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October 11, 2010

10 CFR 50.55a(g)(5)(iii)

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

Watts Bar Nuclear Plant, Unit 2  
NRC Docket No. 50-391

**Subject: Watts Bar Nuclear Plant (WBN) Unit 2 - American Society of Mechanical Engineers (ASME) Section XI Request for Relief WBN-2/PSI-1**

Reference: TVA letter dated January 29, 2008, "Watts Bar Nuclear Plant (WBN) - Unit 2 - Regulatory Framework for the Completion of Construction and Licensing Activities for Unit 2"

Pursuant to 10 CFR 50.55a(g)(5)(iii), TVA is submitting a relief request for the WBN Unit 2 Preservice Inspection (PSI) Program.

One of the Actions Required for Licensing in Reference 1 stated, "TVA plans to submit PSI related relief requests on or before September 24, 2010." This letter satisfies that action.

Enclosure 1 provides relief request WBN-2/PSI-1, which requests relief from the ASME Section XI, Table IWB-2500-1, Examination Category B-A, Note 2, and Examination Category B-J, Note 4, requirements that the extent of examination "includes essentially 100% of (*the: Exam Category B-A only*) weld length." The definition of "essentially 100%" is provided by both NRC Information Notice 98-42, "Implementation of 10 CFR 50.55a(g) Inservice Inspection Requirements," and Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1," and requires examination coverage of "more than 90 percent of the specified examination volume" in lieu of "essentially 100%."

Examination coverage of greater than 90 percent was not achieved for the welds listed in the proposed relief request and the applicable coverage percentage is specified in the relief request for each weld. The examination coverage achieved for the subject welds in conjunction with acceptable construction code examinations provides reasonable assurance that unallowable flaws do not exist in the subject component welds and that the welds are acceptable for service. Thus, an acceptable level of quality and safety will have been achieved and public health and safety will not be endangered by allowing the proposed alternative examination coverage in lieu of the Code requirement.

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The electronic files of nondestructive examination (NDE) reports referred to in Enclosure 1 are contained on the enclosed Optical Storage Media (OSM). Enclosure 2 lists the electronic files and the file sizes.

TVA requests NRC approval of relief request WBN-2/PSI-1 by October 15, 2011, to support the PSI schedule.

There are no new commitments associated with this submittal. If you have any questions, please contact William Crouch at (423) 365-2004.

Sincerely,



Masoud Bajestani  
Watts Bar Unit 2 Vice President

Enclosures:

1. American Society of Mechanical Engineers (ASME) Section XI Request for Relief WBN-2/PSI-1
2. List of Files Provided on Enclosed OSM

cc (Enclosures):

U. S. Nuclear Regulatory Commission  
Region II  
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245 Peachtree Center Ave., NE Suite 1200  
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NRC Resident Inspector Unit 2  
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U.S. Nuclear Regulatory Commission  
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bcc (Enclosures):

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## Enclosure 1

### TENNESSEE VALLEY AUTHORITY WATTS BAR NUCLEAR PLANT (WBN) UNIT 2

#### AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI REQUEST FOR RELIEF WBN-2/PSI-1

#### **SUMMARY:**

In accordance with 10 CFR 50.55a(g)(5)(iii), TVA is requesting relief from the “essentially 100%” code coverage required weld examination volume. This relief request addresses ASME Code Class 1 welds with the Examination Category and Item Numbers as specified in this relief request. The examination limitations described in this relief request are inherent to the component design and manufacture of the installed components given the original construction permit date for WBN Unit 2 of January 23, 1973.

NRC Information Notice 98-42, “Implementation of 10 CFR 50.55a(g) Inservice Inspection Requirements,” defined “essentially 100%” as “more than 90 percent of the specified examination volume.” In Code Case N-460, “Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1,” the ASME provided the same definition.

#### **1.0** SYSTEM/COMPONENTS FOR WHICH RELIEF IS REQUESTED

The Class 1 components for which relief is requested are listed in Table 1 along with information related to materials of construction, configuration and NDE results.

#### **2.0** APPLICABLE CODE EDITION AND ADDENDA

The applicable ASME Section XI Code Edition and Addenda for WBN Unit 2 PSI is the 2001 Edition through 2003 Addenda as amended by 10 CFR 50.55a.

