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PG&E Letter DCL-06-099

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
ASME Section XI Inservice Inspection Program Relief Requests NDE-SLH U2 and NDE-LSL U2

Dear Commissioners and Staff:

Pursuant to 10 CFR 50.55a(g)(5)(iii), Pacific Gas and Electric Company hereby requests NRC approval for Inservice Inspection Program Relief Requests NDE-SLH U2 and NDE-LSL U2.

These requests for relief are associated with the reactor vessel lower shell-to-bottom head circumferential weld and lower shell longitudinal weld examinations performed during Diablo Canyon Power Plant (DCPP) Unit 2 Refueling Outage 13.

The bases for the requests for relief are provided in Enclosures 1 and 2.

There are no regulatory commitments in this letter.

If you have any questions, please contact Mr. Stan Ketelsen at (805) 545-4720.

Sincerely,

James R. Becker

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Why1/4279/A0668378
Enclosures
cc: Diablo Distribution
cc/enc: Edgar Bailey, DHS
Terry W. Jackson, Senior Resident Inspector
Bruce S. Mallett, Region IV
Alan B. Wang, NRR
State of California, Pressure Vessel Unit

INSERVICE INSPECTION (ISI) RELIEF REQUEST NDE-SLH U2
In Accordance with 10 CFR 50.55a(g)(5)(iii)

--Inservice Inspection Impracticality--

1. **ASME Code Component Affected**

Diablo Canyon Power Plant (DCPP) Unit 2 reactor vessel lower shell-to-bottom head circumferential weld.

2. **Applicable Code Edition and Addenda**

ASME Section XI, 1989 Code Edition without Addenda.

3. **Applicable Code Requirement**

Table IWB-2500-1, Category B-A, Item B1.11, requires that the reactor vessel shell-to-bottom head weld (Unit 2 weld no. 10-201) be volumetrically examined once at or near the end of the interval. Essentially 100 percent of the weld volume is required to be examined as shown in Figure IWB-2500-1, using the acceptance standard of IWB-3510.

Relief is requested from performing a portion of the volumetric examination where access is restricted by core support lugs and the bottom head taper. See Figure 1 for weld and lug locations.

4. **Impracticality of Compliance**

The design of the vessel shell-to-bottom head weld precludes a portion of the required weld examination due to the presence of the six core barrel support lug locations. The support lugs and bottom head taper limit access of the vendor's reactor vessel examination tool to a portion of the required examination volume. All areas of the weld (75.36 percent) accessible for Code volumetric examination were examined as required. See Figures 2 and 3 for illustration of limitation areas.

5. **Burden Caused By Compliance**

Providing access at this location would require redesign of the reactor vessel internals supports, redesign of the building concrete structure or of the vessel insulation, and is impractical.

6. Proposed Alternative and Basis for Use

The inspection of DCPP Unit 2 reactor vessel lower shell to lower head circumferential weld (weld no. 10-201) during Unit 2 Refueling Outage 13 (2R13) was conducted using a procedure and techniques qualified by demonstration for 1995 edition/1996 Addenda ASME Section XI Appendix VIII examinations in accordance with Supplements 4 and 6. The examination used a combination of 45 degree angle search units with shear and longitudinal wave propagation and 30 mm or greater focal depths. The sound beams from these transducers were directed in four orthogonal directions parallel and perpendicular to the weld in as close proximity to the six core support lugs as the inspection device and transducer sled would allow. Figures 1, 2, and 3 depict the location of this weld in the reactor vessel, the scanning limitations for parallel and perpendicular scans below the core support lugs, and the scanning access in between the lugs, respectively.

The physical size of the transducer sled limited the approach to the core support lugs without hazarding the assembly and causing damage and loose parts concerns. Calculation of the weld and volume coverage afforded by each set of transducers by the data analysts resulted in a combined coverage of 75.36 percent. Table 1 provides a breakdown of percent coverage of the required examination volume by scan direction and transducers.

