

**REGIS T. REPKO** Vice President McGuire Nuclear Station

Duke Energy MG01VP / 12700 Hagers Ferry Rd. Huntersville. NC 28078

**980-875-4111** 980-875-4809 fax regis.repko@duke-energy.com

September 21, 2011

# 10 CFR 50.55a

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

Subject: Duke Energy Carolinas, LLC (Duke Energy) McGuire Nuclear Station, Units 1 and 2 Docket Nos. 50-369 and 50-370 Relief Request Serial # 11-MN-001 Limited Weld Examinations for Refueling Outages 1EOC20 and 2EOC19

Pursuant to 10 CFR 50.55a(g)(5)(iii), Duke Energy hereby requests NRC approval of relief for the welds listed in Table 1 of the proposed relief request. These welds were required to be examined in accordance with Inservice Inspection Plans for McGuire Units 1 and 2, Third 10-Year Inservice Inspection Interval. The details of the request are included in the enclosure.

This submittal contains no regulatory commitments.

If you have any questions or require additional information, please contact P.T. Vu at (980) 875-4302.

Sincerely,

Regis T. Repko

Enclosure

U. S. Nuclear Regulatory commission September 21, 2011 Page 2

XC:

ι

1

V. M. McCree, Region II Administrator U.S. Nuclear Regulatory Commission Marquis One Tower 245 Peachtree Center Ave., NE Suite 1200 Atlanta, GA 30303-1257

J. H. Thompson, Project Manager U. S. Nuclear Regulatory Commission 11555 Rockville Pike Mail Stop O-8G9A Rockville, MD 20852-2738

J. Zeiler NRC Senior Resident Inspector McGuire Nuclear Station U. S. Nuclear Regulatory Commission September 21, 2011 Page 3

bxc:

Mark Pyne (EC05ZB) Ralph Connell (EC05ZB) David Zimmerman (EC07C) Rod Sheffield (EC07C) Bill Callaway (EC07C) Jeff Thomas (EC05P) Kay Crane (MG01RC) Ricky Branch (MG01MM) Master File MC-801.01 (MG02DM) ELL (EC05O)

# ENCLOSURE

4

.

# Relief Request 11-MN-001

# 1.0 Scope of Relief Request

Relief is requested pursuant to 10 CFR 50.55a(g)(5)(iii) for welds listed in Table 1. These welds were required to be examined in accordance with Inservice Inspection Plans for the following Units.

McGuire Nuclear Station - Unit 1 Third 10-Year Inservice Inspection Interval Interval Start Date: 12/01/2001

McGuire Nuclear Station - Unit 2 Third 10-Year Inservice Inspection Interval Interval Start Date: 03/01/2004

Table 1								
Relief Request Section Number	<u>McGuire</u> <u>Unit</u> Number	Examination Performed (Refueling Outage)	<u>Weld ID</u> <u>Number</u>	<u>Item/Summary</u> <u>Number</u>	<u>Examination</u> <u>Data</u>			
2.0	1	1EOC20	1NCIF-3613- 3092	M1.R1.11.0390	See Attachment A Pages 1-6			
3.0	1	1EOC20	1ELDHX-HD- FLG	M1.C1.20.0017	See Attachment A Pages 7-13			
4.0	1	1EOC20	1NV1FW53- 27	M1.R1.11.2170	See Attachment A Pages 14-19			
5.0	1	1EOC20	1BCSHX-SH- 48	M1.C1.30.0005	See Attachment A Pages 20-24			
6.0	2	2EOC19	2PZR-13	M2.B3.110.0003	See Attachment B Pages 1-13			
7.0	2	2EOC19	2PZR-14	M2.B3.110.0004	See Attachment B Pages 14-26			
8.0	2	2EOC19	2PZR-15	M2.B3.110.0005	See Attachment B Pages 27-39			
9.0	2	2EOC19	2ACSHX-SH- 48	M2.C1.30.0006	See Attachment B Pages 40-43			

10.0	2	2EOC19	2NC2FW39-1	M2.R1.11.0048	See Attachment B Pages 44-51
11.0	2	2EOC19	2NC2FW40- 11	M2.R1.11.0049	See Attachment B Pages 52-53
12.0	2	2EOC19	2NC2FW43-1	M2.R1.11.0050	See Attachment B Pages 54-56
13.0	2	2EOC19	2NV2FW180- 1	M2.R1.11.1566	See Attachment B Pages 57-63
14.0	2	2EOC19	2NC2FW2-2	M2.R1.11.1730	See Attachment B Pages 64-72
15.0	2	2EOC19	NVFW10-20	PSI	See Attachment B Pages 73-82
16.0	2	2EOC19	NVFW180-46	PSI	See Attachment B Pages 83-88
17.0	2	2EOC19	NVFW180-45	PSI	See Attachment B Pages 89-94

# McGuire Relief Request 11-MN-001

٤

,

## 2.0 Weld #1NCIF-3613-3092

2.1. ASME Code Component(s) Affected

Unit 1 Nozzle to Pipe Weld, Weld #1NC1F-3613-3092, Summary Number M1.R1.11.0390

2.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

2.3. Applicable Code/Licensing Requirement

WCAP-14572, Rev.1-NP-A, Supplement 2, Table 4.1-1, Examination Category R-A, Item Number R1.11, Fig.IWB-2500-8(c), 100% Volume Coverage of Examination Volume C-D-E-F

The NRC authorized the inclusion of the RI-ISI program as an acceptable alternative to the ASME Code, Section XI requirements for ASME Code Class 1 piping welds, Examination Categories B-F and B-J and ASME Code Class 2 piping welds, Examination Categories C-F-1 and C-F-2 for the third ISI interval by letter dated June 12, 2002.

2.4. Impracticality of Compliance

Surface 1: Stainless Steel Pipe Surface 2: Stainless Steel Nozzle NPS: 14.0 inch Thickness: 1.406 inch

During the ultrasonic examination of this weld, 62.5% coverage of the required examination volume was obtained. The limitations were due to the nozzle configuration that did not allow complete scanning from the nozzle side (S2). Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 60° shear waves obtained 50% coverage in one axial direction (S1 pipe)
- 60° shear waves obtained 0% coverage in one axial direction (S2 nozzle)
- 45° shear and longitudinal waves obtained 100% coverage in one circ. direction (S3 CW)
- 45° shear and longitudinal waves obtained 100% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (50% + 0% + 100% + 100%)/4 = 62.5%

In order to scan all of the required volume for this weld, the nozzle would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460,

which requires greater than 90% volumetric coverage of examination volume C-D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

2.5. Proposed Alternative and Basis for Use

No alternative examinations are planned for the weld during the current inspection interval. Radiography (RT) is not a desired option because RT is limited in the ability to detect expected degradation mechanisms such as thermal fatigue cracking and stress corrosion crack initiating at the pipe inside surface. Additionally, radiography has not been qualified through performance demonstration.

2.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 12/01/2011.

2.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M1.R1.11.0390 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1; Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

## 3.0 Weld #1ELDHX-HD-FLG

3.1. ASME Code Component(s) Affected

Unit 1 Heat Exchanger Head to Flange Weld, Weld #1ELDHX-HD-FLG, Summary Number M1.C1.20.0017

3.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

3.3. Applicable Code Requirement

IWC-2500, Table IWC-2500-1, Examination Category C-A, Item Number C1.20, Fig. IWC-2500-1(a), 100% Volume Coverage of Examination Volume A-B-C-D

3.4. Impracticality of Compliance

Surface 1: Carbon Steel Flange Surface 2: Stainless Steel Head Diameter: 9.5 inch Thickness: 0.750 inch

The ultrasonic examination of the Heat Exchanger head to flange weld obtained 79.77% coverage of the required examination volume. ASME Section XI, Appendix III, III-4420 requires coverage of the examination volume in two beam path directions and Appendix III, III-4430 requires scanning on the weld crown in two directions. Due to the presence of one vent pipe, one draw pipe, one inlet connection, and one outlet connection, the scanning was limited in each direction for 48.4% of the total weld length. The total aggregate percent of coverage was calculated as follows.

For 51.6% of the total weld length:

- 45° shear waves obtained 51.6% coverage in one axial direction (S1 flange)
- 45° shear waves obtained 51.6% coverage in one axial direction (S2 head)
- 45° shear waves obtained 51.6% coverage in one circ. direction (S3 CW)
- 45° shear waves obtained 51.6% coverage in one circ. direction (S4 CCW)
- This aggregate coverage was calculated to be (51.6% + 51.6% + 51.6%)/4 = 51.6%

For 48.4% of the total weld length:

- 45° shear waves obtained 38.28% coverage in one axial direction (S1 flange)
- 45° shear waves obtained 18.05% coverage in one axial direction (S2 head)
- 45° shear waves obtained 28.17% coverage in one circ. direction (S3 CW)

- 45° shear waves obtained 28.17% coverage in one circ. direction (S4 CCW)
- This aggregate coverage was calculated to be (38.28% + 18.05% +28.17% + 28.17%)/4 = 28.17%

The total aggregate coverage was 51.6% + 28.17% = 79.77%

The limitations were caused by the four physical scanning limitations, all located on the S2 head side. In order to scan all of the required volume for this weld, the heat exchanger would have to be redesigned to allow scanning from both sides of the weld, which is impractical.

The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume A-B-C-D. The achieved coverage did not meet the acceptance criteria of this Code Case.

3.5. Proposed Alternative and Basis for Use

Radiography (RT) is not a desired option because there is no practical access for film placement.

3.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 12/01/2011.

3.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M1.C1.20.0017 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

In addition to the above Code required volumetric examination Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

- 4.0 Weld #1NV1FW53-27
  - 4.1. ASME Code Component(s) Affected

Unit 1 Pipe to Valve #1NV35A Weld, Weld #1NV1FW53-27, Summary Number M1.R1.11.2170

4.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

4.3. Applicable Code/Licensing Requirement

WCAP-14572, Rev.1-NP-A, Supplement 2, Table 4.1-1, Examination Category R-A, Item Number R1.11, Fig.IWB-2500-8(c), 100% Volume Coverage of Examination Volume C-D-E-F

The NRC authorized the inclusion of the RI-ISI program as an acceptable alternative to the ASME Code, Section XI requirements for ASME Code Class 1 piping welds, Examination Categories B-F and B-J and ASME Code Class 2 piping welds, Examination Categories C-F-1 and C-F-2 for the third ISI interval by letter dated June 12, 2002.

