

GARY R. PETERSON Vice President McGuire Nuclear Station

Duke Power MG01VP / 12700 Hagers Ferry Road Huntersville, NC 28078-9340

704 875 5333

704 875 4809 fax grpeters@duke-energy.com

August 9, 2004

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

Subject: Duke Energy Corporation (Duke) McGuire Nuclear Station Units 1 and 2 Docket Nos. 50-369 and 50-370 Relief Requests (RR) 04-MN-02, 04-MN-03, and 04-MN-04

Pursuant to 10 CFR 50.55a(a)(3), Duke requests approval to use alternatives to Section XI of the ASME Boiler and Pressure Vessel Code (Code). Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. However, the proposed alternatives will provide an acceptable level of quality and safety. Specific details are described in the attached relief requests.

Questions on this matter should be directed to Norman T. Simms, McGuire Regulatory Compliance, at (704) 875-4685.

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Sincerely,

G.R. Peterson

Attachments

U.S. Nuclear Regulatory Commission August 9, 2004 Page 2

cc w/attachments:

Mr. W.D. Travers Regional Administrator, Region II U. S. Nuclear Regulatory Commission Atlanta Federal Center 61 Forsyth Street, SW, Suite 23T85 Atlanta, Georgia 30303

Mr. J.J. Shea, Project Manager (addressee only) Office of Nuclear Reactor Regulation U. S. Nuclear Regulatory Commission One White Flint North, Mail Stop 08 H12 11555 Rockville Pike Rockville, MD 20852-2738

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Mr. J.B. Brady Senior NRC Resident Inspector McGuire Nuclear Station U.S. Nuclear Regulatory Commission August 9, 2004 Page 3

bxc w/o attachments:

N.T. Simms R. Branch (MG01WC) G.J. Underwood (EC05A) D.E. Caldwell (MG01WC) R.K. Rhyne (EC05A) J.J. Mc Ardle(EC05A) J.F. Swan (MG01WC) K.L. Crane

bxc w/attachments:

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NRIA File/ELL Master File # 1.3.2.13

ATTACHMENT 1

i.

Relief Request 04-MN-002

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii) Inservice Inspection Impracticality

Duke Energy Corporation McGuire Nuclear Station – Unit 1 (EOC-15), Examination Dates April 18, 2001 To October 10, 2002 Third 10-Year Interval – Inservice Inspection Plan Interval Start Date December 1, 2001. Interval End Date December 1, 2011 ASME Section XI Code – 1995 Edition with 1996 Addenda and * Westinghouse Owner's Group (WCAP-14572)

	I.	II. & III.	IV.	V	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
ICCPUMP-1A- LEG	1A Centrifugal Charging Pump Support Legs (Integrally Welded Attachment)	Exam Category C-C Item No. C03.030.001 Fig. IWC-2500-5 (a) 77.74% Surface Area Coverage	See Paragraph "A" also (See Attachment 1 Pages 1-5)	None	See Paragraph "C" also (See Attachment 1 Pages 1-5)	The examination requirements for this interval were met; no additional exams are planned.
1RPV1-462C- SE	NI Safety Injection System Reactor Vessel Head to Upper Head Injection Tube Weld	Exam Category R-A (RI-ISI Program) Item No.R01.011.026 Fig. IWB-2500-8(c) Appendix III,III-4420 and III-4430 74.62% Volume Coverage	See Paragraph "B" also (See Attachment 2 Pages 1-5)	None	See Paragraph "D" also (See Attachment 2 Pages 1-5)	The examination requirements for this interval were met; no additional exams are planned.

* Piping welds examined under the RI-ISI program developed in accordance with methodology contained in the Westinghouse Owner's Group (WOG) Topical Report, WCAP-14572, Revision 1-NPA and Request for Relief 01-005 approved by SER dated June 12, 2002.

Note: Item Number C03.030.001 was examined on 09/10/2002 and R01.011.026 was examined on 09/23/2002.

Basis for Relief

Paragraph: A

(The 1A Centrifugal Charging Pump Support Leg material is stainless steel.) During the liquid penetrant examination of the welds, 100% coverage of the required surface examination area could not be obtained. The examination coverage was limited to 77.74%. The limitations were caused by the geometric configuration of the support legs restricting access for complete examination coverage. No recordable indications were found during the surface examination of this weld.

Paragraph: B

(The Upper Head Injection Tube Weld material is carbon steel and inconel. The weld has a diameter of 6.250" and a wall thickness of .625".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 74.62%. This percentage represents the aggregate coverage from all scans. A 45 degree longitudinal wave axial scan from the pipe side covered 92.31% of the examination volume from one direction. Two opposing circumferential scans using 45 degree shear waves covered 73.85% and a 45 degree longitudinal wave axial scan from the vessel side covered 58.46% of the required volume from one direction. In order to achieve greater than 90% coverage from two beam path directions, axially and circumferentially, the weld would have to be re-designed to allow scanning from both sides which is impractical. No recordable indications were found during the volumetric examination of this weld.

Justification for Relief

Paragraph: C

Although the examination surface area as defined in ASME Section XI 1995 Edition with 1996 Addenda, Figure IWC-2500-5 (a) could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. The code required surface (PT) examination was the only examination performed for this item. The liquid penetrant examination was performed in accordance with ASME Section V Article 6, 1989 Edition with no addenda. No additional C3.30 (Pump Integrally Welded Attachments) welds were scheduled during this outage.

This is an Integrally Welded Attachment located on the 1A Centrifugal Charging Pump Support Legs 1CCPUMP-1A-LEG. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation.

A leak at this weld would likely result in abnormal Volume Control Tank (VCT) level trends and/or unexpected auto make-ups.

A leak at this weld would likely result in an increase in unidentified reactor coolant leakage. Such a leak would be discovered during performance of the reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage specification in Technical Specification 3.4.13.1 is 1 gpm. Any increased reactor coolant leakage identified by the calculation would make Duke suspect either the operating or idle CCP, especially if a recent train swap has occurred (normally biweekly). To evaluate either of these indicators an operator would be dispatched to the pump rooms, which would identify any leakage from this weld.

Also, operators perform surveillance once per shift during daily rounds of the room containing the 1A CCP. This surveillance should identify any leak at the weld in question.

Paragraph: D

Although the examination volume as defined in the Risk Informed program and WCAP-14572 Revision 1, Figure IWB-2500-8(c), Table 4.1.1 (Examination Category R-A, Risk Informed Piping Examinations) could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures in accordance with Section XI, Appendix III 1995 Edition with the 1996 Addenda. This is a Dissimilar Metal Weld limited due to material characteristics and single sided access caused by component geometry which prevents two-beam path direction coverage of the examination volume. In order to obtain greater than 90% coverage, this weld would have to be re-designed to allow scanning from both sides. Replacement or re-design of this Class 1 weld is not a viable alternative and would create an undue burden on Duke Energy Corporation. During the examination of this weld, techniques were utilized to obtain the maximum possible coverage. Beginning in 1990 Duke Energy Corporation changed to refracted longitudinal wave search units to examine DissimilarM welds based upon NRC Information Notice 90-30, "Ultrasonic Inspection Techniques for Dissimilar Metal Welds". The procedure used complied with the requirements of ASME Section XI, Appendix III. The procedure required the use of refracted longitudinal waves to examine the weld and buttered material and shear waves to examine the wrought nozzle and safe base materials. The code required volumetric (UT) examination was the only examination performed for this item. No additional R01.011. (RPV Head to UHI Tube) welds were scheduled during this outage. However three additional (RPV Head to UHI Tube) welds were examined by volumetric (UT) under the station augmented program (G04.001). No recordable conditions were found during the examination of these welds.

The reactor coolant system weld listed above is located on the reactor vessel closure head. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. This weld was rigorously inspected by radiography and dye penetrant during construction and verified to be free from unacceptable fabrication defects. If a leak were to occur at this weld, the reactor coolant leakage calculation which is normally performed daily (and required by Technical Specifications to be performed every 72 hours) would provide an early indication of leakage. The unidentified leakage specification in Technical Specification 3.4.13.1 is 1 gpm. Several other indicators, such as, containment radiation monitors EMF-38, 39 and 40; the containment floor and equipment sump levels; containment humidity instruments; and the ventilation unit condensate drain tank

level would provide an early indication of weld leakage for prompt Operations and Engineering evaluation.

Jim McArdle and Tim Tucker (NDE Level III's) provided Sections II through V and part of Section VI

Ed Hyland, (MNS Systems Engineer) provided part of Section VI

Gary Underwood (Sponsor) compiled the remaining sections

PT Examination Data C03.030.001 Attachment 1

Attachment 2 UT Examination Data R01.011.026

Sponsored By: Jany Underwood Date <u>6-29-04</u> Approved By: <u>L. Kenin Rhyne</u> Date <u>6/29/04</u>

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STATION	McGuire		1					
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Surface Temperature 86° F								
M&TE S/NMCNDE 27220								
Penetrant Materials Category:								
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A(SE) Approved								
Penetrant Materials Data:								
Batch Numbers								
Cleaner 01G12K								
Penetrant <u>97A10K</u>								
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Examiner: James L. Panel	James .	Lan	Level:	11	Date:	9/10/2002	7
Reviewed By:	7 QN		Level:	L	Date:	9/17/02	
Final Review	Date 9/19/2002	AN	III Review	Date 9-19-03	2	Item No. C03.030.001] to whe
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Prepared By: David K. Zimmerman	Level:	II Date: 9/10/2002
Reviewed By:	Level:	II Date: 9/17/02
	2	Attachment-1 QUARSUT-02 PALE ZOF 5

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04-MN-002 ATTACHMENT-1 Page 50F5

DUKE POWER COMPANY						Exam St	art: 0!	510	Form	NDE-UT	-2A
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V.				04-MN-002 Attachorent Page 2095		

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NDE-UT-5 DUKE POWER COMPANY UT PROFILE/PLOT SHEET **Revision** 1 RR/ HEAT - EXAMINATION SURFACE 2'1 EXAMINATION SURFACE 12 UHI PIPE WELD 4 ge 10/3/02 3 gr 12/3/02 2 3 BUTTERING TNCONEL .5 cut can 1 5 ¥52 1.5 TOTAL INSPECTION AREA 3.1" × 0.21" = 0.65" CWECCW = Z.3 × . ZI = U.481 AZ 2 $52 5CAL - \frac{0.21}{2}(2.75 + 2.85) = \frac{1}{0.6010^2}$ 2.5 51 SCAL 0.21 (1.7 + 1.9) = 0.381 3 σ Component ID/Weld No. 1RPV1-462C-SE Remarks: UHI PIPE RPV HEAD TO Profile taken 270 90 at:____O° Item No: 201.011.076 g g Level: Date: 10/3/02 Examiner: **Reviewed By:** Level: 71 Date: 10-3-02 180 Sheet 4 of 4 Authorized Inspector: Date: 10-8-02

04-MN-02 Attachment-2 Page 4 of 5



ATTACHMENT 2

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Relief Request 04-MN-003

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Relief Request 04-MN-003 Page 1 of 19

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii) Inservice Inspection Impracticality

Duke Energy Corporation McGuire Nuclear Station – Unit 2 (EOC-14), Examination Dates October 14, 2000 To March 27, 2002 Second 10-Year Interval – Inservice Inspection Plan ASME Section XI Code – 1989 Edition with No Addenda Interval Start Date 03/01/1994 Interval End Date 03/01/2004 Code Case N-460 is applicable.

	I.	II. & III.	IV.	v.	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Rellef	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
2SGA-INLET- W5SE	NC System 2A Steam Generator Inlet Nozzle to Safe End	Exam Category B-F Item No. B05.070.001 Fig. IWB-2500-8 75.00% Volume Coverage	See Paragraph "A" See Attachment 1 Pages 1-4	None	See Paragraph "J" See Attachment 1 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2SGA- OUTLET- W6SE	NC System 2A Steam Generator Outlet Nozzle to Safe End	Exam Category B-F Item No. B05.070.002 Fig. IWB-2500-8 75.00% Volume Coverage	See Paragraph "A" See Attachment 1A Pages 1-4	None	See Paragraph "J" See Attachment 1A Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2SGD-INLET- W5SE	NC System 2D Steam Generator Inlet Nozzle to Safe End	Exam Category B-F Item No. B05.070.007 Fig. IWB-2500-8 75.00% Volume Coverage	See Paragraph "A" See Attachment 1B Pages 1-4	None	See Paragraph "J" See Attachment 1B Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.

Inspection Dates for Item Numbers

B05.070.001	03/09/2002	B09.011.013	03/14/2002
B05.070.002	03/09/2002	B09.011.018	03/14/2002
B05.070.007	03/08/2002	B09.011.169	03/14/2002
B05.070.008	03/08/2002	C03.030.001	02/19/2002
B08.020.001A	03/05/2002		
B09.011.009	02/26/2002		
B09.011.011	03/13/2002		
B09.011.011A	03/03/2002		

B09.011.011A	03/03/2002
B09.011.012	03/14/2002

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii) Inservice Inspection Impracticality

Duke Energy Corporation McGuire Nuclear Station – Unit 2 (EOC-14) Second 10-Year Interval – Inservice Inspection Plan ASME Section XI Code – 1989 Edition with No Addenda

	I.	II. & III.	IV.	v.	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
2SGD- OUTLET- W6SE	NC System 2D Steam Generator Outlet Nozzle to Safe End	Exam Category B-F Item No. B05.070.008 Fig. IWB-2500-8 75.00% Volume Coverage	See Paragraph "A" See Attachment 1C Pages 1-4	None	See Paragraph "J" See Attachment 1C Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2PZR-SKIRT	NC System Pressurizer Support Skirt to Lower Head (Integral Attachment)	Exam Category B-H Item No. B08.020.001A Fig. IWB-2500-13 75.16% Volume Coverage	See Paragraph "B" See Attachment 2 Pages 1-9	None	See Paragraph "K" See Attachment 2 Pages 1-9	The examination requirements for this interval were met; no additional exams are planned.
2NCW-3673-1	NC System B Loop Cold Leg (Pipe to Elbow near RV Inlet Nozzle)	Exam Category B-J Item No. B09.011.009 Fig. IWB-2500-8 79.01% Volume Coverage	See Paragraph "C" See Attachment 3 Pages 1-4	None	See Paragraph "L" See Attachment 3 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2NC2FW2-1	NC System 14" Pipe to Pipe Weld on Pressurizer Surge Line (Stress Weld)	Exam Category B-J Item No. B09.011.011 Fig. IWB-2500-8 72.73% Volume Coverage	See Paragraph "D" See Attachment 4 Pages 1-3	None	See Paragraph "M" See Attachment 4 Pages 1-3	The examination requirements for this interval were met; no additional exams are planned.
2NC2FW2-I	NC System 14" Pipe to Pipe Weld on Pressurizer Surge Line (Stress Weld)	Exam Category B-J Item No. B09.011.011A Fig. IWB-2500-8 81.82% Surface Area Coverage	See Paragraph "D" See Attachment 4A Pages 1-2	None	See Paragraph "M" See Attachment 4A Pages 1-2	The examination requirements for this interval were met; no additional exams are planned.
2NC2FW22-6	NC System B Loop Cold Leg 10" Elbow to Nozzle Weld	Exam Category B-J Item No. B09.011.012 Fig. IWB-2500-8 61.09% Volume Coverage	See Paragraph "E" See Attachment 5 Pages 1-5	None	See Paragraph "N" See Attachment 5 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii) Inservice Inspection Impracticality

Duke Energy Corporation McGuire Nuclear Station – Unit 2 (EOC-14) Second 10-Year Interval – Inservice Inspection Plan ASME Section XI Code – 1989 Edition with No Addenda

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief Is Requested: Area or Weld to be Examined	Code Requirement from Which Rellef is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
2NC2FW22-9	NC System C Loop Cold Leg 10" Pipe to Nozzle Weld	Exam Category B-J Item No. B09.011.013 Fig. IWB-2500-8 61.09% Volume Coverage	See Paragraph "F" See Attachment 6 Pages 1-5	None	See Paragraph "O" See Attachment 6 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.
2NC2FW16-6	NC System A Loop Hot Leg 6" Elbow to Nozzle Weld	Exam Category B-J Item No. B09.011.018 Fig. IWB-2500-8 59.09% Volume Coverage	See Paragraph "G" See Attachment 7 Pages 1-4	None	See Paragraph "P" See Attachment 7 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2NI2F871	NI System 6" Elbow to Pipe Weld	Exam Category B-J Item No. B09.011.169 Fig. IWB-2500-8 59.09% Volume Coverage	See Paragraph "H" See Attachment 8 Pages 1-4	None	See Paragraph "Q" See Attachment 8 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2CCPUMP-2A- LEG	2A Centrifugal Charging Pump Support Legs (Integrally Welded Attachment)	Exam Category C-C Item No. C03.030.001 Fig. IWC-2500-5 82.65% Surface Area coverage	See Paragraph "I" See Attachment 9 Pages 1-4	None	See Paragraph "R" See Attachment 9 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.

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IV. Basis for Relief

Paragraph: A

(The Steam Generator Inlet and Outlet Nozzle to SE material is stainless steel to carbon steel. The weld has a diameter of 31.00" with a wall thickness of 2.500".)