Consideration was also given to examining the weld from the vessel outside diameter. The bottom head and shell insulation in this area is not designed to be removable and the close proximity of the insulated vessel to the concrete shield wall prohibits access. As stated above, providing access at these locations would require redesign of the building concrete structure and the vessel insulation, and is impractical.

7. Duration of Proposed Alternative

This relief request will be implemented during the DCPP Unit 2 second ISI interval. The examinations took place during the 2R13 refueling outage in April of 2006.

This request is essentially the same as NDE-001 from the first ISI interval, which was approved in NRC letter dated December 14, 1988.

Diagram of DCPP Unit 2 Reactor Pressure Vessel Showing the Locations of the Lower Shell to Lower Head Circumferential Weld (Weld no. 10-201) and Also the Locations of the Six Core Support Lugs
Figure 1

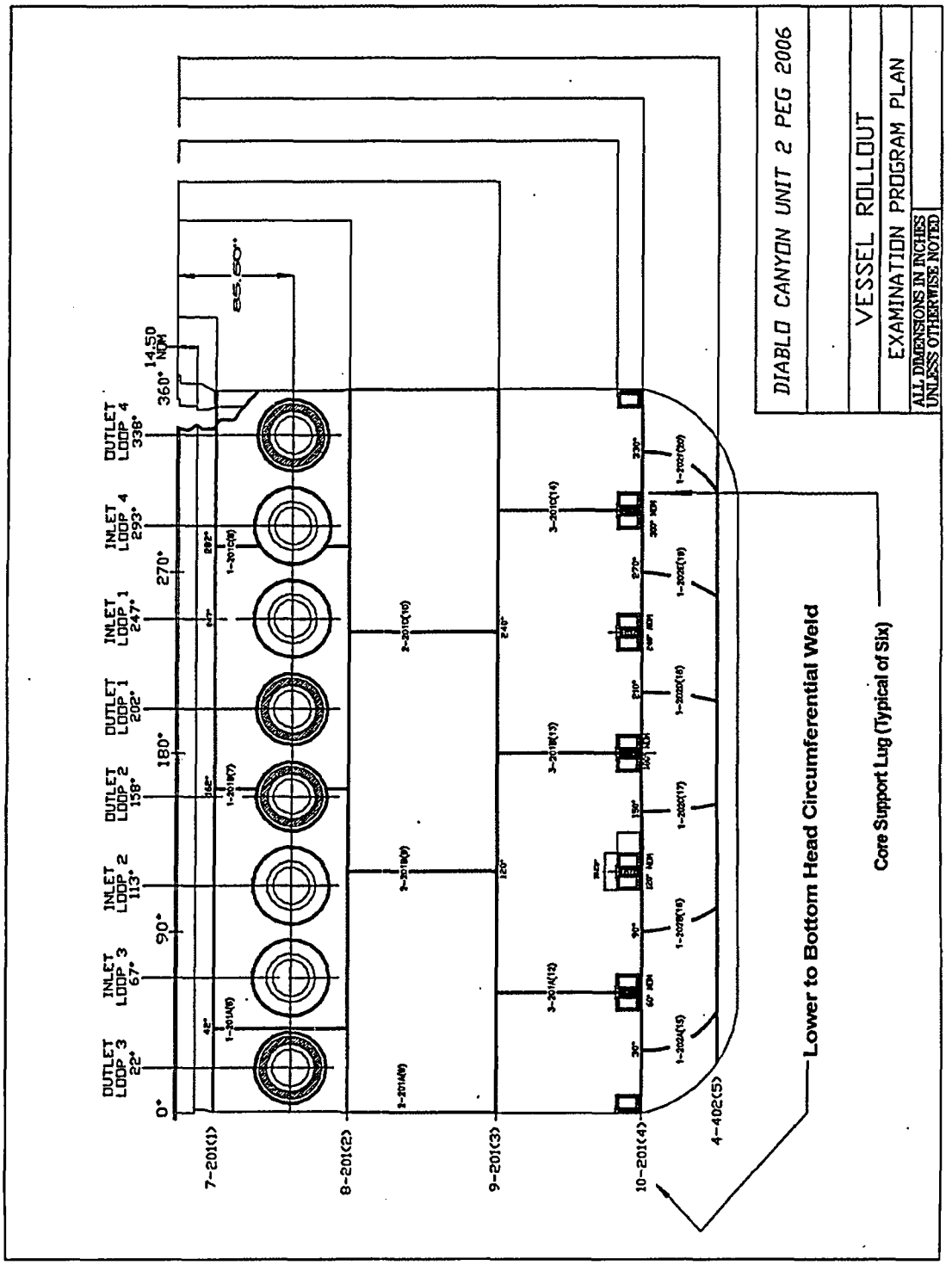


Diagram of DCPP Unit 2 Reactor Vessel Showing Area of ISI Limitation Due to the Presence of Core Support Lug
Figure 2