4.4. Impracticality of Compliance

Surface 1: Stainless Steel Pipe Surface 2: Stainless Steel Valve NPS: 2.0 inch Thickness: 0.436 inch

During the ultrasonic examination of this weld, 37.5% coverage of the required examination volume was obtained. The limitations were due to the valve configuration that did not allow complete scanning from the valve side (S2). Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 60° shear waves obtained 50% coverage in one axial direction (S1 pipe)
- 60° shear waves obtained 0% coverage in one axial direction (S2 valve)
- 45° shear and longitudinal waves obtained 50% coverage in one circ. direction (S3 – CW)
- 45° shear and longitudinal waves obtained 50% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (50% + 0% + 50% + 50%)/4 = 37.5%

In order to scan all of the required volume for this weld, the valve would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-

D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

4.5. Proposed Alternative and Basis for Use

No alternative examinations are planned for the weld during the current inspection interval. Radiography (RT) is not a desired option because RT is limited in the ability to detect expected degradation mechanisms such as thermal fatigue cracking and stress corrosion crack initiating at the pipe inside surface. Additionally, radiography has not been qualified through performance demonstration.

4.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 12/01/2011.

4.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M1.R1.11.2170 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each inspection period in accordance with Table IWC-2500-1; Examination Category C-H requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

## 5.0 Weld #1BCSHX-SH-48

5.1. ASME Code Component(s) Affected

Unit 1 Heat Exchanger Tubesheet to Shell Weld, Weld #1BCSHX-SH-48, Summary Number M1.C1.30.0005

5.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

5.3. Applicable Code Requirement

IWC-2500, Table IWC-2500-1, Examination Category C-A, Item Number C1.30, Fig. IWC-2500-2, 100% Volume Coverage of Examination Volume E-F-G-H

5.4. Impracticality of Compliance

Surface 1: Carbon Steel Tube Sheet Surface 2: Carbon Steel Shell Diameter: 55.25 inch Thickness: 0.625 inch

ASME Section XI, Appendix III, III-4420 requires coverage of the examination volume in two beam path directions and Appendix III, III-4430 requires scanning on the weld crown in two directions. Because of the design of this component, these requirements could not be met. The aggregate coverage was calculated as follows:

- 35° shear waves obtained 44.29% coverage in one axial direction (S1 tubesheet)
- 35° shear waves obtained 44.29% coverage in one axial direction (S2 shell)
- 35° shear waves obtained 44.29% coverage in one circ. direction (S3 CW)
- 35° shear waves obtained 44.29% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (44.29% + 44.29% +44.29%)/4 = 44.29%

The limitations were caused by the design of the attached permanent hanger supports limiting scanning from any of the required four directions. In order to scan all of the required volume for this weld, the heat exchanger would have to be redesigned to allow scanning in all directions, which is impractical.

The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume E-F-G-H. The achieved coverage did not meet the acceptance criteria of this Code Case.

Radiography (RT) is not a desired option because there is no practical access for film placement.

5.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 12/01/2011.

5.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M1.C1.30.0005 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each inspection period in accordance with Table IWC-2500-1; Examination Category C-H requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), visual observations performed during periodic surveillance testing provide additional assurance that in the event leakage did occur through this weld, it would be detected and proper action taken.

## 6.0 Weld #2PZR-13

6.1. ASME Code Component(s) Affected

Unit 2, Pressurizer Safety/Relief Nozzle to Upper Head Weld, Weld #2PZR-13, Summary Number M2.B3.110.0003

6.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

6.3. Applicable Code Requirement

IWB-2500, Table IWB-2500-1, Examination Category B-D, Item Number B3.110 Fig. IWB-2500-7 (a), 100% Volume Coverage of Examination Volume A-B-C-D-E-F-G-H-I

6.4. Impracticality of Compliance

The Pressurizer Safety/Relief Nozzle material is carbon steel and the Upper Head material is carbon steel. This weld has a diameter of 15 inches and a wall thickness of 2.35 inches.

Because of the weld configuration, the requirements of ASME Section V, Article 4, T-441.1.2(a), T-441.1.3, T-441.1.4, T-441.1.5 and t-441.1.6 could not be met. The aggregate coverage was calculated from the following base and weld metal scan results:

- Weld coverage using 35°, 45°& 60° shear waves for axial scans (S1, S2), and 35° & 45° shear waves for circ. scans (CW, CCW) obtained 83.6% coverage.
- Base material coverage using 35°, 45°& 60° shear wave for axial scans (S1) and 35°, 45° and 60° shear waves for circ. scans (CW, CCW) obtained 70.555% coverage.
- 0° scan coverage obtained 81.95% coverage.
- The aggregate coverage was calculated to be (83.6% + 70.555% + 81.95%)/3 = 78.7%.

The limitation was caused by the weld taper configuration created by the attachment of the Safety/Relief nozzle to the Upper Head. In order to scan all of the required volume for this weld, the Upper Head to Safety/Relief nozzle attachment weld would have to be redesigned, which is impractical.

The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage. The achieved coverage did not meet the acceptable criteria of this Code Case.

Radiography (RT) is not a desired option because there is no practical access for film placement.

6.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

6.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.B3.110.0003 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1; Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

## 7.0 Weld #2PZR-14

7.1. ASME Code Component(s) Affected

Unit 2, Pressurizer Safety/Relief Nozzle to Upper Head Weld, Weld #2PZR-14, Summary Number M2.B3.110.0004

7.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

7.3. Applicable Code Requirement

IWB-2500, Table IWB-2500-1, Examination Category B-D, Item Number B3.110 Fig. IWB-2500-7 (a), 100% Volume Coverage of Examination Volume A-B-C-D-E-F-G-H-I

7.4. Impracticality of Compliance

The Pressurizer Safety/Relief Nozzle material is carbon steel and the Upper Head material is carbon steel. This weld has a diameter of 15 inches and a wall thickness of 2.35 inches.

Because of the weld configuration, the requirements of ASME Section V, Article 4, T-441.1.2(a), T-441.1.3, T-441.1.4, T-441.1.5 and t-441.1.6 could not be met. The aggregate coverage was calculated from the following base and weld metal scan results:

- Weld coverage using 35°, 45°& 60° shear waves for axial scans (S1, S2), and 35° & 45° shear waves for circ. scans (CW, CCW) obtained 83.6% coverage.
- Base material coverage using 35°, 45°& 60° shear wave for axial scans (S1) and 35°, 45° and 60° shear waves for circ. scans (CW, CCW) obtained 70.555% coverage.
- 0° scan coverage obtained 81.95% coverage.
- The aggregate coverage was calculated to be (83.6% + 70.555% + 81.95%)/3 = 78.7%.

The limitation was caused by the weld taper configuration created by the attachment of the Safety/Relief nozzle to the Upper Head. In order to scan all of the required volume for this weld, the Upper Head to Safety/Relief nozzle attachment weld would have to be redesigned, which is impractical.

The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage. The achieved coverage did not meet the acceptable criteria of this Code Case.

Radiography (RT) is not a desired option because there is no practical access for film placement.

7.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

#### 7.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.B3.110.0004 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1; Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

### 8.0 Weld #2PZR-15

8.1. ASME Code Component(s) Affected

Unit 2, Pressurizer Safety/Relief Nozzle to Upper Head Weld, Weld #2PZR-15, Summary Number M2.B3.110.0005

8.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

8.3. Applicable Code Requirement

IWB-2500, Table IWB-2500-1, Examination Category B-D, Item Number B3.110 Fig. IWB-2500-7 (a), 100% Volume Coverage of Examination Volume A-B-C-D-E-F-G-H-I

8.4. Impracticality of Compliance

The pressurizer Safety/Relief Nozzle material is carbon steel and the Upper Head material is carbon steel. This weld has a diameter of 15 inches and a wall thickness of 2.35 inches.

Because of the weld configuration, the requirements of ASME Section V, Article 4, T-441.1.2(a), T-441.1.3, T-441.1.4, T-441.1.5 and t-441.1.6 could not be met. The aggregate coverage was calculated from the following base and weld metal scan results:

- Weld coverage using 35°, 45°& 60° shear waves for axial scans (S1, S2), and 35° & 45° shear waves for circ. scans (CW, CCW) obtained 83.6% coverage.
- Base material coverage using 35°, 45°& 60° shear wave for axial scans (S1) and 35°, 45° and 60° shear waves for circ. scans (CW, CCW) obtained 70.555% coverage.
- 0° scan coverage obtained 81.95% coverage.
- The aggregate coverage was calculated to be (83.6% + 70.555% + 81.95%)/3 = 78.7%.

The limitation was caused by the weld taper configuration created by the attachment of the Safety/Relief nozzle to the Upper Head. In order to scan all of the required volume for this weld, the Upper Head to Safety/Relief nozzle attachment weld would have to be redesigned, which is impractical.

The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage. The achieved coverage did not meet the acceptable criteria of this Code Case.

Radiography (RT) is not a desired option because there is no practical access for film placement.

8.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

#### 8.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.B3.110.0005 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1; Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

- 9.0 Weld #2ACSHX-SH-48
  - 9.1. ASME Code Component(s) Affected

Unit 2, Exchanger Shell to Tubesheet Weld #2ACSHX-SH-48, Summary Number M2.C1.30.0006

9.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

9.3. Applicable Code Requirement

IWC-2500, Table IWC-2500-1, Examination Category CA, Item Number C1.30 Fig. IWC-2500-2, 100% Volume Coverage of Examination Volume E-F-G-H

9.4. Impracticality of Compliance

The material is carbon steel. This weld has a diameter of 55.25 inches and a wall thickness of 0.625 inch.

ASME Section XI, Appendix III, III-4420 requires coverage of the examination volume in two beam path directions. ASME Section XI, Appendix III, III 4430 requires scanning on the weld crown in two directions. The total aggregate percent coverage was calculated as follows:

- 45° shear waves obtained 23.4% coverage in one axial direction (S1 tubesheet)
- 45° shear waves obtained 23.4% coverage in one axial direction (S2 shell)
- 45° shear waves obtained 23.4% coverage in one circ. direction (CW).
- 45° shear waves obtained 23.4% coverage in one circ. direction (CCW).
- The aggregate coverage was calculated to be (23.4% + 23.4% + 23.4%)/4 = 23.4%.