During the ultrasonic examination of the welds, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 75.00% for all four welds. The percentage of coverage reported represents the aggregate coverage obtained by each scan. A 45 degree scan was performed from the safe end side of the weld achieving 100% coverage from one axial direction, and a 45 degree scan in two opposing circumferential directions achieved 100% coverage. The nozzle configuration allows scanning from only the safe end side of the weld. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. In order to achieve more coverage, the nozzles would have to be re-designed to allow scanning from both sides of the weld.

The Steam Generator Nozzle-to-Safe End welds were examined to the maximum extent practical using ultrasonic techniques in accordance with the requirements of ASME Section XI, Appendix III of the 1989 Edition. No recordable indications were found during the volumetric and surface examinations of these welds.

Paragraph: B

(The Pressurizer Support Skirt material is carbon steel. The weld diameter is 87.00" with a wall thickness of 1.500".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume in four orthogonal directions could not be obtained. The examination coverage was limited to 75.16%. The percentage of coverage reported represents the aggregate coverage obtained by each scan. The entire examination volume was covered 100% from at least one axial and one circumferential direction. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. The examination procedure and calibration block was in accordance with ASME Section XI, Appendix I and ASME Section V, Article 5 1989 Edition.

A recordable indication was found during the volumetric examination of this weld. The recordable indication was determined to be a Geometric Reflector. This weld was determined to be acceptable after NDE evaluation.

Paragraph: C

(The B Loop Cold Leg material is stainless steel. The weld diameter is 27.500" and the wall thickness is 2.000".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 79.01%. Limitations are caused by cast austenitic weld metal characteristics and single sided access caused by the location of pipe restraints preventing two-beam path direction coverage of the examination volume. The percentage of coverage reported represents the aggregate coverage obtained by each scan. A 45 degree scan was performed from one side of the weld achieving 100% coverage from one axial direction, and a 45 degree scan in two opposing circumferential directions achieved 100% coverage. An additional 4% was achieved from the restraint side of the weld. The proximity of the restraint limits scanning from two opposing axial directions. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

No recordable indications were found during the volumetric and surface examination of this weld.

The most effective ultrasonic technique for the examination of welds in cast austenitic piping uses refracted longitudinal waves. The longitudinal wave is preferred as the austenitic weld metal and buttering create highly attenuative barriers to shear wave ultrasound. The longitudinal wave is less affected by these difficulties. However, the longitudinal wave is affected by mode conversion when it strikes the inside surface of the safe end or pipe at any angle other than a right angle to the surface.

The calculations below show that a 45° refracted longitudinal wave striking the inside surface of a pipe will produce a 22.9° refracted shear wave in addition to the normally expected 45° reflected longitudinal wave.

 V_s is the shear wave velocity of the stainless steel safe end/pipe material in inches /µsec.

 V_L is the longitudinal wave velocity of the stainless steel safe/pipe end material in inches/ μ sec.

As shown in the graph below, the mode conversion process creates two sound beams of differing intensities reflecting off the inside surface¹. At incident angles greater than 30 degrees, the shear wave will predominate. However, the shear wave is attenuated and scattered by the cast austenitic material. The examination sensitivity is degraded to such an extent that any examination using the second sound path leg is meaningless. Therefore, the two-beam path direction coverage requirement is impractical.

In order to obtain the required two-beam path direction coverage, the pipe restraints would have to be re-located to allow scanning from both sides.

¹Firestone, F.A.: Tricks with the Supersonic Reflectoscope, J. Soc. Nondestructive Testing, vol. 7, no. 2 Fall 1948.

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Reflected Sound Beam Energy In Steel on A Free Face

Paragraph: D

(The Pressurizer Surge Line material is stainless steel. The weld diameter is 14.00" and the wall thickness is 1.406".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 72.73%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the location of rigid restraints which prevents scanning of the weld from two opposing sides. The percentage of coverage reported represents the aggregate coverage obtained by each scan. A 60 degree scan was performed from one side of the weld achieving 100% coverage from one axial direction, and a 45 degree scan in two opposing circumferential directions achieved 100% coverage. An additional 4% was achieved from the restraint side of the weld. The proximity of the restraint limits scanning from two opposing axial directions. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. In order to achieve more coverage, the restraint would have to be moved to allow scanning from both sides of the weld.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the first sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

During the Liquid Penetrant examination for this same weld the required surface examination area could not be obtained. The examination coverage was limited to 81.82%. The Liquid Penetrant exam limitations were caused by the close proximity of a pipe support/restraint that obstructed a portion of the weld and adjacent base metal in two locations.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: E

(The Elbow to Nozzle material is stainless steel. The weld diameter is 10.00" and the wall thickness is 1.000".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 61.09%. The reported percent of coverage represents the aggregate coverage from all scans performed on the weld. A 60 degree shear wave scan was performed from the elbow side of the weld achieving 44.3% coverage of the examination volume from one axial direction and a 45 shear wave degree scan in

two opposing circumferential directions achieved 100% coverage. A supplemental axial scan from the elbow side using a 60 degree refracted longitudinal wave search unit covered 100% of the weld metal and far side base material. Limitations are caused by austenitic weld metal characteristics and single sided access due to the proximity of the nozzle which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the first sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: F

(The pipe to nozzle material is stainless steel. The weld diameter is 10.000" and the wall thickness is 1.000".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 61.09%. The reported percent of coverage represents the aggregate coverage from all scans performed on the weld. A 60 degree shear wave scan was performed from the elbow side of the weld achieving 44.3% coverage of the examination volume from one axial direction and a 45 degree shear wave scan in two opposing circumferential directions achieved 100% coverage of the weld base material. A supplemental axial scan from the elbow side using a 60 degree refracted longitudinal wave search unit covered 100% of the weld metal and far side base material. Limitations are caused by austenitic weld metal characteristics and single sided access due to the proximity of the nozzle which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the first sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: G

(The elbow to nozzle material is stainless steel. The weld diameter is 6.000" and the wall thickness is .719".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 59.09%. The reported percent of coverage represents the aggregate coverage from all scans performed on the weld. A 60 degree shear wave scan was performed from the elbow side of the weld achieving 36.36% coverage of the examination volume from one axial direction and a 45 degree shear wave scan in two opposing circumferential directions achieved 100% coverage of the weld and base material. A supplemental axial scan from the elbow side using a 60 degree refracted longitudinal wave search unit covered 100% of the weld metal and far side base material. Limitations are caused by austenitic weld metal characteristics and single sided access due to the proximity of the nozzle which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the first sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: H

(The elbow to pipe material is stainless steel. The weld diameter is 6.000" and the wall thickness is .719".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 59.09%. The reported percent of coverage represents the aggregate coverage from all scans performed on the weld. A 60 degree shear wave scan was performed from the elbow side of the weld achieving 36.36% coverage of the examination volume from one axial direction and a 45 degree shear wave scan in two opposing circumferential directions achieved 100% coverage of the weld and base material. A supplemental axial scan from the elbow side using 60 degree refracted longitudinal wave search unit covered 100% of the weld metal and far side base material. Limitations are caused by austenitic weld metal characteristics and single sided access due to the elbow configuration and the proximity of an adjacent weld which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the second sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: I

(The support leg material is stainless steel.)

During the Liquid Penetrant examination of the weld, 100% coverage of the required surface examination area could not be obtained. The examination coverage was limited to 82.65%. The limitations were caused by the geometric configuration of the support legs restricting access for complete examination coverage.

No recordable indications were found during the surface examination of this weld.

VI. Justification for Relief

Paragraph: J

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. These welds were examined using procedures in accordance with ASME Section XI, Appendix III. Ultrasonic examination personnel are qualified in accordance with ASME Section XI, Appendix VII 1989 Edition.

No additional B05.070 welds were scheduled during this outage.

The 2A Steam Generator Inlet and Outlet Nozzle to Safe End Welds (2SGA-Inlet-W5SE and 2SGA-Outlet-W6SE) and the 2D Steam Generator Inlet and Outlet Nozzle to Safe End Welds (2SGD-Inlet-W5SE and 2SGD-Outlet-W6SE) are part of the NC (Reactor Coolant System) boundary. These welds are not exposed to significant neutron fluence and are not prone to negative material property changes (i.e., embrittlement) associated with neutron bombardment. If a leak were to occur at the welds in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at one of these welds would result in the following:

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased Steam Generator enclosure temperature. This parameter is continuously monitored by the Operations via an Operator Aid Computer (OAC) alarm, and is periodically monitored • by the System Engineer.
- c) Increased input into the Ventilation Unit Condensate Drain Tank (VUCDT). This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- d) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- e) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the Steam Generator enclosure or containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage. Also, a containment walk-down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walk down should identify any leak at the weld in question

Paragraph: K

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-13 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity.

There is inadequate accessibility to the inside surface (surface C-D) of the Pressurizer Support Skirt Weld to perform the required surface examination. Therefore, an ultrasonic examination was used to inspect the inner examination surface from the skirt's exterior surface per Relief Request 00-001. For additional information reference NRC letter dated August 23, 2001, Docket Numbers 50-369, 50-370 and Tac Numbers MB 2325 and MB 2326. The ultrasonic procedure and the basic calibration block conformed to the requirements of ASME Section XI, Appendix I, 1989 Edition, and ASME Section V, Article 5, 1989 Edition. Ultrasonic examination personnel were qualified in accordance with ASME Section XI Appendix VII, 1989 Edition.

No additional B08.020 welds were scheduled during this outage.

This weld 2PZR-SKIRT joins the pressurizer support skirt to the pressurizer lower head. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e., embrittlement) associated with neutron bombardment. This weld joins the pressurizer support skirt, a non-pressure boundary component, to the lower pressurizer head. Therefore, the weld serves no pressure boundary function. However, if a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also the Containment Ventilation System Engineer.
- b) Increased Pressurizer enclosure temperature. This parameter is continuously monitored by the Operations via an OAC alarm, and is periodically monitored by the System Engineer.
- c) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- d) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of the reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours (McGuire normally performs this calculation every 24 Hrs). The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.

e) Other indicators such as containment radiation monitors EMF-38, 39, and 40, the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the pressurizer enclosure or containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walk down should identify any leak at the weld in question.

Paragraph: L

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures in accordance with ASME Section XI, Appendix III. Ultrasonic examination personnel are qualified in accordance with ASME Section XI Appendix VII, 1989 Edition.

No additional B09.011 cold leg welds were scheduled during this outage.

This is a Pipe to Elbow Weld 2NCW-3673-1 located on the NC (Reactor Coolant System) B Loop Cold Leg near the Reactor Vessel Inlet Nozzle. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walk down should identify any leak at the weld in question.

Paragraph: M

Although the examination volume and surface area as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was ultrasonically examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). Liquid penetrant examination was performed in accordance with ASME Section V, Article 6 1989 Edition with no addenda.

No additional B09.011 Pressurizer Surge Line welds were scheduled during this outage.

This is a 14" Pipe to Pipe Weld 2NC2FW2-1 located on the NC (Reactor Coolant System) Pressurizer Surge Line. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walkdown is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: N

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

One additional B09.011, 10.00" weld on the NC System was scheduled during this outage. No recordable indications were found during the volumetric and surface examination of this weld.

This is a 10" Elbow to Nozzle Weld 2NC2FW22-6 located on the NC (Reactor Coolant System) B Loop Cold Leg. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: O

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

One additional B09.011, 10.00" weld on the NC System was scheduled during this outage. No recordable indications were found during the volumetric and surface examination of this weld.

This is a 10" Pipe to Nozzle Weld 2NC2FW22-9 located on the NC (Reactor Coolant System) C Loop Cold Leg. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: P

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

Five additional B09.011, 6.00" welds on the NC System were scheduled and examined during this outage. No recordable indications were found on three of these welds. Recordable indications were found on two of the welds. The indications were determined to be Geometric Reflectors, and were determined to be acceptable after NDE evaluation.

This is a 6" Elbow to Nozzle Weld 2NC2FW16-6 located on the NC (Reactor Coolant System) A Loop Hot Leg. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: Q

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

Four additional B09.011 welds on the NI System were scheduled and examined during this outage. No recordable indications were found during the volumetric and surface examinations of these welds.

This is a 6" Elbow to Pipe Weld 2NI2F871 located on the NI (Safety Injection System). This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:
- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: R

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWC-2500-5 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. The liquid penetrant examination was performed in accordance with ASME Section V, Article 6, 1989 Edition with no addenda.

No additional C03.030 welds were scheduled during this outage.

This is an Integrally Welded Attachment located on the 2A Centrifugal Charging Pump Support Legs 2CCPUMP-2A-LEG. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation.

- a) A leak at this weld would likely result in abnormal Volume Control Tank (VCT) level trends and/or unexpected auto make-ups.
- b) A leak at this weld would likely result in an increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of the reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm. Any increase reactor coolant leakage identified by the calculation would make suspect either the operating or idle CCP especially if a recent train swap has occurred (normally biweekly). To evaluate

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either of these indicators an operator would be dispatched to the pump rooms, which would identify any leakage from this weld.

Also, operators perform surveillance once per shift during daily rounds of the room containing the 2A CCP. This surveillance should identify any leak at the weld in question.

The following individuals contributed to the development of this relief request:

Jim McArdle and Tim Tucker (Principal UT and RT NDE Level III Examiners, respectively) provided Sections II through V and part of Section VI.

Ed Hyland, Bryan Meyer and Larry Kunka (MNS Systems Engineers) provided parts of Section VI.

Gary Underwood (McGuire ISI Plan Manager) compiled the remaining sections.

Sponsored By: Jone U	demood Date 7-12-04
Approved By:	in Physe Date 7/13/04
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Attachment 2	UT Examination Data B08.020.001A
Attachment 3	UT Examination Data B09.011.009
Attachment 4	UT, PT Examination Data B09.011.011, B09.011.011A respectively
Attachment 5	UT Examination Data B09.011.012
Attachment 6	UT Examination Data B09.011.013
Attachment 7	UT Examination Data B09.011.018
Attachment 8	UT Examination Data B09.011.169
Attachment 9	PT Examination Data C03.030.001

												DAITTA	HHENT	71	
r									R	elief R	guest	<u>04-H</u>	N-003	Pag	<u>e 1094</u>
			DL	JKE PO	WER C	COMF	PANY			Exam St	art: 1	001	Form	NDE-UT	-2A
ULT	RASO		XAMINA		TA SHE	ET FO	OR PLANAP	REFLEC	TORS	Exam Fir	nish: 10	026	R	evision 4	•
Station: McGuire Unit:						2	Component/	Veld ID: 2	SGA-INLE	T-W5SE		1	Date:	3/9/20	02
Weld L	.ength	(in.):	119.	4	Surface	Condit	tion: AS N	ACHINE) Lo:	RT *0*	Surface ⁻	Temperat	ure:	78 °	_F_
Exami	ner: W	infred C	C. Leeper/	Verfile			Scans:				Pyromete	er S/N: _ //	<u>MCNI</u> 3/2002	DE 2722	8
Examiı Procec	ner:) Jure: N	VDE-9	<u>1 Mo</u>	Rev: 1	FC:	π -04	45 □ 45T ⊠ 60 □	dB <u>***_</u> dB 7	70 □ 70 □	dB dB	Configura	ation:	(Flow to	Nozzle	
Calibra 020205 	ation Sh 6	neet No	D:				60T	dB : <u>33° @</u>	<u>54dB</u> d	B	ہر Skew An	Scan : Applies to gle:	Surface: o NDE-6 ん,	OD 80 only A	
IND #	Å	Max % Ref	Mp Max	W Max	L Max	L1	12	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		do i In t	NOT WI HIS SP	RITE ACE		20%da HMA 50%da 100%d	ac 20%dac HMA ac 50%dac dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO IN	D NOT THIS	WRIT SPACI	E
NRI	33°														
NRI	45°														

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Remarks: ** SC	ANNED AT 69dB DL	JE TO NOISE	· · · · · · · · · · · · · · · · · · ·		-]
Limitations: (see	NDE-UT-4) 🖾 90	% or greater	coverage obtai	ined: yes 🗋 no 🖾		Sheetof4	1
Reviewed Bv:	Onte	Level:	Date:	Authorized Inspector:	Date: 3-13-02	Item No: B05.070.001	2210
		·		20	······································		-1

ATTACHMENT I

RR. 04-MN-003 Page 2044

	DUKE POWI	ER COMPANY		FORM NDE-UT-4
	ISI LIMITAT	TION REPORT		Revision 1
Component/Weld ID: 2SGA-INLET-W	5SE	Item No: B05.070.001	Remarks:	
	SURFACE	BEAM DIRECTION	Nozzle Configu	uration
	1 2	🛛 1 🗌 2 🔲 cw 🗌 ccw		
FROM L to L	INCHES	FROM WO 2" to Beyond		
ANGLE: 0 0 45 60 0 Ot	her <u>33°</u>	FROM DEG toDEG		
	SURFACE	BEAM DIRECTION		
	1 2	□ 1 □ 2 □ cw □ ccw		
FROM L to L	INCHES	FROM WO		
ANGLE: 0 0 45 60 0 0t	her	FROM DEG toDEG		
	SURFACE	BEAM DIRECTION		· · · · · · · · · · · · · · · · · · ·
	1 2	🗌 1 🗌 2 🛄 cw 🔲 ccw		
FROM L to L	INCHES	FROM WO		
ANGLE: 0 0 45 60 0t	her	FROM DEG toDEG		
	SURFACE	BEAM DIRECTION		
	1 2	□ 1 □ 2 □ cw □ ccw		
FROM L to L	INCHES	FROM WO		
	her	FROM DEG to		
Prepared By: Winfred C. Leeper	Devel: II	Date: 3/9/2002 Sketch(s) attached	gyes □ no	Sheet Z of 4
Reviewed By:	Date: 3/ 11/0	2 Authorized Inspector:	lein	Date: 37-67
			L	

