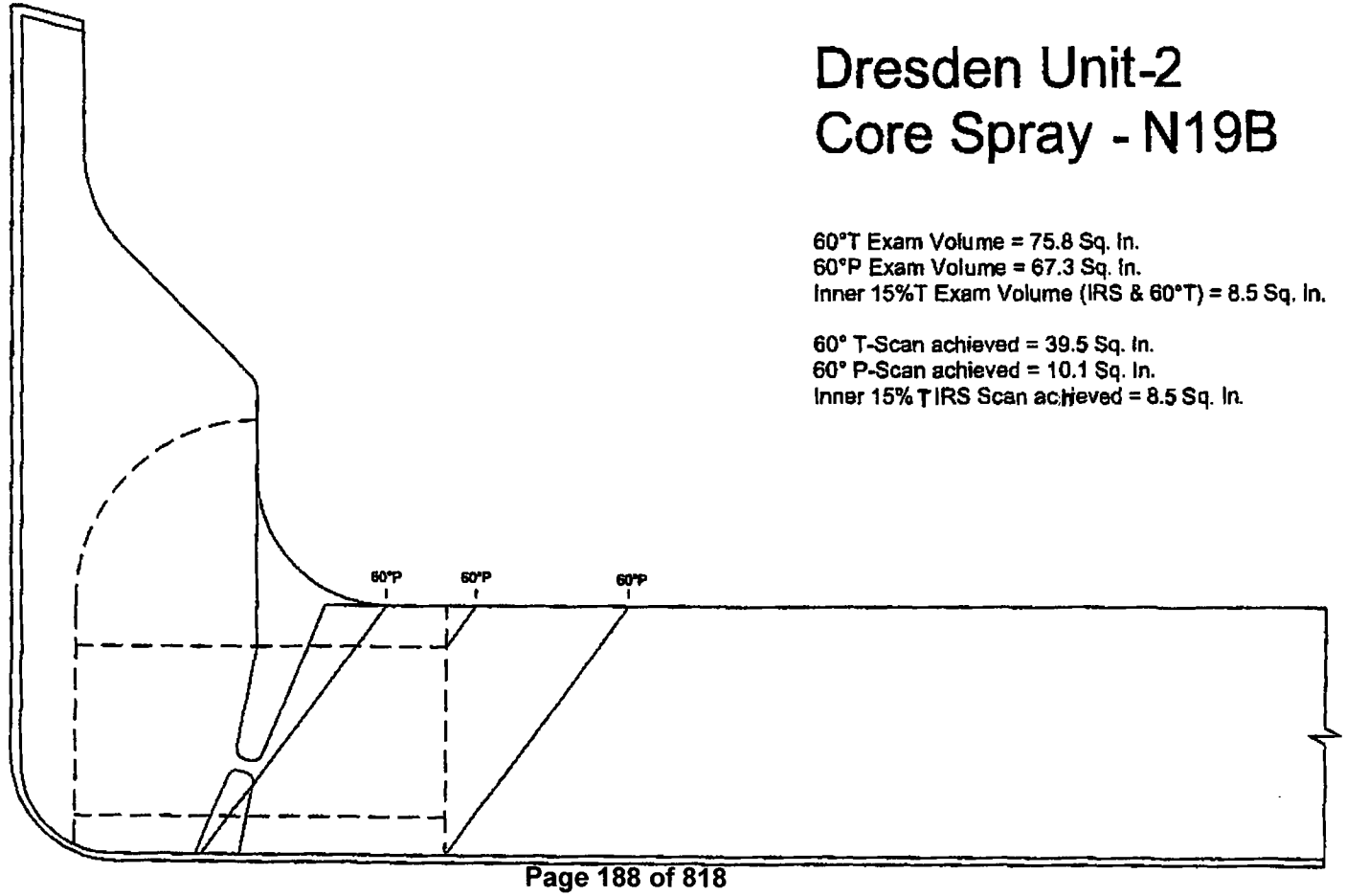
60° T-Scan achieved = 39.5 Sq. In.
60° P-Scan achieved = 10.1 Sq. In.
Inner 15%T IRS Scan achieved = 8.5 Sq. In.