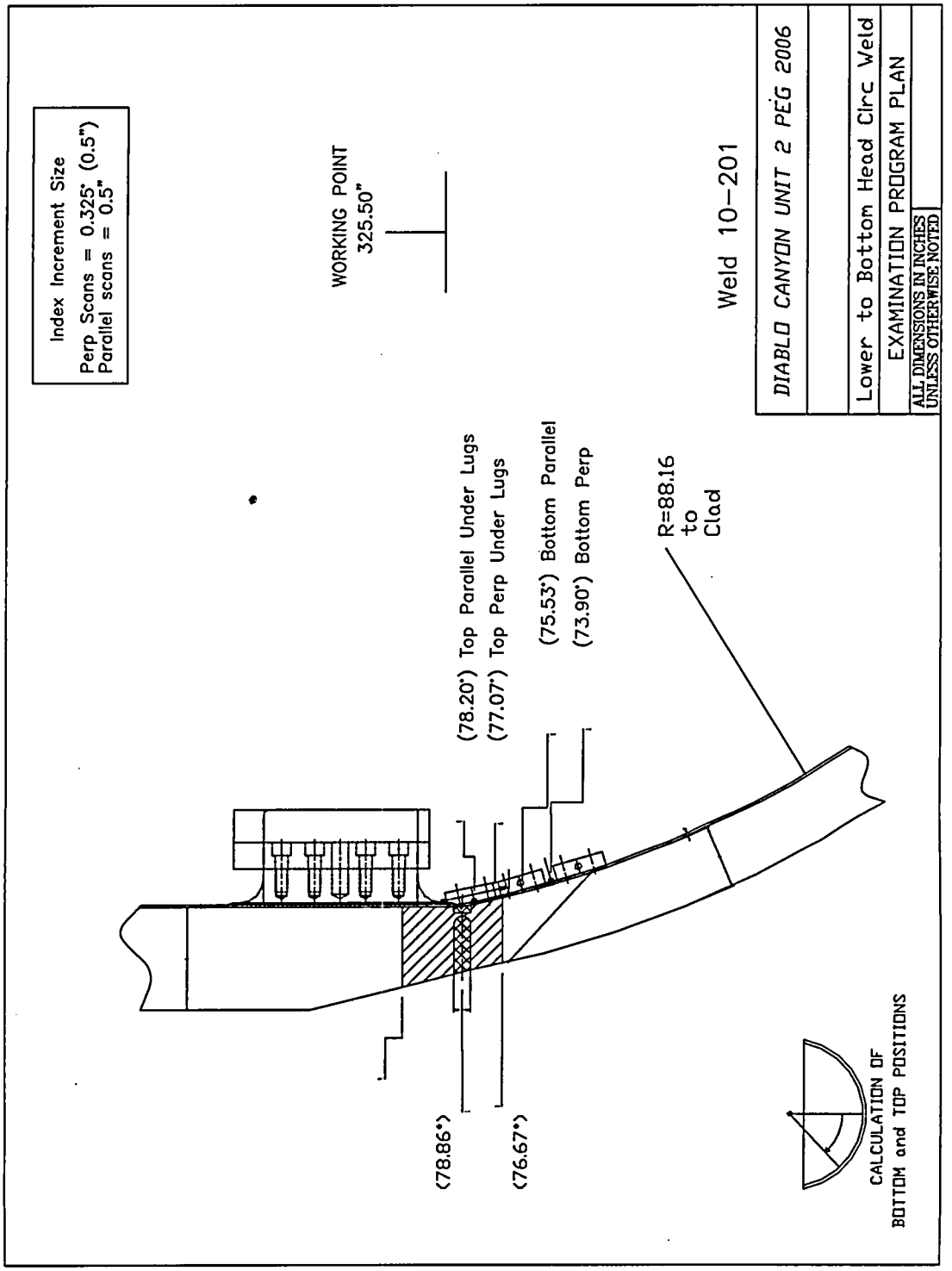