In order to obtain more coverage the welded supports would have to be removed to allow additional access. This is impractical.

The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume E-F-G-H. Therefore, the available coverage will not meet the criteria of this Code Case.

9.5. Proposed Alternative and Basis for Use

Radiography (RT) is not a desired option because there is no practical access for film placement.

# 9.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

9.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.C1.30.0006 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each inspection period in accordance with Table IWC-2500-1; Examination Category C-H requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), visual observations performed during periodic surveillance testing provide additional assurance that in the event leakage did occur through this weld, it would be detected and proper action taken.

- 10.0 Weld #2NC2FW39-1
  - 10.1. ASME Code Component(s) Affected

Unit 2, Nozzle to Pipe Weld #2NC2FW39-1, Summary Number M2.R1.11.0048

10.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

10.3. Applicable Code/Licensing Requirement

WCAP-14572, Rev.1-NP-A, Supplement 2, Table 4.1-1, Examination Category R-A, Item Number R1.11, Fig.IWB-2500-8(c), 100% Volume Coverage of Examination Volume C-D-E-F

The NRC authorized the inclusion of the RI-ISI program as an acceptable alternative to the ASME Code, Section XI requirements for ASME Code Class 1 piping welds, Examination Categories B-F and B-J and ASME Code Class 2 piping welds, Examination Categories C-F-1 and C-F-2 for the third ISI interval by letter dated June 12, 2002.

10.4. Impracticality of Compliance

Surface 1: Stainless Steel Nozzle Surface 2: Stainless Steel Pipe NPS: 1.5 inch Thickness: 0.281 inch

Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 45° shear waves obtained 0% coverage in one axial direction (S1 nozzle)
- 45° shear waves obtained 50% coverage in one axial direction (S2 pipe)
- 38° shear and longitudinal waves obtained 27.7 % coverage in one circ. direction (S3 CW)
- 38° shear and longitudinal waves obtained 27.7% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (0% + 50% + 27.7% + 27.7%)/4 = 26.35%

In order to scan all of the required volume for this weld, the nozzle would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-

D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

10.5. Proposed Alternative and Basis for Use

No alternative examinations are planned for the weld during the current inspection interval. Radiography (RT) is not a desired option because RT is limited in the ability to detect expected degradation mechanisms such as thermal fatigue cracking and stress corrosion crack initiating at the pipe inside surface. Additionally, radiography has not been qualified through performance demonstration.

10.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

10.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.R1.11.0048 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1; Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

### 11.0 Weld #2NC2FW40-11

11.1. ASME Code Component(s) Affected

Unit 2, Nozzle to Pipe Weld #2NC2FW40-11, Summary Number M2.R1.11.0049

11.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

11.3. Applicable Code/Licensing Requirement

WCAP-14572, Rev.1-NP-A, Supplement 2, Table 4.1-1, Examination Category R-A, Item Number R1.11, Fig.IWB-2500-8(c), 100% Volume Coverage of Examination Volume C-D-E-F

The NRC authorized the inclusion of the RI-ISI program as an acceptable alternative to the ASME Code, Section XI requirements for ASME Code Class 1 piping welds, Examination Categories B-F and B-J and ASME Code Class 2 piping welds, Examination Categories C-F-1 and C-F-2 for the third ISI interval by letter dated June 12, 2002.

11.4. Impracticality of Compliance

Surface 1: Stainless Steel Nozzle Surface 2: Stainless Steel Pipe NPS: 1.5 inch Thickness: 0.281 inch

۰.

Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 45° shear waves obtained 0% coverage in one axial direction (S1 nozzle)
- 45° shear waves obtained 50% coverage in one axial direction (S2 pipe)
- 38° shear and longitudinal waves obtained 50% coverage in one circ. direction (S3 CW)
- 38° shear and longitudinal waves obtained 50% coverage in one circ. direction (S4 – CCW)
- The aggregate coverage was calculated to be (0% + 50% + 50% + 50%)/4 = 37.5%

In order to scan all of the required volume for this weld, the nozzle would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

No alternative examinations are planned for the weld during the current inspection interval. Radiography (RT) is not a desired option because RT is limited in the ability to detect expected degradation mechanisms such as thermal fatigue cracking and stress corrosion crack initiating at the pipe inside surface. Additionally, radiography has not been qualified through performance demonstration.

#### 11.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

#### 11.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.R1.11.0049 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1; Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

# 12.0 Weld #2NC2FW43-1

12.1. ASME Code Component(s) Affected

Unit 2, Nozzle to Pipe Weld #2NC2FW43-1, Summary Number M2.R1.11.0050

12.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

12.3. Applicable Code/Licensing Requirement

WCAP-14572, Rev.1-NP-A, Supplement 2, Table 4.1-1, Examination Category R-A, Item Number R1.11, Fig.IWB-2500-8(c), 100% Volume Coverage of Examination Volume C-D-E-F

The NRC authorized the inclusion of the RI-ISI program as an acceptable alternative to the ASME Code, Section XI requirements for ASME Code Class 1 piping welds, Examination Categories B-F and B-J and ASME Code Class 2 piping welds, Examination Categories C-F-1 and C-F-2 for the third ISI interval by letter dated June 12, 2002.

12.4. Impracticality of Compliance

Surface 1: Stainless Steel Nozzle Surface 2: Stainless Steel Pipe NPS: 1.5 inch Thickness: 0.281 inch

Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 45° shear waves obtained 0% coverage in one axial direction (S1 nozzle)
- 45° shear waves obtained 50% coverage in one axial direction (S2 pipe)
- 38° shear and longitudinal waves obtained 50% coverage in one circ. direction (S3 CW)
- 38° shear and longitudinal waves obtained 50% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (0% + 50% + 50% + 50%)/4 = 37.5%

In order to scan all of the required volume for this weld, the nozzle would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-

D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

12.5. Proposed Alternative and Basis for Use

No alternative examinations are planned for the weld during the current inspection interval. Radiography (RT) is not a desired option because RT is limited in the ability to detect expected degradation mechanisms such as thermal fatigue cracking and stress corrosion crack initiating at the pipe inside surface. Additionally, radiography has not been qualified through performance demonstration.

12.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

12.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.R1.11.0050 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1; Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

- 13.0 Weld #2NV2FW180-1
  - 13.1. ASME Code Component(s) Affected

Unit 2, Nozzle to Pipe Weld ID #2NV2FW180-1, Summary Number M2.R1.11.1566

13.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

13.3. Applicable Code/Licensing Requirement

WCAP-14572, Rev.1-NP-A, Supplement 2, Table 4.1-1, Examination Category R-A, Item Number R1.11, Fig.IWB-2500-8(c), 100% Volume Coverage of Examination Volume C-D-E-F

The NRC authorized the inclusion of the RI-ISI program as an acceptable alternative to the ASME Code, Section XI requirements for ASME Code Class 1 piping welds, Examination Categories B-F and B-J and ASME Code Class 2 piping welds, Examination Categories C-F-1 and C-F-2 for the third ISI interval by letter dated June 12, 2002.

13.4. Impracticality of Compliance

Surface 1: Stainless Steel Reducer Surface 2: Stainless Steel Pipe NPS: 2.0 inch Thickness: 0.344 inch

Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 45° shear waves obtained 0% coverage in one axial direction (S1 reducer)
- 45° shear waves obtained 50% coverage in one axial direction (S2 pipe)
- 45° shear and longitudinal waves obtained 75% coverage in one circ. direction (S3 – CW)
- 45° shear and longitudinal waves obtained 75% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (0% + 50% + 75% + 75%)/4 = 50.0%

In order to scan all of the required volume for this weld, the nozzle would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

Page 25 of 34

No alternative examinations are planned for the weld during the current inspection interval. Radiography (RT) is not a desired option because RT is limited in the ability to detect expected degradation mechanisms such as thermal fatigue cracking and stress corrosion crack initiating at the pipe inside surface. Additionally, radiography has not been qualified through performance demonstration.

13.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

13.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.R1.11.1566 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each inspection period in accordance with Table IWC-2500-1; Examination Category C-H requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), visual observations performed during operator rounds provide additional assurance that in the event leakage did occur through this weld, it would be detected and proper action taken.

# 14.0 Weld #2NC2FW2-2

14.1. ASME Code Component(s) Affected

Unit 2, Nozzle to Pipe Weld #2NC2FW2-2, Summary Number M2.R1.11.1730

14.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

14.3. Applicable Code/Licensing Requirement

WCAP-14572, Rev.1-NP-A, Supplement 2, Table 4.1-1, Examination Category R-A, Item Number R1.11, Fig.IWB-2500-8(c), 100% Volume Coverage of Examination Volume C-D-E-F

The NRC authorized the inclusion of the RI-ISI program as an acceptable alternative to the ASME Code, Section XI requirements for ASME Code Class 1 piping welds, Examination Categories B-F and B-J and ASME Code Class 2 piping welds, Examination Categories C-F-1 and C-F-2 for the third ISI interval by letter dated June 12, 2002.

14.4. Impracticality of Compliance

Surface 1: Stainless Steel Pipe Surface 2: Stainless Steel Nozzle NPS: 14.0 inch Thickness: 1.406 inch

Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 45° shear waves obtained 50% coverage in one axial direction (S1 pipe)
- 45° shear waves obtained 5.6% coverage in one axial direction (S2 nozzle)
- 45° shear and longitudinal waves obtained 100% coverage in one circ. direction (S3 CW)
- 45° shear and longitudinal waves obtained 100% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (50% + 5.6% + 100% + 100%)/4 = 63.9%

In order to scan all of the required volume for this weld, the nozzle would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

No alternative examinations are planned for the weld during the current inspection interval. Radiography (RT) is not a desired option because RT is limited in the ability to detect expected degradation mechanisms such as thermal fatigue cracking and stress corrosion crack initiating at the pipe inside surface. Additionally, radiography has not been qualified through performance demonstration.

14.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

14.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number M2.R1.11.1730 was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each refueling outage in accordance with Table IWB-2500-1; Examination Category B-P requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), Reactor Building Normal Sump monitoring provide additional assurance that, in the event that leakage did occur through this weld, it would be detected and proper action taken.