#### **3.0** CODE REQUIREMENTS FROM WHICH RELIEF IS REQUESTED

In accordance with 10 CFR 50.55(g)(5)(iii), relief is requested from the extent of examination requirements of “essentially 100%” for the following examination categories and item numbers from Table IWB-2500-1: B-A, B1.40 (note 2); B-J, B9.11 (note 4); B-J, B9.22 (note 4); and B-J, B9.31 (note 4). This relief request is applicable to the ultrasonic examination method associated with the subject examination categories and item numbers.

WBN Unit 2 has invoked ASME Section XI Code Case N-460, “Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1.” Code Case N-460 states, in part, “when the entire examination volume or area cannot be examined...a reduction in examination coverage...may be accepted provided the reduction in coverage for that weld is less than 10%.”

## Enclosure 1

### 4.0 BASIS FOR RELIEF

In accordance with 10 CFR 50.55a(g)(5)(iii), relief is requested on the basis that the Code required, Table IWB-2500-1, “essentially 100%” examination coverage is impractical due to physical obstructions and limitations imposed by design, geometry, or physical obstructions for the welds and associated components listed in Table 1.

ASME Section XI, IWB-2200, “Preservice Examination,” requires that “preservice examination be extended to include essentially 100% of the pressure retaining welds in all Class 1 components”; therefore, no alternate Class 1 welds are available for selection. Compliance with the examination requirements of ASME Section XI would require significant modification of plant components to remove obstructions, redesign of plant systems/components, or replacement of components where geometry is inherent to the component design.

Weld profile sketches and coverage plots are included in the NDE reports attached to this relief request for the applicable welds in Table 1.

### 5.0 PROPOSED ALTERNATIVES

WBN Unit 2 performed the ASME Section XI Code required preservice volumetric examinations listed in Table 1 to the maximum extent possible utilizing certified personnel with applicable Performance Demonstration Initiative (PDI) endorsements and approved procedures.

For Examination Category B-J piping welds listed in Table 1, the examination personnel and equipment were required to meet Appendix VIII requirements as implemented by the Electric Power Research Institute (EPRI) PDI and mandated by 10 CFR 50.55a. The shear wave examination of the applicable stainless steel welds listed in Table 1, where access was limited to one side and the piping thickness is greater than 0.500”, was supplemented by a refracted longitudinal wave examination. For those welds in Table 1, where access was limited to one side and the piping thickness is 0.500” or less, a supplemental 70° shear wave was performed.

For the Examination Category B-A RPV head-to-flange weld, W08-09, listed in Table 1, the examination personnel and equipment were required to meet Article 4 of Section V, except that alternative examination Beam angles may be used, as specified in ASME Section XI, Mandatory Appendix I, I-2110(b). The Article 4, Section V examination was supplemented with an Appendix VIII qualified examination; however, no additional coverage was achieved or credited based on the Appendix VIII supplemental examination.

### 6.0 JUSTIFICATION FOR GRANTING RELIEF

The welds listed in Table 1 were examined to the maximum extent possible utilizing certified personnel, qualified equipment, and approved procedures to meet the preservice acceptance standards of ASME Section XI 2001 Edition through 2003 Addenda.

Surface conditioning of the subject welds was performed to the extent necessary to preclude a reduction in coverage associated with weld crowns, weld shrinkage, and surface roughness.

## Enclosure 1

Welds SIF-D199-05 and SIF-D199-06 had recordable root geometry identified by volumetric examination. Weld SIF-D197-05 had a recordable, but acceptable surface indication 1/8" in length located on the outside diameter valve side at the weld toe identified by surface examination. These three welds have not been in service and were acceptable to the construction code standards for installation. The examinations performed on these welds for both construction code and the limited coverage preservice examination, greater than 70% coverage minimum, are sufficient to ensure structural adequacy of the subject welds.

These welds also met the ASME Section III NDE acceptance criteria associated with construction, which for Class 1 butt welds requires radiography. The construction code radiography, while providing additional assurance of the structural integrity of the subject welds, is not qualified in accordance with ASME Section XI, Appendix VIII, and cannot be credited for ASME Section XI coverage. Additionally, the welds listed in Table 1 will be subjected to an ASME Section III pressure test prior to initial plant startup.