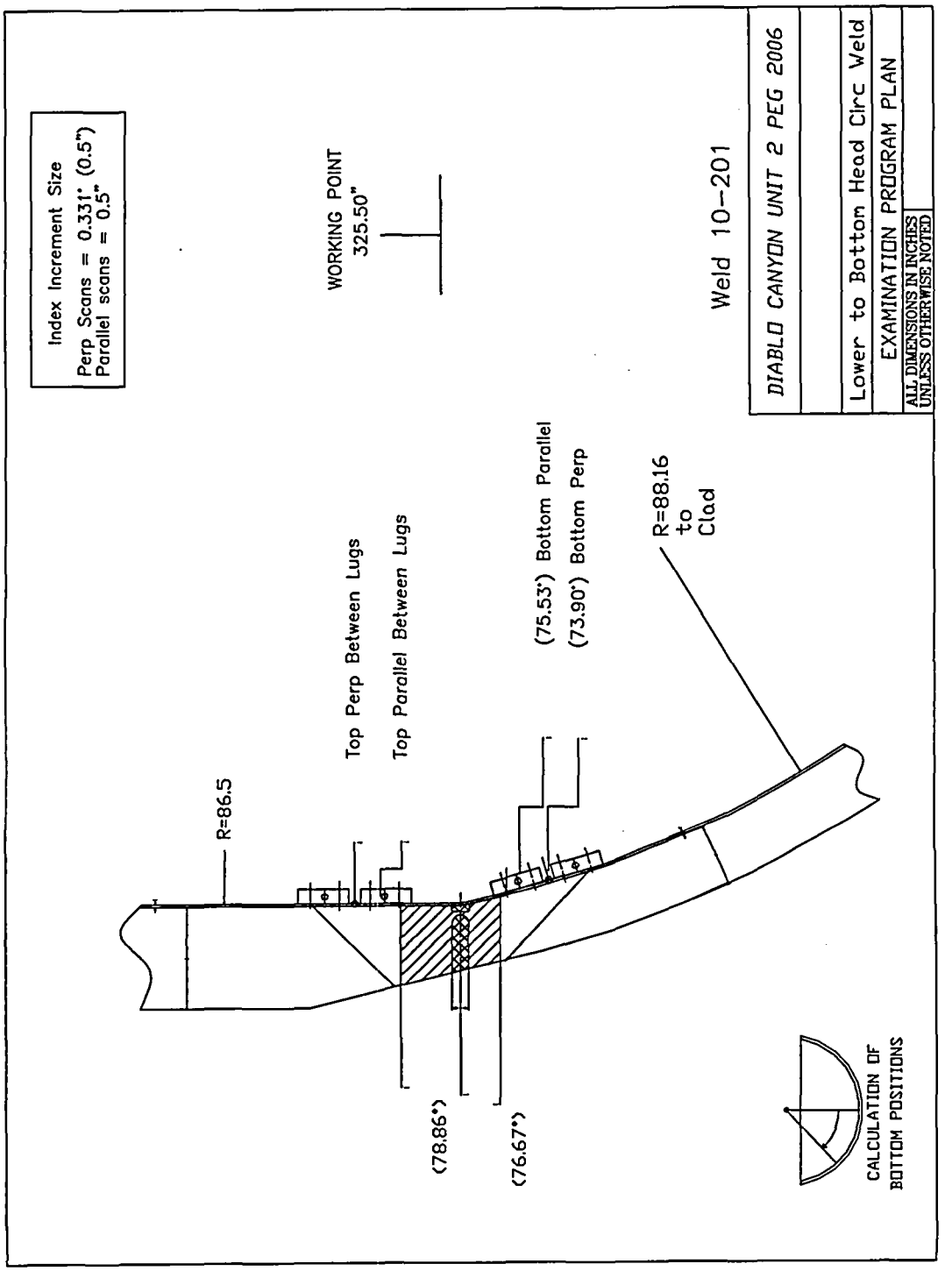


