



L-MT-03-007

February 10, 2003

10 CFR Part 50  
Section 50.55a

US Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**MONTICELLO NUCLEAR GENERATING PLANT**  
Docket No. 50-263 License No. DPR-22

**Response to Request For Additional Information Related to Relief Request No. 16  
For the Third 10-Year Inservice Inspection Interval (TAC No. MB5487)**

Reference 1: Nuclear Management Company (NMC): JS Forbes to NRC, "Request for Review and Approval Relief Request Nos. 15 and 16 for the Monticello 3<sup>rd</sup> 10-Year Interval Inservice Inspection Examination Plan," Monticello Nuclear Generating Plant, Docket No. 50-263, License No. DPR-22, May 30, 2002.

Reference 2: NRC: DS Hood to NMC, "Monticello Nuclear Generating Plant – Request for Additional Information Related to Relief Request No. 16 For the Third Ten-Year Inservice Inspection Interval (TAC No. MB5487)," January 9, 2003.

Reference 1 contained Relief Request No. 16 for the Monticello Nuclear Generating Plant 3rd Ten Year Interval Inservice Inspection Examination Plan. Relief Request No. 16 addresses Section XI Inservice Inspections of limited examination coverage.

In Reference 2, the NRC requested additional information. The enclosure to this letter contains the NMC response to the request for additional information.

This letter contains no new NRC commitments, nor does it modify any prior commitments.

If you have any questions regarding this letter, please contact John Fields, Senior Licensing Engineer, at 763-295-1663.



David L. Wilson  
Site Vice President  
Monticello Nuclear Generating Plant

Enclosure: Response to The Request For Additional Information Related To Relief Request No. 16 For The Third 10-Year Inservice Inspection Interval, with attachments

cc: Regional Administrator-III, NRC  
NRR Project Manager, NRC  
Sr. NRC Resident Inspector, NRC  
State of Minnesota Boiler Inspector (w/o attachments to Enclosure)  
Hartford Insurance (w/o attachments to Enclosure)  
J. Silberg (w/o Enclosure)

**RESPONSE TO THE**  
**REQUEST FOR ADDITIONAL INFORMATION**  
**RELATED TO RELIEF REQUEST No. 16**  
**FOR THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL**  
**FOR**  
**NUCLEAR MANAGEMENT COMPANY, LLC**  
**MONTICELLO NUCLEAR GENERATING PLANT**  
**DOCKET NUMBER 50-263**

**1. SCOPE**

By letter dated May 30, 2002, the licensee, Nuclear Management Company, LLC, submitted Requests for Relief Nos. 15 and 16 from the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, for Monticello Nuclear Generating Plant, (Monticello). The requests for relief are for the third 10-year inservice inspection (ISI) interval, in which Monticello adopted the 1986 Edition of ASME Section XI, no addenda, as the Code of record. This request for additional information is applicable to Request for Relief No. 16 only (Request for Relief No. 15 is being addressed separately by NRC Staff). Pacific Northwest National Laboratory (PNNL) reviewed the information submitted by the licensee, and based on this review, determined the following information is required to complete the evaluation.

**2. REQUEST FOR ADDITIONAL INFORMATION**

**2.1 General Information:** Please state the start and end dates for the Monticello third 10-year ISI interval.

**NMC Response:** Start Date: June 1, 1992  
End Date: May 31, 2003 (1 year extension as permitted by ASME Section XI, IWA-2430(d))  
The primary Code of Record is ASME Section XI, 1986 Edition with no Addenda

**2.2 Request for Relief No. 16, Part A, Category B-A, Bottom Head-to-Reactor Vessel Weld VCBB-1**

The licensee states that examination coverage was limited to scans from one side of the weld only (in the area of the weld made accessible by removal of insulation in the nozzle N1B window). Also, it appears from the limitation report 102638 that only a 60 degree examination was performed. Please clarify whether this included both refracted longitudinal and shear wave examinations, and if only the 60 degree examination was applied.

It is noted that examinations on this weld were performed from the OD surface. Please provide any evaluations performed to determine the feasibility of examining this weld from the ID surface (via remote tooling or robotics).

Describe other reactor pressure vessel weld examinations that have been completed, including any indications observed; specifically describe examinations of circumferential welds exposed to similar operating conditions as VCBB-1. Please state why the limited

examination of Weld VCBB-1, considering all factors, provides a basis for reasonable assurance of continued structural integrity of this weld.

2.2.a. **NRC Question / Request:** Please clarify whether this included both refracted longitudinal and shear wave examinations, and if only the 60 degree examination was applied.

**NMC Response** As noted in ISI Report 2001U312 for Summary No.102638 which was included as Attachment 1 in the previous submittal package for Relief Request No 16 for the Third ISI Interval dated May 30, 2002 (hereafter referred to as "Original Submittal"), the primary angle applied to examination of VCBB-1 was 60 degrees and the primary mode of propagation, as specified by qualified examination procedure ISI-UT-3B, was a refracted longitudinal (RL) wave. A characteristic of the 60 degree RL transducer required for this procedure, is that it also produces a 28 degree shear wave that can be used for confirmation of indications.

Other techniques (e.g. automated techniques, phased array Ultrasonic Testing (UT) technology, shear wave methods, and other angles) were taken into consideration. These techniques did not meet the qualification requirements of the Performance Demonstration Initiative (PDI) and 10CFR50.55a for Reactor Pressure Vessel (RPV) ferritic base metal / clad interface manual detection exams at that time. Since the primary causes of the exam limitations are due to the inherent design characteristics of the Monticello RPV and not the applied examination technique or method, the application of additional, non-qualified techniques was determined by ISI Supervision to be impractical in this case.

Monticello also considered the use of a magnetic crawler delivered UT Inspection Device that travels between the outside diameter (OD) of the RPV and the RPV insulation and determined that it could not be used at that time. This method has been used successfully at other BWR units such as the Duane Arnold Energy Center. The crawler would require approximately 3 inches of space between the RPV and insulation. The Monticello insulation is mounted directly to the RPV and, by past observation, provides a minimal gap between the RPV and insulation (estimated to be less than 1 inch, in general).

A cross-sectional plot of the weld and examination area is attached to this Request For Additional Information (RAI) Response as Attachment 1. For scans perpendicular to the weld, this plot shows the beam propagation in relation to the weld and the physical obstruction created by the permanent insulation.

Drawings NX-7831-192 and NX-7831-323 are included in this RAI Response as Attachment 2 and Attachment 3 to provide additional details of the access limitations encountered for examination of Weld VCBB-1, e.g. Removable Insulation Panels (RIP's) and spacing between the Biological Shield and the RPV.

2.2.b **NRC Question / Request:** Please provide any evaluations performed to determine the feasibility of examining this weld from the ID surface (via remote tooling or robotics).

**NMC Response:** Because the access to Weld VCBB-1 is extremely limited from the OD, Monticello considered examination from the inside diameter (ID) surface using remote delivery devices. With the technology that was available, access to Weld VCBB-1 from the ID was not possible due to the inherent design characteristics of the Monticello RPV.