# 15.0 Weld #2NV2FW10-20

15.1. ASME Code Component(s) Affected

Unit 2, Pipe to Flange Weld ID = 2NV2FW10-20, Summary Number PSI

15.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

15.3. Applicable Code/Licensing Requirement

IWC-2500, Table IWC-2500-1, Examination Category C-F-1, Item Number C5.21 Figure IWC-2500-7(a), 100% Volume Coverage of Examination Volume C-D-E-F

15.4. Impracticality of Compliance

Surface 1: Stainless Steel Pipe Surface 2: Stainless Steel Flange NPS: 3.0 inch Thickness: 0.216 inch

Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 45° shear waves obtained 50% coverage in one axial direction (S1 pipe)
- 45° shear waves obtained 0% coverage in one axial direction (S2 flange)
- 45° shear and longitudinal waves obtained 50% coverage in one circ. direction (S3 CW)
- 45° shear and longitudinal waves obtained 50% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (50% + 0% + 50% + 50%)/4 = 37.5%

In order to scan all of the required volume for this weld, the flange would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

This weld was inspected by radiography (RT) in order to meet Section III requirements, and found to be free of weld fabrication defects. A pre-service ultrasonic inspection was also performed as a baseline for future inservice (ISI) inspections, and was examined using procedure, equipment, and personnel qualified in accordance with ASME Section XI, Appendix VIII. For future ISI inspections, RT is not a desired option because RT has not been qualified through performance demonstration.

15.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

15.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number PSI was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each inspection period in accordance with Table IWC-2500-1; Examination Category C-H requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), visual observations performed during operator rounds provide additional assurance that in the event leakage did occur through this weld, it would be detected and proper action taken.

## 16.0 Weld #2NV2FW180-46

16.1. ASME Code Component(s) Affected

Unit 2, Pipe to Valve 2NV 1025, Weld #2NV2FW180-46, Summary Number PSI

16.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

16.3. Applicable Code/Licensing Requirement

IWC-2500, Table IWC-2500-1, Examination Category C-F-1, Item Number C5.21 Figure IWC-2500-7(a), 100% Volume Coverage of Examination Volume C-D-E-F

16.4. Impracticality of Compliance

Surface 1: Stainless Steel Valve Surface 2: Stainless Steel Pipe NPS: 4.0 inch Thickness: 0.237 inch

Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 45° shear waves obtained 0% coverage in one axial direction (S1 valve)
- 45° shear waves obtained 25% coverage in one axial direction (S2 pipe)
- 45° shear and longitudinal waves obtained 50% coverage in one circ. direction (S3 CW)
- 45° shear and longitudinal waves obtained 50% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (0% + 25% + 50% + 50%)/4 = 31.25%

In order to scan all of the required volume for this weld, the valve would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

This weld was inspected by radiography (RT) in order to meet Section III requirements, and found to be free of weld fabrication defects. A pre-service ultrasonic inspection was also performed as a baseline for future inservice (ISI) inspections, and was examined using procedure, equipment, and personnel qualified in accordance with ASME Section XI, Appendix VIII. For future ISI inspections, RT is not a desired option because RT has not been qualified through performance demonstration.

#### 16.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

#### 16.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number PSI was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each inspection period in accordance with Table IWC-2500-1; Examination Category C-H requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), visual observations performed during operator rounds provide additional assurance that in the event leakage did occur through this weld, it would be detected and proper action taken.
#### 17.0 Weld #2NV2FW180-45

17.1. ASME Code Component(s) Affected

Unit 2, Elbow to Valve 2NV 1025, Weld #2NV2FW180-45 Summary Number PSI

17.2. Applicable Code Edition and Addenda

ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through the 2000 Addenda

17.3. Applicable Code/Licensing Requirement

IWC-2500, Table IWC-2500-1, Examination Category C-F-1, Item Number C5.21 Figure IWC-2500-7(a), 100% Volume Coverage of Examination Volume C-D-E-F

17.4. Impracticality of Compliance

Surface 1: Stainless Steel Valve Surface 2: Stainless Steel Elbow NPS: 4.0 inch Thickness: 0.237 inch

Scanning requirements are described in 10CFR.50.55a(b)(2)(xv)(A)(1). The aggregate coverage was calculated as follows:

- 45° shear waves obtained 0% coverage in one axial direction (S1 valve)
- 45° shear waves obtained 50% coverage in one axial direction (S2 elbow)
- 45° shear and longitudinal waves obtained 50% coverage in one circ. direction (S3 CW)
- 45° shear and longitudinal waves obtained 50% coverage in one circ. direction (S4 CCW)
- The aggregate coverage was calculated to be (0% + 50% + 50% + 50%)/4 = 37.5%

In order to scan all of the required volume for this weld, the valve would have to be redesigned to allow scanning from both sides of the weld, which is impractical. The McGuire Inservice Inspection Plan allows the use of Code Case N-460, which requires greater than 90% volumetric coverage of examination volume C-D-E-F. Therefore, the available coverage will not meet the acceptance criteria of this Code Case.

#### 17.5. Proposed Alternative and Basis for Use

This weld was inspected by radiography (RT) in order to meet Section III requirements, and found to be free of weld fabrication defects. A pre-service ultrasonic inspection was also performed as a baseline for future inservice (ISI) inspections, and was examined using procedure, equipment, and personnel qualified in accordance with ASME Section XI, Appendix VIII. For future ISI inspections, RT is not a desired option because RT has not been qualified through performance demonstration.

#### 17.6. Duration of Proposed Alternative

This request is for the duration of the third inservice inspection interval, currently scheduled to end on 7/15/2014.

#### 17.7. Justification for Granting Relief

Ultrasonic examination of the weld for the item number PSI was conducted using personnel, equipment, and procedures qualified in accordance with ASME Section XI, 1998 Edition with the 2000 Addenda.

The system leakage test performed each inspection period in accordance with Table IWC-2500-1; Examination Category C-H requires a VT-2 visual examination to detect evidence of leakage. This test and VT-2 examination provide additional assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), visual observations performed during operator rounds provide additional assurance that in the event leakage did occur through this weld, it would be detected and proper action taken.

Duke has examined the weld/component to the maximum extent possible utilizing approved examination techniques and equipment. Based on the acceptable results for the coverage completed by the volumetric examination, the pressure testing (VT-2) examinations required by Section XI, and the leakage monitoring, it is Duke's position that the combination of examinations provide a reasonable assurance of quality and safety. Attachment A

Weld Examination Data

•

Duke Energy.						ι	JT Pipe We	d Exan	nination				1	
s	ite/Unit:	McGuir		1			Pro	ocedure:	PDI-(	JT-2	. 01	itage No.;	M1-20	
Summ	ary No.:	A	11.R1.1	1.0390	······		Procedu	vre Rev.:	C	;	R	eport No.:	UT-10-135	;
Wo	kscope:		15	}			Work O	rder No.: _	0185	8546	-	Page:	of	6
Code:	1998	3/2000 A	ddenda			Cat./Item	: <b>R-A/</b> R1.	.11	Locati	on:				
Drawing No.:			MCFI-1	INC53			Description:	Nozzie to P	ipe					
System ID:	NC						······							
Component ID:	INC1F-	3613-30	92					<u> </u>	Size/Lengt	n: <u>N/A</u>	Thickr	ness/Diameter.	1.40/14.0	0/35
Limitations:	See atta	iched si	hest							Start Time:	1031	Finish Time	1120	<u>}</u>
Examination \$	Surface:	Insid	te 🔲	Ou	tside 🖌		Surface Con	dition: AS (	GROUND					
Lo Location:		9.1.	1.1		Wo Loo	ation:	Centerline of	Weld	Couplant:	ULTRA	GEL 11	Batch No.:	0932	5
Temp. Tool M	fg.:	L	nontra	<u></u>	Seria	n No.:	MCNDE328	28	Surface Ter	np.: <u>72</u>	°F			
Cal. Report N	o.:				CAL	10-328, 3	29 & 330							
Angle Used	0	45	45T	60	60RL		]							
Scanning dB		39.7	39.7	55.9	71.2									
Indication(s):	Yes	Z Na	<b>•</b> 🗆			Sc	can Coverage: U	pstream 🗌	Downstream	m 🗹 🛛 CW 🛛	CCW 🖸			
Comments:														
FC 08-04, 09	02, 09-08	8, 10-09												
Results:	Accept [	] <b>R</b>	eject 🔽	1	Info 🔲									
Percent Of Co	verage O	btained :	<b>&gt; 90%</b> :		No		Reviewed Previou	us Data:	Yes					
Examiner Muirhead, Bar	Level II. ry A.	"Ba	in		Signature	~	Date 3/25/2010	Reviewer Moss, Ga	" Ja	n A M	Signati	ure	3/	Date /31/2010
Examiner Hollis, Jacob	Level M-	N Gar	2 F	Ali	Signature		Date 3/25/2010	Site Revie N/A	w .	V(	Signati	ure .		Date
Other I N/A	Level N/	K			Signature		Date	ANti Revie Jerome Si	wan ///	= lova	Signat	ure 4_ 4	1.10.	Date 4/4/2010
<b></b>		<u></u>						<u> </u>	0			\$		

ATTACHMENT A PAGE / OF 24



------

	dee					U	traso	nic (	) ndicat	ion R	epor	t			۸ P	AGE 2	IENT OF 7
	<b></b>	Site/Uni	t: McG	Sulre	1	1		F	Procedure	ə:	PDI-I	JT-2		Outage No.:	M1-2	D	
	Su	mmary No	.:	M1.	R1.11.03	390		Proce	dure Rev		C	;		Report No.:	UT-10-1	35	
	\	Vorkscope	»: 					Work Order No.:		.:	01859546			Page:	<u>2</u> of	6	
Sea	rch Unit Ar	ngle:	60		. •			() Pi	iping Wel	lds					Wo CL	Wmex	
	Wo Loca	tion: Cer	nterline c	of Weld	•			O F	erritic Ve	ssels <u>&gt;</u>	2 <b>"</b> T					W1 W2	!
	Lo Loca	tion:	9.1.1.	1		O Other									> <i>///</i>		
MP Metal Path RBR Remaining Back Reflection L Distance From Datum Comments: N/A					Wr W1 W2	nax C I C 2 D	Distance   Distance   Distance	From Wo From Wo From Wo	o To S.U. o At o At	At Maxi Of Of	mum Res Max (Fo Max (Fo	sponse prward) prward)					MIC -
Com	ments: N	NA														WI Winex	: W2
]	Indication % W		N	Fo	Forward Ba		kward	L1	L	L2	RBR		F	Remarks			
Angle	No.	DAC	W	MP	W1	MP	W2	MP	Of Max	Max	Óf Max	Amp.					
60	1	75	2.3	2.60	N/A	N/A	NIA	N/A	360	0"	Int.	N/A	Geometry	1			
······																	<u></u>
														······································			
miner	Level	[]-N		]	Signatur	•			Date Rev	iewje		<u> </u>		Signatu	Jre		D
irhead	, Barry A.	14	any	z l	U	n		3/25/2	010	La	4/	10	2			4-1-10	
aminer Ills, Ja	Level cob	II-N C	Frink	1	Signatur	e		[ 3/25/2	ote Site	Keview	1.		Λ	Signati	hie		U
ner A	Level	NIA		ur f	Signatur	e		C	Date ANI	l Review		1e	los	Signatu	ле 1- Ц-	10	Da
											6						