Diagram of DCPP Unit 2 Reactor Pressure Vessel Showing Area with No ISI Limitation Due to the Presence of Core Support Lug
Figure 3



DCPP Unit 2 Reactor Vessel Lower Shell to Lower Head Circumferential Weld (Weld No. 10-201) Coverage Percentages
Table 1

DIABLO CANYON UNIT 2

RPV COVERAGE ESTIMATE BREAKDOWNS

DIRECTION / ORIENTATION

PARALLEL SCANS: CCW/CW
PERP. SCANS: UP / DN

WELD DESCRIPTION: **Lower Shell to Lower Head Circ. Weld**

WELD NO.: **10-201**

BEAM ANGLES

BEAM DIRECTION	45° L Dual		45° L Single		45° Shear					
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
CCW	59.37	66.2	77.1	85.0	77.1	85.0				
CW	59.37	66.2	77.1	85.0	77.1	85.0				
UP	63.9	63.9	63.9	63.9	*100	*99.0				
DOWN	63.9	63.9	63.9	63.9	*100	*99.0				
Combined Average = 75.36%	* Area of single sided coverage below core support lugs. Limitation due to proximity of 6 core support lugs.									

INSERVICE INSPECTION (ISI) RELIEF REQUEST NDE-LSL U2
In Accordance with 10 CFR 50.55a(g)(5)(iii)

--Inservice Inspection Impracticality--

1. **ASME Code Component Affected**

Diablo Canyon Power Plant (DCPP) Unit 2 reactor vessel lower shell longitudinal welds.

2. **Applicable Code Edition and Addenda**

ASME Section XI, 1989 Code Edition without Addenda.

3. **Applicable Code Requirement**

Table IWB-2500-1, Category B-A, Item B1.12, requires that the reactor vessel shell longitudinal welds (Unit 2 weld nos. 3-201A, 3-201B, and 3-201C) be volumetrically examined once at or near the end of the interval. Essentially, 100 percent of the weld volume is required to be examined as shown in Figure IWB-2500-2, using the acceptance standard of IWB-3510.

Relief is requested from performing a portion of the volumetric examination where access is restricted by core support lugs and the bottom head taper. See Figure 1 for weld and lug locations.

4. **Impracticality of Compliance**

The design of the vessel shell longitudinal weld precludes a portion of the required weld examination due to the presence of three of the six core barrel support lugs. The support lugs limit access of the vendor's reactor vessel examination tool to a portion of the required examination volume. All areas of each weld (80.01 percent of each weld) accessible for Code volumetric examination were examined as required. See Figure 2 for illustration of limitation areas.

5. **Burden Caused By Compliance**

Providing access at this location would require redesign of the reactor vessel internals supports, redesign of the building concrete structure or of the vessel insulation, and is impractical.

6. Proposed Alternative and Basis for Use

The inspection of DCPP Unit 2 reactor vessel lower shell longitudinal welds (weld no. 3-201A, 3-201B, and 3-201C) during Unit 2 Refueling Outage 13 (2R13) was conducted using a procedure and techniques qualified by demonstration for 1995 edition/1996 Addenda ASME Section XI Appendix VIII examinations in accordance with Supplements 4 and 6. The examination used a combination of 45 degree angle search units with shear and longitudinal wave propagation and 30 mm or greater focal depths. The sound beams from these transducers were directed in four orthogonal directions parallel and perpendicular to the weld in as close proximity to the six core support lugs as the inspection device and transducer sled would allow. Figures 1 and 2 depict the location of these welds in the reactor vessel and the scanning limitations for parallel and perpendicular scans above the core support lugs.