Weld VCBB-1 (Bottom Head-to-Vessel Shell Weld) is positioned just inches above the Core Shroud Shelf and Core Shroud Supports. That configuration eliminates the opportunity to obtain access through a removed fuel assembly and deliver a toolhead from below. The radial positioning of the Feedwater and Core Spray Spargers complicates remote access to the weld from the annulus. Further down the annulus region, access to Weld VCBB-1 with available tooling is blocked by the Jet Pump Nozzles that are inserted into the Core Shroud Shelf and by the Jet Pump Instrumentation Lines that enter through nozzles N8A and N8B. The configuration is shown on Drawing M00100V4, attached to this RAI Response as Attachment 4.

2.2.c. **NRC Question / Request:** Describe other reactor pressure vessel weld examinations that have been completed, including any indications observed; specifically describe examinations of circumferential welds exposed to similar operating conditions as VCBB-1.

**NMC Response:** The circumferential Vessel-to-Flange Weld, VCBC-5, and the RPV Longitudinal Seam Welds, VLAA-1, VLAA-2, VLBA-1, VLBA-2, VLDB-1, VLDB-2, including the intersecting portion of adjacent Circumferential Welds VCBA-2, VCBB-3, and VCBB-4, were also examined during the 2001 Refueling Outage. The In-Vessel UT Vendor, using PDI-qualified, proprietary techniques examined them from the interior surface of the RPV. With the exception of VLAA-1 and VLAA-2 (see Section 2.3), all welds were examined essentially 100%. No indications were reported or evaluated for any of the newly applied PDI-qualified exams.

The only other circumferential RPV weld examined in the past, besides those previously mentioned, is VCBB-4 (shell-to-shell). This weld is partially accessible from the RPV OD surface at the Feedwater Nozzle windows. In prior exams of this weld, only one small, mid-wall indication has been reported. This indication was evaluated and was within the acceptance criteria specified in the IWB-3000 tables.

In 2001, Monticello was granted relief from examination of all RPV Shell-to-Shell Welds, VCBA-2, VCBB-3, and VCBB-4, for the remainder of the current operating license (TAC No. MB0261). Relief Request No. 12 for the Third Ten-Year ISI Interval was granted based on meeting the requirements established in BWRVIP-05 Report. The BWRVIP-05 Report had been approved by an NRC Safety Evaluation Report (SER) in July of 1998 (TAC No. M93925) and SER Supplement in March of 2000 (TAC No. MA3395).

2.2.d. **NRC Question / Request:** Please state why the limited examination of Weld VCBB-1, considering all factors, provides a basis for reasonable assurance of continued structural integrity of this weld

**NMC Response:** Based on the results of VCBB-1's limited exam, the extent and examination results of Appendix VIII / PDI techniques for other RPV welds during the 2001 Refueling Outage (no indications), the granting of Relief Request #12 for all circumferential Shell-to-Shell Welds, successful performance of Class 1 boundary pressure tests during each refueling outage, and the impracticality of applying other techniques due to physical impediments, it is reasonable to conclude that Weld VCBB-1 has been examined to the extent practical, and there is reasonable assurance that the structural integrity of Weld VCBB-1 has been, and will continue to be, maintained.

2.3 **Request for Relief No. 16, Part A, Category B-A, Reactor Vessel Longitudinal Welds VLAA-1 and VLAA-2**

The licensee stated: "The volumetric examination was limited by available technology for in-vessel UT delivery tooling, the span distance between recirculation jet pump diffusers and their proximity to the reactor vessel wall, and the interference of the jet pump instrumentation lines. The UT head is 5.5-inch in width and 9.5-inch in height. The UT instrument head rotates 90 degrees to obtain a V-scan across the weld. The span distance between recirculation pump diffusers was less than the 9.5-inch UT instrument head, so the UT scan was not possible from the internal surface of reactor vessel." Please clarify the last sentence to ensure that the volumetric coverage obtained was indeed from the internal surface of the vessel wall

The licensee has claimed coverage of 80.1% and 75.8% of weld length(s). In addition, in limitation reports 2001VE301 and 2001VE302, several coverages for up, down, clockwise and counterclockwise scans are listed. Please confirm, through cross-sectional drawings or further descriptions, whether the coverage obtained was 100% of the Code-required volume for 80.1% and 75.8% of the length of these longitudinal welds, or whether the coverage was 80.1% and 75.8% of the volume for 100% of the weld length. Please state what cross-sections of the Code-required volume have been completed. Also, please describe any evaluations that were performed to determine if coverage could be reliably increased, e.g., a re-design of the UT tool head to minimize the overall size, or an evaluation of phased array technology to enable multiple scan angles without having to manipulate the tool head.

2.3.a **NRC Question / Request:** Please clarify the last sentence to ensure that the volumetric coverage obtained was indeed from the internal surface of the vessel wall

**NMC Response:** Welds VLAA-1 and VLAA-2, listed in Reports 2001VE301 and 2001VE302, Attachment 8 and Attachment 9 of the Original Submittal, were examined with UT techniques delivered by remote tooling and were scanned from the inside surface of the RPV.

2.3 b. **NRC Question / Request:** Please confirm, through cross-sectional drawings or further descriptions, whether the coverage obtained was 100% of the Code-required volume for 80.1% and 75.8% of the length of these longitudinal welds, or whether the coverage was 80.1% and 75.8% of the volume for 100% of the weld length. Please state what cross-sections of the Code-required volume have been completed

**NMC Response:** The majority of the examination coverage for Welds VLAA-1 and VLAA-2 was 100% coverage of the Code-required volume for the length available to examine. The majority of the coverage reduction for Welds VLAA-1 and VLAA-2 was due to the physical inaccessibility to the lower portion of the welds created by the Jet Pump Diffuser Nozzles, i.e. approximately 20-25% of the weld lengths had 0% coverage of the code required examination volume.

A discussion regarding the physical access to the lower portions of the weld was included in the Original Submittal. The tooling used for the exams was custom designed for use at Monticello with the plant fabrication drawings and three dimensional modeling of the RPV. The preliminary weld coverage estimates provided by the vendor showed that they expected to obtain 100% coverage of the examination volumes for Welds VLAA-1 and VLAA-2. However, during the examination planning and detailed accessibility study, it became evident that these welds would have limitations to scanner movement in the area mentioned, particularly between the Nozzles. A description of the anticipated limitation areas was shown on Attachment 10 provided with the Original Submittal.

Even with extensive preplanning, the as-built configuration in the Monticello RPV found equipment access to be more limited than expected. The custom tooling was unable to fit within the available space – areas originally anticipated to have limited physical scanning ended up having no scanner access. Drawing M00100V4, Attachment 4 to this RAI Response, shows the Jet Pump Assemblies in relation to the area of VLAA-1 and VLAA-2, particularly the Diffuser Nozzles that caused the obstruction preventing examination of the lower portions of the welds from the RPV ID surface. The congestion in the annulus region can also be seen on this drawing.

No cross-sectional plots were provided by the vendor as part of their examination activities. They provided tabular, composite coverage estimates of the limitations using their own methodologies, and these were included in the final report. These composite coverage estimates were provided in the Original Submittal as Attachments 8 and 9. Although the vendor did not prepare cross-sectional plots, using standard, basic UT principles, two simplified cross-sectional plots have been provided in this RAI Response for illustrative purposes. They show the 45 degree wave propagation through the zonal examination volumes for the scans perpendicular to the weld.

The sketch in Attachment 5 shows the cross-section of an exam with no physical scanner limitations which provides 100% coverage of the exam volume. The sketch in Attachment 6 shows an example of exam volume coverage obtained if a physical obstruction was encountered in a symmetrical fashion, equidistant on each side of the weld centerline, e.g. partial obstruction encountered with Jet Pump Diffusers prior to complete obstruction. The limitation would impact both the 0.6t and 0.4t zones for the perpendicular scans.