ASME Section XI, IWB-2200, "Preservice Examination," requires that "preservice examination be extended to include essentially 100% of the pressure retaining welds in all Class 1 components"; therefore, no alternate Class 1 welds are available for selection. Compliance with the examination requirements of ASME Section XI would require significant modification of plant components to remove obstructions, redesign of plant systems/components, or replacement of components where geometry is inherent to the component design.

The examination coverage achieved for the subject welds in conjunction with acceptable construction code examinations provides reasonable assurance that unallowable flaws do not exist in the subject component welds and that the welds are acceptable for service. Thus, an acceptable level of quality and safety will have been achieved and public health and safety will not be endangered by allowing the proposed alternative examination in lieu of the Code requirement.

### 7.0 IMPLEMENTATION SCHEDULE AND DURATION

Upon approval by the NRC staff, TVA will implement the provisions of this relief request for the Preservice Inspection of WBN Unit 2.



Enclosure 1

TABLE 1 - ASME CODE CLASS 1 COMPONENTS						
System / Component ID	Materials (Configuration)	Category / Item No.	Dia. / Thk.	Report Number	Limited Scan %	Additional Information
RCS / RCF-C2-2	SA-351 CF-8A (pipe and pump)	B-J / B9.11	27.5" / 2.21"	R-P0147	75%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation upstream due to pump housing configuration. NRI* (PT NRI*)
RCS / RCF-C3-2	SA-351 CF-8A (pipe and pump)	B-J / B9.11	27.5" / 2.21"	R-P0149	75%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation upstream due to pump housing configuration. NRI* (PT NRI*)
RCS / RCF-D145-05	SA-403 WP304 (tee and reducer)	B-J / B9.11	4" / 0.531"	R-P0228	90%	Beam angle: 1) 45° shear and 2) 70° shear Transducer Size: 1) .250" and 2) .250" Limitation due to tee and reducer configuration. NRI* (PT NRI*)
RCS / RCF-D145-08	SA-403 WP304 / SA-182 F316 (elbow/valve)	B-J / B9.11	4" / 0.531"	R-P0226	50%	Beam angle: 1) 45° shear and 2) 60° refracted longitudinal Transducer Size: 1) .250" and 2) dual 8x14mm Limitation due to valve body taper. NRI* (PT NRI*)
RCS / RCF-G1-4	SA-351 CF-8A (pipe and pump)	B-J / B9.11	31" / 2.48"	R-P0152	75%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation downstream due to pump housing configuration. NRI* (PT NRI*)

**Enclosure 1**

<b>TABLE 1 - ASME CODE CLASS 1 COMPONENTS</b>						
<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
RCS / RCF-G2-4	SA-351 CF-8A (pipe and pump)	B-J / B9.11	31" / 2.48"	R-P0156	75%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation downstream due to pump housing configuration. NRI* (PT NRI*)
RCS / RCF-G3-4	SA-351 CF-8A (pipe and pump)	B-J / B9.11	31" / 2.48"	R-P0150	75%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation downstream due to pump housing configuration. NRI* (PT NRI*)
RCS / RCF-G4-4	SA-351 CF-8A (pipe and pump)	B-J / B9.11	31" / 2.48"	R-P0155	75%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation downstream due to pump housing configuration. NRI* (PT NRI*)
RCS / RCS-1-6	SA-351 CF-8A / SA-182 F316 (pipe/branch)	B-J / B9.31	6" / 2.33***	R-P0101	50%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation from branch connection side due to configuration. NRI* (PT NRI*)
RCS / RCS-2-6	SA-351 CF-8A / SA-182 F316 (pipe/branch)	B-J / B9.31	6" / 2.33***	R-P0105	50%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation from branch connection side due to configuration. NRI* (PT NRI*)

Enclosure 1

TABLE 1 - ASME CODE CLASS 1 COMPONENTS						
System / Component ID	Materials (Configuration)	Category / Item No.	Dia. / Thk.	Report Number	Limited Scan %	Additional Information
RCS / RCS-3-6	SA-351 CF-8A / SA-182 F316 (pipe/branch)	B-J / B9.31	6" / 2.33"***	R-P0106	50%	Beam angle: 45° refracted longitudinal Transducer Size: .5"x1.0" Limitation from branch connection side due to configuration. NRI* (PT NRI*)
RCS / RCW-01	SA-351 CF-8A / SA-182 F316 (pipe/branch)	B-J / B9.31	4" / 2.21"***	R-P0107	46%	Beam angle: 1) 45° shear and 2) 60° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from pipe side due to configuration. NRI* (PT NRI*)
RCS / RCW-02	SA-351 CF-8A / SA-182 F316 (pipe/branch)	B-J / B9.31	4" / 2.21"***	R-P0108	41%	Beam angle: 1) 45° shear and 2) 60° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from pipe side due to configuration NRI* (PT NRI*)
RHRS / RHRF-D031-04	SA-403 WP316 / SA-182 F316 (tee/valve)	B-J / B9.11	14" / 1.250"	R-P0689	76%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation due to valve to tee configuration. NRI* (PT NRI*)