The physical size of the transducer sled limited the approach to the core support lugs without hazarding the assembly and causing damage and loose parts concerns. Calculation of the weld and volume coverage afforded by each set of transducers by the data analysts resulted in a combined coverage of 80.01 percent. Tables 1, 2, and 3 provide a breakdown of percent coverage of the required examination volume for each one of the three welds by scan direction and transducers.

Consideration was also given to examining the welds from the vessel outside diameter. The bottom head and shell insulation in this area is not designed to be removable and the close proximity of the insulated vessel to the concrete shield wall prohibits access. As stated above, providing access at these locations would require redesign of the building concrete structure and the vessel insulation, and is impractical.

7. Duration of Proposed Alternative

This relief request will be implemented during the DCPP Unit 2 second ISI interval. The examinations took place during the 2R13 refueling outage in April of 2006.

Diagram of DCPP Unit 2 Reactor Pressure Vessel Showing the Locations of the Lower Shell Longitudinal Welds (Weld no. 3-201A, 3-201B, & 3-201C) and Also the Locations of the Six Core Support Lugs
Figure 1

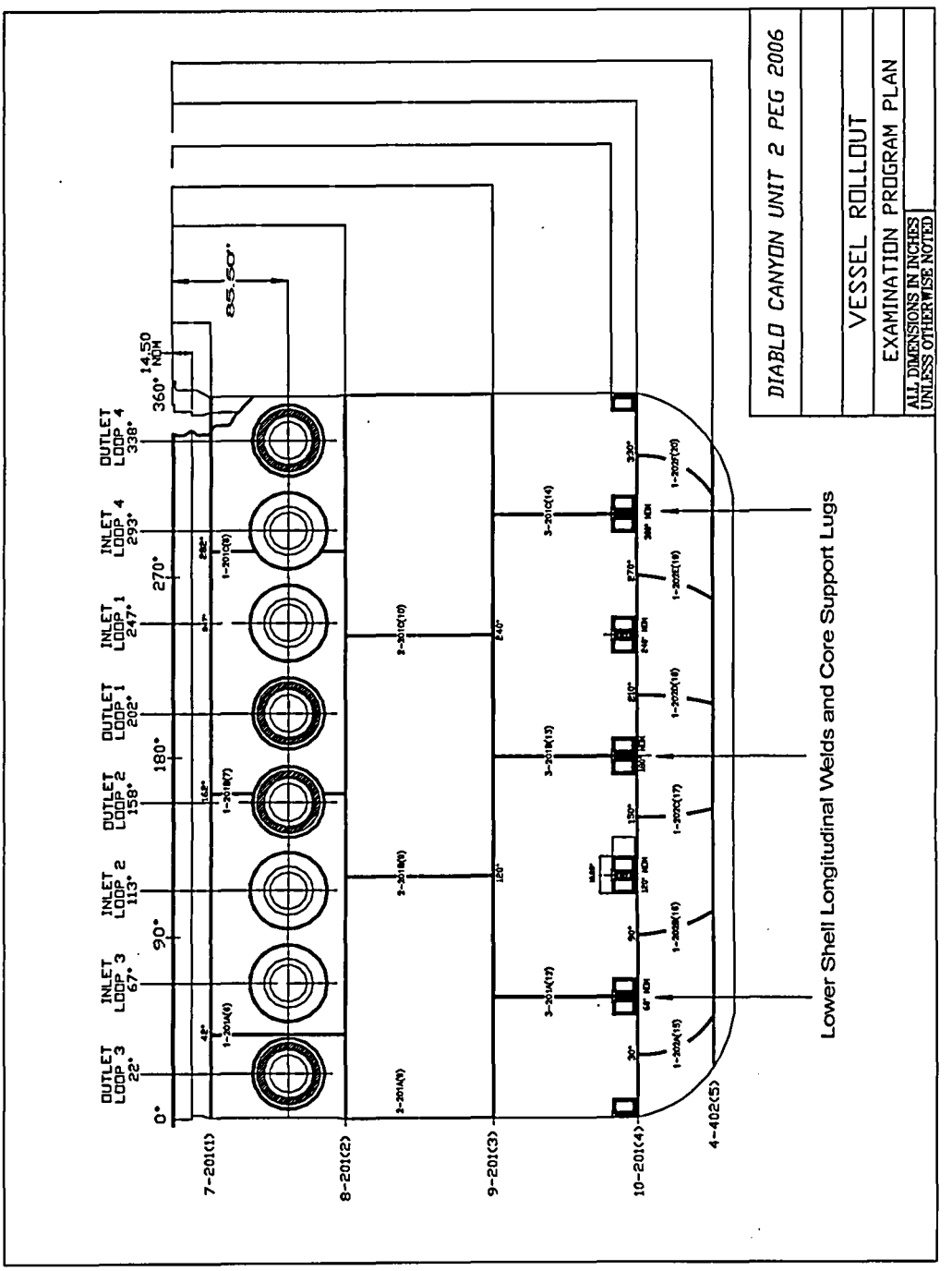
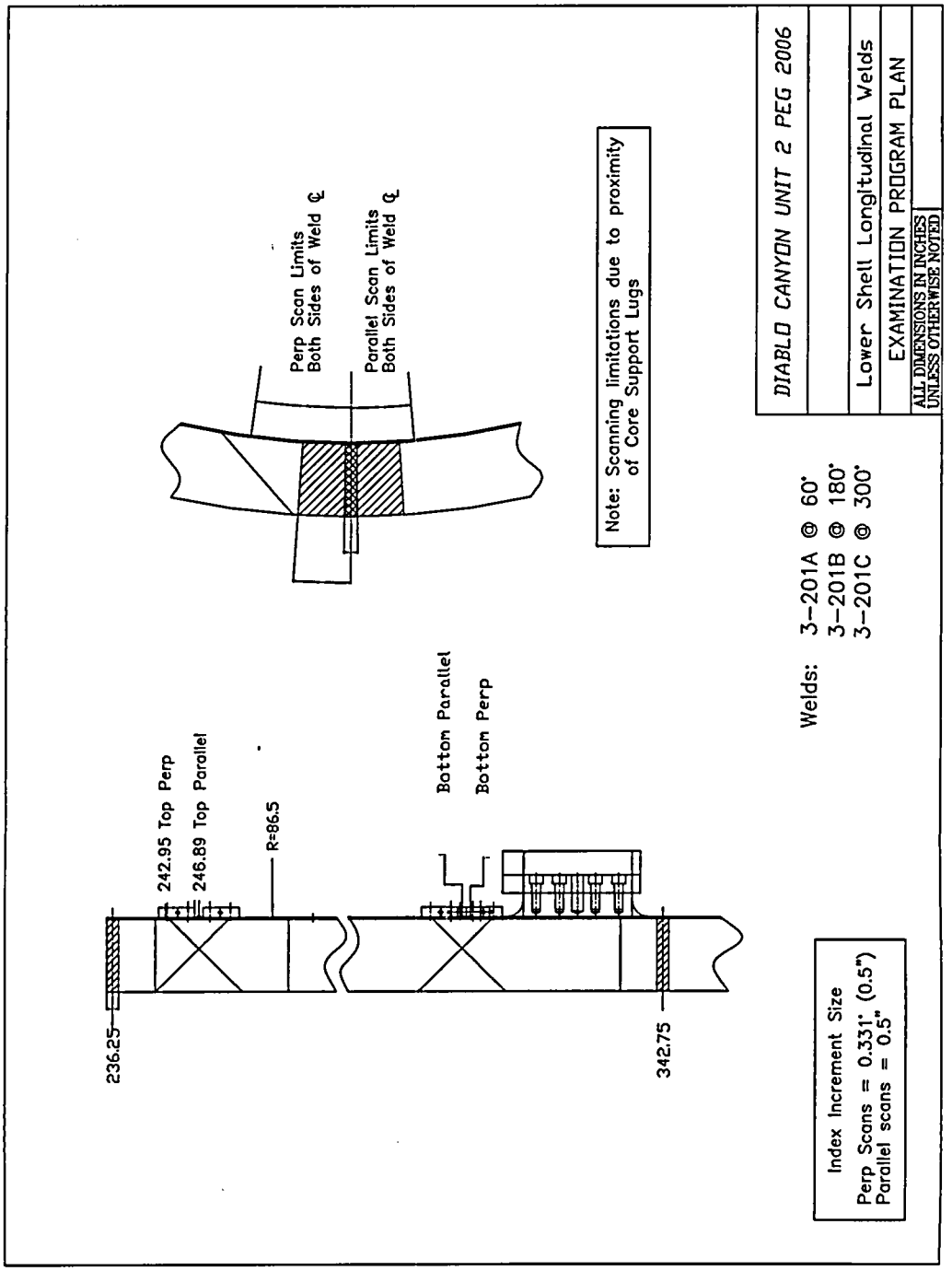