Based on the vendor determined coverage estimation sheet, included as Attachment 8 in the Original Submittal, a composite coverage of 80.1% of the required examination volume was achieved for Weld VLAA-1. The majority of the coverage reduction was due to the physical inaccessibility to the lower portion of VLAA-1 caused by the Jet Pump Diffuser Nozzles.

Based on the vendor determined coverage estimation sheet, included as Attachment 9 in the Original Submittal, a composite coverage of 75.8% of the required examination volume was achieved for Weld VLAA-2. The majority of the coverage reduction was due to the physical inaccessibility to the lower portion of VLAA-2 caused by the Jet Pump Diffuser Nozzles.

- 2.3.c. **NRC Question / Request:** Also, please describe any evaluations that were performed to determine if coverage could be reliably increased, e.g., a re-design of the UT tool head to minimize the overall size, or an evaluation of phased array technology to enable multiple scan angles without having to manipulate the tool head.

**NMC Response:** Tool design has been discussed above. The vendor would not have been able to provide a redesigned toolhead and reprogram the manipulator / scanner head programming within any reasonable time associated with the refueling outage. As seen on Attachments 2 and 4 to this RAI Response, there are no piping inlet nozzles in the region of VLAA-1 and VLAA-2 with sufficient proximity to permit partial access from the OD of the RPV by removing their removable insulation panels. Phased Array UT technology, which may reduce the access needs for scanning movement, had not yet been qualified to Appendix VIII / PDI by any vendor and was not used for this examination

Therefore, although their exams were limited, Welds VLAA-1 and VLAA-2 have been examined to the extent practical with qualified technology available at the time of the 2001 Refueling Outage.

#### 2.4 **Request for Relief No. 16, Part C, Category B-J, Pressure Retaining Piping Weld W-22 (LSUD)**

The licensee states that this weld, due to the piping-to-tee configuration, is available for UT scans from only the pipe side of the weld. However, the drawings supplied as part of limitation report 2001U321 do not adequately show this limitation. From these drawings, it appears that some access, albeit limited, may be possible from the tee side, and over the weld crown, for Scans 2, 3, and 4. Please clarify this discrepancy or further describe the scanning limitations. Also state if other B-J weld configurations are being examined to the full extent required by Code.

Please describe any evaluations of new technologies that the licensee has performed to determine if increased coverage of this and similar welds may be achieved, e.g., phased array applied from both sides of the weld, or other recently developed methods.



2.4.a **NRC Question / Request:** From these drawings, it appears that some access, albeit limited, may be possible from the tee side, and over the weld crown, for Scans 2, 3, and 4. Please clarify this discrepancy or further describe the scanning limitations.

**NMC Response:** The sketch provided by the UT examiner in Report 2001U321, Attachment 2 in the Original Submittal, does not fully depict the surface profile for actual tee-to-pipe configuration. Based on the Section XI Coordinator's recollection, the examiner verbally indicated that the radius of the tee was very close to the weld zone, and did not permit the transducer shoe to maintain adequate contact with the tee. Also, with the change in surface profile, the examiner would be unsure of where the sound beam was traveling. It was also noted on the report that this examination is performed in a 300 millirem/hour dose area.

The tee in this weld configuration is a 22 x 22 x 12 inch reducing tee. The examination was being performed from the side of the 12 inch Recirculation Riser. The weld number found on the report says W-22 (LSUD) (LSUD stands for Longitudinal Seam Upstream and Downstream). Sketches for Report 2001U321, included in the Original Submittal, have been enhanced to more accurately depict the configuration, and these enhanced sketches are included in this RAI Response as Attachment 7 (2 pages). Also included in this RAI Response as Attachment 8 is a spool piece drawing from Texas Pipe Bending Company which was provided at the time of the Recirculation System Piping Replacement Project in 1984. It more clearly shows what the examiner has described with regards to the proximity of the weld to the tee radius. The overhead view, which provides a relational view of the 22 inch to 12 inch pipe reduction, shows that the physically limiting condition of the tee radius described by the examiner would remain essentially constant for the entire circumference of the 12 inch weld, W-22 (LSUD).

The new Appendix VIII / PDI qualified procedure used for this exam, ISI-UT-16A, which utilized a 45 degree refracted longitudinal wave transducer, is not qualified for detection or length sizing of circumferentially oriented flaw indications when only single side access is available and the flaw is located on the far side of the weld. Because of the limitation imposed by the qualified technique for this piping configuration and the awareness that the examination occurs in a high radiation area, it was determined by ISI Supervision that performing examinations with other angles, wedge combinations, or other techniques would not provide a demonstrative benefit of increased coverage.

As stated in Report 2001U321, included with the Original Submittal, the techniques provided by this procedure were used for a *BEST EFFORT EXAMINATION* for [examination on] the far side of the weld. In other words, although the technique is not specifically qualified to Appendix VIII / PDI for a single-sided examination, the examiners are instructed to proceed with the same procedural examination techniques to obtain as much information as possible about the weld volume on the far side of the weld. However, for determining coverage for the Code required volume, it has been the practice at Monticello that no credit is applied to the portion of the examination volume located on the far side of the weld. 50%, the portion of the examination volume on the near side of the weld, is the maximum amount of "qualified Code coverage" applied for an

ultrasonic examination on austenitic stainless steel weld configurations at Monticello when access is limited to only one side of the weld.

- 2.4.b. **NRC Question / Request:** Also state if other B-J weld configurations are being examined to the full extent required by Code.

**NMC Response:** Other Category B-J welds in the ISI Program have been examined and meet the Code coverage requirements. A small number of the B-J welds contain a physical limitation which also imposes a technique limitation on the weld. Prior exams which were not capable of meeting Code coverage requirements have been submitted and approved in previous Relief Requests.

- 2.4.c. **NRC Question / Request:** Please describe any evaluations of new technologies that the licensee has performed to determine if increased coverage of this and similar welds may be achieved, e.g., phased array applied from both sides of the weld, or other recently developed methods

**NMC Response:** At the time of the exam, there were no other technologies (e.g. phased array UT technology) qualified to perform Appendix VIII / PDI.

Monticello, through the Nuclear Management Company, is a member utility of the PDI industry consortium and the EPRI NDE Center. Through participation in these organizations, Monticello is pursuing development and implementation of examination methods and technologies that will provide optimized results.