**Enclosure 1**

**TABLE 1 - ASME CODE CLASS 1 COMPONENTS**

<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
RHRS / RHRF-D031-13	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	14" / 1.250"	R-P0766	83%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation due to valve to tee configuration. NRI* (PT NRI*)
RHRS / RHRF-D031-14	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	10" / 1.00"	R-P0767	90%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation due to valve to elbow configuration. NRI* (PT NRI*)
RHRS / RHRS-015	SA-403 TP316 / SA-403 WP316 (pipe/tee)	B-J / B9.11	10" / 1.00"	R-P0759	88%	Phased array 25° to 70° shear wave sector (16 element probe) Limitation from tee side configuration NRI* (PT NRI*)
RPV / W08-09	SA-508 C12 (ring and flange)	B-A / B1.40	173" / 7.30"	R-P1014	75%	Beam angle: 1) 0° longitudinal 2) 45° shear and 3) 60° shear, Transducer Size: 1) 1", 2) .5" x 1.0", and 3) .5" x 1.0" Limitations from the flange profile configuration and three lifting lugs (4.0" tall x 5.9" length each and have a 12.8" arc length in contact with RPV head) see attached sketch (page E1-11) NRI* (PT NRI*)

**Enclosure 1**

<b>TABLE 1 - ASME CODE CLASS 1 COMPONENTS</b>						
<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
SIS / SIF-B-T076-06	SA-376 TP304 / SA-182 F316 (pipe/flange)	B-J / B9.22	1.5" / 0.281"	R-P0590	50%	Phased array 35° to 80° shear wave sector (8 element probe), Limitation from flange side configuration NRI* (UT only)
SIS / SIF-B-T076-23	SA-376 TP304 / SA-182 F316 (pipe/flange)	B-J / B9.22	1.5" / 0.281"	R-P0591	50%	Phased array 35° to 80° shear wave sector (8 element probe), Limitation from flange side configuration NRI* (UT only)
SIS / SIF-B-T077-01	SA-376 TP304 / SA-403 WP304 (pipe/tee)	B-J / B9.22	1.5" / 0.281"	R-P0650	75%	Phased array 35° to 80° shear wave sector (8 element probe), Limitation from tee side configuration NRI* (UT only)
SIS / SIF-B-T095-01	SA-376 TP304 / SA-182 F316 (pipe/nozzle)	B-J / B9.22	1.5" / 0.281"	R-P0588	50%	Phased array 35° to 70° circ/80° axial shear wave sector (8 element probe), Limitation from branch side configuration NRI* (UT only)
SIS / SIF-B-T097-13	SA-376 TP304 / SA-182 F316 (pipe/flange)	B-J / B9.22	1.5" / 0.281"	R-P0589	50%	Phased array 35° to 70° circ/80° axial shear wave sector (8 element probe) Limitation from flange side configuration NRI* (UT only)
SIS / SIF-B-T107-04	SA-376 TP304 / SA-182 F316 (pipe/flange)	B-J / B9.22	1.5" / 0.281"	R-P0646	50%	Phased array 35° to 80° shear wave sector (8 element probe) Limitation from flange side configuration NRI* (UT only)
SIS / SIF-B-T107-05	SA-376 TP304 / SA-182 F316 (pipe/flange)	B-J / B9.22	1.5" / 0.281"	R-P0649	50%	Phased array 35° to 80° shear wave sector (8 element probe) Limitation from flange side configuration NRI* (UT only)