Diagram of DCPP Unit 2 Reactor Vessel Showing Area of ISI Limitation Due to the Presence of Core Support Lug
Figure 2



DCPP Unit 2 Reactor Vessel Lower Shell Longitudinal Weld
(Weld No. 3-201A) Coverage Percentages
Table 1

Diablo Canyon #2

RPV COVERAGE ESTIMATE BREAKDOWNS

DIRECTION / ORIENTATION

PARALLEL SCANS UP/DN
PERP. SCANS CCW/CW

ITEM / AREA Lower Long Seam Weld @ 60°

WELD NO. 3-201A

BEAM ANGLES

BEAM DIRECTION	45 Dual		45 Single		45 Shear					
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
CCW	79.49	79.49	77.12	77.12	79.49	79.49				
CW	79.49	79.49	77.12	77.12	79.49	79.49				
UP	79.24	79.24	79.24	79.24	85.47	85.47				
DOWN	79.24	79.24	79.24	79.24	85.47	85.47				
Combined Average = 80.01%	Limitation due to Core Support Lug @ 60°									

DCPP Unit 2 Reactor Vessel Lower Shell Longitudinal Weld (Weld No. 3-201B) Coverage Percentages
Table 2

Diablo Canyon #2

RPV COVERAGE ESTIMATE BREAKDOWNS

DIRECTION / ORIENTATION

PARALLEL SCANS: UP/DN
PERP. SCANS: CCW/CW

ITEM / AREA: Lower Long Seam Weld @ 180°

WELD NO.: 3-201B

BEAM ANGLES

BEAM DIRECTION	45 Dual		45 Single		45 Shear					
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
CCW	79.49	79.49	77.12	77.12	79.49	79.49				
CW	79.49	79.49	77.12	77.12	79.49	79.49				
UP	79.24	79.24	79.24	79.24	85.47	85.47				
DOWN	79.24	79.24	79.24	79.24	85.47	85.47				
Combined Average = 80.01%	Limitation due to Core Support Lug @ 180°									

Table 3
DCPP Unit 2 Reactor Vessel Lower Shell Longitudinal Weld (Weld No. 3-201C) Coverage Percentages

Diablo Canyon #2

RPV COVERAGE ESTIMATE BREAKDOWNS

DIRECTION / ORIENTATION

PARALLEL SCANS: UP/DN
PERP. SCANS: CCW/CW

ITEM / AREA: Lower Long Seam Weld @ 300°

WELD NO.: 3-201C

BEAM ANGLES

BEAM DIRECTION	45 Dual		45 Single		45 Shear					
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
CCW	79.49	79.49	77.12	77.12	79.49	79.49				
CW	79.49	79.49	77.12	77.12	79.49	79.49				
UP	79.24	79.24	79.24	79.24	85.47	85.47				
DOWN	79.24	79.24	79.24	79.24	85.47	85.47				
Combined Average = 80.01%	Limitation due to Core Support Lug @ 300°									