### **3.0 SUMMARY OF ATTACHMENTS FOR RELIEF REQUEST No. 16 RAI RESPONSE:**

**ATTACHMENT 1:** Cross-Sectional Plot of Weld VCBB-1 Limitation (as Supplemental Information for ISI Report 2001U312)

**ATTACHMENT 2:** Drawing NX-7831-192, Vessel Insulation below Elevation 34'-2"

**ATTACHMENT 3:** Drawing NX-7831-323, Insulation Arrangement - Upper Vessel

**ATTACHMENT 4:** Drawing M00100V4, Outside of Reactor Vessel Shell (Rolled Out)

**ATTACHMENT 5:** Simplified Cross-Sectional Plot of Weld VLAA-1 and VLAA-2 with 100% coverage (as Supplemental Information for ISI Report 2001VE301 and 2001VE302)

**ATTACHMENT 6:** Simplified Cross-Sectional Plot of Weld VLAA-1 and VLAA-2 with postulated coverage limitation (as Supplemental Information for ISI Report 2001VE301 and 2001VE302)

**ATTACHMENT 7:** Enhanced sketches for ISI Report 2001U321, Tee-to-Pipe configuration

**ATTACHMENT 8:** Texas Pipe Bending Company Spool Piece Drawing

## ATTACHMENT 1

Cross-Sectional Plot of Weld VCBB-1 Exam Limitation  
(As Supplemental Information for ISI Report 2001U312)



# UT Vessel Examination

ONLY PAGE 101-3  
ATTACHED TO RA1  
Report No.: 2001U312  
Page: 1 of 1-2  
3 PWD  
11/19/01

Site/Unit: NSP / M1  
Summary No.: 102638  
Examination For: ISI

Procedure: ISI-UT-3B  
Procedure Revision/FC: 0 / -  
Work Order No.: 0105401

Applicable Code: 1986 ISO Drawing No.: ISI Flg 4 Location: Reactor Vessel  
Description: B. Head/Vessel  
System ID: Reactor Vessel  
Component ID: VCBB-1 Size/Length: 6' 8" Thickness/Diameter: 6.25"  
Limitations: See Comments Start Time: 14:48 Finish Time: 15:35

Examination Surface: Inside  Outside  Surface Condition: Blended  
Lo Location: 180 Degree Wo Location: Centerline of Weld Couplant: Sonotrace 40 Batch No.: #95243  
Temp Tool Mfg.: Telatemp Serial No.: NSP 144 Surface Temp.: 95 °F

Cal. Sheet No.: 2001CA313

Angle Used	0	45	45T	60	60T	
Scanning dB				*	*	

Indication(s): Yes  No  Scan Coverage: Upstream  Downstream  CW  CCW

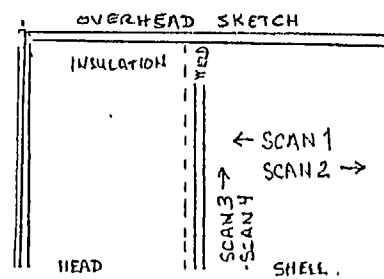
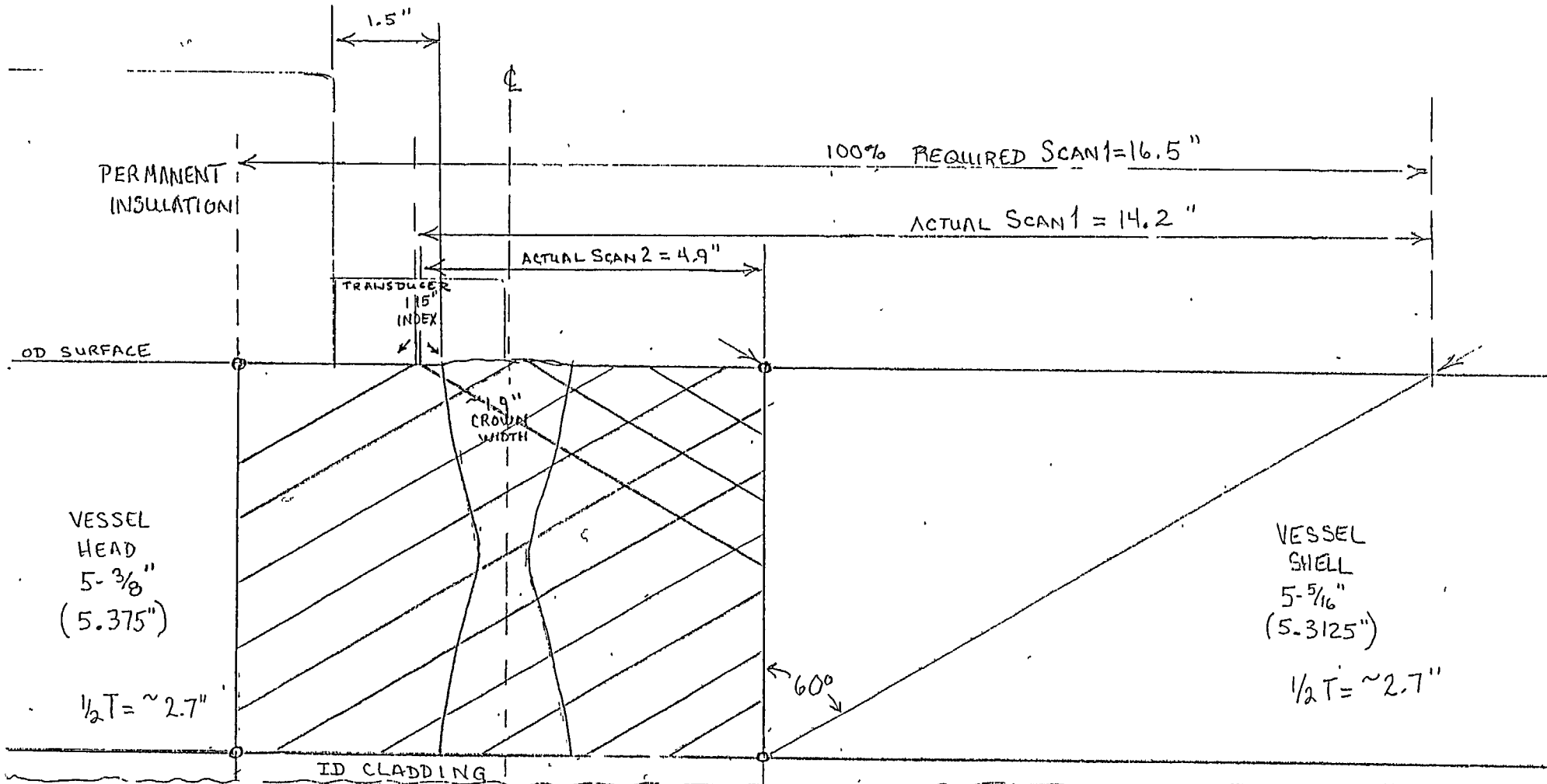
Comments:  
\* Scanned at 20 - 30% noise level. Examined 6' 8" at NIB window access. Upstream scan performed in 4 directions, shell side from centerline. No scan head side due to permanent insulation. Total examination area = 50% of required (for 6'-8" ACCESSIBLE LENGTH) PWD 11/20/01

Results: NAD  IND  GEO   
Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes PWD

Examiner	Level	III-PDI	Signature	Date	Reviewer	Signature	Date
Davis, Layn R.	/		<i>[Signature]</i>	11/12/2001	Clay, Sean P.	<i>[Signature]</i>	11-17-01
Examiner	Level	II-PDI	Signature	Date	Site Review	Signature	Date
Newgard, Jerry W.	/		<i>[Signature]</i>	11/12/2001	Deopere, Richard A.	<i>[Signature]</i>	11/26/01
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A	/				Clow, Ron	<i>[Signature]</i>	12/1/01

MONTICELLO NUCLEAR PLANT  
2001 REFUELING OUTAGE

SUPPLEMENTAL INFORMATION IN SUPPORT OF  
REPORT 20014312  
WELD VCBB-1  
LIMITED EXAMINATION  
(1/2 SCALE)