**Enclosure 1**

<b>TABLE 1 - ASME CODE CLASS 1 COMPONENTS</b>						
<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
SIS / SIF-B-T107-26	SA-376 TP304 / SA-182 F316 (pipe/nozzle)	B-J / B9.22	1.5" / 0.281"	R-P0647	75%	Phased array 35° to 80° shear wave sector (8 element probe) Limitation from branch side configuration NRI* (UT only)
SIS / SIF-B-T142-01	SA-376 TP304 / SA-182 F316 (pipe/nozzle)	B-J / B9.22	1.5" / 0.281"	R-P0651	49%	Phased array 35° to 80° shear wave sector (8 element probe) Limitation from branch side configuration NRI* (UT only)
SIS / SIF-B-T154-01	SA-376 TP304 / SA-182 F316 (pipe/nozzle)	B-J / B9.22	1.5" / 0.281"	R-P0648	71%	Phased array 35° to 80° shear wave sector (8 element probe) Limitation from branch side configuration NRI* (UT only)
SIS / SIF-D193-03	SA-376 TP304 / SA-182 F316 (pipe/valve)	B-J / B9.22	3" / 0.281"	R-P0508	70%	Beam angle: 1) 45° shear and 2) 70° shear Transducer Size: 1) .250" and 2) .250" Limitation from valve side due to configuration NRI* (UT only)
SIS / SIF-D196-03	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0437	68%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation due to valve to elbow configuration NRI* (PT NRI*)

**Enclosure 1**

<b>TABLE 1 - ASME CODE CLASS 1 COMPONENTS</b>						
<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
SIS / SIF-D196-05	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0472	73%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D196-06	SA-403 WP316 / SA-182 F316 (tee/valve)	B-J / B9.11	10" / 1.00"	R-P0486	75%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation due to valve to tee configuration NRI* (PT NRI*)
SIS / SIF-D196-07	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	6" / 0.719"	R-P0440	73%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D196-10	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0487	73%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from valve side due to configuration NRI* (PT NRI*)

**Enclosure 1**

<b>TABLE 1 - ASME CODE CLASS 1 COMPONENTS</b>						
<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
SIS / SIF-D196-11	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	10" / 1.00"	R-P0488	75%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D197-03	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0304	75%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D197-05	SA-403 WP316 / SA-182 F316 (tee/valve)	B-J / B9.11	10" / 1.00"	R-P0287	73%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT - 1/8" recordable linear)
SIS / SIF-D197-08	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0306	74%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)



**Enclosure 1**

<b>TABLE 1 - ASME CODE CLASS 1 COMPONENTS</b>						
<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
SIS / SIF-D197-09	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	10" / 1.00"	R-P0305	74%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D197-11A	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	6" / 0.719"	R-P0620	50%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (dual element probe) Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D198-03	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0348	75%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D198-04	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0341	75%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)

**Enclosure 1**

<b>TABLE 1 - ASME CODE CLASS 1 COMPONENTS</b>						
<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
SIS / SIF-D198-05	SA-403 WP316 / SA-182 F316 (tee/valve)	B-J / B9.11	10" / 1.00"	R-P0344	75%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D198-06	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	6" / 0.719"	R-P0349	75%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D198-10	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	10" / 1.00"	R-P0343	75%	Beam angle: 1) 45° shear and 2) 60° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)
SIS / SIF-D199-03	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	10" / 1.00"	R-P0434	57%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)

**Enclosure 1**

**TABLE 1 - ASME CODE CLASS 1 COMPONENTS**

<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
SIS / SIF-D199-05	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0369	74%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from valve side due to configuration. Recordable root geometry 360° at varying amplitude. (PT NRI*)
SIS / SIF-D199-06	SA-403 WP316 / SA-182 F316 (tee/valve)	B-J / B9.11	10" / 1.00"	R-P0370	75%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from valve side due to configuration. Recordable root geometry 360° at varying amplitude. (PT NRI*)
SIS / SIF-D199-07	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	6" / 0.719"	R-P0405	70%	Beam angle: 1) 45° shear and 2) 70° refracted longitudinal Transducer Size: 1) .375" and 2) dual 8x14mm Limitation from valve side due to configuration NRI* (PT NRI*)