Forar a MCGUIRE Unit Z Rev. File No. Station : Sheet 30F4. Subject SALE ENA TO NOZZLE II Date _3/10/02 WELD# ZSKA-INLET-WSSE BY Prob No. <u>B05.070.00</u> Checked by Date NOZZLE SATE END ... 3.5 Sz. ADING 2.5 AREA Axam 1.17 M. X Z. 55 1. = 2.98 50.14

						_	
	·					<u></u>	<u>MN-003 tange 401</u>
		DUK		COMPANY	(NDE-91-1
		Limited E	xamination Co	verage Work	sheet		Revision 0
T or pain	er er er en genalf e	erana yrdia'i arrag	Examinat	ion Volume//	Area Defined	2. 2021 Test officiel a	an a
🖾 Ba	se Metal	\boxtimes	Weld	🛛 Near Su	rface C	Bolting	Inner Radius
		Area Calo	culation		Vo	lume Calcula	ation
1.17° x				0.00	sa in v 119 /		io
	2.55" = 2	.98 sq. in.		2.98	oq. III. X 1 10.4	- = 355.81 CU.	· · ·
	2.55" = 2	.98 sq. in.		2.98	oq. III. X 110. 4	- = 355.81 CU.	· · · · · · · · · · · · · · · · · · ·
	2.55" = 2	.98 sq. in.	Co	verage Calcu	lations	- = 355.81 CU.	
Scan #	2.55" = 2	Beam Direction	Co Area Examined (sq.in.)	verage Calcu Length Examined (in.)	lations Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
Scan #	Angle	Beam Direction	Co Area Examined (sq.in.) 2.98	verage Calcu Length Examined (in.) 119.4	Ilations Volume Examined (cu.in.) 355.81	Volume Required (cu.in.) 355.81	Percent Coverag
Scan #	Angle 33° 45°	Beam Direction S2 S1	Co Area Examined (sq.in.) 2.98 0	verage Calcu Length Examined (in.) 119.4 0	Ilations Volume Examined (cu.in.) 355.81 0	Volume Required (cu.in.) 355.81 355.81	Percent Coverag 100.00 0.00
Scan #	Angle 33° 45° 45°	Beam Direction S2 S1 CW	Co Area Examined (sq.in.) 2.98 0 2.98	verage Calcu Length Examined (in.) 119.4 0 119.4	Ilations Volume Examined (cu.in.) 355.81 0 355.81	Volume Required (cu.in.) 355.81 355.81 355.81	Percent Coverag 100.00 0.00 100.00
Scan #	Angle 33° 45° 45° 45°	Beam Direction S2 S1 CW CCW	Co Area Examined (sq.in.) 2.98 0 2.98 2.98	verage Calcu Length Examined (in.) 119.4 0 119.4 119.4	Ilations Volume Examined (cu.in.) 355.81 0 355.81 355.81	Volume Required (cu.in.) 355.81 355.81 355.81 355.81	Percent Coverage 100.00 0.00 100.00 100.00

		(X)	2 JAJAC 2
	Item No:	B05.070.001] 80 180
Prepared By: Jay A. Eaton	Level: III	Date: 3/10/2002	
Reviewed By: Dawiel K.		Date: 3/11/02	
	C.	. SHEET 4 OF	4

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ATTACHNENT IA

RR 04-NN-003 Page 10+4

DUKE POV	VER COMP	PANY			Exam Sta	art: 10)27	Form	NDE-UT	-2A
ULTRASONIC EXAMINATION DA	TA SHEET FO	OR PLANAR	REFLEC	TORS	Exam Fir	nish: 10	053	Re	evision 4	
Station: McGuire Unit: 2 Component/Weld ID: 2SGA-OUTLET-We							I	Date:	3/9/20	02
Weld Length (in.): 119.4	ngth (in.): 119.4 Surface Condition: AS MACHINED Lo: RT						emperat	ure:	<u>78 </u>	F
Examiner: Winfred C. Leeper Life Chevel: II Scans:						Pyromete Cal Due:	er S/N:7/	MCNI 3/2002	DE 2722	3
Examiner: San // //oss		45 LL	<u></u>	// L	aB	Configura	ation:	<u> </u>	CIRC.	
Procedure: NDE-930/ Rev: 1	FC:	45T ⊠ <u>73</u>	<u>**</u> dB 7	ᅋᆸ	dB	5	1	Flow	_52	
	- 02-04	60 🗆	dB			Sa	fe End	to	Nozzie	-
Calibration Sheet No:		60T dBdBdBdBdBdB						00 80 oniv		
0202056		Other:	<u>33° @</u>	<u>54dB</u> dE	3	Skew Angle:				
IND # A Max Mp W % Max Max Max	L Max L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
DO NOT WRITE IN THIS SPACE	20%da HMA 50%da 100%d	ac 20%dac A HMA ac 50%dac dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	D(IN	O NOT THIS	WRITI SPACE	
NRI 33°										
NRI 45°										

Remarks: ** SCANNED AT 69dE	DUE TO NOISE]
Limitations: (see NDE-UT-4)	,	Sheet of			
Reviewed By:	Level: Date:	Authorized Inspector:	Date: 3-13-02	Item No: B05.070.002	3118
· · · · · · · · · · · · · · · · · · ·					4

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ATTACHMENT IA RR 04-NN-003 Page 2094

	DUKE POWER COMPANY								
	ISI LIMITATION	N REPORT		Revision 1					
Component/Weid ID: 2SGA-OUTLET-We	SE	Item No: B05.070.002	Remarks:						
	SURFACE	BEAM DIRECTION	Nozzle Configur	ation					
	🗋 1 🖾 2	🛛 1 🗌 2 🔲 cw 🗋 ccw							
FROM L to L	INCHES FRO	M WO 2" to Beyond							
ANGLE: 0 0 45 60 Other	<u>33°</u> _	FROM DEG to DEG							
	SURFACE	BEAM DIRECTION							
	1 2	□ 1 □ 2 □ cw □ ccw							
FROM L to L	INCHES FRO	M WO to							
ANGLE: 0 0 45 60 0 Other		FROM DEG to DEG							
	SURFACE	BEAM DIRECTION							
	□ 1 □ 2	□ 1 □ 2 □ cw □ ccw							
FROM L to L	INCHES FRO	M WO to							
ANGLE: 0 0 45 0 60 0 Other		FROM DEG to DEG							
	SURFACE	BEAM DIRECTION							
	1 2	1 2 C cw C ccw							
FROM L to L	INCHES FRC	MWO to							
ANGLE: 0 0 45 0 60 0 Other		FROM DEG to							
Prepared By: Winfred C. Leeper/	avel: II	Date: 3/9/2002 Sketch(s) attached	yes 🔲 no	Sheet Z of 4					
Reviewed By:	TT Date: 3/11/0	Authorized Inspector:	Allen	Date: 57-00					
		- <u>-</u> Υμ							

ATHACHINENTIA RR 04-MN-003 Page 301A Former Stock Code No. 89203 Station: MCGUIRE Unit Z Rev. File No. __Sheet 30F4 Subject SALE ENA TO NOZZLE 1 Date 3/10/02 WELD# ZSGA-OUTLET-W6SE BY Prob No. <u>B05.070.002</u> Date Checked by OZZLE SATE END ... 35 O D I MUS AREA XAM X Z. 55 1A. = 2.9850 17 Ac. ju.

		•			1		RR	ATTRC: 24-H	HHENT IA N-003 Page 4094
		DUKE	POWER	COMP	ANY				NDE-91-1
·		Limited Exa	mination Co	verage V	erage Worksheet				Revision 0
		······································	Examinati	ion Volu	me/Area	a Defined	101111040fd - 01042		
🖾 Ba	se Metal	🖾 w	'eld	🗆 Nea	ır Surfac	е [1	🛛 Inner Radius
		Area Calcul	ation			Vo	olume Ca	iculat	lion
1.17" x	2.55" = 2	.98 sq. in.			2.98 sq.	in. x 119.4	• = 355.8 [.]	l cu. 1	n.
						000			
1			00	verage C	alculati	0115			
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Leng Exami (in.	th \ ned Eu)	Volume xamined (cu.in.)	Volu Requ (cu.	me ired in.)	Percent Coverage
1	33°	S2	2.98	119.	4	355.81	355	.81	100.00
2	45°	S1	0	0		0	355	.81	0.00
3	45°	CW	. 2.98	119.	4	355.81	355	.81	100.00
4	45°	CCW	2.98	119.4	4	355.81	355	.81	100.00
		Total	Aggregate	Covera	ige	1067.43	1423	.24	75.00

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			C.	
		Item No:	B05.070.002]
Prepared By: Jay A. Eaton	Level: III		Date: 3/10/2002	
Reviewed By: Parid Kan	Level:		Date: 3/11/02	J
\smile			SHEER 40	F4

ATTACHHENT IB

RP 04-MN-003 Page 10f4

DUKE PO	WER CO	MPAN	IY			Exam Sta	urt: 10)49	Form	Form NDE-UT-2A Revision 4 ate: 3/8/2002 re: <u>87</u> ° <u>F</u> MCNDE 27228 /2002			
ULTRASONIC EXAMINATION DA	TA SHEE	TFOR	PLANAR	REFLEC	TORS	Exam Fin	ish: 11	15	Re	evision 4			
Station: McGuire	Unit: 2	Con	nponent/W	eld ID: 29	GD-INLE	T-W5SE		Date: 3/8/2002 Temperature: 87 ° F ter S/N: MCNDE 27228			02		
Weld Length (in.): 119.4	Surface Co	ondition:	AS M	ACHINED	Lo:	RT *0*	Surface 1	Tempera	ature: <u>8</u>	ture: <u>87</u> ° <u>F</u> <u>MCNDE 27228</u>			
Examiner: Gary J. Moss Jan Mo	n Level:	11 So	cans:				Pyromete Cal Due:	er S/N: 7	MCNE 1/3/2002	DE 27228	<u>8</u>		
Examiner: Winfred C. Leeper	D Level:	4	5 U	dB	70 L	dB	Configura	ation:	c	IRC.			
Procedure: NDE-930 Rev: 1	FC:	45	T 🖾 <u>73</u>	**_dB 7	от 🗆	dB		51	Flow	52			
	02-04	4 60) 🗆	dB			Sa	ife End	to _	Nozzie	_		
Calibration Sheet No:		60	т 🗆	dB				Scan	Surface:	OD 80 only			
0202055			Other:	<u>33° @</u>	<u>54dB</u> dI	3	Skew An	gie:	2	4			
IND # A Max Mp W % Max Max Max	L Max	L1	٤2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps .		
DO NOT WRITE IN THIS SPACE	2 5 1	20%dac HMA 50%dac 00%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	[DO NOT N THIS	WRITI SPACE			
NRI 33°					•								
NRI 45°													

Remarks: SCANNED AT 69 c	3 DUE	TO NOISE					
Limitations: (see NDE-UT-4)	90)% or greater	coverage obtai	ned: yes 🛛 no 🖾		Sheet_1	a
Reviewed Bv:	K		Date:	Authorized Inspector:	Date: 3-13-02	Item No: B05.070.007	
0			, , , , , , , , , , , , , , , , , , , ,			-	

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ATTACH	HENT	18	

RR 04. MN-603 Page Zof4

1	DUKE POWE	<b>R</b> COMPANY			FORM NDE-UT-4
	ISI LIMITATI	ON REPORT			Revision 1
Component/Weld ID: 2SGD-INLET-W5SE		Item No: B05.070.0	007	Remarks:	
☑ NO SCAN □ LIMITED SCAN	SURFACE	BEAM DIR	ECTION	Nozzle Configu	Iration
FROM L to L	INCHES FI	ROM WO2"	to Beyond	-	
ANGLE: 0 0 45 60 0 Other	<u>33°</u>	FROM	DEG toDEG	3	
NO SCAN LIMITED SCAN	SURFACE	BEAM DIR			
FROM L to L			to	-	
ANGLE: 0 0 45 60 0 Other	<u></u>		DEG toDEC	6	
	SURFACE	BEAM DIR	ECTION		
	□ 1  □ 2	1 1 2	🗆 cw 🗆 ccw		
FROM L to L	INCHES F		^{to}	_	
ANGLE: 0 0 45 0 60 0 Other		FROM	DEG toDEG	G	
	SURFACE	BEAM DIR	RECTION		
	1 2	1 2	Cw Ccw		
FROM L to L	INCHES F	ROM WO	to	_	
ANGLE: 0 0 45 0 60 0 Other		FROM	DEG to		
Prepared By: Winfred C. Leeper/	Dievel: II	Date: 3/9/2002	Sketch(s) attached	🖾 yes 🔲 no	Sheet Z of 4
Reviewed By:	III Date: 3/1	Authorize	ed Inspector:	dein	Date: 21202
	l,_				

ATTHCHIMUTTI 113 RY. 04-MN-003 Poge 3094 From . Stock Code No. 39203 • • • • • • • • • • • • • • MCGUIRE Unit Z Rev. File No. Sheet 30F4 Station : Subject SALE ENA TO NOZZLE II_ Date 3/10/02 WEDH ZSKD-INLET-W55E BY Checked by Prob No. <u>B05.070.007</u> Date OZZLE SATE END ... 3.5" Ī )2 2.55 ŧ i AREA XAM X Z. 55 1A. = 2.9850 17 M. X. J.

		. <b>.</b>		ſ		ATTACHI RR 04-HN	MENT 1B -003 Page 40f		
		DUKE	POWER		(		NDE-91-1		
		Limited Exa	mination Cov	/erage Work	sheet		Revision 0		
<u>.</u>		n tanı	• • • • • • • • • • • • • • • • • • •						
🛛 Bas	se Metal	ØW	eld	🛛 Near Su	rface C	Bolting	Inner Radius		
		Area Calcul	ation		Vo	lume Calcul	ation		
1.17" x :	2.55* = 2	.98 sq. in.		2.98	2.98 sq. in. x 119.4" = 355.81 cu. in.				
			. •						
- <u>.</u>	<u>_</u>	·····	Cov	verage Calcu	lations				
		Deem	Area	Length	Volume	Volume			
Scan #	Angle	Direction	(sq.in.)	Examined (in.)	Examined (cu.in.)	(cu.in.)	Percent Coverag		
Scan #	Angle 33°	Direction S2	(sq.in.) 2.98	Examined (in.) 119.4	Examined (cu.in.) 355.81	(cu.in.) 355.81	Percent Coverag		
Scan #	Angle 33° 45°	Direction S2 S1	2.98 0	Examined (in.) 119.4 0	Examined (cu.in.) 355.81 0	(cu.in.) 355.81 355.81	Percent Coverag 100.00 0.00		
Scan #  1  2  3	Angle 33° 45° 45°	Seam Direction S2 S1 CW	2.98 0 2.98	Examined (in.) 119.4 0 119.4	Examined (cu.in.) 355.81 0 355.81	355.81 355.81 355.81	Percent Coveraç 100.00 0.00 100.00		
Scan # 1 2 3 4	Angle 33° 45° 45° 45°	Seam Direction S2 S1 CW CCW	2.98 0 2.98 2.98 2.98	Examined (in.) 119.4 0 119.4 119.4	Examined (cu.in.) 355.81 0 355.81 355.81	355.81 355.81 355.81 355.81 355.81	Percent Coverag 100.00 0.00 100.00 100.00		

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			Item No:	B05.070.007
Prepared By: Jay A. Eaton	9K	Level: III		Date: 3/10/2002
Reviewed By: David K	3. 110	Level:		Date: 3/11/02
		- 7		1 1

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SHEET 4 OF 4

ATTACHMENT IC

											<u></u>	<u>04-H</u>	N-003	Tage 10	<u>t4</u>
			DU	IKE PC	WER C	OMP	ANY			Exam St	art: 10	012	Form	NDE-UT	-2A
ULTI	RASO	NIC E	XAMINA		ATA SHE	ET FO	R PLANAR	REFLEC	TORS	Exam Fir	nish: 10	048	R	evision 4	ł
Station	•	N	AcGuire	<u> </u>	Unit:	2 0	Component/W	Veld ID: 2	SGD-OUT	LET-W6S	E		Date:	3/8/20	02
Weld L	.ength	(in.):	119.	4	Surface	Conditio	on: AS M		) Lo:	RT "0"	Surface ⁻	Tempera	ature:	87 °	_ <u>F_</u>
Examir	ner: Ga	ary J. M	loss M	ry Mile	Level:	11	Scans:				Pyromete Cal Due:	er S/N: 7	<u>MCN</u> 7/3/2002	DE 2722	8
Procec	lure: 1	NDE-9	30	Rev: 1	FC:	04	45 □ 45T ⊠ <u>73</u> 60 □	dB <u>**</u> dB 7 dB	70 U_ 77 D_	dB dB	Configura	ation: < \ afe End	Flow _	CIRC. 5 Z Nozzle	>
Calibra 020205	ition St 5	neet No	o:				60T 🗆 Other:	dB <u>33° @</u>	<u>54dB</u> d	B	Safe End to Nozzle Scan Surface: OD Applies to NDE-680 only Skew Angle: $2/A$				
IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	12	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO I IN T	NOT WI HIS SP	RITE ACE		20%da HMA 50%da 100%da	c 20%dac HMA c 50%dac ac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	C II	OO NOT N THIS	WRITI SPACI	
NRI	33°														
NRI	45°														