·····

-----

------

-

## ATTACHMENTA PAGE-3 OF 24

- ---

		PAGE-3 OF 2
DU	JKE POWER COMPANY	
·	ISI LIMITATION REPORT	
Component/Weld ID: 1NC1F-36	13-3092 Item No: <u>M1.R1.11.0390</u>	remarks:
🖾 NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration
LIMITED SCAN	□ 1	
FROM L <u>N/A</u> to L <u>N/A</u>	INCHES FROM W0 CL to Beyond	
ANGLE: 0 0 45 0 60	other FROM 0 DEG to 360 DEG	
NO SCAN	SURFACE BEAM DIRECTION	
LIMITED SCAN	□ 1 □ 2 □ 1 □ 2 □ cw □ ccw	
FROM L to L	INCHES FROM W0 to	<u>.</u>
ANGLE: 0 0 45 0 60	other FROM DEG to DEG	
NO SCAN	SURFACE BEAM DIRECTION	
LIMITED SCAN	□ 1 □ 2 □ 1 □ 2 □ cw □ ccw	
FROM L to L	INCHES FROM W0 to	
ANGLE: 0 0 45 60	other FROM DEG to DEG	
NO SCAN	SURFACE BEAM DIRECTION	
LIMITED SCAN	1 2 1 2 cw ccw	
FROM L to L	INCHES FROM W0 to	Sketch(s) attached
ANGLE: 0 0 5 60	other FROM DEG to DEG	∑ yes □ No
Prepared By: Barry Muirhead Barry	Mul Level: II Date: 03/25/10 Shee	$t^{\underline{\beta}}\underline{2}_{\underline{\beta}}$ of $\underline{\beta}_{\underline{\delta}}^{\underline{\beta}}\underline{3}_{\underline{3}}^{\underline{\beta}}$
Reviewed By: Damil K. Z	Date: Authorized Inspector:	- Eluran 4-4-10
	$\mathcal{O}$	

\_ \_\_ \_

.

----

-----

	Supplemental Report	ATTACHMENT A PAGE 4 OF 24 Report No.: UT-10-135 Page: 4 of 6
Summary No.: M1.R1.11.0390 Examiner: Mulrhead, Barry A. Burger Examiner: Hollis, Jacob Gurd R. Hule Other: N/A	Level: II-N Reviewer: Moss, Gary So. Level: II-N Site Review: N/A Level: N/A ANII Review: Jerome Swan	Date: 3/31/2010 Date: Efwa Date:

•

Comments: Ind. #1 is a geometric reflector from the weld root configuration. Used 60° shear and 60°RL, confirmed using previous data.

Sketch or Photo:

•

.





		9 <b>7</b> .	Dete	Determination of Percent Coverage for UT Examinations - Pipe							
	Site/Unit:	McGuire /	1	Procedure:	PDI-UT-2	Outage No.:	(	<b>M1-20</b>			
s	Summary No.:	M1.R1.11.0390		Procedure Rev.:	c	Report No.:	UT-10-135				
	Workscope:	IS	5]	Work Order No.:	01859546	Page:	6	of			

15	d	e	Ø	

Scan 1		% Length X.		% volume of length / 100 =	•·····	% total for Scan 1
Scan 2	<u></u>	"		% volume of length / 100 =		% total for Scan 2
Scan 3	100.000	% Lengsh X	100.000	% volume of length / 100 =	100.000	% total for Scan 3
Scan 4	100.000	% Length X	100.000	% volume of length / 100 =	<u> </u>	% total for Scan 4

Add totals and divide by # scans = 100.000 % total for 45 deg

Other dea - (to be used for supplemental scans)

The data to be listed below is for coverage that was not obtained with the 45 deg scans.

Scan 1	100.000	% Length X	50.000	% volume of length / 100 =	50.000	% total for Scan 1
Scan 2	100.000	% Length X	0.000	% volume of length / 100 =	0.000	% total for Scan 2
Scan 3		% Length X	÷	% volume of length / 100 =	<del></del>	% total for Scan 3
Scan 4		% Lengtin X	۹	% volume of length / 100 =		% total for Scan 4

#### Percent complete coverage

Add totals for each scan required and divide by # of scans to determine;

#### 62.500 % Total for complete exam

Site Field Supervisor: James, Mc Gulles Date: 4-7-10

ATTA	CHN	AEN 1	r A
P A 6 E	7	Q F	24

# **Duke** Energy.

.

~

## **UT Vessel Examination**

\_\_\_\_\_

Site/Unit:		cGuire /	1		Pro	cedure:	NDE-3630		Out	age No.:		M1-20	
Summa	ry No.:	M1.C1.20	.0017		Procedur	e Rev.:	1		Re	port No.:	U	T-10-137	r
Work	scope:	131		Work Order No.:		01859546		Page:		1	of _	7	
Code:	1998	/2000 Addenda	1	Cat./Item:	C-A/C1.2	20	Location:						
Drawing No.:		MC-ISIN-1	554-01.02		Description: H	ead To Flan	ge						
lystem ID:	NV			·····									
Component ID:	1ELDHX	-HD-FLG					Size/Length:	N/A	- Thickne	ess/Diame	ler: 0	r: 0.75/9.5/SS-C	
imitations:	Yes - Se	e attached lim	Itation sheet				Sta	rt Time:	1040	Finish Tir	ne: _	112	0
Examination S	urface:	Inside 📋	Outside	Z	Surface Condit	tion: AS GR	OUND						
Lo Location:	T	op Dead Cente	r Wo	Decalion:	Centerline of W	/eld	Couplant:	ULTRAGEL	. II	Batch No.:		0932	5
Temp. Tool Mi	g.:	Fluke		Serial No.:	OCQUA33090	0	Surface Temp.:	64	_ °F				
Cal. Report No	).:			CA	L-10-334, 335, 336 &	337	<del></del>						
Angle Used	0	45 45T	60 <u>6</u> 01										
Scanning dB		n ++	***										
Indication(s):	Yes [	No 🖌			Scan Coverage: Ups	stream 🖌	Downstream 🗹	cw 🖌	ccw 🖌				
Comments:													
60"RL used fo *CS side-83.2 **CS side-87.1 ***CS & SS side Results:	or supple db/88 sk db/35 s de scann Acce	mental covera de-54.0db Axia ide-61.0db Circ ed at 83.0db d ot [] Reje	ge I scan :. Scan ue to signal t ect 🖌	o noise ratio	P FC 09-01, 09-05, 1 Reviewed Proviou	0-10	Yas						
Examiner L lendrickson, N	evel N-A	11.	Signal		Date 1 3/26/2010	Reviewer	$m \wedge N$	ors	Signatu	e	4	- [-]0	Da
Examiner L Briebel, David I	evel 11-N M.	10.	Signal	uré	Date 5 3/26/2010	Site Review	V	A	Signatur	e			Da
Dther L N/A	evel N//		Signal	pre	Date /	ANII Review	HF=	hua	Signatur	°4- 4	-/-	10	Da
				<u></u>			$\mathcal{O}$	t					

ATTACHMENT A

D	UKE PO			8 2		
	ISI LIMF	TATION 1	REPORT			ر میں
Component/Weld ID: 1ELDHX-	HD-FLG	_ Item No:	M1.C1.20.0017	,	remarks:	
NO SCAN	SURFAC	ж	BEAM DIRECT	ION	Vent pipe.	
📋 LIMITED SCAN	1	2	1 🗌 2 🛛	cw 🛛 ccw		
FROM L _26.75" to L30.50	۱۱ <u>"(</u>	ICHES FROM	M WO <u>+3.5"</u> f	to Beyond		
ANGLE: 🗌 0 🛛 45 🖾 60	other	FROM	M <u>N/A</u> DEG to	N/A DEG		
🖾 NO SCAN	SURFAC	E	BEAM DIRECT	ION	Inlet connection	
LIMITED SCAN	1	2	1 🗌 2 🛛 d	w 🛛 ccw		
FROM L 0.25" to L 4.25"	IN	ICHES FROM	<b>/ W0</b> <u>+0.9"</u> t	o <u>Beyond</u>		
ANGLE: 🗌 0 🖾 45 🗌 60	other	FROM	I N/A DEG to	N/A DEG		
NO SCAN	SURFAC	5	BEAM DIRECTI	ON	Outlet conection	
LIMITED SCAN		2	1 🗌 2 🛛 c	w 🛛 ccw		
FROM L <u>11.5</u> " to L <u>16.5</u> "	IN	CHES FROM	1 W0 <u>+0.9"</u> to	Beyond	· · · · · · · · · · · · · · · · · · ·	
ANGLE: 🗍 0 🛛 45 🖾 60	other	FROM	N/A DEG to	N/A DEG		
NO SCAN	SURFACE		BEAM DIRECTIO	NC	Draw Pipe	
LIMITED SCAN	□1 🛛	2 🛛 1	🗌 2 🛛 c	w 🛛 ccw 🏾		
FROM L <u>16.5"</u> to L <u>18.5</u> "	IN	CHES FROM	W0 <u>+3.5</u> " to	Beyond	Sketch(s) a	uttached
ANGLE: 🔲 0 🛛 45 🖾 60	other	FROM	N/A DEG to	N/A DEG	🛛 yes	🗌 No
Prepared By: Matthew Hendrickson	the keve	l: <sub>II</sub> Da	te: 03/26/10	Sheet	<u>2</u> of _	7
Keviewed By: DavilK3	Date	3/31/10	Authorized Ins	pector:	ifwa-	Date: _ 4 - 4 - 10
$\cup$		• /		0		