PREPARED BY: Richard A. Deopere UT Level III  
RICHARD A. DEOPERE

REVIEWED BY: Tom M. Jones UT Lvl III  
TOM M. JONES

## ATTACHMENT 2

Drawing NX-7831-192,  
Vessel Insulation below Elevation 34'-2"

*Drawing provided to support this submittal only.  
Future revisions will not be submitted*

**THIS PAGE IS AN  
OVERSIZED DRAWING  
OR FIGURE,  
THAT CAN BE VIEWED AT  
THE RECORD TITLED:  
DWG. NO. NX-7381-192, REV. B  
"VESSEL INSULATION  
DEVELOPMENT BELOW ELEV. 34'2"  
FOR G.E. NUCLEAR REACTOR-  
MONTICELLO VESSEL"  
SHEET 1 OF 1  
WITHIN THIS PACKAGE...OR,  
BY SEARCHING USING THE  
DRAWING NUMBER:  
NX-7381-192, REV. B**

**NOTE:** Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

**D-1**

## ATTACHMENT 3

### Drawing NX-7831-323 Insulation Arrangement - Upper Vessel

*Drawing provided to support this submittal only.  
Future revisions will not be submitted*



**THIS PAGE IS AN  
OVERSIZED DRAWING**

**OR FIGURE,**

**THAT CAN BE VIEWED AT**

**THE RECORD TITLED:**

**DWG. NO. NX-7381-323**

**"INSULATION ARRANGEMENT-  
UPPER VESSEL FOR G.E. NUCLEAR  
REACTOR- MONTICELLO  
VESSEL UNIT"**

**SHEET 1 OF 1**

**WITHIN THIS PACKAGE...OR,**

**BY SEARCHING USING THE**

**DRAWING NUMBER:**

**NX-7381-323**

**NOTE:** Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.

## ATTACHMENT 4

Drawing M00100V4  
Outside of Reactor Vessel Shell (Rolled Out)

*Drawing provided to support this submittal only.  
Future revisions will not be submitted*

**THIS PAGE IS AN  
OVERSIZED DRAWING  
OR FIGURE,**

**THAT CAN BE VIEWED AT  
THE RECORD TITLED:**

**DWG. NO. M00100V4  
"OUTSIDE OF REACTOR VESSEL  
SHELL (ROLLED OUT)"**

**WITHIN THIS PACKAGE...OR,  
BY SEARCHING USING THE  
DRAWING NUMBER:  
M00100V4**

**NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.**

## ATTACHMENT 5

Simplified Cross-Sectional Plot of Welds of  
VLAA-1 and VLAA-2 with 100% coverage

(As Supplemental Information for ISI Reports  
2001VE301 and 2001VE302)



# Vendor Exam For Ultrasonic

Site/Unit: NSP / M1 Procedure: PDI-ISI-254 Outage No.: MNGPRF22  
 Summary No.: 102642 Procedure Rev/FC: 4 / --- Report No.: 2001VE301  
 Workscope: ISI Work Order No.: 0003968 Page: 1 of 1

Code: 1986 Code Cat.: B-A Location: Reactor Vessel

Drawing No.: ISI Fig 4 Description: Long Seam

System ID: Reactor Vessel

Component ID: VLAA-1 Size/Length: \_\_\_\_\_ Thickness/Diameter: \_\_\_\_\_

Limitations: Jet Pump diffusers restricts access to lower portion of Weld.

### Comments:

See Wesdyne Report," Monticello Nuclear Generating Plant 10 Year Reactor Vessel Inservice Examination for NMC. Report 2001 interval 3, period3, Outage RFO20". Coverage of VLAA-1= 80.1%

Limitation is documented in Wesdyne Report

Results: NAD  IND  GEO

Percent Of Coverage Obtained > 90%: No

Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Clay, Sean	III-PDI	<i>[Signature]</i>	11/19/2001	Whitcomb, Daniel	<i>[Signature]</i>	11/19/2001
Examiner	Level	Signature	Date	Site Review	Signature	Date
	/			Deopere, Richard A.	<i>[Signature]</i>	2/15/02
Other	Level	Signature	Date	ANII Review	Signature	Date
	/			Suleski, Kurt A.	<i>[Signature]</i>	2/15/02



# Vendor Exam For Ultrasonic

Site/Unit: NSP / M1 Procedure: PDI-ISI-254 Outage No.: MNGPRF22  
 Summary No: 102643 Procedure Rev/FC: 4 / --- Report No.: 2001VE302  
 Workscope: ISI Work Order No.: 0003968 Page: 1 of 1

---

Code: 1986 Code Cat.: B-A Location Reactor Vessel

Drawing No.: ISI Fig 4 Description: Long Seam

System ID: Reactor Vessel

Component ID: VLAA-2 Size/Length: \_\_\_\_\_ Thickness/Diameter: \_\_\_\_\_

Limitations: Jet Pump diffusers restricts access to lower portion of Weld.

Comments:

See Wesdyne Report, "Monticello Nuclear Generating Plant 10 Year Reactor Vessel Inservice Examination <sup>for</sup> Report 2001 interval 3, period3, Outage RFO20." Coverage of VLAA-2= 75.8% <sup>for 2/15/02</sup> of NMC.

Limitation is documented in Wesdyne Report.

Results: NAD  IND  GEO

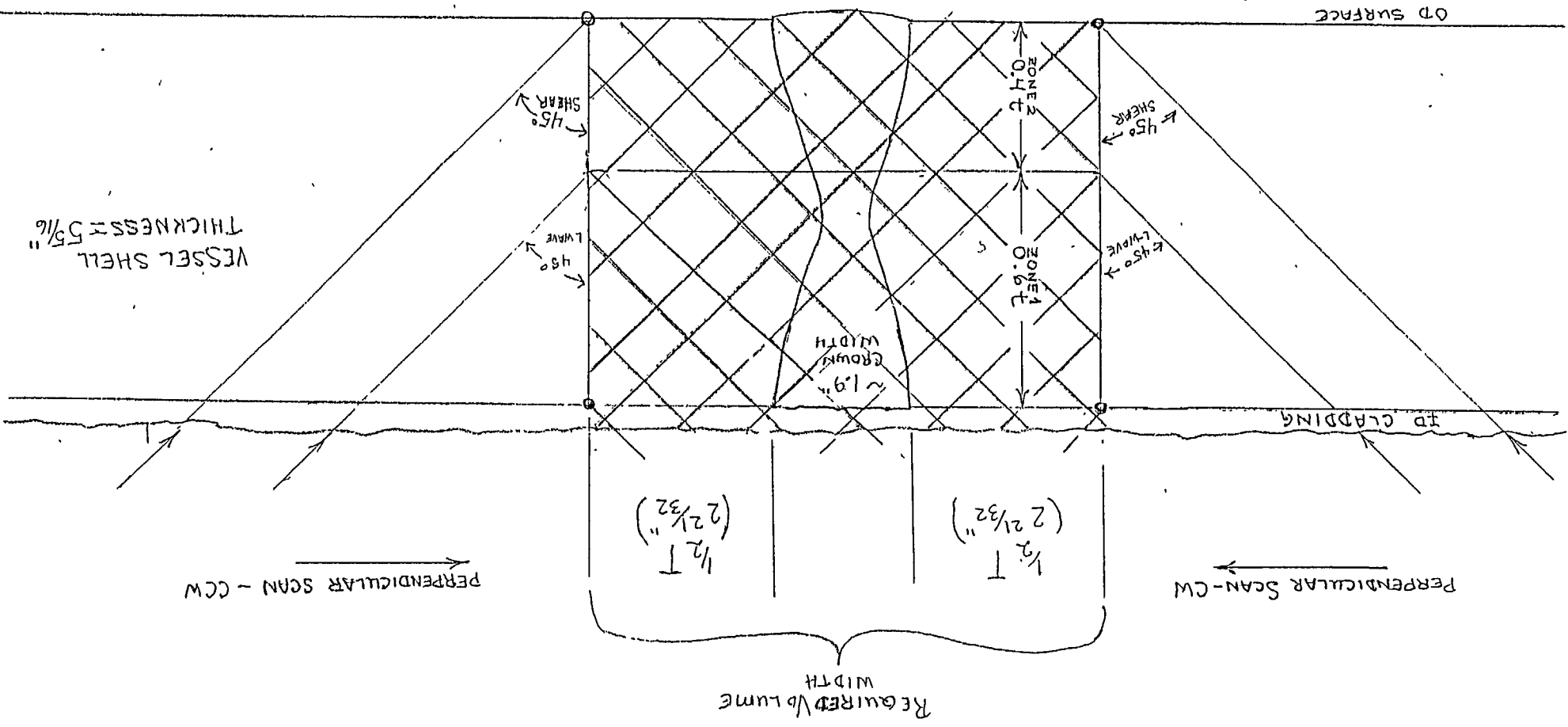
Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Examiner	Level	III-PDI	Signature	Date	Reviewer	Signature	Date
Clay, Sean	/		<i>[Signature]</i>	11/19/2001	Whitcomb, Daniel	<i>[Signature]</i>	11/19/2001
Examiner	Level	/	Signature	Date	Site Review	Signature	Date
	/				Deopere, Richard A.	<i>[Signature]</i>	2/15/02
Other	Level	/	Signature	Date	ANII Review	Signature	Date
	/				Suleski, Kurt A.	<i>[Signature]</i>	2/15/02