Remarks: ** SCA	NNED AT 69dB	DUE TO NOISE	, ,				7
Limitations: (see N	NDE-UT-4)	90% or greater	coverage obtai	ned: yes 🔲 no 🖾		Sheet of _4	
Reviewed Bv:	CHA	Level:	Date: 3/11/02	Authorized Inspector:	Date: 3-13-02	Item No: B05.070.008	
	1pc						1

ATTACHMENT IC) RR 04-MN-003 Rose 2014

	DUKE PON	WER COMPANY		FORM NDE-UT-4
	ISI LIMIT	TATION REPORT		Revision 1
Component/Weld ID: 2SGD-OUTLET-W	/6SE	Item No: B05.070.008	Remarks:	
	SURFACE	BEAM DIRECTION	Nozzle Configu	Iration
	1 2	🖾 1 🗖 2 🔲 cw 🗋 ccw		
FROM L to L	INCH	ES FROM WO2* toBeyond	_	
ANGLE: 0 0 45 60 0 Othe	r <u>· 33°</u>	FROM DEG toDEG	G	
	SURFACE	BEAM DIRECTION		
	1 2	□ 1 □ 2 □ cw □ ccw		
FROM L to L	INCH	ES FROM WO	_	
ANGLE: 0 0 45 60 0 Othe	r	FROM DEG toDEG	G	
	SURFACE	BEAM DIRECTION		
	1 2			
FROM L to L	INCH	IES FROM WO		
ANGLE: 0 0 45 0 60 0 Othe	r	FROM DEG toDE	G	
	SURFACE	BEAM DIRECTION		
	1 2	🗋 1 🗖 2 🔲 cw 🗍 ccw		
FROM L to L	INCH	IES FROM WO	_	
ANGLE: 0 0 45 60 000 Othe	r	FROM DEG to		
Prepared By: Winfred C. Leeper	Devel:	II Date: 3/9/2002 Sketch(s) attached	⊠ yes □ no	Sheet Z of 4
Reviewed By:	Date:	3/11/07_ Authorized Inspector:	2ain	Date: 3-13-02

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ATTACHMENT IC Stock Code No. 89203 RR 04-MN-003-72-3054 ····· M'GUIRE Unit Z Rev. Sheet 3 OF4 File No. Station : Subject SALE ENA TO NOZZLE TT_ Date _3 10 02 WEID# 254D-OUTLET-W6SE BY Prob No. <u>B05.070.008</u> Checked by Date . . . **. . .** i Nozzie SATE END ... i 3.5" )2 Aleta: xdm X Z. 55 14. = 2.98.50 1.17 1%. 11. . •

		אוות					NDE-91-1			
		Limited Ex	amination Cov	verage Work	heet	-	Revision 0			
•	. *		Examinati	on Volume/A	rea Defined					
🖾 Bas	se Metal		Weld	🛛 Near Su	face C	Bolting	Inner Radius			
		Area Calc	ulation		Volume Calculation					
1 17" x					2.98  sg in x 119.4" = 355.81 cu in					
	2.55" = 2	98 sq. in.		2.98	sq. in. x 119.4'	'= 355.81 cu.	in.			
	2.55" = 2	98 sq. in.	Cov	2.98 verage Calcu	sq. in. x 119.4' ations	'= 355.81 cu.	in.			
Scan #	2.55" = 2.	98 sq. in. Beam Direction	Cov Area Examined (sq.in.)	2.98 verage Calcu Length Examined (in.)	sq. in. x 119.4' ations Volume Examined (cu.in.)	Volume Required (cu.in.)	in. Percent Coverage			
Scan #	2.55" = 2. Angle 33°	98 sq. in. Beam Direction S2	Cov Area Examined (sq.in.) 2.98	2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98	ations Volume Examined (cu.in.) 355.81	Volume Required (cu.in.) 355.81	in. Percent Coverage 100.00			
Scan #	2.55" = 2. Angle 33° 45°	98 sq. in. Beam Direction S2 S1	Cov Area Examined (sq.in.) 2.98 0	2.98 Perage Calcu Length Examined (in.) 119.4 0	sq. in. x 119.4 ations Volume Examined (cu.in.) 355.81 0	Volume Required (cu.in.) 355.81 355.81	in. Percent Coverage 100.00 0.00			
Scan #	Angle 33° 45° 45°	98 sq. in. Beam Direction S2 S1 CW	Cov Area Examined (sq.in.) 2.98 0 2.98	2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98	sq. in. x 119.4 ations Volume Examined (cu.in.) 355.81 0 355.81	Volume Required (cu.in.) 355.81 355.81 355.81	in. Percent Coverage 100.00 0.00 100.00			
Scan #	Angle 33° 45° 45° 45°	98 sq. in. Beam Direction S2 S1 CW CCW	Cov Area Examined (sq.in.) 2.98 0 2.98 2.98	2.98 2.98 2.98 2.98 2.98 2.98 2.98 2.98	ations Volume Examined (cu.in.) 355.81 0 355.81 355.81	Volume Required (cu.in.) 355.81 355.81 355.81 355.81	in. Percent Coverage 100.00 0.00 100.00 100.00			

	1			
				BU5.070.008
Prepared By: Jay A. Eaton	CHES	Level:	111	Date: 3/10/2002

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SHEET 4 OF4

20%

7.02 Bul

## ATTACHHENT 2

RR 04-NN-003 Page 1049

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		DUł	(E PO'	WER C	COMP	ANY				Exam Sta	rt:	1012	1	NDE-UT-3A
ULTRASC	ONIC EX	AMINA		TA SHE	ET FOF		AR REF	LECTOF	RS	Exam Fin	ish:	1020		Revision 2
Station:	Мс	Guire		Unit:	2	Compor	nent/Welc	11D: 2P	ZR-SKIF	AT .			Date: 03/05/2002	
Nominal Mater	rial Thickr	ness (in):		1.5		Weld Le	ength (in.)	: 2	73.3	Surfa	ce Tempe	erature:	82°	Deg F
Measured Mat	erial Thic	kness (in	):	1.69		Lo:		9.2.1		Pyron	neter S/N	: M		27227
Surface Condi	tion:		AS GROL	JND		Calibrat	ion Sheet	No:	•	Cal D	ue:		07/03/2	:002
Examiner: Ga	ry J. Mos:	s Har	A Ma	m Levi	el: Il	0202049	9			Confi	guration:	SKIRT	to LOW	'ER HEAD
Examiner: Jar	nes L. Pa	nel		Leve								S2_Flor	w§	31
Procedure:	NDE-6	340	Rev: 1	FC:	*						S	KIRT to	<del>_</del>	
IND NO.	Ampi ≥ rem BW LOB	L1 ∍ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ⇒ rem BW LOB	W2 ⇒ rem BW LOB	Mp2 ⇒ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.		Damps
NRI 0°												·		

Remarks: 🔀	FC 95-1	18 \$ 95.	-19				
				Limitations: see NDE-UT-4	None: 🖾	Sheet	of <u>Z9</u>
Reviewed By:			l: Date: 3/10/02	Authorized Inspector:	Date:	Item No: B08.020.001A	9E3/10/02
							· • · · · · · · · · · · · · · · · · · ·

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ATTACHMENT 2

RR 04-NN-003 Rage 2049

	DUKE POWER COMPANY								Exam Sta	art: 10	012	Form	NDE-UT	-2A	
ULTI	RASO		XAMINA		ATA SHE	ET FOI	R PLANAR	REFLEC	TORS	Exam Fir	nish: 11	105	Re	evision 4	
Station	•	N	lcGuire		Unit:	it: 2 Component/Weld ID: 2PZR-SKIRT					Date: 03/05/2002				002
Weld L	ength (	(in.):	273.	3	Surface	urface Condition: AS GROUND Lo: 9.2.1					Surface 1	[emperat	ture:	<u>32</u> °	F
Examir	ner: Ga	ary J. M	oss Jar	Mor	C Level:	11	Scans:			5	Pyrometer S/N:         MCNDE 27227           Cal Due:         07/03/2002			7	
Examir	ner: Ja	mes L.	Panel	- la	bevel:		45 ⊠ <u>60.</u>	<u>5</u> dB	⁷⁰ –	dB	Configura	ation:	Skirt to	Lower He	ad
Proced	lure: N	NDE-95	52 /	Rev: 0	FC:		45T थ <u>60.</u> 3° _	<u>5</u> dB 7	OT L	dB	S	2	Flow	S1	
					- 02.	.05 G	60 🖾 <u>63.</u> Eslidez	<u>5</u> dB				Skirt Scan	to Surface:	Head	
Calibra 020204 	ition Sf 9 , 0202	1eet No 2050	): 			ē	50T	dB <u>0° @</u>	<u>34</u> dl	В	م Skew An	Applies t gle:	o NDE-6	80 only N/A	
IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	12	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		do i In t	NOT WI HIS SP/	RITE ACE		20%dad HMA 50%dad 100%da	20%dac HMA 50%dac ac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	D IN	O NOT	WRITI SPACI	
1	30°	350	2.83	Taper-5.7*	0.0*	360°	INT.	IND.	NA	24		2	1	AX	NO

Remarks:	X 3/12	9
Limitations: (see NDE-UT-4	90% or greater coverage obtained: yes no 🛛	Sheet Z of Z Q
Reviewed By:	Level: Date: Authorized Inspector: Date: TII 3/10/02 Replem 3/1-01-	Item No: 97.3/14.2 3/13 B08.020.001A

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## ATTACHMENT 2

RR 04-MN-003 Fage 4049

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DUKE POWER COMPANY	Form NDE-UT-8	
ULTRASONIC INDICATION RESOLUTION SHEET	Revision 1	
Acceptance Standard: IND. 1 - PLOTTING OF INDICATION SHOWS THIS TO BE A GEOMETRICAL REFLECTOR FROM THE I.D. OF INDICATION WOULDNOT HOLD UP TO SKEWING.	THE WELD.	
Item No: B08.020.001A		
Acceptable Indications: IND. 1 Rejectable Indications: NONE		
These indications have been compared with previous ultrasonic data		
Examiner: Level: Date:	Sheet 4_of 9_	









						A	MHDATT	ENT 2	
<b></b> _			· · · · · · · · · · · · · · · · · · ·			RROY	- <u>MN-0</u>	03 Page 905 C	
		DUK	E POWER (	COMPA	Y		1	NDE-91-1	
		Limited Exa	amination Cov	/erage Wo	orksheet		F	Revision 0	
Examination Volume/Area Defined									
Ø Bas	se Metal	I P⊠ V	Veld	D Near	Surface	Bolting	1 C	Inner Radius	
Area Calculation Volume C								1	
SEE DRWG 6.7 SQ. IN. 6.7 SQ. IN. X 274 IN. = 1835 CU. IN.									
			Cov	verage Cal	culations				
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examine (in.)	Volum d Examin (cu.in	e Volu ed Requ .) (cu.	me ired in.) P	ercent Coverage	
1	0°	N/A	5.12	274	1402.	88 183	35		
2	45°	1	3.4	274	931.0	6 183	35		
3	30°	2	6.42	274	1759.0	08 183	85		
4	45°	CW	5.12	274	1402.8	38 183	35		
5	45°	CCW	5.12	274	1402.8	38 183	35		
		TOTAL	AGGREGATE	COVERAG	E 6899.	32 917	'9	75.16	

				1
				ð
				the state
				A B
······································	·	Item No:	B08.020.001A	20/5/15
Prepared By: David Cast	Level: TI		Date: 05/05/	107 jzst
Reviewed By:	Level: TT	- a	Date: 3/10/0	12
			· SHEET 9	059

ATTACHMENT 3

						-					R	<u>R 04-N</u>	10-003	togel	044
			DL	JKE PC	WER C	COMPA	ANY			Exam Sta	art: 1(	013	Form	NDE-UT	-2A
ULTI	RASOI		XAMINA		ATA SHE	ET FO	R PLANAR	REFLEC	TORS	Exam Finish: 1026			Revision 4		
Station	:	N	AcGuire		Unit:	2 C	omponent/W	/eld ID: 2	ncw-3673-	1			Date:	2/26/20	002
Weld Length (in.): 101" Surface Condition: AS GROUND				Lo:	9.1.1.1	Surface 7	ſempera	ture: <u>1</u>	<u>18</u> °	F					
Examiner: Larry Mauldin Court Mauldu Level: III Scans: Examiner: Larry Mauldin Court And Court III Scans: Examiner: Larry Mauldin Court And Court III Scans: Cal Due:						er S/N: 7	MCNI /3/2002	DE 2722	7						
Examiner: James L. Panel       Level: II       45 🖄 68.5 dB       70 Ll dB         Procedure: NDE-610       Rev: 4       FC:       45T 🖄 75 dB       70 Ll dB         *       60 Ll dB					dB	Configura	ation: <u>PC</u> ぞらい LBOW	Flow C	to Elbow	(PC.AL 152					
Calibra 020202 	ation St 8, 0202	neet No 029	0:			•	60T  Other:	dB	di	В	ہ Skew An	<u>Scan</u> Spplies f gle:	Surface: to NDE-6	<u>OD</u> 80 only N/A	
IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	12	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO IN T	NOT WI HIS SP	RITE ACE		20%dad HMA 50%dad 100%da	20%dac HMA 50%dac ac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	C II	NOT N THIS	WRIT SPACI	E
NRI	45A												- <u> </u>		
NRI	45C														1

r					<b>.</b>		
Remarks: *97-01,	98-20, 01-05				•		
Limitations: (see N	DE-UT-4) 🖂	90% or greater	coverage obtair	ned: yes 🛛 no 🖾		Sheet _ I _ of _4	- R - R
Reviewed By:	$\frown$	Level:	Date:	Authorized Inspector:	Date:	Item No:	311-
	WE		2/27/02	Allein	2-26-02	B09.011.009	
				4	·····		

			ATTACHN	ENT 3
	DUKE POWI	ER COMPANY fion report	<u> </u>	FORM NDE-UT-4 Revision 1
Component/Weld ID: 2NCW-3673-1		Item No: B09.011.009	Remarks:	····
NO SCAN	SURFACE		DUE TO 18 INC	CH PIPE RESTRAINT
FROM L <u>16.25</u> to L <u>34</u> ANGLE: 0 🛛 45 🗆 60 🗆 Ot	4.25" INCHES	FROM WO 2.0" to <u>BEYOND</u> FROM N/A DEG to <u>N/A</u> DEG		
<ul><li>☑ NO SCAN</li><li>☑ LIMITED SCAN</li></ul>	SURFACE		DUE TO 12 INC	CH PIPE RESTRAINT
FROM L to L ANGLE: 0 🛛 45 🗆 60 🗖 Ot	6.5" INCHES	FROM WO <u>2.0</u> to <u>BEYOND</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG		
<ul><li>☑ NO SCAN</li><li>□ LIMITED SCAN</li></ul>	SURFACE		DUE TO 12 INC	CH PIPE RESTRAINT
FROM L <u>69.75</u> to L <u>8</u> ANGLE: □ 0 ⊠ 45 □ 60 □ Ot	1.75" INCHES	FROM WO 2.0 to <u>BEYOND</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG		i
NO SCAN	SURFACE		DUE TO 12 INC	CH PIPE RESTRAINT
FROM L <u>95.0</u> to L to L	6.0" INCHES	FROM WO to BEYOND	Que al 27	
Prepared By: Kaus Maula Reviewed By:	Level: /// TIL Date: Z/Z	Date: えん・02 Sketch(s) attached Date: えん・02 Sketch(s) attached Date:	i yes ⊠ no Rein	Sheet Z of 4

						ATTAC	HMENT 3		
					RR	04-142-00	3 Page 30f4		
		DUKE	POWER O	COMPANY	1		NDE-91-1		
		Limited Exa	mination Cov	verage Work	sheet		Revision 0		
Examination Volume/Area Defined									
🖾 Base Metal 🖾 Weld 🛛 Near Surface 🗖 Bolting 🗂 Inner Radius									
	· · · · · · · · · · · · · · · · · · ·	Area Calcul	ation		Vol	ume Calcula	tion		
3.5 IN.	X 0.67 IN	= 2.35 SQ.IN		2.35	SQ.IN. X 101 I	$N_{\rm c} = 237.35  \rm C$	U.IN.		
			•						
Coverage Calculations									
		_	Area	Length	Volume	Volume			
Na 4	Angle	Beam	Examined	Examined	Examined	Required	Percent Coverage		
ແລມ 🛱	ruigio	Direction	(sq.in.)	(in.)	(cu.in.)	(cu.in.)	1 bibblik bovblage		
scan #	•					· ·			
can #	45	2	2.35	101	237.35	237.35	· · · · · · · · · · · · · · · · · · ·		
2 xcan #	45 45	2	2.35 2.35	101 47	237.35 110.45	237.35			
2 2	45 45 45	2 1 1	2.35 2.35 0.0	101 47 54	237.35 110.45 0	237.35 110.45 126.9			
2 3	45 45 45 45 45	2 1 1 CW	2.35 2.35 0.0 2.35	101 47 54 47	237.35 110.45 0 110.45	237.35 110.45 126.9 110.45			
can # 1 2 2 3 3	45 45 45 45 45 45	2 1 1 CW CW	2.35 2.35 0.0 2.35 1.68	101 47 54 47 54	237.35 110.45 0 110.45 90.72	237.35 110.45 126.9 110.45 126.9			
2 3 3 4	45 45 45 45 45 45 45	2 1 CW CW CCW	2.35 2.35 0.0 2.35 1.68 2.35	101 47 54 47 54 47 47	237.35 110.45 0 110.45 90.72 110.45	237.35 110.45 126.9 110.45 126.9 110.45			
can # 1 2 2 3 3 4 4	45 45 45 45 45 45 45 45	2 1 CW CW CCW CCW	2.35 2.35 0.0 2.35 1.68 2.35 1.68	101 47 54 47 54 47 54 47 54	237.35 110.45 0 110.45 90.72 110.45 90.72	237.35 110.45 126.9 110.45 126.9 110.45 126.9 110.45 126.9	<u> </u>		