•

ار اور ارتباع از ۲۰ هم و<sup>1</sup> مرجع

and a second second



\_\_\_\_\_





ATTACHMENT A PABE 120F24 . Supplemental Report UT-10-137 Report No.: 6 of 7 Page: Summary No.: M1.C1.20.0017 Varial 3 TIT Date: -Reviewer: evel: II-N Examiner: Hendrickson, Matthew Date: Level: II-N Site Review: Examiner: Griebel, David M. Date: 4-4 **ANII Review:** Level: N/A Other: N/A Comments: WELD # 1ELDHX-HD-FLG INVER/OUTLES VENT/DRAIN PIPE Sketch or Photo: FLANGE -51 DOWN STREAM HEAD -52 UPSTREAM % COYERAGE WITH 45° CW&CCW & LIMITATIONS 1.341NZ-(.75" x.75")= .78 1NZ .78/1.34 × 100 = 58.2% \* FILL SCALE \*

• • • • • • • •

#### くけ **Determination of Percent Coverage for** ATTACHMENT, 🏝 Duke N 1 @ Energy. **UT Examinations - Vessels** Μ Site/Unit: McGuire / NDE-3630 1 Procedure: Outage No.: M1-20 Summary No.: M1.C1.20.0017 Procedure Rev.: 1 Report No.: UT-10-137 ISI Workscope: 01859546 Work Order No .: Page: of 7 0 deg Planar % Length X % volume of length / 100 = % total for 0 deg Scan <u>45 deg</u> Scan 1 51.600 % Length X 100.000 % volume of length / 100 = 51.600 % total for Scan 1 51.600 % Length X 100.000 % volume of length / 100 = 51.600 % total for Scan 2 Scan 2 51.600 51.600 % Length X 100.000 % volume of length / 100 = % total for Scan 3 Scan 3 Scan 4 51.600 % Length X 100.000 % volume of length / 100 = 51.600 % total for Scan 4 Add totals and divide by # scans = 51.600 % total for 45 deg Other deg 45 % Length X 79.100 % volume of length / 100 = 38.284 Scan 1 48.400 % total for Scan 1 % Length X \_\_\_\_ 37.300 % volume of length / 100 = 18.053 % total for Scan 2 Scan 2 48.400

 Scan 3
 48.400
 % Length X
 58.200
 % volume of length / 100 =
 28.169
 % total for Scan 3

 Scan 4
 48.400
 % Length X
 58.200
 % volume of length / 100 =
 28.169
 % total for Scan 4

 Add totals and divide by # scans =
 28.169
 % total for
 45
 deg

51.600 28.169

79.769

#### Percent complete coverage

Add totals for each angle and scan required and divide by # of angles to determine;

#### -39:884- % Total for complete exam

DE2 Note:

Supplemental coverage may be achieved by use of other angles / methods. When used, the coverage for volume not obtained with angles as noted above shall be calculated and added to the total to provide the percent total for the complete examination.

Site Field Supervisor:

Varil C. 2

Date: 3/31/10





~

. . . . . . .

## UT Pipe Weid Examination

	Site/Unit:	McGuire	1	1			Pro	ocedure:	NDE-6	DO		Outage No.:	M1-20	
Sum	mary No.:	M	1.R1.11	.2170			Procedu	ire Rev.:	17			Report No.:	UT-10-11	10
W	orkscope		ISI			Work Order No.:		rder No.:	018595	46		Page: 1	of	4
Code:	19	98/2000 Ad	Idenda			Cat./Item:	R-A/R1.	<u>f1</u>	Location	ו:				
Drawing No.:			MCFI-1	NV53			Description:	VALVE TO PIP	E					
System ID:	NV											· · · ·		
Component IC	): <u>INV1</u>	W53-27							Size/Length:	N/A	Thi	ckness/Diameter	0.436/	2.0/SS
Limitations:	See at	tached she	eet				· · · · ·			Start Time:	1121	Finish Time	: 11	41
Examination	Surface:	Inside	• 🗍	Ou	lside 🖌		Surface Cond	lition: AS GR	OUND					
Lo Location:		9.1.1	.1	·	Wo Loc	ation:	Centerline of 1	Weld	Couplant: _	ULTRAC	<u>SEL II</u>	Batch No.:	093	25
Temp. Tool	Mfg.:	Lu	tron		Seria	I No.:	MCNDE328	24	Surface Temp	o.: <u>65</u>	°F			
Cal. Report	No.:			<del> </del>	CAL-	10-310, 311	. & 312							
Angle Used	0	45	45T	60	70	<u> </u>	]							
Scanning dE	3		47.9	34.4	49.3	<u> </u>								
Indication(s)	): Yes	□ No	V			Sca	n Coverage: U	pstream 🔲 🛛	Downstream	CW E	CCV	N 🗹		
Comments:														
FC 08-03														
Results:	Accept	📋 Rej	ject 😰		Info 🗌	ł	nitial Section XI	Exam						
Percent Of C	overage	Obtained >	<b>90%</b> :		No		Reviewed Previou	us Data:	No					
Examiner	Level	I-N Z	9	×.	Signature		Date	Reviewer	h	A AV	Sigi	nature		Date
Mauldin, Lar Examiner	ry E.		y	<u> </u>	Signature	lilden	3/23/2010 Date	Sile Review	Var	<del>/ //</del>	G-+-) Siai	nature		3/25/2010 Date
Bull, W. Kelt	h _		, đe	<u>جر ا</u>	R	$\geq$	3/23/2010	N/A	<u> </u>		- 5			-
Other	Level	VA S			Signature		Date	ANII Review	_ ()	F/	Sigi	nature		Date
N/A						<u>.</u>		Jerome Swa	<u> </u>	1 Ans	<u> </u>			4/4/2010
									()					
										~				

# ATTACHMENT A PAGE-V5 OF 24

$\bigcirc$		PAGE-15 OF										
D	UKE POWER COMPANY											
	ISI LIMITATION REPORT											
Component/Weid ID: _1NV1FW	53-27 Item No: <u>M1.R1.11.2170</u> rem	narks:										
🛛 NO SCAN	SURFACE BEAM DIRECTION Due	to valve 1NV35-A										
LIMITED SCAN	□ 1 ⊠ 2 ⊠ 1 □ 2 ⊠ cw ⊠ ccw confi	iguration										
FROM L N/A to L N/A	INCHES FROM W0 0.25" to Beyond											
ANGLE: 🗌 0 🖾 45 🖾 60	other FROM 0 DEG to 360 DEG											
NO SCAN	SURFACE BEAM DIRECTION											
LIMITED SCAN												
FROM L to L	INCHES FROM W0 to											
ANGLE: 0 45 60	other FROM DEG to DEG											
	SURFACE BEAM DIRECTION											
LIMITED SCAN												
FROM L to L	INCHES FROM W0 to											
ANGLE: 0 0 45 60	other FROM DEG to DEG											
NO SCAN	SURFACE BEAM DIRECTION											
LIMITED SCAN	□ 1 □ 2 □ 1 □ 2 □ cw □ ccw											
FROM L to L	INCHES FROM W0 to	Sketch(s) attached										
4 ANGLE: □ 0 □ 5 □ 60	other FROM DEG to DEG	🛛 yes 🗌 No										
Prepared By: Larry Mauldin	Mauldii Level: II Date: 03/23/10 Sheet 2	of										
Reviewed By: Jan Mo	Date: Authorized Inspector: AFLwo	Date: 										
JC	$\mathcal{J}$											

	Supplemental Report	Report No.:	ATTA PAGE	CHME 76 0 -10-111	INT A IF Z4
Summary No.: Examiner: Examiner: Other:	M1.R1.11.2170 Mauldin, Larry E. Kuy & Mauddy Level: II-N Reviewer: Jan Mon Bull, W. Keith Level: II-N Site Review: N/A Level: N/A ANII Review: A.F. fura-	Page:	3 Date: Date: Date:	- of	<u>4</u> -10 
Comments:	<i>U</i>				
	Var. 1 NN 35 D				

the second secon



-

	EXAM AREA	1.5" x 0.14" = .21 = .2 sq.1N
AREA of	COVERDEE	.2 ÷ 2 = .1 sq. IN. X 100 = 50%

Site/Unit:	McGuire /	1	Procedu	re: <b>NDE-600</b>	Outage N	o.: <u>M1-20</u>
Summary No.:	M1.R1.11	.2170	Procedure Re	IV.: <u>17</u>	Report N	o.: <b>UT-10-110</b>
Workscope:	ISI		Work Order N	lo.: <b>0185954</b> 6	Pag	e: <u>4</u> of <u>4</u>
45 deg						
Scan 1	·	% Length X		% volume of length / 100 =		% total for Scan 1
Scan 2	••••••••••••••••••••••••••••••••••••••	% Length X		% volume of length / 100 =		- % total for Scan 2
Scan 3	100.000	% Length X	50.000	% volume of length / 100 =	50.000	% total for Scan 3
						-
Scan 4 <u>Other de</u> The data	<u>100.000</u> Add totals and <u>a-</u> <u>60</u> to be listed below	% Length X divide by # scar (to be used for w is for coverage :	50.000 Is = 50.000 supplemental so	% volume of length / 100 = <b>% total for 45 deg</b> cans) ained with the 45 deg scans	<u>50.000</u>	_% total for Scan 4
Scan 4 <u>Other de</u> The data Scan 1	100.000 Add totals and a- <u>60°</u> to be listed below	_ % Length X divide by # scar (to be used for w is for coverage for % Leonth X	50.000 s = 50.000 supplemental so that was not obtain 50.000	% volume of length / 100 = <b>% total for 45 deg</b> cans) ained with the 45 deg scans % volume of length / 100 ;	50.000	_% total for Scan 4
Scan 4 <u>Other de</u> The data Scan 1 Scan 2	100.000 Add totals and a. <u>(60</u> to be listed below <u>100.000</u>	% Length X divide by # scar (to be used for w is for coverage is % Length X % Length X	50.000 s = 50.000 supplemental so that was not obta 50.000	% volume of length / 100 = <b>% total for 45 deg</b> cans) ained with the 45 deg scans % volume of length / 100 = % volume of length / 100 =	<u>50.000</u>	% total for Scan 4
Scan 4 Other de The data Scan 1 Scan 2 Scan 3	100.000 Add totals and a - <u>60°</u> to be listed below <u>100.000</u> 0.000	% Length X divide by # scar (to be used for w is for coverage % Length X % Length X % Length X	50.000 Is = 50.000 supplemental so that was not obta 50.000 0.000	% volume of length / 100 = _ % total for 45 deg cans) ained with the 45 deg scans _ % volume of length / 100 = _ % volume of length / 100 = % volume of length / 100 =	<u>50.000</u> = <u>50.000</u> = <u>0.000</u>	% total for Scan 4 % total for Scan % total for Scan % total for Scan
Scan 4 Other de The data Scan 1 Scan 2 Scan 3 Scan 4	100.000 Add totals and a - <u>60°</u> to be listed below <u>100.000</u> <u>0.000</u>	% Length X divide by # scar (to be used for w is for coverage % Length X	50.000 s = 50.000 supplemental so that was not obta 50.000 0.000	% volume of length / 100 = <b>% total for 45 deg</b> cans) ained with the 45 deg scans % volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 4 % total for Scan % total for Scan % total for Scan % total for Scan % total for Scan