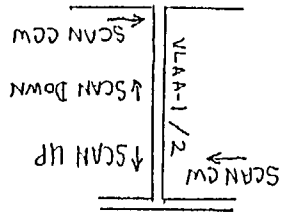
MONTECELLO NUCLEAR PLANT  
2001 REFUELING OUTAGE

SUPPLEMENTAL INFORMATION IN SUPPORT OF  
REPORTS 2001VE301 AND 2001VE302  
WELDS VLA-1 AND VLA-2  
SKETCH SHOWING 100% COVERAGE

(1/2 SCALE)



SKETCH



\* ACTUAL SURFACE IS SLIGHTLY CURVED \* RADIUS = 103" TO CLAD

PREPARED BY: ~~Tom Jones~~ <sup>RICHARD A. DEOPRE</sup>, UT Level III  
REVIEWED BY: ~~Tom Jones~~ <sup>TOM H. JONES</sup>, UT Level III

## ATTACHMENT 6

Simplified Cross-Sectional Plot of Welds  
VLAA-1 and VLAA-2 with postulated limitation

(As Supplemental Information for ISI Reports  
2001VE301 and 2001VE302)





# Vendor Exam For Ultrasonic

Site/Unit NSP / M1 Procedure: PDI-ISI-254 Outage No.: MNGPRF22  
 Summary No.: 102642 Procedure Rev/FC: 4 / --- Report No.: 2001VE301  
 Workscope: ISI Work Order No.: 0003968 Page: 1 of 1

---

Code: 1986 Code Cat.: B-A Location: Reactor Vessel  
 Drawing No.: ISI Fig 4 Description: Long Seam  
 System ID: Reactor Vessel  
 Component ID: VLAA-1 Size/Length: \_\_\_\_\_ Thickness/Diameter: \_\_\_\_\_  
 Limitations: Jet Pump diffusers restricts access to lower portion of Weld.

Comments:

See Wesdyne Report," Monticello Nuclear Generating Plant 10 Year Reactor Vessel Inservice Examination for NMC. Report 2001 interval 3, period3, Outage RFO20". Coverage of VLAA-1= 80.1%

Limitation is documented in Wesdyne Report

Results: NAD  IND  GEO

Percent Of Coverage Obtained > 90%: No

Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Clay, Sean	III-PDI		11/19/2001	Whitcomb, Daniel		11/19/2001
Examiner	Level	Signature	Date	Site Review	Signature	Date
	/			Deopere, Richard A.		2/15/02
Other	Level	Signature	Date	ANII Review	Signature	Date
	/			Suleski, Kurt A.		2/15/02



# Vendor Exam For Ultrasonic

Site/Unit: NSP / M1 Procedure: PDI-ISI-254 Outage No.: MNGPRF22  
 Summary No.: 102643 Procedure Rev/FC: 4 / --- Report No.: 2001VE302  
 Workscope: ISI Work Order No.: 0003968 Page: 1 of 1

---

Code: 1986 Code Cat.: B-A Location: Reactor Vessel  
 Drawing No.: ISI Fig 4 Description: Long Seam  
 System ID. Reactor Vessel  
 Component ID: VLAA-2 Size/Length: \_\_\_\_\_ Thickness/Diameter. \_\_\_\_\_  
 Limitations: Jet Pump diffusers restricts access to lower portion of Weld.

Comments:

See Wesdyne Report, "Monticello Nuclear Generating Plant 10 Year Reactor Vessel Inservice Examination <sup>P&P 2/15/02</sup> <sub>for</sub> of NMC. Report 2001 interval 3, period 3, Outage RFO20." Coverage of VLAA-2= 75.8%