			(X)	they
		Item No:	B09.011.009	R
Prepared By: Mun Thanking	Level: 777		Date: 2.26.02	ة الحالج الحالج
Reviewed By:	Level: JI		Date: 2-27-02	
	1		· SHEET 3	ofy





SHEET 1 OF 3

# McGuire Unit #2 EOC14

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No Data Recorded. Reference Calibration Sheet #'s

ATTACHMENT 4 RR 04-MN-003 Page 20+3

### **DUKE POWER COMPANY** IST I IMITATION DEDODT

**Devision** 1

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FORM NDE-UT-4

A,		
Component/Weld ID: 2NC2FW2-1	Item No: B09.011.011	Remarks:
SURI SURI	FACE BEAM DIRECTION	RIGID RESTRAINT
LIMITED SCAN	⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	
FROM L to L	INCHES FROM WO to	
ANGLE: 0 0 45 0 60 0 Other	FROM N/A DEG to N/A DEG	
SURI SURI	FACE BEAM DIRECTION	RIGID RESTRAINT
LIMITED SCAN	⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	
FROM L to L	INCHES FROM WO to	
ANGLE: 0 0 45 0 60 0 Other	FROM N/A DEG to N/A DEG	
	FACE BEAM DIRECTION	
LIMITED SCAN		
FROM L to L	INCHES FROM WO	
ANGLE: 0 0 45 0 60 Other	FROM DEG toDEG	
	FACE BEAM DIRECTION	
LIMITED SCAN		
FROM L to L	INCHES FROM WO	
ANGLE: 0 0 45 0 60 0 Other	FROM DEG to	
Prepared By: Winford D. B. L	evel: Date: 3-/3-02 Sketch(s) attached	yes ⊠ no Sheet Z_of 3_
Reviewed By:	Date: 3 13 02 Authorized Inspector:	Spein Date: 3-14-02
1'		et estaloz

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<b>.</b>				Item No:	B09.011.011
Prepared By: DAVID	K. ZIMMERMA	N David Ca	Level:	111	Date: 3/13/2002
Reviewed By:	Ch	A	Level:	Ш.	Date: 31302
					SHEET 30-3

Viet 400 Star

ATTACHMENT 4A

	RR04-HN-003 Page lof:
	Form NDE-35A Revision 3
DUKE	E POWER COMPANY
STATION _	McGuire UNIT 2
LIQUID PENET	TRANT EXAMINATION REPORT
Weld/ID No. 2NC2FW2-1	Material Type: 🖾 SS 🔲 CS 📋 Inconel
Diameter 14 Schedu	dule/Thickness 160/1.406 🛛 ISI 🗌 PSI 🔲 Other
Procedure Rev. No. 19 Fie	ield Change No.(s) <u>N/A</u>
W/O No. 98395261	SKETCH OF ITEM EXAMINED
Surface Temperature75°F	j Li Lianter -> j j.
M&TE S/N: MCNDE 27221	4" -1 [3 -3]
Penetrant Materials Category:	
A ⊠ A(SE) □ B □ C □ D □	
A(SE) Approved	
Penetrant Materials Data:	1 \  `.
Batch Numbers	
Cleaner99M01K	
Penetrant 97A10K	
Emulsifier	
Fluorescent D Nonfluorescent X	- HADLER
Black Light Intensity Verified	Acceptance Standard: A 🛛 D 🔲 G 🔲 K 🔲
Time Date	Other:         B         E         H         L         L
Light Meter S/N:	
Ind. Indication No. Type/Dimensions	Reference Documents Recordable Reportable
NRI	

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PIP S/N:	Rejectable 🔲	Acceptable
Exam Limitations: Xes 81.8	Z % Examined 🛛 🔲	No (100% Examined)
Comments: LIMITED C HAR	DAER AS SHOWN	ABOVE
Examiner: Jay A. Eaton	Level: II	Date: 3/3/2002
Examiner:	Level:	Date:
Reviewed By: Man Moro	Level: 🖈	Date: 3-4-07
Final Review / Date	ANII Review Date	Item No. B09.011.011A

		DUĶ	E POWER	COMP/	ANY			NDE-91-1
•	1	Limited Ex	camination Co	overage V	/orksheet	•		Revision 0
<u></u> .	e - e a ten rea últa sénérit.	<u></u>	Examina	tion Volu	me/Area Def	ined	<u></u>	na na stand sa standa standa. Teana
🖾 Ba	ise Metal		Weld	🗆 Nea	r Surface	□в	olting	Inner Radius
Area Calculation					Volume Calculation			
44" of 1 sq.in. t	weld lengtl otal weld a	Area Calci h x 2.5" wide urea.	ulation inspection area	a = 110		Volum	e Calcula	ation
44° of t sq.in. t	weld lengtl otal weld a	Area Calci h x 2.5" wide urea.	ulation Inspection area	a = 110 overage C	alculations	Volum	e Calcula	ation
44" of 1 sq.in. t	weid lengti otal weid a	Area Calci h x 2.5" wide trea. Beam Direction	ulation Inspection area וnspection area שבעד שודד Area א Examined (sq.in.)-	a = 110 overage C H Examir K (in.)	alculations All th -Volum red Examin	Volum 10	e Calcula ALEA Volumo- Required	ation پر پر Percent Coverage

Prepared By: Jay A. Eaton	Level:	11 .	Date: 3/3/2002
Reviewed By: 72 Tusky	Level:	ŢŢĘ	Date: 3/11/02


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### McGuire Unit #2 EOC14

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Item #	B09.011.012	
Weld #	ZNCZFWZZ-6	•

No Data Recorded. Reference Calibration Sheet #'s  $\frac{0202069 - 45^{\circ} \notin 60^{\circ}}{0202070 - 60^{\circ} L}$ 

SHEET 1 OF 5

ATTACHMENT 5

RR 04-MN-003 Rage 2075

#### FORM NDE-UT-4 DUKE POWER COMPANY ISI LIMITATION REPORT **Revision 1** Component/Weld ID: 2NC2FW22-6 **Remarks:** Item No: B09.011.012 SURFACE BEAM DIRECTION NOZZLE CONFIGURATION 🖾 NO SCAN LIMITED SCAN FROM L N/A to L N/A INCHES FROM WO 0.7* to BEYOND ANGLE: 0 0 45 8 60 0 Other _____ FROM 0 DEG to 360 DEG BEAM DIRECTION SURFACE LIMITED SCAN FROM L to L INCHES FROM WO to ANGLE: 0 0 45 0 60 Other _____ FROM ____ DEG to ____ DEG SURFACE BEAM DIRECTION □ NO SCAN □ LIMITED SCAN FROM L _____ to L _____ INCHES FROM WO _____ to _____ ANGLE: 0 0 45 0 60 0 Other FROM ____ DEG to ____ DEG SURFACE BEAM DIRECTION D NO SCAN □ LIMITED SCAN FROM L to L INCHES FROM WO _____ to ____ ANGLE: 0 0 45 0 60 0 Other FROM ____ DEG to ____ boen Level: I Date: 3-14.02 Sketch(s) attached I yes I no Prepared By: / / , ; / Sheet Z of S III Date: 315 02 Authorized Inspector: Authorized Inspector: Reviewed By: Date 3-15.02





		•		1		ATTA RR 04-MM	1-003 Page 5
		DUKE	POWER	COMPANY	,		NDE-91-1
Limited Examination Coverage Worksheet Revision						Revision 0	
•	•		Examinat	ion Volumé/A	rea Defined	··	· · · · · ·
🛛 Bas	se Metal	N 🛛	/eld	🗆 Near Sur	face C	Bolting	Inner Radius
		Area Calcu	ation		Vol	ume Calcula	ition
SEE AT	TACHED	DRWG.					
AREA = 0.63 sq. in. = 21.3 cu. in.						n.	
	·		Co	verage Calcul	lations		
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	60	\$2	0	33.8	0	21.3	<u> </u>
2						-	
	60	S1	0.28	33.8	9.45	21.3	
3	60 45	S1 CW	0.28 0.63	33.8 33.8	9.45 21.3	21.3 21.3	v
3 4	60 45 45	S1 CW CCW	0.28 0.63 0.63	33.8 33.8 33.8	9.45 21.3 21.3	21.3 21.3 21.3	,
3 4	60 45 45	S1 CW CCW TOTAL	0.28 0.63 0.63 COVERAGE	33.8 33.8 33.8 AGGREGATE	9.45 21.3 21.3 52.05	21.3 21.3 21.3 85.2	, 61.09
3 4 2	60 45 45 60RL	S1 CW CCW TOTAL S1	0.28 0.63 0.63 COVERAGE 0.35	33.8 33.8 33.8 AGGREGATE 33.8	9.45 21.3 21.3 52.05 11.83	21.3 21.3 21.3 85.2 21.3	61.09

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				and the second
		Item No:	B09.011.012	196
Prepared By: DAVID K. ZIMMERMAN	m		Date: 3/14/2002	
Reviewed By: Level:	I	Γ	Date: 3 15 02	
			SHEET 50	F5



## McGuire Unit #2 EOC14

Item #	B09.011.013
Weld #	ZNLZEWZZ-9

No Data Recorded. Reference Calibration Sheet #'s  $\frac{0202069 - 45^{\circ} \pm 60^{\circ}}{0202070 - 60^{\circ}L}$ 

SHEET 1 OF 5

RTACHMENT 6

# DUKE POWER COMPANY

FORM NDE-UT-4 Devicion 1

	151 LIVITATION	REPURI		Revision 1
Component/Weld ID: 2NC2FW22-9		tem No: B09.011.013	Remarks:	~ <u></u>
☑ NO SCAN □ LIMITED SCAN	SURFACE		NOZZLE CONF	GURATION
FROM L         N/A         to L         N/A           ANGLE:         □         0         □         45         ⊠         60         □         Other		MWO         0.7"         to         BEYOND           FROM         0         DEG to         360         DEG		
NO SCAN LIMITED SCAN FROM L to L	SURFACE 1 2 INCHES FROM	BEAM DIRECTION		
ANGLE: 0 0 45 0 60 0 Other		FROM DEG toDEG		
<ul><li>NO SCAN</li><li>LIMITED SCAN</li></ul>	SURFACE			
FROM L       to L         ANGLE:       0       45       60       Other		to         to           FROM         DEG to         DEG		
NO SCAN     LIMITED SCAN	SURFACE			
FROM L to L		WWO to		
Prepared By: Linfront? Reep.	Level: 7 [ III Date: 3/15/0	Date: 3-14.02 Sketch(s) attached Authorized Inspector:	yes □ no lein	Sheet 2 of 5 Date: 3-15-02



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		DUKE	E POWER	COMPANY			NDE-91-1
		Limited Exa	mination Co	verage Works	sheet		Revision 0
•	•	··· • • •	Examinat	ion Volume/A	rea Defined	• · · <u></u> • •	
🛛 Bas	e Metal	Ø W	/eld	🛛 🗆 Near Sur	face C	Bolting	Inner Radiu
Area Calculation V				Vol	ume Calcula	tion	
SEE AT	TACHED	DRWG.					
AREA =	0.63 sq.	in.		33.8	in. X 0.63 sq. ir	n = 21.3  cu. in	n.
. <u> </u>			Co	verage Calcul	ations		
Scan #	Angle	Beam Direction	Co Area Examined (sq.in.)	verage Calcul Length Examined (in.)	ations Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverag
Scan #	Angle 60	Beam Direction S2	Co Area Examined (sq.in.) 0	verage Calcul Length Examined (in.) 33.8	ations Volume Examined (cu.in.)	Volume Required (cu.in.) 21.3	Percent Coverag
Scan # 1 2	Angle 60 60	Beam Direction S2 S1	Co Area Examined (sq.in.) 0 0.28	verage Calcul Length Examined (in.) 33.8 33.8	ations Volume Examined (cu.in.) 0 9.45	Volume Required (cu.in.) 21.3 21.3	Percent Coverag
Scan # 1 2 3	Angle 60 60 45	Beam Direction S2 S1 CW	Co Area Examined (sq.in.) 0 0.28 0.63	verage Calcul Length Examined (in.) 33.8 33.8 33.8	ations Volume Examined (cu.in.) 0 9.45 21.3	Volume Required (cu.in.) 21.3 21.3 21.3	Percent Coverag
Scan # 1 2 3 4	Angle 60 60 45 45	Beam Direction S2 . S1 CW CCW	Co Area Examined (sq.in.) 0 0.28 0.63 0.63	verage Calcul Length Examined (in.) 33.8 33.8 33.8 33.8 33.8	ations Volume Examined (cu.in.) 0 9.45 21.3 21.3	Volume Required (cu.in.) 21.3 21.3 21.3 21.3 21.3	Percent Coverag
Scan #	Angle 60 60 45 45	Beam Direction S2 S1 CW CCW TOTAL	Co Area Examined (sq.in.) 0 0.28 0.63 0.63 COVERAGE	verage Calcul Length Examined (in.) 33.8 33.8 33.8 33.8 33.8 AGGREGATE	ations Volume Examined (cu.in.) 0 9.45 21.3 21.3 52.05	Volume Required (cu.in.) 21.3 21.3 21.3 21.3 21.3 85.2	Percent Coverag 61.09
Scan # 1 2 3 4 2	Angle 60 60 45 45 60RL	Beam Direction S2 S1 CW CCW TOTAL S1	Co Area Examined (sq.in.) 0 0.28 0.63 0.63 COVERAGE 0.35	verage Calcul Length Examined (in.) 33.8 33.8 33.8 33.8 33.8 33.8 33.8 33	ations Volume Examined (cu.in.) 0 9.45 21.3 21.3 52.05 11.83	Volume Required (cu.in.) 21.3 21.3 21.3 21.3 85.2 21.3	Percent Coverag 61.09



Report of Star

		. <u> </u>	Item No:	B09.011.013
Prepared By: DAVID K	ZIMMERMAN Rusific	Level:	111	Date: 3/14/2002
Reviewed By:	46	Level:	Ш.	Date: 3/15/02
				SHEET 5 OF

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SHEET 1 OF 4

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## McGuire Unit #2 EOC14

Item #_	B09.011.018	
Weld #	ZNCZFW16-6	•

No Data Recorded. Reference Calibration Sheet #'s

0202071 - 45° 460° 0202072 - 60° L

ATTACHMENT 7

# DUKE POWER COMPANY

FORM NDE-UT-4 Deviation 1

ISI LIMITATION REPORT	Revision 1
Component/Weld ID: 2NC2FW16-6 Item No: B09.011.018	Remarks:
Ø NO SCAN     SURFACE     BEAM DIRECTION       I LIMITED SCAN     Ø 1     0     1     0     2     0     0     ccw	NOZZLE CONFIGURATION
FROM L       N/A       to L       N/A       INCHES FROM WO       C/L       to       BEYOND         ANGLE:       0       45 🖾 60       Other       FROM       0       DEG to       360       DEG	
SURFACE     BEAM DIRECTION       Imited SCAN     Imited SCAN       FROM L     7.0"       to L     13.0"       INCHES FROM WO     C/L       to BEYOND	I-BEAM ADJACENT TO PIPE
ANGLE:         □         0         □         45         □         60         ⊠         Other         60         E         FROM         N/A         DEG to         N/A         DEG	
SURFACE     BEAM DIRECTION       Imited SCAN     Imited SCAN	
FROM L     to L     INCHES FROM WO     to       ANGLE:     0     45     60     Other     FROM     DEG to     DEG	
SURFACE     BEAM DIRECTION       Imited SCAN     Imited SCAN	
FHOM L       to L       INCHES FROM WO       to         ANGLE:       0       45       60       Other       FROM       DEG to         Prepared By:       T       Date:       7. W/cd2       Stateble) attracted       FI	ves □ no Shoet 7 of d
Reviewed By: <u>III</u> Date: 3/14/02 Authorized Inspector: <u>ORKE</u>	Date: 375-02