Dresden Unit-2
Core Spray - N19B

60°T Exam Volume = 75.8 Sq. In.
60°P Exam Volume = 67.3 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

60° T-Scan achieved = 39.5 Sq. In.
60° P-Scan achieved = 10.1 Sq. In.
Inner 15% T IRS Scan achieved = 8.5 Sq. In.

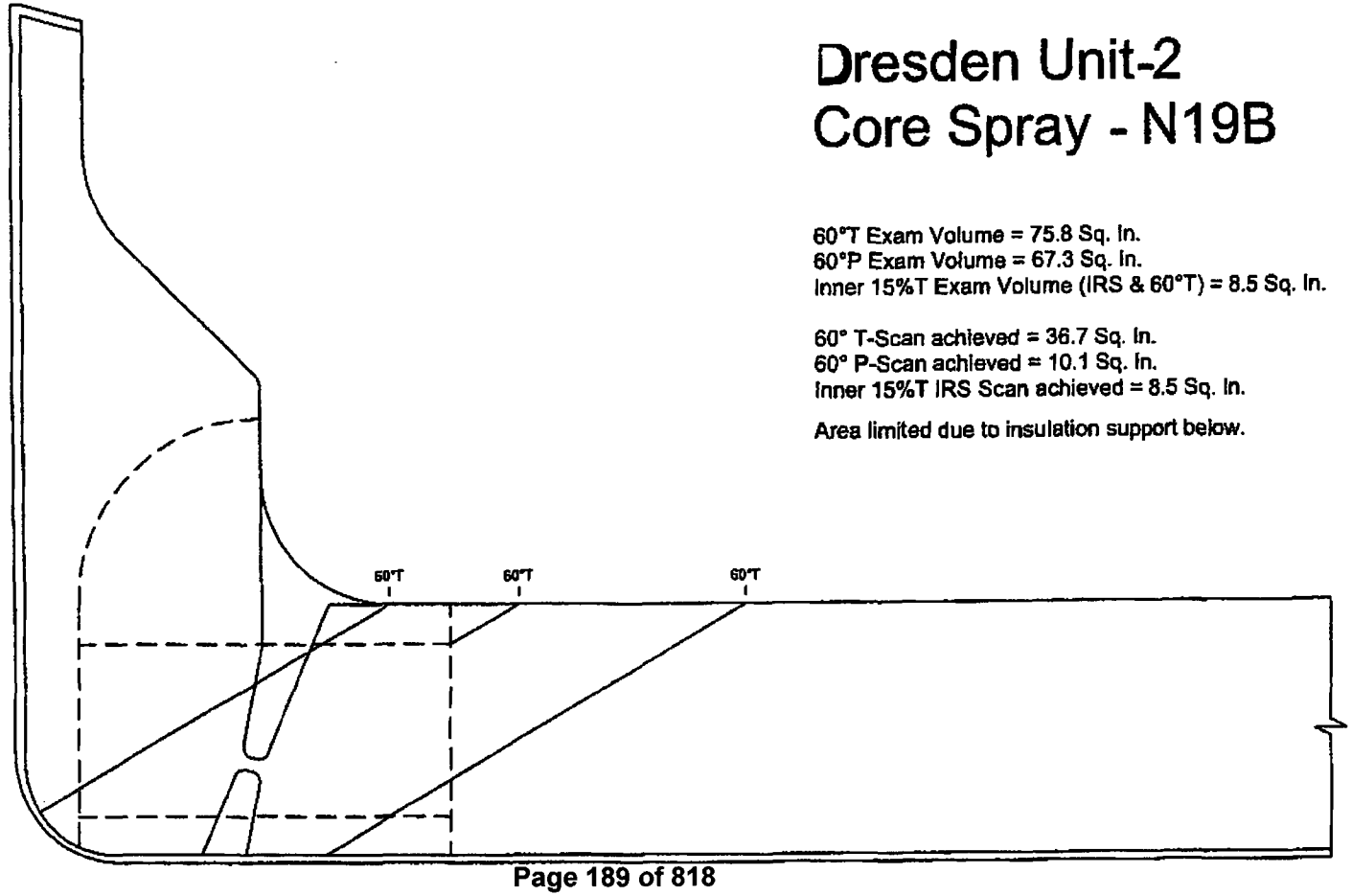


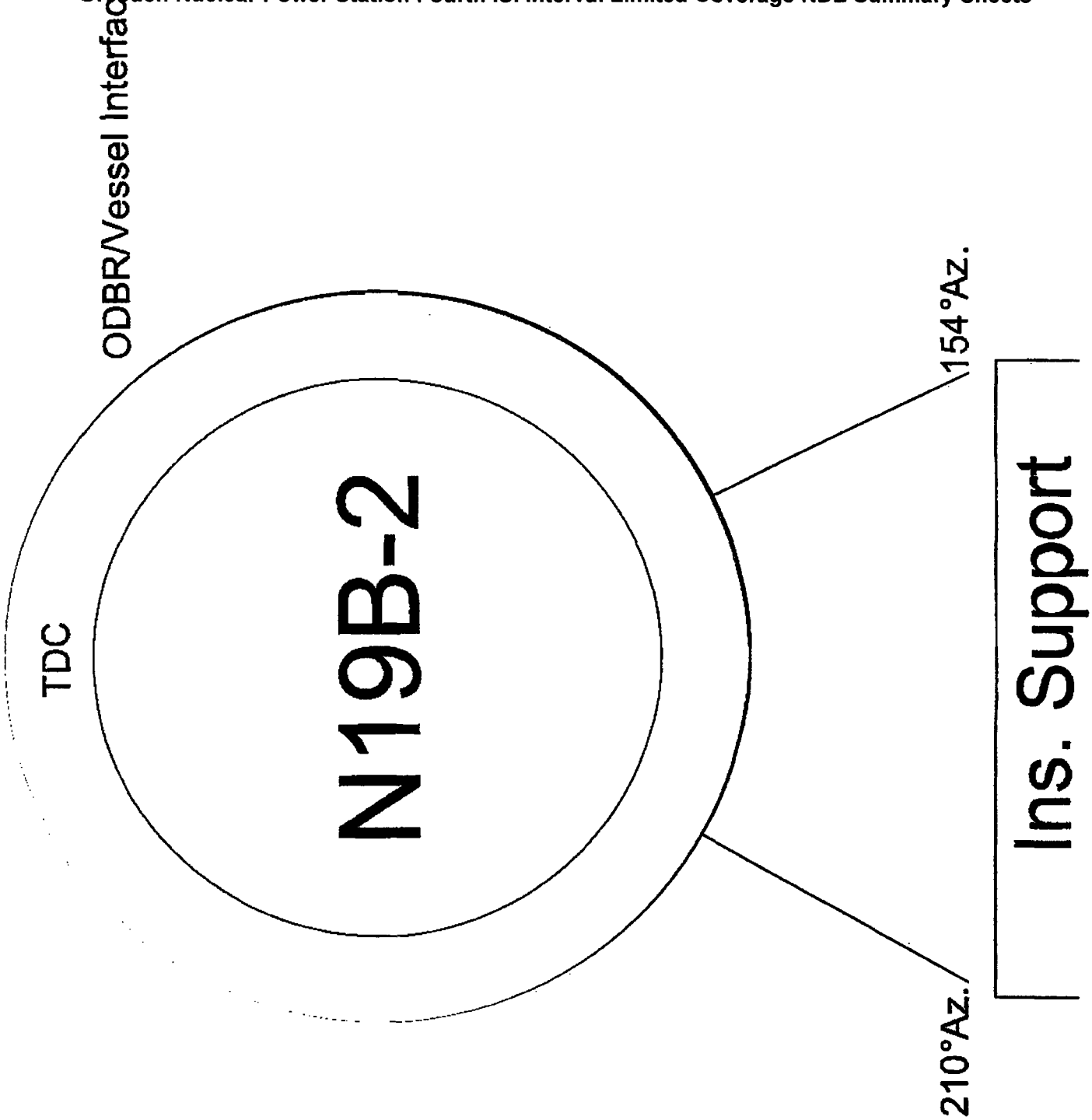
Dresden Unit-2
Core Spray - N19B

60°T Exam Volume = 75.8 Sq. In.
60°P Exam Volume = 67.3 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

60° T-Scan achieved = 36.7 Sq. In.
60° P-Scan achieved = 10.1 Sq. In.
Inner 15%T IRS Scan achieved = 8.5 Sq. In.

Area limited due to insulation support below.




ODBR/Vessel Interface
TDC
N19B-2
154°Az.
210°Az.
Ins. Support