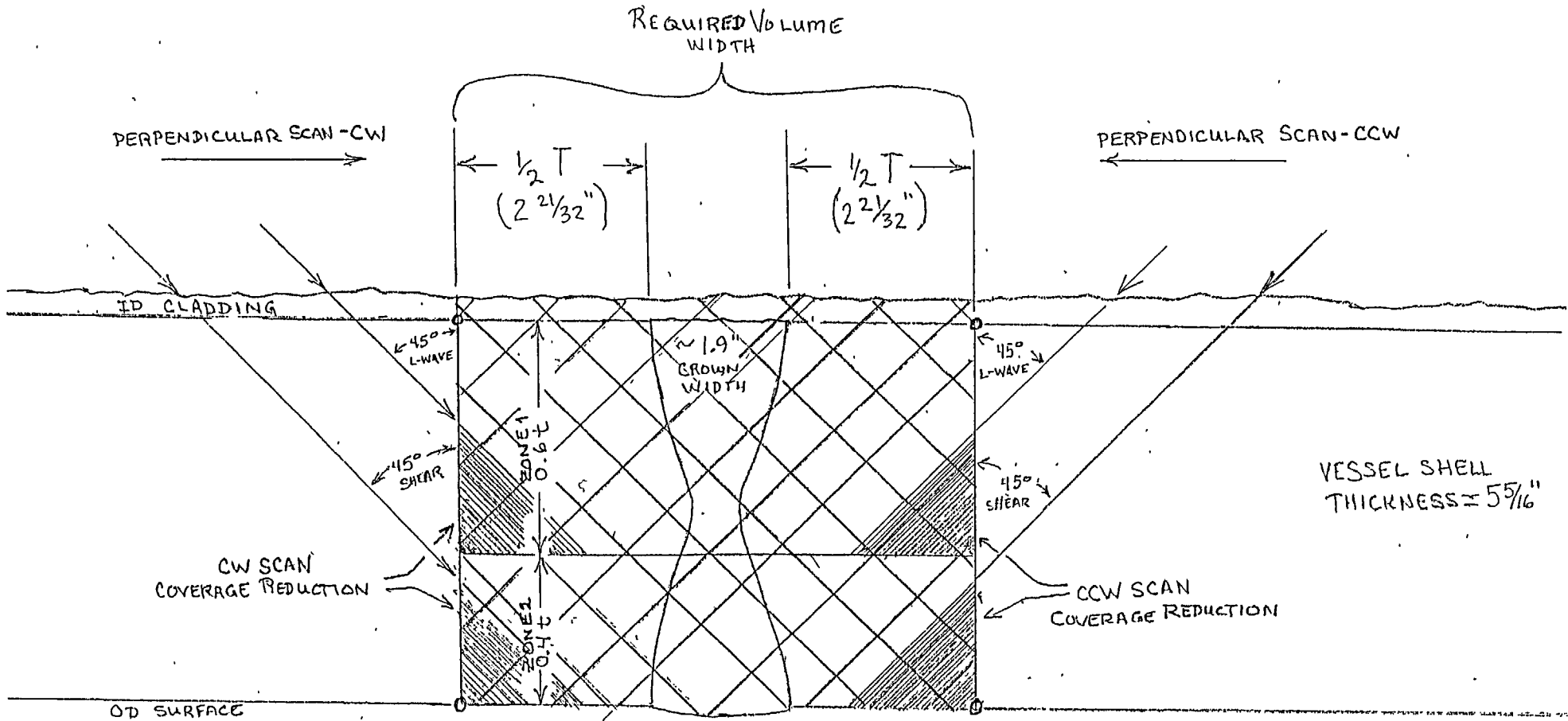
Limitation is documented in Wesdyne Report.

Results: NAD  IND  GEO   
 Percent Of Coverage Obtained > 90%. No Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Clay, Sean	III-PDI /	<i>[Signature]</i>	11/19/2001	Whitcomb, Daniel	<i>[Signature]</i>	11/19/2001
Examiner	Level /	Signature	Date	Site Review	Signature	Date
				Deopere, Richard A.	<i>[Signature]</i>	2/15/02
Other	Level /	Signature	Date	ANII Review	Signature	Date
				Suleski, Kurt A.	<i>[Signature]</i>	2/15/02

MONTICELLO NUCLEAR PLANT  
2001 REFUELING OUTAGE

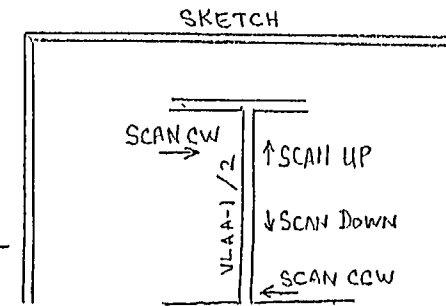
SUPPLEMENTAL INFORMATION IN SUPPORT OF  
REPORTS 2001VE301 AND 2001VE302  
WELDS VLAA-1 AND VLAA-2  
POSTULATED LIMITATION TO FULL SCANNER MOVEMENT  
(EXAMPLE ONLY)  
(1/2 SCALE)



\* ACTUAL SURFACE IS SLIGHTLY CURVED, RADIUS = 103" TO CLAD

PREPARED BY: Richard A. Deopere, UT Level III  
RICHARD A. DEOPERE

REVIEWED BY: Tom M. Jones, UT Level III  
TOM M. JONES



## ATTACHMENT 7

Enhanced sketches for ISI Report 2001U321,  
Tee-to-Pipe Configuration



# Limitation Record

Report No: 2001U321

Site/Unit: NSP / M1

Procedure: ISI-UT-16A

Page: 2 of 4

Summary No.: 102161

Procedure Revision/FC: 1 / -

Examination For: ISI

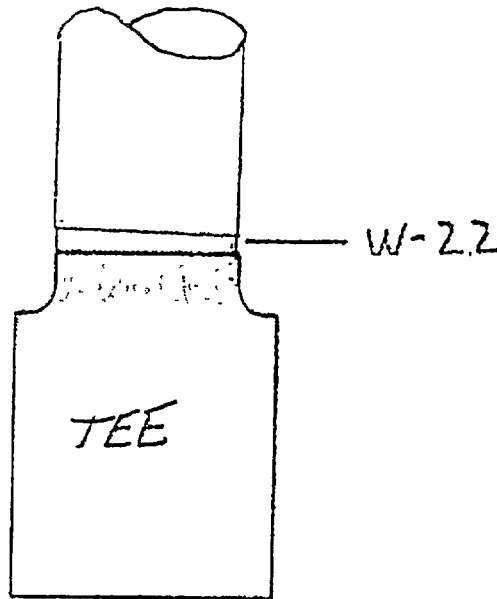
Work Order No.: 0105396

### Description of Limitation:

Single sided exam - Procedure ISI-UT-16A is not qualified for the detection of flaws on the far side of single side access exams. The techniques provided by this procedure were used for a BEST EFFORT EXAMINATION for flaws on the far side of the weld.

Sketch of Limitation: G:\DDEAL50\MNGR\PRFO2001\MNGP SUPPL UT\2001U321 bmp

SINGLE SIDED  
EXAM DUE TO  
TEE.



### Limitations removal requirements:

None

Radiation field: 300 mr

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Griebel, David M.		/	<i>[Signature]</i>	11/8/2001	Clay, Sean P.	<i>[Signature]</i>	11-19-01
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A		/			Deopere, Richard A.	<i>[Signature]</i>	11/23/01
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A		/			<i>[Signature]</i>	<i>[Signature]</i>	11/23/01