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						RR 64	HN-003	Page
		DUKI	E POWER C	OMPANY	,		NDE-91	-1
	· <u></u>	Limited Ex	amination Cov	erage Work	sheet		Revision	0
••		<u></u>	Examination	on Volume/A	rea Defined		<u> </u>	
🛛 Ba	se Metal	ØV	Veld	D Near Su	rface 🗆	Bolting	🗆 Inner	Radius
Area Calculation				Vol	ume Calcula	ation		
SEE AT	TACHED	DRWG.						
TOTAL	ABEA = 3	2.42 sq. in.		2 42	sa. in. X 20.8 it	n = 50.33  cm	in.	
				2.76	-4			
			Cov	erage Calcu	lations			
Scan #	Angle	Beam Direction	Cov Area Examined (sq.in.)	erage Calcu Length Examined (in.)	lations Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent C	overage
Scan #	Angle 45	Beam Direction CW	Cov Area Examined (sq.in.) 2.42	erage Calcu Length Examined (in.) 20.8	lations Volume Examined (cu.in.) 50.33	Volume Required (cu.in.) 50.33	Percent C	overage
Scan #	Angle 45 45	Beam Direction CW CCW	Cov Area Examined (sq.in.) 2.42 2.42	erage Calcu Length Examined (in.) 20.8 20.8	lations Volume Examined (cu.in.) 50.33 50.33	Volume Required (cu.in.) 50.33 50.33	Percent C	overage
Scan #	Angle 45 45 60	Beam Direction CW CCW S2	Area Examined (sq.in.) 2.42 2.42 0	erage Calcu Length Examined (in.) 20.8 20.8 20.8	lations Volume Examined (cu.in.) 50.33 50.33 0	Volume Required (cu.in.) 50.33 50.33 50.33	Percent C	overage
Scan # 1 2 3 4	Angle 45 45 60 60	Beam Direction CW CCW S2 S1	Cov Area Examined (sq.in.) 2.42 2.42 0 0.88	erage Calcu Length Examined (in.) 20.8 20.8 20.8 20.8 20.8	lations Volume Examined (cu.in.) 50.33 50.33 0 18.3	Volume Required (cu.in.) 50.33 50.33 50.33 50.33	Percent C	overage
Scan # 1 2 3 4	Angle 45 45 60 60	Beam Direction CW CCW S2 S1 TOTAL	Cov Area Examined (sq.in.) 2.42 2.42 0 0.88 AGGREGATE	erage Calcu Length Examined (in.) 20.8 20.8 20.8 20.8 20.8 20.8 20.8 20.8	lations Volume Examined (cu.in.) 50.33 50.33 0 18.3 118.96	Volume Required (cu.in.) 50.33 50.33 50.33 50.33 201.32	Percent C	overage
Scan # 1 2 3 4	Angle 45 45 60 60 60RL	Beam Direction CW CCW S2 S1 TOTAL S1	Cov Area Examined (sq.in.) 2.42 2.42 0 0.88 AGGREGATE 1.54	erage Calcu Length Examined (in.) 20.8 20.8 20.8 20.8 20.8 20.8 20.8 20.8	lations Volume Examined (cu.in.) 50.33 50.33 0 18.3 118.96 21.3	Volume Required (cu.in.) 50.33 50.33 50.33 50.33 201.32 50.33	Percent C	overage

Area alleler

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			Item I	No: B09.011.018
Prepared By: JAM		murth Ryan Lov	el: II	Date: 3/14/2002
Reviewed By:	Git	Leve	el: III	Date: 3/14/02

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SHEET 1 OF4

## McGuire Unit #2 EOC14

Item #	B09.011.169	
Weld #	ZNIZF.871	

No Data Recorded. Reference Calibration Sheet #'s

0202071-45°\$60° 0202072-60°L

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ATTACHMENT 8

RR 04-MN-003 Page 2044 FORM NDE-UT-4

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# DUKE POWER COMPANY

ISI LIMITATION REPORT	Revision 1
Component/Weld ID: 2NI2F871 Item No: B09.011.169	Remarks:
SURFACE  BEAM DIRECTION    Image: NO SCAN  Image: Decision of the scale	ADJACENT WELD
FROM L       N/A       to L       N/A       INCHES FROM WO       C/L       to         ANGLE:       0       45 Ø 60 Other        FROMO       DEG to	EYOND 60DEG
Image: Substance     SURFACE     BEAM DIRECTION       Image: Substance     BEAM DIRECTION       Image: Substance     Image: Substance       Image: Substance     Image: Substance	THROAT RADIUS OF 6" ELBOW
FROM L       7.0"       to L       13.0"       INCHES FROM WO       C/L       to       BE         ANGLE:       0       0       45       0       Ø       Other       60 RL       FROM       N/A       DEG to       N/A	EYOND VADEG
SURFACE     BEAM DIRECTION       Indext     Indext	ccw
FROM L       to L       INCHES FROM WO       to to	DEG
SURFACE     BEAM DIRECTION       Imited SCAN     Imited SCAN	ccw
FROM L       to L       INCHES FROM WO       to to         ANGLE:       0       45       60       Other       FROM       DEG to	
Prepared By: Reviewed By:	ached & yes I no Sheet <u>2</u> of <u>4</u>



		•			I	Ai Ro (11	TACHMENT 8		
		DUKI	E POWER C	COMPAN	1Y	<u></u>	NDE-91-1		
		Limited Ex	amination Cov	verage Wo	rksheet		Revision 0		
<u>an lait t</u> ao en	<u>an di sa di sa d</u>	<u>, 1997 - 1998 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19</u>	Examination	on Volume	۱ Volume/Area Defined				
🛛 Ba	se Metal	Øγ	Veld	D Near S	Surface	Bolting	Inner Radius		
		Area Calcu	lation	1		Volume Cald	culation		
SEE AT	TACHED	DRWG.							
			Cov	erage Cal	culations				
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examine (in.)	Volume d Examine (cu.in.)	Volun d Requir (cu.ir	ne red h.) Percent Coverage		
1	45	CW	2.42	20.8	50.33	50.3	3		
2	45	CCW	2.42	20.8	50.33	50.3	3		
. 3	60	S2	0	20.8	0	50.3	3		
4			0.00	00.0		50.3	<b>n</b>		
	60	TOTAL	AGGREGATE	COVERAG	18.3 E 118.96	201.3	3 12 59.09		
4	60 60RL	S1 TOTAL S1	AGGREGATE	COVERAG	18.3 E 118.96 21.3	201.3 50.3	3 12 59.09 3		

	Item No:	B09.011.169
Prepared By: JAMIE H. RESOR	Bun Level: II	Date: 3/14/2002
Reviewed By:	Level:	Date: 3/14/02

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Aller C. M. Marris

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	DUKE POW	ER COMPANY		- 1	8		
STA	TIONMc	Guire UN	IT_2				
	PENETRANT	EXAMINATION	REPOR	<u></u>			
Wek/ID No. 2CCPUMP-2A-LEG		Mate	rial Type:	SS IS		_ Inco	nel
Diameter 0	Schedule/Thick		)	୍ ାଥା ଯ		L] Oth	or i
Procedure Hev. No. 19	Field Chan	ge No.(s) <u>N/A</u>					=
W/O No. 98395260-01		8KETC	H of Ite	M EXAMIN	ED		
Surface Temperature 841							
Maile S/N: MUNUE 27226							
A(SE) Approved							
Penetrant Materials Data:							
Batch Numbe	ns j						
Cleaner 59M01K							
Developer 96M09K							· ·
Emulsifier							
						· M	님
Time Date	Other:		B	εΟ	нМ	· L	۲ ۲
Light Meter S/N:			C []	F 🖸	J 🗖	M	미
No. Type/Dimensions		Reference D	ocuments		Recordeble	Report	
					·	· · · ·	
PIP.S/N:		Rejectable					×.
Exam Limitations: Xe	s <u>82.65</u>	% Examined		] .No (10	0% Exan	nined)	
Comments:		detiene				• • •	
		Haiki 13.					
Examiner: Marion T. Weaver	montriver	Level:	11	Date:	2/19/20	002	
Examiner: B. Dale Jolly B	le gelly	Level:	11	Date:	2/19/2	002	
Reviewed By: 727	uchin	Level:	T	Date:	zinla	2	
Alue 2/25	1002	Den 2	Date: 2,5,5	2			
		<del> </del>					
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~ ·			DUK	E POWER	COMPA	NY	•		NDE-91-1		
(_)		£.	Imited Ex	amination Co	verage W	orksheet	•		Revision 0		
		• • • • • • • •	** *** <u>*</u> * ** **	Examinati	ion Volur	Volume/Area Defined					
	🖾 Base	Metal	$\boxtimes$ $\vee$	Weld	🗆 Nea	Surface	Boltin	a	Inner Radius		
			Area Calcu	lation		•	Volume Ca	alculatio	on .		
	138.5" of 1 332.4 sq.ii	weld len n. total v	gth x 2.4" w reld area.	ide inspection ar	′0a =				•		
				Col	verage Ca		<b>Δ Δ</b> ()	CA			
	Scan # A	ngle	Beam Direction	GK-Area Examined (sq.in.)	Lengt Examin (in.)	n <del>Volum</del> ed Examin SQ (cv.in	He - Volu Hed Requ	<del>ino</del> ۲-uired (in.)ہر	Percent Coverage		
•	N/A	N/A	N/A	2.4	114.5	274.	8 33	2.5	82.65		

			Item N	No: C03.030.001
Prepared By: Marion T	Weaver Manan V- Wang	Level:	11	Date: 2/19/2002
Reviewed By:	Teruchen	Level:	<u> </u>	Date: 2/19/02

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ATTACHMENT-9 RR 04-MN-003 Page 40F4

### ATTACHMENT 3

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### Relief Request 04-MN-004

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii) Inservice Inspection Impracticality

Duke Energy Corporation McGuire Nuclear Station – Unit 2 (EOC-15), March 28, 2002 To October 6, 2003 Second 10-Year Interval – Inservice Inspection Plan Interval Start Date March 1, 1994. Interval End Date March 1 2004. ASME Section XI Code – 1989 Edition with No Addenda Code Case N-460 is applicable

	I.	II. & III.	IV.	<b>v.</b>	VI.	
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
2ND2F-12	ND System 14" Pipe to Valve 2ND2A weld	Exam Category B-J Item No. B09.011.104 Fig. IWB-2500-8 35.20% Volume Coverage	See Paragraph "A" also See Attachment 1 Pages 1-5	None	See Paragraph "E" also See Attachment 1 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.
2NI2FW26-7	NI System 8" Valve 2NII 29 to Pipe Weld	Exam Category B-J Item No. B09.011.171 Fig. IWB-2500-8 34.96% Volume Coverage	See Paragraph "B" also See Attachment 2 Pages 1-5	None	See Paragraph "F" also See Attachment 2 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.
2NI2FW26-16	NI System 8" Valve 2NII 25 to Pipe Weld	Exam Category B-J Item No. B09.011.172 Fig. IWB-2500-8 34.96% Volume Coverage	See Paragraph "C" also See Attachment 3 Pages 1-5"	None	See Paragraph "F" also See Attachment 3 Pages 1-5"	The examination requirements for this interval were met; no additional exams are planned.
2NI2FW26-15	NI System 8" Elbow to Valve 2NI125 Weld	Exam Category C-F-1 Item No. C05.011.168 Fig. IWC-2500-7 34.96% Volume Coverage	See Paragraph "D" also See Attachment 4 Pages 1-5	None	See Paragraph "G" also See Attachment 4 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.

#### **Inspection Dates for Item Numbers**

B09.011.104	09/16/2003
B09.011.171	09/18/2003
B09.011.172	09/18/2003
C05.011.168	09/18/2003

#### IV. Basis for Relief

#### Paragraph A:

(The pipe to valve weld material is stainless steel. The weld diameter is 14.00" with a wall thickness of 1.250".)

During the ultrasonic examination of the weld, 100% coverage of the required scan and coverage examination volume could not be obtained. The examination coverage was limited to 35.20%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the valve configuration which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. The percent coverage reported represents the aggregate coverage from all shear wave scans performed on the weld and base material. A 45° shear wave axial scan was used to scan from the pipe side of the weld covering 40.8% of the examination volume. Two opposing 45° shear wave circumferential scans were performed on the pipe side of the weld covering 50% of the examination volume.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. A 60° refracted longitudinal wave axial scan was used to supplement the shear wave scan to provide better penetration but cannot be used beyond the first sound path leg. This supplemental scan covered 100% of the examination volume from the pipe side.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds. No recordable indications were found during the volumetric and surface examinations of this weld.

#### Paragraph B:

(The valve to pipe weld material is stainless steel. The weld diameter is 8.00" with a wall thickness of .906".)

During the ultrasonic examination of the weld, 100% coverage of the required scan and coverage examination volume could not be obtained. The examination coverage was limited to 34.96%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the valve configuration which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. The percent coverage reported represents the aggregate coverage from all shear wave scans performed on the weld and base material. A 45° shear wave axial scan was used to scan from the pipe side of the weld covering 39.84% of the examination volume. Two opposing 45° shear wave circumferential scans were performed on the pipe side of the weld covering 50% of the examination volume.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam

when shear waves pass through the weld. A 60° refracted longitudinal wave axial scan was used to supplement the shear wave scan to provide better penetration but cannot be used beyond the first sound path leg. This supplemental scan covered 100% of the examination volume from the pipe side. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds. No recordable indications were found during the volumetric and surface examinations of this weld.

#### Paragraph C:

(The valve to pipe weld material is stainless steel. The weld diameter is 8.00" with a wall thickness of .906".) During the ultrasonic examination of the weld, 100% coverage of the required scan and coverage examination volume could not be obtained. The examination coverage was limited to 34.96%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the valve configuration which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. The percent coverage reported represents the aggregate coverage from all shear wave scans performed on the weld and base material. A 45° shear wave axial scan was used to scan from the pipe side of the weld covering 39.84% of the examination volume. Two opposing 45° shear wave circumferential scans were performed on the pipe side of the weld covering 50% of the examination volume.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. A 60° refracted longitudinal wave axial scan was used to supplement the shear wave scan to provide better penetration but cannot be used beyond the first sound path leg. This supplemental scan covered 100% of the examination volume from the pipe side. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds. No recordable indications were found during the volumetric and surface examinations of this weld.

#### Paragraph D:

(The elbow to valve weld material is stainless steel. The weld diameter is 8.00" with a wall thickness of .906".) During the ultrasonic examination of the weld, 100% coverage of the required scan and coverage examination volume could not be obtained. The examination coverage was limited to 34.96%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the valve configuration which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the

weld volume as defined in Code Case N-460 is not possible. The percent coverage reported represents the aggregate coverage from all shear wave scans performed on the weld and base material. A 45° shear wave axial scan was used to scan from the pipe side of the weld covering 39.84% of the examination volume. Two opposing 45° shear wave circumferential scans were performed on the pipe side of the weld covering 50% of the examination volume.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. A  $60^{\circ}$  refracted longitudinal wave axial scan was used to supplement the shear wave scan to provide better penetration but cannot be used beyond the first sound path leg. This supplemental scan covered 100% of the examination volume from the pipe side. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds. No recordable indications were found during the volumetric and surface examinations of this weld.

#### Justification for Relief

#### VI. Paragraph E:

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). No additional B09.011 welds on the ND System were scheduled during this outage. No recordable indications were found during the volumetric and surface examination of this weld.

This is a 14" Pipe to Valve 2ND2A Weld 2ND2F-12 located on the ND (Residual Heat Removal System). This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following.

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the Ventilation Unit Condensate Drain Tank (VUCDT). This parameter is monitored continuously by Operations via an Operator Aid Computer (OAC) alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of a reactor coolant leakage calculation, which is

required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.

d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walkdown is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

#### Paragraph F:

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). One additional weld on NI System was scheduled this outage. No recordable indications were found during the volumetric and surface examination of this weld.

These are 8" Valves 2NI129/2NI125 to Pipe Welds 2NI2FW26-7/2NI2FW26-16 (respectively) located on the NI (Safety Injection System). These welds are not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the welds in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at these welds would result in the following.

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of a reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walkdown is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

#### Paragraph G:

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). Eleven additional C05.011 welds on NI System were scheduled during this outage. Two welds had recordable indications on the surface examination. One weld had a Linear indications of .15" and .65", the other weld had a indication of .25". Subsequent evaluation determined these indications were acceptable per the Section XI Code.

This is a 8" SS Elbow to Valve 2NI125 Weld 2NI2FW26-15 located on the NI (Safety Injection System). This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following.

- a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
- b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
- c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of a reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
- d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walkdown is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

#### VIII. Other:

The following individuals contributed to the development of this relief request:

Jim McArdle (Principal UT NDE Level III Examiner) provided Sections II through V and part of Section VI.

Ed Hyland, Bryan Meyer and Larry Kunka (MNS Systems Engineers) provided parts of Section VI.

Gary Underwood (McGuire ISI Plan Manager) compiled the remaining sections.