-------

## IIT Base Met: amination

	Luke Energy	1.				UT	' Base	e Meta	am	inati	on					10
	Site/	Unit: <u>McGu</u>	tre /	1					Procedu	re:	ND	E-640			Outage No.:	N/A
	Summary	No.:	M1.R1.	11.2170	<u> </u>			Proc	edure Re	v.:		5			Report No.: BO	P-UT-10-217
	Workso	ope:	1	SI				Worl	k Order N	o.:	018	59546			Page: 1	of <u>2</u>
ode:		1998/2000	Addend	la		Cat./It	em:	R-	A/R1.11		Loca	ation:				
awing	No.:		MCF	-1NV53			D	escription	n: Valve	to Pipe						
/stem	ID: N	/														
ompon	ent ID: 11	W1FW53-27	! <u>.</u>								Size/Len	igth:	N/A	T	nickness/Diameter:	0.436"/2.0/5
mitatio	ns: <u>N</u>	one						•••				Start	Time:	1115	Finish Time:	1120
xamin	ation Surfa	ice: Ins	ide [_]	Ou	side 🔽		S	iurface Co	ondition:	AS GR	OUND					
o Loca	ation:	9.1	1.1.1		Wold	ocation:	Ce	nterline (	of Weld		Couplant:	(	ULTRAG	EL fl	Batch No.:	09325
'emp. '	Tool Mfg.:	1	Lutron		Sei	rial No.:		MCNDE3	2824		Surface Te	emp.:	65	°F	Scanning	dB: <u>38.9</u>
al. Re	port No.:					CAL-10	-313									
Ind.	%	Amplitude		Positio	on One			Positic	on Max			Positi	on Two		Rem	adua.
No.	Loss Back Wall	% Full Screen	L1	W1	W2	MP	LM	W1	W2	MP	L2	W1	W2	MP	- Kem	arks
NRI						1										
	ini							<u> </u>							-	
				ļ		ļ		ļ								
omme lesuits	ents: N/A :: :: ::	Accept 🖌	Rej	ect 🔲	Info		Initia	I Section	XI Exam	a.	No	<del></del>	,	<u></u>		
ercen				,	Signatur				ate   Rovi				4	Sic	nature	
lauldir	n, Larry E.	er II-N	La	ur k		haul	lin	3/23/20	10		Jann	11	on			3-25-10
xamin	er Lev	el N-N		1	Signatur	e		D.	ate Site	Review	1	[		Si	gnature	
un, w ther t/A	Lev	el N/A	$ \rightarrow $		Signatur	e		D	ate ANII	Review	A	E J	Iwa	Się	gnature	1-10
											1	- 1				



ATTA	CHN	1 E N	Ŧ	A
PAGE	20	Q F	2	4

### Duke Energy.

-----

## **UT Vessel Examination**

Site/Unit: Summary No.:		McGuire / 1					Pr	Procedu	ure:	NDE	-3630 1			Outage No. Report No.		M1-20	3
Work	scope:		ISI				W	ork Order I	No.:	01859545			Page		of	5	
Code: Drawing No.:	ode: 1998/2000 Addenda awing No.: MCM 1201.06-25		Ca 5	Cat./Item: C-A/C1.30 Description: Shell To Tube			Location:				·····						
Component ID: Limitations:	1BCS Yes	HX-SH-4	8							Size/Leng	gth: Start	N/A Time:	Th 1355	ickness/Dian Finlsh	ieter: ), Fime:	625/55. 143	250/CS
Examination S	urface:	Insi 9.	ide 📋 2.1	Ou	tside 🔽 Wo Loc	ation:	Surface Centerlin	Condition:	AS GR	Couplant:		ULTRAG	EL II	Batch N	0.:	093	25
Temp. Tool Mf Cal. Report No	g.:		D. <b>A.S</b>	<u>-</u>	. Seria	I No.: _	MCND	E32795		Surface Te	mp.:	73	°F				
Angle Used Scanning dB Indication(s): Comments: Scan @ 50.5d	Yes	45	457	60 ratio.	601	35 50.5	Scan Coverage	: Upstrea	am 🗹	Downstrea	m 🗹	cw 🗹	] CCI	N 🗹			
Results: Percent Of Co	Ac verage	cept 📋 Obtained	Reje 1 > 90%:	ect 🖌	Info   No		FC 09-01, 0 Reviewed F	<b>9-05, 10-1(</b> Previous Da	0 ata:	Yes							
Examiner L Muirhead, Barr Examiner L Leeper, Winfre	.evel   y A. .evel   d C.	1-N Ba 1-N	ing .	100	Signature Signature	Ċ	3/2/. 3/2/:	Date Revi 2010 Date Site 2010	iewer Review	Jan	//	070	Sig	nature	3	10110	Date Date
Leeper, Winfre Other L Hollis, Jacob	d C. .evel j		ind .	e H	Le p signature		3/2/: 3/2/:	2010 Date ANII 2010	Review	4	F=	fue	Sigi	nature / - /	-/(	0	Date
		ν								$\mathcal{O}$							



Ċ		ATTACHMENT Page-220F 24
DU	KE POWER COMPANY	
]	SI LIMITATION REPORT	
Component/Weld ID: 1BCSHX-S	H-48 Item No: M1.C1.30.0005	remarks:
🖾 NO SCAN	SURFACE BEAM DIRECTION	16" due to permenant
LIMITED SCAN	⊠ 1 ⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	support hanger
FROM L <u>12.0</u> to L <u>28.0</u> "	INCHES FROM W0 <u>S1+1.5</u> to <u>S2+.5</u>	
ANGLE: 0 0 45 60	other <u>35</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG	
NO SCAN	SURFACE BEAM DIRECTION	12" due to permenant support
LIMITED SCAN	⊠ 1 ⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	hanger
FROM L to L	INCHES FROM W0 <u>S1+1.5</u> to <u>S2+.5</u>	
ANGLE: 0 45 60	other <u>35</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG	
NO SCAN	SURFACE BEAM DIRECTION	12" due to permenant support
LIMITED SCAN	⊠ 1 ⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	hanger
FROM L 60.0" to L 72.0	INCHES FROM W0 _ S1+1.5 to _ S2+.5	
ANGLE: 0 45 60	other <u>35</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG	
NO SCAN	SURFACE BEAM DIRECTION	15" due to permenant
LIMITED SCAN	🛛 1 🖾 2 🖾 1 🖾 2 🖾 cw 🖾 ccw	support hanger
FROM L 81.0" to L 96.0"	INCHES FROM W0 <u>S1+1.5</u> to <u>S2+.5</u>	Sketch(s) attached
4 ANGLE: □0□ 5 □ 60	other 35 FROM N/A DEG to N/A DEG	🖾 yes 🗌 No
Prepared By: Winfred Leeper	Date: 03/02/2010 Shee	t <u>_3</u> of <u>5</u>
Reviewed By: San Mars	Date: 3/25/10 Authorized Inspector:	Date: Won 4-1-10
//		

----

$\bigcirc$	$\left( \begin{array}{c} \\ \end{array} \right)$	ATTACHMENT PAGE-23OF 2
DU	KE POWER COMPANY	
I	SI LIMITATION REPORT	
Component/Weld ID: <u>1BCSHX-S</u>	H-48 Item No: <u>M1.C1.30.0005</u>	Remarks:
NO SCAN	SURFACE BEAM DIRECTION	9" due to permanent support
LIMITED SCAN	⊠ 1 ⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	hanger
ROM L <u>106.0"</u> to L <u>115.0"</u>	INCHES FROM W0 to S2+.5	
NGLE: 0 0 45 60	other <u>35</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG	
NO SCAN	SURFACE BEAM DIRECTION	16" due to permanent support
LIMITED SCAN	⊠ 1 ⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	hanger
ROM L <u>125.0"</u> to L <u>141.0"</u>	INCHES FROM W0 to S1+1.5 to	
NGLE: 0 0 45 60	other <u>35</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG	
NO SCAN	SURFACE BEAM DIRECTION	10" due to permanent support
LIMITED SCAN	⊠ 1 ⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	hanger
ROM L <u>150.0</u> " to L <u>160.0</u> "	INCHES FROM W0 _ S1+1.5 toS2+.5	
NGLE: 0 0 45 60	other <u>35</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG	
NO SCAN	SURFACE BEAM DIRECTION	7.5" due to permanent support
LIMITED SCAN	⊠ 1 ⊠ 2 ⊠ 1 ⊠ 2 ⊠ cw ⊠ ccw	hanger
ROM L <u>170.0"</u> to <u>L 2.5"</u>	INCHES FROM W0 _ S1+1.5 to _ S2+.5	Sketch(s) attached
NGLE: 0 0 5 0 60	other <u>35</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG	🛛 yes 🗌 No
repared By: Winfred Leeper Winke	Level: II Date: 03/02/2010 Shee	t <u>4 5</u>
eviewed By: San A Mors	Date: Authorized Inspector:	Juan 4-1-10
V	$\mathcal{O}$	/