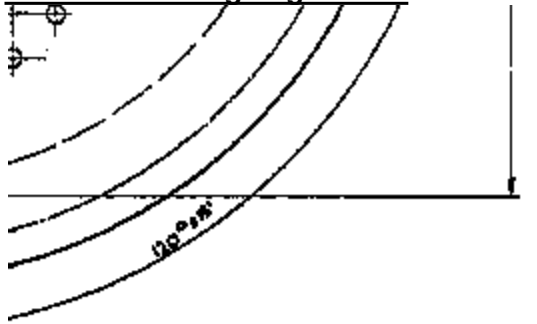
**Enclosure 1**

<b>TABLE 1 - ASME CODE CLASS 1 COMPONENTS</b>						
<b>System / Component ID</b>	<b>Materials (Configuration)</b>	<b>Category / Item No.</b>	<b>Dia. / Thk.</b>	<b>Report Number</b>	<b>Limited Scan %</b>	<b>Additional Information</b>
SIS / SIF-D199-10	SA-376 TP316 / SA-182 F316 (pipe/valve)	B-J / B9.11	10" / 1.00"	R-P0382	73%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from valve side due to configuration. NRI* (PT NRI*)
SIS / SIF-D199-11	SA-403 WP316 / SA-182 F316 (elbow/valve)	B-J / B9.11	10" / 1.00"	R-P0383	73%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from valve side due to configuration. NRI* (PT NRI*)
SIS / SIF-D199-15	SA-403 WP316 (tee and elbow)	B-J / B9.11	6" / 0.719"	R-P0491	61%	Phased array 25° to 70° shear wave sector (16 element probe) and 40° to 70° refracted longitudinal wave sector (15 element probe supplemental) Limitation from tee side due to configuration. NRI* (PT NRI*)

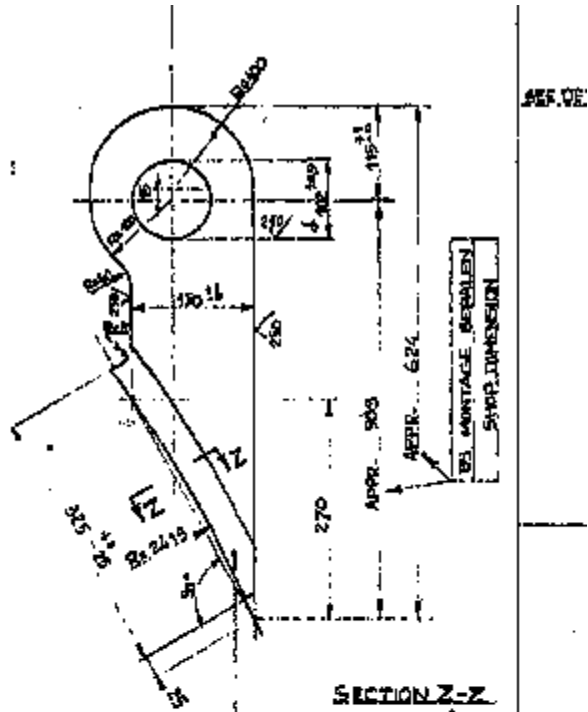
\* NRI: No Recordable Indications

\*\* Nominal wall thickness is given from the piping side of a branch connection

RPV Head Lifting Lug Sketch



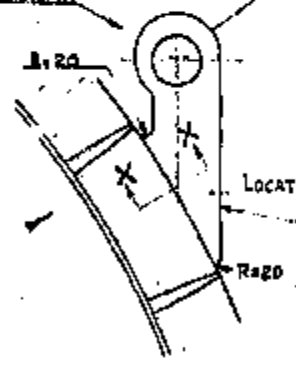
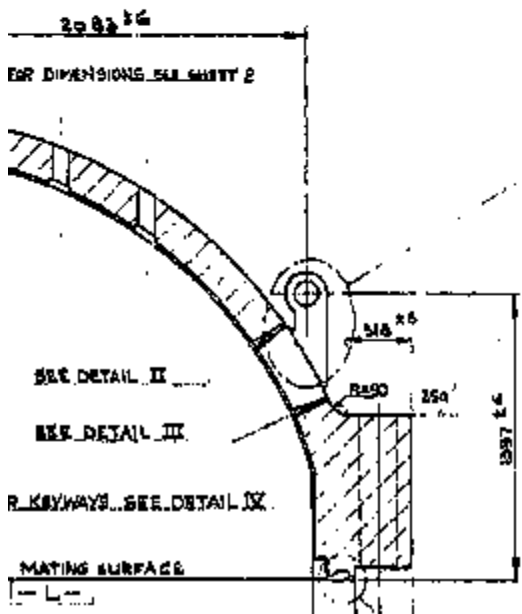
DIMENSIONS AND TOLERANCES OF ADAPTERS SEE DWG 30738-1847 5W-13.  
 AFMETINGEN EN TOLEZANTIES VAN ADAPTERS ZIE TEK 30738-1847 9H.1-13