Sponsored Date By: Jure

7/12/2004

Approved By: UT Examination Data B09.011.104 Attachment 1

1/13/04_ Date

Attachment 2 UT Examination Data B09.011.171

Attachment 3 UT, Examination Data B09.011.172

Attachment 4 UT Examination Data C05.011.168

Benergy.				UT Pipe We	ים Examination	elief Reguest 64.44-004 ALTIACHNERT-1 Base LOF 5			
S	Site/Unit: M	McGuire /	2		Pro	ocedure: PDI-U	JT-2	Outage No	D.: MN2EOC15
Summ	ary No.:	B09.01	1.104		Procedu	ire Rev.: C		Report No	o.: UT-03-109
Wor	Workscope: ISI			Work Order No.:		824	Pag	e: 1 of 5	
Code:	Sec	tion XI, 1989		Cat./Iter	n: B-J/B9.11.	.104 Locati	on:	N/A	<u></u>
Drawing No.:		MCFI-2N	D1		Description: P	Pipe to Valve (2ND2A)			
System ID:	ND				-		<u> </u>		
Component ID:	B09.011.	104 /2ND2F-1	2			Size/Length	: 14" SS	Thickness/Dia	meter: 1.25
Limitations:	Yes - Pip	e to Valve Co	nfigurati	on			Start Time:	1430 Finish	Time: 1600
Evenination C	Surfacor				Surface Coord			·•	
	Junace,		Udi		Surface Cond	AUDIN GROUND			·····
Lo Location:		Top of Pipe		Wo Location:	Centerline of V	Weld Couplant:	ULTRAG	EL II Batch	No.: 03125
Temp. Tool M	fg.:	FISHER		Serial No.: _	MCNDE 272	20 Surface Ter	np.: <u>79</u>	°F	
Cal. Report No	o.:		CA	L-03-164. CAL-03	-165. CAL-03-166				
Anale Used		45   45T	60	6081					
Scanning dB		48 48	64.4	69.4					
Indication(c):			<u> </u>						
mulcanon(s).	162 🖌				scan Coverage: Op	Downstream			
Comments:									
				<b>0</b> 0	<b>a</b> 07				
Results: A	Accept 🗹	Reject [	] (4 1-1)					1	
Percent Of Cov	verage Ob	tained > 90%:	NN	0-75% 35.2%	, Reviewed Previou	is Data: Yes			,
Examinar I					Data	Routowat	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
Busby, John S	<b>5.</b>		- Joula		9/16/2003	Jay A Eaton Level III	(		Date 9/23/2003
Examiner I	Level II-N	1		Signature	Date	Site Review		Signature	Date
Matteson, Mar	ry F.	<u> </u>	nary	2. Thattern	9/16/2003			¥ -	
Cut-se			- 110	Signature	Data	LAND DALLARS		<b>O</b> 1	
Other I	renei N/	4		Signatoro	Date	ANII Heview			Date

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	(التظريحي	ст <b>Н</b> У.	Site/Unit	: McGi	uire /	2			Proc	edure:	1	PDI-UT-2	2	Outage No.: MN2EOC15
		Su	nmary No.	:	B09.01	1.104		Р	rocedure	e Rev.:		С		Report No.: UT-03-109
_	<u>-</u>	۷	Vorkscope	:	IS	l		W	/ork Orde	er No.: _	9	8536824	\$	Page: _2of _5
	Sea MP RBR L	Wo Locat Lo Locat Metal F Remain Distanc	gle: ion: ion: Path hing Back I se From Da	45-60 Weld C Top of P Reflection	ipe n	9 Wn W1 W2	nax D D 2 D	Distance I Distance I	Pi     From Wo     From Wo     From Wo	ping Wel erritic Ves ther To S.U. At At	lds ssels ≥ At Maxir Of Of	2"T num Res Max (Fo Max (Fo	sponse rward) rward)	Wo Wrmex CL W1 W2
	Com	iments:												W1 Wimax W2
[	Scan	Indication	%		N	Foi	rward	Bac	kward	L1	L	L2	RBR	Remarks
	#	No.	Of	N W	lax I MP	W1	Of Max	(	Of Max	Of	Max	Ol May	Amp.	
	45*	1	60%	1.6"	1.8"	N/A	N/A	N/A	N/A	360*	12"	N/A	Int.	
	60*	2	150%	2.5*	2.45"	N/A	N/A	N/A	N/A	360*	0"	N/A	Int.	
														Δ
	xaminer usby, J xaminer	Level ohn S. Level	II-N II-N	<u> </u>	-del.	I Signatw C Signatur		I	۱ 9/16/2 [	Date Rev 003 Jay Date Site	I viewer A Eator Review	L		Signature Date 9/23/2003 Signature Date
	atteson ther I/A	n, Mary F. Level	N/A	N	any.	Signatur	etter e	~	9/16/2 [	Date ANI	II Review	RI	<i>ભ્ર</i>	Signature Date

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Puta Ener	e 1917.	Suppleme	ort	blate les				
					Report No.:	<u></u> UT	-03-1(	09
					Page:	4	of	5
Summary No.:	B09.011.104	~						
Examiner:	Busby, John S. Jawag S		Reviewer:	Jay A Eaton Level		_Date:	9/23	2003
Examiner:	Matteson, Mary F. Mary A.	hadevelin II-N	Site Review:			Date:		
Other:	N/A 0	Level: N/A	ANII Review:	Alli	-	Date:	42	يرجعك
<b></b>								

Comments:

Indication #1-45° & #2-60° are geometric reflectors from counterbore. Review of RT fillm showed extensive counterbore and near the bottom of this weld there is evidence of thru-wall repair.

RR 04-NN-604 ATTACHNENT-1 Page 4075

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Picke Enorg	Ŋ.	L	imitation	Record	RR04-MN-004 ATTACHNENT-1 Page_50F5			
Site/Unit:	McGuire /	2	Proced	ure:	PDI-UT-2	Outage No.:	MN2E	OC15
Jummary No.:	B09.011.1	104	Procedure R	ev.:	с	Report No.:	UT-0	3-109
Workscope:	ISI		Work Order I	No.:	98536824	Page:	<u>    5     </u> c	of <u>5</u>
Description of Lim	litation:							
No scan on the d	lownstream side	of the weld C/L + 0	.5" and beyon	d due to val	ve configuration.			
	DS		YL		L	15		
Sketch of Limitatic	on:	60° L		7	<u> </u>			
				5	40.8% 6°.	5		
U, D	S. SCAJ S. SCAJ CW	45/60 £ 60°L 45° £		40.8 <del>1009</del> 0% & 1009/	/ 12/2/03 12/2/05 30) 5 12/2/05 30) 5 12/2/03 N 6 (NO	SUPPLEM AUE FRUI O-CREDIT SCAN DO	EDTA ( M U. CLAI+ 5, SID	L S, SIDE : 160 E)
	CCW	45° 6	· -	50%	5 (NO	SCAN D	5. 51	DE)
Limitations remova	Aにん al requirements:	REGANE CO	 DUERALE =	140.8 300- 96.1212/03 ROK 17.3	-  	35.2% 7 <del>5%</del> 9E 122 BOK (0	23-03	
Radiation field:	N/A	. <u> </u>				<u>۱</u> ۸		
Examiner Le	evel II-N	Signature	Date F	Reviewor		Signature		Date
Busby, John S.		Signature	9/16/2003 J	ay A Eaton		Signature		23/2003 Date
Matteson, Mary	F. MADA	J. Matter	9/16/2003		•			
9r Le	evel N/A	Signature	Date A	NII Review	Allein	Signature	roz	Date
·				_ <u> </u>	R	104 q120103		

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elief Reguest oy-MN-004 AttuchMENT-2 Bage 10F S	O Outage No.: MN2EOC15	Report No.: UT-03-151	Page: 1 of 1	NIA			3" SS Thickness/Diameter: 0.906"	me: 1400 Finish Time: 1500		LTRAGEL II Batch No.: 00325	80 °F					-		Signature Date	Signature Date	Signature Date	Varia 1 1
mination	PDI-UT-2	υ	98536824	Location:	29) to Pipe		Size/Length: 8	Start Th	HTOOMS DNUC	Couplant: UI	Surface Temp.:	[		Downstream	]		Yes	on Level III	3	M	1rol 9/2010 2
. Pipe Weiu Exa	Procedure:	Procedure Rev.:	Work Order No.: _	B-J/B9.11.171	Description: Valve (2NI1				Surface Condition: GRC	Centerline of Weld	MCNDE 27219	3-175		overage: Upstream			riewed Previous Data:	Date Reviewer 9/18/2003 Jav A Eato	Date Site Reviev	Date ANII Revie	
5				Cat./Item:					utside 🛛	Wo Location:	Serial No.:	CAL-03-174, CAL-0		Scan C		Into 🗆 R.Dela.3-0	1210 5 No -759+ 34 96 Rev	Signature	Signature	Signature	
	McGuire / 2	B09.011.171	ISI	ection XI, 1989	MCFI-2NI26		1.171 /2NI2FW26-7		Inside 0	Top of Pipe	FISHER		45 45T 60			] Reject	btained > 90%; 72 13	"Thank t	N Land	3	
Emergy.	Slte/Unit:	Summary No.:	Workscope:	Code: S	Drawing No.:	System ID: NI	Component ID: B09.01	Limitations: Yes	Examination Surface:	Lo Location:	Temp. Tool Mfg.:	Cal. Report No.:	Angle Used 0 Scanning dB	Indication(s): Yes [	Comments:	Results: Accept E	Percent Of Coverage C	Examiner Level II. Matteson, Mary F.	Examiner Level II. Charbonnet, Shane C.	Other Level	
				5	T Pipe We	elu Exam	ination	RR A MUMC	ht-NN-004 HMENT-2 2055												
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	Site/Unit:	McGuire /	7		'n	ocedure:	NDE-600	0	Outage No.:	MN2EOC15											
Sur	nmary No.:	B09.011	171		Proced	rre Rev.:	15		Report No.:	UT-03-135											
>	Vorkscope:	ISI			Work O	rder No.:	98536824		Page:	of 4											
Code:	Š	ction XI, 1989		Cat./item:	B-J/B9.11	.171	Location:		N/A		1										
Drawing No.		MCFI-2NI	26		Description:	Valve (2NI12	9) to Pipe				1										
System ID:	z										1										
Component	D: B09.011	.171 /2NI2FW26	-7				Size/Length:	8" SS	Thickness/Diameter	.906.0	ı										
Limitations:	Yes						Sta	rt Time:	958 Finish Time	1005											
Examinatio	n Surface:	Inside	Outside 🔽		Surface Cone	dition: GROU	IND SMOOTH				1 1										
Lo Locatio		Top of Plpe	Wo Loo	ation:	Centerline of	Weld	Couplant:	ULTRAGEL	II Batch No.:	01225											
Temp. Too	I Mfg.:	FISHER	Serie	al No.:	MCNDE 272	21	Surface Temp.:	80	ц.												
Cal. Repon	No.:			CAL-03-186																	
Angle Usec Scanning d		45 45T	60 60L																		
Indication(s	s): Yes 🗹	D %		Scan	Coverage: U	ostream 🗸	Downstream	C MO	Ccw []												
Comments																					
:																					
Hesults:	Accept K	Reject		I																	
Percent Of	Coverage Ot	stained > 90%;	1 No - 75% 3	H.96% B	eviewed Previou	ıs Data:	Yes			•											
Examiner Eaton, Jay /	Level III 1.	J	Signature		Date 9/20/2003	Reviewer Gayle E Hou	user Level III	"X	Signature/	00/52/6	ate 03										
Examiner	Level		Signature		Date	Site Review			/ Signature	Õ	ate										
Other	Level		Signature		Date	ANII Review			Signature		ate										
						8	164 9/30	(03	- mining		٦										

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Pe		Site/Uni	t: McGu	ilre /	2	U	Itrasc	D <b>nic I</b> I Proc	ກພາCa ^{:edure:} _	tion F	Repor	t [¥]	RR 04-1 ATTACHI Page 3	N-004 NENT-Z 0F5 Outage No.:	MN	12EOC	:15
	Sur	nmary No	.:	B09.01	1.171		P	rocedure	e Rev.:		15			Report No.:	ַบา	r-03-1	35
	v	Vorkscope	ə:	IS	1		N	/ork Ord	er No.:		98536824	4	<u> </u>	Page:	2	of	
Sea	rch Unit An Wo Locat Lo Locat	gle: ion: ion:	60L C/L of W Top of P	eid ipe	2		·	<ul> <li>Pi</li> <li>Fe</li> <li>O</li> </ul>	ping Wel erritic Ve ther	lds ssels ≥	2 <b>'</b> T				, ·	Wo CL	Wmex W1 W2
MP RBR L Com	Metal P Remain Distanc	ath ing Back e From D	Reflection	n 	Wr W1 W2	nax D I D 2 D	listance listance listance	From Wo From Wo From Wo	o To S.U. o At o At	At Maxir Of Of	mum Res Max (Fo Max (Fo	sponse prward) prward)					DATUM Lo
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#	NO.	DAC	W	MP	W1	MP	W2	MP	Of Max	IMAX	Of Max						
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Examiner Eaton, Ja	Level ay A.	111	Ô		Signatur	re		[ 9/20/2	Date Rev 2003 Gay	viewer vie E Ho	user Lev	vel III (	Days	Signal	ture	<u>.</u>	Date 9/25/2003
Examiner	Level		01		Signatur	re		[	Date Site	Review				Signal	ture		Date
Other	Level				Signatur	78		[	Date AN	ll Review	,		-TRA	Signal	ture トレフ	-03	Date
										RIC	ies o	213010	53 7				

Puiko Enorgy.	Supplemental Report	RR 04-MN-004 ATTACHMENT-Z Page 40F5	eport No.: <u>UT-03-135</u> Page: <u>3</u> of <u>4</u>
Summary No.: B09.011.171 Examiner: Eaton, Jay A.	Level: III Reviewer: Level: Site Review: Level: ANII Review:	Gayle E Houser Level III, JSAD	Date: 9/25/2003 Date: Date: <u>972-07</u>
Comments: Indication # 1-60°L is a geometric reflector from t	the weld root / counterbore configu	ration. This was confirmed by review	v of RT film.
Sketch or Photo: \\ngofs1\\DDeel7\\ddeal_Server\Graphics\Co	mmon\ProfileLine2.jpg	۰ ،	
- PIPE		VALVE	
	#1 4		<del> </del>
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Puke Energ	Jy.		Limitation Rec	ord	RR 04-MN- ATTACHNEN Fage 501	004 F-Z =5
Site/Unit:	McGuire /	2	Procedure:	NDE-600	Outage No.:	MN2EOC15
Summary No.:	B09.0	11.171	Procedure Rev.:	15	Report No.:	UT-03-135
Workscope:		SI	Work Order No.:	98536824	Page:	4 of 4

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Description of Limitation:

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Limited due to valve configuration on the Upstream side from the weld  $C/L + 0.5^{\circ}$  and Beyond (360°).

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Sketch of Limitation:

DOLINISTREAM				VALVE	
PIPE				U PSTREA M	۱
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		$\langle   / \rangle^{00}$			
34.84% 60°5	2	TIXIII .			
	<u>- 1</u>			·····	
ANGLE SCAN		COVERALEE			
		D% Kutala	-U3 5.02F	IT.MENTAL	
60°L UP S,		100/5 (	10° L 1	From DS SIDE	:)
451406		39.84	NO LA	EDIT CLAIMED	/
TO DOWN S.		+00% Kiddo	3		
45° AVI		En of ARK B.	505 50-50-50	AND UDCSID	)  - 
			00 5	DAH OF 5 510	رسان سر م
US CCW		50% (	NO SC	AN UPSSIDE	5)
Limitations removal requirements:		139.84	34.96	ALLRELAT	E
N/A		-300 - 4 :	- 75%	5 COVERALE	-
		9612/2/03	9/2/12/2	03	
Radiation field: N/A		\$0×12-2-03	REX.	53-03	
Eaton. Jav A.	Date 9/20/2003	Reviewer Gavle F Houser I evel III		Date Date	
Examiner Level Signature	Date	Site Review	Sign	ature Date	
	<u> </u>				
T Level Signature	Date	ANII Review	ADDE	ature Date	
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	· 1	W.			