# Supplemental Report

Report No.: 2001U321

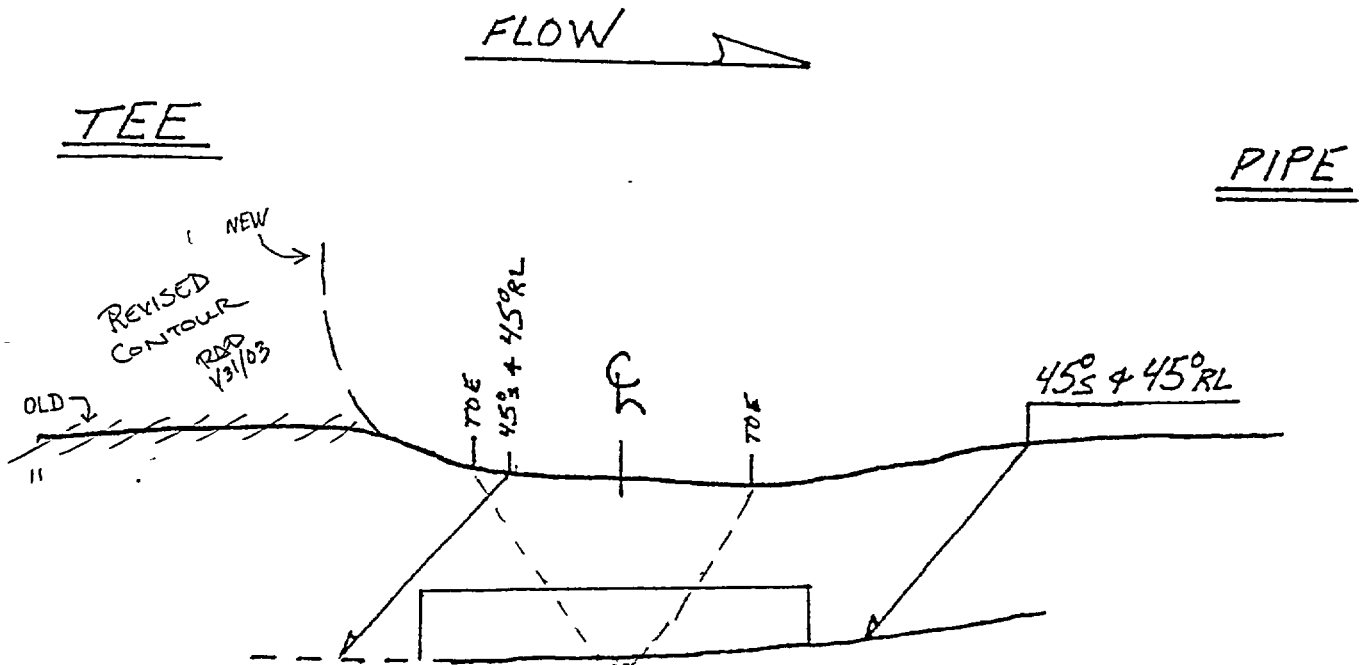
Page: 3 of 4

Summary No.: 102161

Examiner: <u>Griebel, David M. <i>DML</i></u>	Level: <u>II-PDI</u>	Reviewer: <u>Clay, Sean P.</u>	Date: <u>11-19-01</u>
Examiner: <u>N/A</u>	Level: <u>N/A</u>	Site Review: <u>Deopere, Richard A.</u>	Date: <u>11/23/01</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u><i>N/A</i></u>	Date: <u>11/23/01</u>

Comments: 50% coverage achieved

Sketch or Photo: G \IDDEAL50WNGPRFO2001WNGP SUPPL UT2001U321\_1 bmp



WELD: W-22 RRBJR-5

COVERAGE PLOT

## ATTACHMENT 8

Texas Pipe Bending Company Spool Piece Drawing,  
10040-300-P-201-1 Q-0561(1)-02,  
Tee for Weld Exam in ISI Report 2001U321

*Drawing provided to support this submittal only.  
Future revisions will not be submitted*

**TEXAS PIPE BENDING CO.**

**NPT**

Class N6987-21  
 1  
 1983

System: RECIRCULATION

Design Press: \_\_\_\_\_ psig

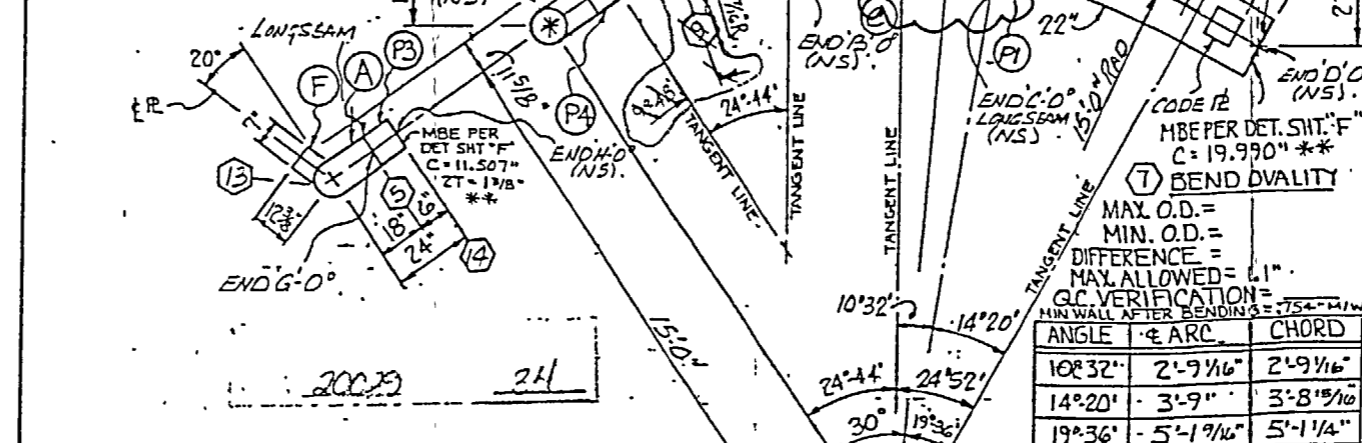
Design Temp: \_\_\_\_\_ °F

**B BEND QUALITY**

MAX. O.D. = \_\_\_\_\_  
 MIN. O.D. = \_\_\_\_\_  
 DIFFERENCE = \_\_\_\_\_  
 MAX. ALLOWED = .638"  
 G.C. VERIFICATION  
 RAD = 5'-10 7/16"

ANGLE	± ARC	CHORD
9°-48'	12 1/16"	12 1/16"
24°-44'	2'-6 7/16"	2'-6 3/16"

MIN. WALL AFTER BENDING = .602"



\*\*ALL OPEN MBE TO BE MACHINED AFTER FINAL HT. TREAT.  
 +SHOP CHECK FITTING DIM. BEFORE CUTTING PIPE

SEE FAB CONTROL SHEET FOR NOTES

110040-300-P-201-1 Q-056(1)-02

**T BEND QUALITY**

MAX. O.D. = \_\_\_\_\_  
 MIN. O.D. = \_\_\_\_\_  
 DIFFERENCE = \_\_\_\_\_  
 MAX. ALLOWED = .61"  
 G.C. VERIFICATION = \_\_\_\_\_  
 MIN. WALL AFTER BENDING = .754" MIN

ANGLE	± ARC	CHORD
10°-32'	2'-9 1/16"	2'-9 1/16"
14°-20'	3'-9"	3'-8 15/16"
19°-36'	5'-1 9/16"	5'-1 1/4"
24°-52'	6'-6 1/8"	6'-5 1/2"

NORTHERN STATES POWER CO.  
 MONTICELLO GENERATING PLANT, UNIT 1 DO 419  
 PROJ. NO. E82M003  
 RECIRCULATING PIPING LOOP "B"

TEE NOTED IN EX-AM 200110321

ALL MAT'L TYPE 316 STAIN STL (XAN)

ITEM	DESCRIPTION	HT. NO.	SER. NO.	DATE	BY
A 1	SA 403 GR W/P 3/16" (W/0.2% MAX CARBON) 12" SCH 80 LR 90° ELL W/2 MBE PER DET SHT F C=11.507"				
B 1	22" O.D. X 22" O.D. (.754" MW) X 12" SCH 80 RED TEE PER DET SHT A W/ MBE PER DET SHT F C=19.990"				
C 1	22" O.D. (.754" MW) X 12" SCH 80 CONC RED W/2 MBE PER DET SHT F C=19.990"				
D 1	1" 3000# SOCK W/ROSS PER DET SHT D				
E 1	3/4" SAMPLE NOZZLE PER DET SHT C				
F 1	SA 240 GR 3/16" (UT EXAMINE) 2" LHS 7" THX 6" X 7" LONG				
P 1	22" REF OD 4" 10" 2MBE PER DET SHT F C=19.990"				

CONT'D

WEIGHT LBS  
 TREAT HAWK-N6987  
 OR BEAM SEENOTE 8:9