**WARNING**

DON'T USE ONLY ONE (1) LIFTING LUG FOR TURN OVER OPERATION IN WORKSHOP

FABRICATED FROM THE MATERIAL OF ITEM 02



LOCATED ON 0°, 120° & 240°  
 AFTER WELDING IT SHALL BE CHECKED THAT THE 2 CIRCUMFERENTIAL WELDS ARE FREE FROM THE LIFTING LUGS (AS SHOWN).

NA HET LAGEN CONTROLLEREN OP DE 2 RONNADEN VAN ZUN. VAN DE HUSCHEN (ZDALS BETEKEND).

SECTION Y-Y  
 SCALE 1:1

SECTION

BACK

SCALE

## ENCLOSURE 2

### List of Files Provided on Enclosed Optical Storage Media (OSM)

Tennessee Valley Authority - Watts Bar Nuclear Plant - Unit 2, Docket No. 50-391

File Name	Fill Size (Bytes)
01 - NDE Report # R-P0101	429,086
02 - NDE Report # R-P0105	327,427
03 - NDE Report # R-P0106	379,655
04 - NDE Report # R-P0107	439,107
05 - NDE Report # R-P0108	425,388
06 - NDE Report # R-P0147	285,886
07 - NDE Report # R-P0149	277,510
08 - NDE Report # R-P0150	238,133
09 - NDE Report # R-P0152	241,152
10 - NDE Report # R-P0155	250,381
11 - NDE Report # R-P0156	292,119
12 - NDE Report # R-P0226	389,718
13 - NDE Report # R-P0228	370,479
14 - NDE Report # R-P0286	86,482
15 - NDE Report # R-P0287	335,788
16 - NDE Report # R-P0304	462,739
17 - NDE Report # R-P0305	363,301
18 - NDE Report # R-P0306	363,713
19 - NDE Report # R-P0341	360,572
20 - NDE Report # R-P0343	330,485
21 - NDE Report # R-P0344	377,635
22 - NDE Report # R-P0348	275,543
23 - NDE Report # R-P0349	409,510
24 - NDE Report # R-P0369	448,429

## ENCLOSURE 2

### List of Files Provided on Enclosed Optical Storage Media (OSM)

Tennessee Valley Authority - Watts Bar Nuclear Plant - Unit 2, Docket No. 50-391

File Name	Fill Size (Bytes)
25 - NDE Report # R-P0370	442,420
26 - NDE Report # R-P0382	446,365
27 - NDE Report # R-P0383	372,546
28 - NDE Report # R-P0405	325,054
29 - NDE Report # R-P0434	349,900
30 - NDE Report # R-P0437	392,200
31 - NDE Report # R-P0440	329,566
32 - NDE Report # R-P0472	3,542,311
33 - NDE Report # R-P0486	3,808,107
34 - NDE Report # R-P0487	3,856,000
35 - NDE Report # R-P0488	4,070,812
36 - NDE Report # R-P0491	4,433,621
37 - NDE Report # R-P0508	3,432,751
38 - NDE Report # R-P0588	304,396
39 - NDE Report # R-P0589	302,163
40 - NDE Report # R-P0590	313,886
41 - NDE Report # R-P0591	324,638
42 - NDE Report # R-P0620	449,301
43 - NDE Report # R-P0646	342,267
44 - NDE Report # R-P0647	332,942
45 - NDE Report # R-P0648	338,066
46 - NDE Report # R-P0649	337,999
47 - NDE Report # R-P0650	334,859
48 - NDE Report # R-P0651	342,129

**ENCLOSURE 2**

**List of Files Provided on Enclosed Optical Storage Media (OSM)**

**Tennessee Valley Authority - Watts Bar Nuclear Plant - Unit 2, Docket No. 50-391**

<b>File Name</b>	<b>Fill Size (Bytes)</b>
49 - NDE Report # R-P0689	506,442
50 - NDE Report # R-P0759	334,835
51 - NDE Report # R-P0766	379,118
52 - NDE Report # R-P0767	370,904
53 - NDE Report # R-P1014	521,877