UT Pipe Weiu Examination

Relief Roguest 04-MN-004 ATTACHMENT-3 Page 10F5

S	ite/Unit: 1	McGuire /	2		Proce	edure:I	PDI-UT-2		Out	age No.:	MN	2EOC15	
Summ	ary No.:	B09.011	1.172		Procedure	Rev.:	C		Rej	port No.:	דט	-03-152	
Wor	kscope:	ISI			Work Orde	r No.: 9	8536824			Page:	1	of	l
Code:	Sec	ction XI, 1989		Cat./Item	:	7 <u>2</u> L	ocation:			N/A			
Drawing No.:		MCFI-2NI	26		Description: Val	ve (2NI125) to Pip	)e	-					
System ID:	NI												
Component ID:	B09.011	172 /2NI2FW26	5-16			Size/Le	ength:	8" SS	Thickne	ess/Diame	iter:	0.906*	
Limitations:	Yes	·					_ Sta	rt Time:1	440	Finish Ti	me: _	1515	<b></b>
Examination S	Surface:	inside 🔲	Outsi	de 🗹	Surface Conditio	on: <u>GROUND SM</u>	оотн						
Lo Location:	•	Top of Pipe		Wo Location:	Centerline of We	ld Coupla	int:	ULTRAGEL	11	Batch No	.:	00325	;
<u>Te</u> mp. Tool M	fg.:	FISHER		Serial No.:	MCNDE 27220	Surfac	e Temp.:	80	°F				
Cal. Report N	o.:			CAL-03-174, C	AL-03-175								
Angle Used		45   45T	60										
Scanning dB		44.8 44.8	52.3										
Indication(s):	Yes	) No 🗹	4	S	 can Coverage: Upst	ream 🗌 🛛 Downs	tream 🗹	cw 🗹	ccw 🔽	ļ			
Comments:													
Results:	Accept 🔽	Reject		Info T Date 12.	3-07								
Percent Of Co	verage Of	ntained > 90%:	YE IZ	203	Reviewed Previous	Data: v	 / e e	. 1	· _ · _ · _ · _ · · _ · · · ·			•	
								<u> </u>					
Examiner	Level II-I	N	SI	gnature	Date F	Reviewer		7 14	Signatu	re			Date
Framiner	yr. Level II	- That	wo-10	appriling	9/18/2003 J	ay A Laton Leve	·		Signatu	10		9/2	25/2003
Charbonnet, S	Shane C.	HA		-	9/18/2003			V	oignatu				Date
Other	Level /		৾৾৽	gnature	Date A	NII Review		-Aro	Signatu	re	2.2-		Date
L			<u> </u>			RIGU C	1130103	> vil	free	/	<u> </u>	-	

Site/Unit:         McGuire /         2           Summary No.:         B09.011.172         P           Workscope:         ISI         W	Procedure: Procedure Rev.: /ork Order No.: /B9.11.172 tion: Valve (2NI125	NDE-600 15 98536824 Location:		Outage No.: Report No.: Page:1	MN2EOC15 UT-03-132 of 4
Summary No.:         B09.011.172         P           Workscope:         ISI         W	rocedure Rev.: /ork Order No.: /B9.11.172 tion: Valve (2NI125	15 98536824 Location:		Report No.: Page:1	UT-03-132 of 4
Workscope: ISI W	/ork Order No.: /B9.11.172 tion: Valve (2NI125	98536824 Location:		Page: 1	of
	/B9.11.172 tion: Valve (2NI125	Location:			· · · · · · · · · · · · · · · · · · ·
Code: Section XI, 1989 Cat/item: B-J	tion: Valve (2NI125	to Pine		N/A	
Drawing No.: MCFI-2NI26 Descrip		<u> </u>			
System ID: NI			-		
Component ID: B09.011.172 /2NI2FW26-16		Size/Length:	8"SS Th	ickness/Diameter	: 0.906*
Limitations: Yes		Start T	ime: 0945	Finish Time	:0951
Examination Surface: Inside 🗌 Outside 🖌 Surfac	e Condition: GROU				
Lo Location: Top of Pipe Wo Location: Centerli	ne of Weld	Couplant:	JLTRAGEL II	Batch No.: _	01225
Temp. Tool Mfg.: FISHER Serial No.:MCNE	DE 27221	Surface Temp.:	<u>80</u> °F		
Cal. Report No.: CAL-03-188					
Angle Used 0 45 45T 60 60L					
Scanning dB 60					
Indication(s): Yes 🔽 No 🗍 Scan Coverag	ge: Upstream 🗹	Downstream 🔲	cw 🗆 cc	w	
Comments:					
60° L wave to gain coverage on the valve side of the weld.					
					·
Percent Of Coverage Obtained > 90%: No 75% 34.96 Reviewed	Previous Data:	Yes			•
Examiner Level III / Signature	Date Reviewer		A A Sig	inature	Date
Eaton, Jay A. 9/20	0/2003 Gayle E Hou	user Level III	_ How	ser	9/25/2003
Examiner Level Signature	Date Site Review		Sig	Inature	Date
Other Level Signature	Date ANII Review	,	Sig	nature	Date
L		21002 (1)72125	-11HRU/	len T2	1-61

Į		<b>Bergy.</b> Sul	Site/Unit mmary No. Workscope	: <u>McG</u> :	uire / B09.01 IS	2 1.172 I	U	Itrasc P W	Proc Procedure Jork Orde	<b>חנו כמ</b> edure: Rev.: er No.:	tion F	Repor NDE-600 15 98536824	t p 5	IR 04 ITACH	(-MN-004 MENT-3 30F5 Outage No.: Report No.: Page:	MN2E UT-03 2 0	OC15 3-132 if 4	-
_	Sea MP RBR L Com	rch Unit Ar Wo Loca Lo Loca Metal F Remain Distanc ments:	ngle: tion: tion: Path ning Back I ce From Da	60°L C/L of W Top of P Reflectio	/eld /lpe n	ν Wπ W1 W2	nax D D D	istance f istance f istance f	Pin     Fe     O     Ct     From Wo     From Wo     From Wo	ping Wel erritic Ves ther o To S.U. o At o At	lds ssels ≥ At Maxir Of Of	2"T num Res Max (Fo Max (Fo	sponse prward) prward)					W2 -DATUM L0 Wmax W2
	Scan # 	Indication No. 1	% Of DAC 100	N W 1.4	W Max 1.7	For W1 N/A	ward Of Max MP N/A	Back W2 N/A	kward Of Max MP N/A	L1 Of Max 360*	L Max 0"	L2 Of Max Int.	RBR Amp. N/A			Remarks		
	xaminer aton, Ja xaminer ther	Level y A. Level Level	111	G	¥.	Signature Signature Signature	ə ə ə		0/20/2	Date Rev 003 Gay Date Site Date ANI	iewer Ae E Hou Review I Review	ISOF LOV	vel III 8) 25 \ C	Š	Signati Signati Signati	ure ure ure	-27-	Date 9/25/2003 Date Date

Benorgy.	٨	Suppleme.	al Report	RR 04-MN-004 ATTACHNENT-3 Page 40F5	Report No.: U Page: 3	T-03-132
Summary No.: 809, Examiner: Eato Examiner: Other:	.011.172	Level:     Level: Level:	Reviewer: Site Review: ANII Review:	Gayle E Houser Level III	Auger Date: All Lui Date:	9/25/2003 
Comments: Indicati	on # 1-60°L is a geometric	reflector from the weld root / cou	nterbore configu	ration. This was confirmed by	review of RT film.	
Sketch or Photo:	\\ngofs1\IDDeal7\Iddeal_S	erver\Graphics\Common\ProfileLine2.jpg	I	,' \/\\\		
-	F	TID #1	ŧ			
						· ·

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Picke Energy	<b>.</b>		Limitation Rec	ord	RR OY-MN- ATTACHMENT Poge 50F2	-3 5					
Site/Unit:	McGuire /	2	Procedure:	NDE-600	Outage No.:	MN28	EOC15				
Summary No.:	B09.011	1.172	Procedure Rev.:	15	Report No.:	UT-0	3-132				
Workscope:	ISI		Work Order No.:	98536824	Page: <u>4</u> of <u>4</u>						

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Description of Limitation:

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Limited due to valve configuration on the Upstream side from the weid C/L + 0.5" and Beyond ( 360°).

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Sketch of Limitation:

DOWN STREAM		VALVE
PIPE	¢	UPSTREAM
	60	 ۴ ل
39.84% Losz		<b></b>
ANGLE SCAN	COVERALE PLIS	3-03
$60^{\circ}L$ UP S.	-1-00-15- 39.84 %-	60°L FROM DS SIDE NO CREDIT CLAIMED
45/605 Down 5. 45° (11/	+00% genza	2/03 3-03
45° CCW	50%	(NO SCAN UPS SIDE
Limitations removal requirements: N/A	139.84 -300 - 4 96.12/1/03	= 75% COVERAGE
Radiation field: N/A	\$00-1203-03	6-7-03
Examiner Level III Signature Eaton, Jay A. 9/2 Examiner Level N Signature	Date Reviewer 20/2003 Gayle E Houser Level III Date Site Review	A Signature Date DE OLDOL 9/25/2003 Signature Date
er Level Signature	Date ANII Review	Signature Date
	R164 9130103	



Relief Regist 04-MN-004 UT Pipe Wein Examination ATTACHMENT 4 Page 10F5

Si	te/Unit:	McGuire	1	2			Pro	cedure:	PDI-	UT-2		0	utage No.:	MN	2EOC15	
Summa	ary No.:	(	C05.011	.168	<u> </u>		Procedur	e Rev.:		>		F	Report No.:	UT	-03-150	
Work	(scope:		ISI				Work Orc	ler No.:	9853	6824			Page:	1	of <u>1</u>	
Code:	Se	ction XI,	1989		C	at./Item:	C-F-1/C5.11	.168	Locat	ion:			N/A			
Drawing No.:		м	CF1-2N12	26			Description: E	bow to Valv	e (2NI125)							
System ID:	NI															
Component ID:	C05.01	1.168 /2N	12FW26	-15					Size/Lengtl	h:	8" SS	Thick	ness/Diame	eter:	0.906"	
Limitations:	Yes				•				<del>_</del>	Start	Time:	1520	- Finish Ti	me:	1602	
Examination S	urface:	Inside	• 🛛	Outs	side 🔽		Surface Condi	tion: <u>GROU</u>	ND SMOOT	ГН						
Lo Location:		Top of	Pipe		Wo Loca	ion:	Centerline of W	/eld	Couplant:	<u></u>	ULTRAG	EL 11	Batch No	.:	00325	
Temp. Tool Mi	g.:	FIS	HER		Serial	No.:	MCNDE 2722	0	Surface Te	mp.:	80	•F				
Cal. Report No	o.:				CAL-03	-174, CAL	-03-175			_						
Angle Used		45	45T	60	1					_						
Scanning dB		44.8	44.8	52.3												
Indication(s):	Yes ſ	' No	, M	ł.	1	Sca	n Coverage: Up	stream 🗖	Downstrea	m 🔽	cw⊽	a ccw				
Commontor							, eerenager ep				U	,				
Comments:																
							_									
Results: A	ccept	] Re	ject 🗌	<b>~</b>		13K12-3-6	>3									
Percent Of Cov	verage C	btained >	90%:	<u> </u>	0 <del>- 75% 3</del> 4	isc f	Reviewed Previou	s Data:	Yes						•	
Examiner L	evel II			S	ignature		Date	Reviewer			7	8Tgna	iture			Date
Matteson, Mary	y F	·· · ·	mai	ult.	Matt	em	9/18/2003	Jay A Eaton	Level III		C	HE'S	>		9/2	5/2003
Examiner L Charbonnet, S	.evel    hane C.	·N	Í,		Ignature		Date 9/18/2003	Site Review			T	Signa	iture			Date
Other L	evel N	1A		- C	gnature		Date	ANII Review			~~~	Signa	iture	<u> </u>		Date
N/A				<u></u>	N			0		<u>\</u> 2	all	flein	9-2	<u>7</u> ~	<u>1</u> 2	
								KIGA	10-1-4	-0		·				

Penorgy.						UT Pipe Weig Examination					ו י ד	RR 04-NW-004 ATTACHMENT-4 Page 20F5				
• •	Site/Unit:	McGuire	ə /	2			Pro	cedure:	NDE	-600		0	Outage No.:	MN	2EOC15	
Summ	nary No.:		C05.011	.168			Procedu	re Rev.:	15			Report No.: UT		-03-133		
Workscope: ISI			<u>sı</u>			Work Order No.:		98536824		,	Page: 1			of		
Code:	Se	ection XI,	1989			Cat./Item:	C-F-1/C5.1	1.168	Locat	ion:			N/A			
Drawing No.:		М	CFI-2NI	26			Description: E	lbow to Va	lve (2NI125 <u>)</u>		-					
System ID:	NI															
Component ID:	C05.01	1.168 /2N	12FW26	-15					Size/Lengti	h:	8" SS	IT	nickness/Diamo	eter:	0.906*	
Limitations:	Yes									Start	Time:	0951	Finish Ti	me:	0957	
Examination	Surface:	insid	e 🔽	Ou	lside 🗂		Surface Cond	lition: GRO		гн					<u> </u>	
Lo Location:	Outs	ide Radi	us of El	bow	Wo Lo	cation:	Centerline of V	Weld	Couplant:		ULTRAC	GEL II	Batch No	).:	01225	
Toon Tool b					, Cori				Sudaaa Ta			<u>ور</u>				
	ng.:	FR	SHER		Sen	iai ivo.:	MCNDE 272	21	Sunace re	mp.: _	80	°r				
Cal, Report N	lo.:					CAL-03-1	88			-						
Angle Used	0	45	45T	60	60L		]									
Scanning dB				l	60											
Indication(s):	ndication(s): Yes 🗹 No 🗌 Scan Coverage: Upstream 🗹 Downstream 🗌 CW 🗌 CCW 🗍															
Comments:																
60° L wave t	o gain co	overage o	on the v	aive sid	le of the v	weld.										
Results:	Accept 5	2 Re	eject		Info [_ مر ، ۲ ] ۲	1=1 1=1	3-0)					·				
Percent Of Co	overage C	votained :	> 90%;	<u>۱</u>	10 75%	<u>- 54</u> .46%	Heviewed Previou	is Data:	Yes						-	
Examiner Eaton, Jay A.	Level []	· (	Alt		Signature	1	Date 9/20/2003	Reviewer Gavle E H	ouser Level	Itt	~	NE S	ghature		Date 9/25/2003	
Examiner	Levei	<u>&gt;</u>	/</td <td></td> <td>Signature</td> <td>,</td> <td>Date</td> <td>Site Review</td> <td>w</td> <td></td> <td>\Z</td> <td>St</td> <td>gnature</td> <td></td> <td>Date</td>		Signature	,	Date	Site Review	w		\Z	St	gnature		Date	
Other	Level		Y		Signature	•	Date	ANII Revie				Si	agature	- 4-		
L								L	RIGU	10-1-	6.3	··· V	W/X	<u> </u>		

Pe	nergy.					U	Itrasc	onic l	ກັບເບລ	tion F	Repor	t	RR 04MN-004 HTTACHNENT-4 Page 30F5			
	Site/Unit: McGuire / 2						- Procedur			e: NDE-600			O Outage No.: MN2EOC15			
	Summary No.: C05.01 Workscope: ISI				1.168		- Procedure Rev Work Order No			IV.:15 •			Report No.: <u>UT-03-133</u>			
					il 	<u> </u>				o.:98536824		4	Page: 2 of 4			
Search Unit Angle: 60°L Wo Location: C/L of Weld				9		<ul> <li>④ Piping Welds</li> <li>○ Ferritic Vessels ≥ 2°T</li> </ul>					Wo Wmex CL W1 W2					
	Lo Location:Top_of Pipe					O Other										
MP RBI L	MP Metal Path RBR Remaining Back Reflection L Distance From Datum				Wn W1 W2	WmaxDistance From Wo To S.U. At Maximum ResponseW1Distance From Wo AtOf Max (ForwardW2Distance From Wo AtOf Max (Forward					sponse orward) orward)	DATUM Lo L1 L2				
Comments:																
- Scan #	Indication No.	% Of	N N	V lax	For	ward Of Max	Bac	ward L1	L1 Of	L Max	12 ~	RBR Amp.	I I I I I Remarks			
		DAC	W	MP	W1	MP	W2	MP	Max		Max					
S1	1	100	1.4	1.7	N/A	N/A	N/A	N/A	360*	0"	Int.	N/A				
												<u> </u>				
	<u> </u>				<b> </b>		ļ	<u> </u>		ļ	<u> </u>	<u> </u>				
													· · · · · · · · · · · · · · · · · · ·			
				1.1												
Examine Eaton, J	r Level ay A.	111	Ch		Signatur	0		9/20/2	Date Rev 2003 Gay	riewer /le E Hor	user Lev	vei III	Signature Date			
Examiner Level V Signature				e	Date Site Review						Signature Date					
Other	Ther Level Signature					e	Date ANII Review					Signature Date				
									R	lau	10-1-07	3				

Summary No.: C05.011.168 Examiner: Eaton, Jay A.	Supplemen Report	RR 04-MW-00 H ATTACHNENT 4 Page 4045 Report No.: Page: Gayle E Houser Level III DE AMPEN	UT-03-133 3 of 4 Date: $9/25/2003$ Date: Date: $9/27-03$
Comments: Indication # 1-60°L is a geometric reflector from t Sketch or Photo: \\ngofs1\UDDeal7\\iddeal_Server\Graphics\Com EUBDW 	he weld root / counterbore configu mmon\ProfileLine2.jpg	ration. This was confirmed by review of RT film	·

Pinko	jy.			Limitation Re	cord	RR 04-MN-004 ATTACHMENT-4 Page 5085				
Site/Unit:	McGuire	1	2	Procedure:	NDE-600	Outage No.:	MN	2600	C15	
Summary No.:	C	05.011.	168	Procedure Rev.:	15	Report No.:	UT	-03-1	33	
Workscope:		ISI		Work Order No.:	98536824	Page:	4	of	4	

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Description of Limitation:

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Limited due to valve configuration on the Upstream side from the weid  $C/L + 0.5^{\circ}$  and Beyond (360°).

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Sketch of Limitation:

DOWN STREAM	VALVE
ELBOW	ŧ
	60° L
39.84/26052	
ANGLE SCAN	COVERALE
60°L UP S.	100/3, of relation of SUPPLEMENTAL 100/51 Nov (60° L FROM DS SIDE
45/60'S DOWN S.	39.84 % NO CREDIT CLAINED
45° CW	50% (NO SAAH UPS SIDE
45° CCW	50% (NO SCAN UPS SIDE
Limitations removal requirements: N/A	
Badiation field: N/A	9212/2/03 9612/2/03 1908 12-3-07 1908 12-3-03
	Reviewer Date
Eaton, Jay A.	Gayle E Houser Level III.
Examiner Level Signature Date	Site Review Date Date
9r Level Signature Date	ANII Review Signature Date
· · · · · · · · · · · · · · · · · · ·	R/Q4 10-1-03
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