- --- - ---- --



## **Determination of Percent Coverage for UT Examinations - Vessels**

Site/Unit:	nit: McGuire / 1		Procedure:	NDE-3630	Outage No.:	M1-20				
Summary No.:	M1.C1.3	0.0005	Procedure Rev.:	1	Report No.: UT-			}		
Workscope:	ISI		Work Order No.:	01859545	Page:	5	of	5		
<u>0 deg P</u>	lanar									
Scan		% Length X		me of length / 100 =	%	total fo	r 0 deg	I		
<u>45 deg</u>										
Scan	1	% Length X	% volu	me of length / 100 =	%	total fo	r Scain	1		
Scan	2	% Length X	% volu	me of length / 100 =	%	total fo	r Scan	2		
Scan	3	% Length X	% volu	me of length / 100 =	%	total fo	r Scan	3		
Scan	4	%Leng#nX	% volu	me of length / 100 =	%	total fo	r Scan	4		
Add	l totals and divid	e by # scans =		or 45 deg						
Other d	leg 35°	_								
Scan	1 44.290	% Length X	100.000 % volu	ime of length / 100 = _	<b>44.290</b> %	total fo	r Scan	1		
Scan	2 44.290	% Length X	100.000 % volu	ime of length $/ 100 = $	<u>44.290</u> %	total fo	r Scan	2		
Scan	3 44.290	% Length X	100.000 % volu	ime of length / 100 =	<b>44.290</b> %	total fo	r Scan	3		
Scan	4 44.290	% Lengen X	100.000 % volu	me of length / 100 = _	<b>44.290</b> %	total fo	r Scan	4		
Add	l totals and divid	e by#scams =	44.290% total f	or <u>35°</u> deg						

#### Percent complete coverage

Add totals for each angle and scan required and divide by # of angles to determine;

#### 44.290 % Total for complete exam

#### Note:

Supplemental coverage may be achieved by use of other angles / methods. When used, the coverage for volume not obtained with angles as noted above shall be calculated and added to the total to provide the percent total for the complete examination.

Site Field Supervisor:

Date: 0.3/17/2010 Aund K3

ATTACHMENT PAGE 24 OF

Attachment B

Weld Examination Data

ATTACHMENT B page 1 of 94



-----

## **UT Vessel Examination**

Summary No:       M2.83.110.0003       Procedure Rev:       4       Report No:       UT-09-097         Workscope:       ISI       Work Order No.:       91845833       Page:       1       0       1         bode:       1998/2000 A       Cat./Item:       B-D/B3.110       Location:	Si	e/Unit:	McGuire /	2			Proc	edure:	NDE-820		,	Outage No.:	M2-19	
Workscope       ISI       Work Order No.:       01845833       Page:       1       1         bode:       1998/2000 A       Cat/ltem:       B-D/B3.110       Location:	Summa	ry No.:	M2.E	B3.110.0003			Procedure	Procedure Rev.: 4				Report No.:	UT-09-097	
code:       1998/2000 A       Cat./Item:       B-D/B3.110       Location:         vrawing No.:       MCM 2201.01-15       Description:       NOZZLE to HEAD         joomponent ID:       PZR-13       Size/Length:       N/A       Thickness/Diameter:       2.35 / 15.000         imitations:       Yes       Start Time:       1340       Finish Time:       2.35 / 15.000         Examination Surface:       Inside       Outside @       Surface Condition:       As Manufactured         Examination Surface:       Inside       Outside @       Surface Condition:       As Manufactured         Examination Surface:       Inside       Outside @       Surface Condition:       As Manufactured         Examination Surface:       9.2.3       Wo Location:       Centerline of Weld       Couplant:       ULTRAGEL II       Batch No.:       08125         Temp. Tool Mfg:       Fluxe       Serial No.:       OCQUA33090       Surface Temp.:       B4       'F         Cal. Report No:       CAL-09-259,260,261,262,263,264 & 265       Angle Used       0       45       451       60       601       35         Scaning db       6.45       451       60       601       35       53       64.6       44       50         Indicat	Work	scope:		151			Work Order No.:		01845833		Page: 1		of	1
NCM       2201.01-15       Description:       NOZZLE to HEAD         vstern ID:       NC       NC       Size/Length:       N/A       Thickness/Diameter:       2.35 / 15.000         imitations:       Yes       Start Time:       1340       Finish Time:       2.35 / 15.000         imitations:       Yes       Start Time:       1340       Finish Time:       1549         Examination Surface:       Inside       Outside @       Surface Condition:       As Manufactured         Examination Surface:       9.2.3       Wo Location:       Centerline of Weid       Couplant:       ULTRAGEL II       Batch No.:       08125         Temp. Tool Mfg:       Fluxte       Serial No.:       OCQUA33090       Surface Temp.:       84       'F         Cal. Report No.:       CAL-09-259,260,261,262,263,264 & 265       Angle Used       0       45       451       60       601       35         Scanning db       64.5       45       64       64       66       607       35       64 & 265       CGW Ø       CGW Ø       CGW Ø         Comments:       606       607       35       32 & 64 & 64       64       66       64       66       64       64       66       64       66       66 <td>code:</td> <td></td> <td>1998/2000</td> <td>A</td> <td></td> <td>Cat./Item:</td> <td>B-D/B3.110</td> <td>D</td> <td>Location:</td> <td></td> <td></td> <td>· · ·</td> <td></td> <td></td>	code:		1998/2000	A		Cat./Item:	B-D/B3.110	D	Location:			· · ·		
NC       NC         component ID:       2PZR-13       Size/Length:       N/A       Thickness/Diameter:       2.35 / 15.000         imitations:       Yes       Start Time:       1340       Finish Time:       1549         Examination Surface:       Inside       Outside       Surface Condition:       As Manufactured         Lo Location:       9.2.3       Wo Location:       Centerline of Weld       Couplant:       ULTRAGEL II       Batch No.:       08125         Temp. Tool Mig.:       Fluke       Serial No.:       OCQUA33090       Surface Temp:       84       "F         Cal. Report No:       CAL-09-259,260, 261, 262, 263, 264 & 265       Angle Used       0       45       45T       60       60T       35         Scanning dB       40.1       53       53       86.6       64       44       Indication(s):       Yes       No Ø       Scan Coverage:       Upstream Ø       Downstream Ø       CW Ø       CCW Ø         Comments:       60RL scanning db - 82.5       90/07/2009       Scan Coverage       Date       Yes       Signature       Date         Percent Of Coverage Obtained > 90%:       No       Reviewed Previous Data:       Yes       Signature       Date       Signature       Date       Si	rawing No.;		MCM	2201.01-1	5		Description: NO	ZZLE to F	IEAD					<del></del>
Size/Length: N/A Thickness/Diameter: 2.35 / 15.000         Imitiations:       Yes       Start Time:       1340       Finish Time:       1549         Examination Surface:       Inside I       Outside IV       Surface Condition: As Manufactured       Imitiations:       1549         Examination Surface:       Inside IV       Outside IV       Surface Condition:       As Manufactured       Imitiations:       06125         Examination Surface:       Inside IV       Surface Condition:       As Manufactured       Outside IV       06125         Lo Location:       9.2.3       Wo Location:       Centerline of Weid       Couplant:       ULTRAGEL II       Batch No.:       06125         Temp. Tool Mig:       Fluke       Serial No.:       OCQUA33090       Surface Temp.:       84       'F         Cal. Report No.:       CAL-09-259,260, 261, 262, 263, 264 & 265       Angle       Angle       40.1       53       53       e6.6       64.5         Indication(s):       Yes       No IV       Scan Coverage:       Upstream IV       Downstream IV       CW IV       CCW IV       COW IV       COW IV       COW IV       COW IV       CW IV       CW IV       COW IV       CW IV       COW IV       CW IV       CW IV       CW IV       CW IV <td< td=""><td>ystem ID:</td><td>NC</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	ystem ID:	NC												
Imitations: Yes Start Time: 1340 Finish Time: 1549   Examination Surface: Inside	component ID:	2PZR-1	13						Size/Length:	N/A	Thic	kness/Diameter:	2.35 / 15	.000
Examination Surface:       Inside       Outside       Q       Surface Condition:       As Manufactured         Lo Location:       9.2.3       Wo Location:       Centerline of Weld       Couplant:       ULTRAGEL II       Batch No.:       08125         Temp. Tool Mfg:       Fluke       Serial No.:       OCQUA33090       Surface Temp:       84       "F         Cal. Report No.:	imitations:	Yes		· · · · · · · · · · · · · · · · · · ·			<u></u>		Sta	t Time:	1340	Finish Time:	1549	)
Lo Location:       9.2.3       Wo Location:       Centerline of Weld       Couplant:       ULTRAGEL II       Batch No.:       08125         Temp. Tool Mig.:       Fluke       Serial No.:       OCQUA33090       Surface Temp.:       84       °F         Cal. Report No.:       CAL-09-259,260, 261, 262, 263, 264 & 265         Angle Used       0       45       457       60       607       35         Scanning dB       40.1       53       53       86.6       64.4         Indication(s):       Yes       No.       Scan Coverage:       Upstream @       Downstream @       CW @       CCW @         Comments:       6081 scanning db - 82.5       Jake Ross Level II       Made       09/07/2009       Percent Of Coverage Obtained > 90%:       No       Reviewed Previous Data:       Yes         Percent Of Coverage Obtained > 90%:       No       Reviewed Previous Data:       Yes       Signature       Date       Date       Signature       Date       0-1-04       Date       Signature       Date       Made       0-1-04       Date       Signature       Date       Made       Made <td< td=""><td>Examination S</td><td>urface:</td><td>Inside</td><td></td><td>utside 🖌</td><td></td><td>Surface Condition</td><td>on: <u>As Ma</u></td><td>nufactured</td><td></td><td></td><td></td><td></td><td></td></td<>	Examination S	urface:	Inside		utside 🖌		Surface Condition	on: <u>As Ma</u>	nufactured					
Temp. Tool Mfg:       Fluke       Serial No.:       OCQUA33090       Surface Temp.:       84       °F         Cal. Report No.:       CAL-09-259,260, 261, 262, 263, 264 & 265         Angle Used       0       45       45T       60       60T       35         Scanning dB       40.1       53       53       66.6       64         Indication(s):       Yes       No       Scan Coverage:       Upstream       Downstream       CW       CCW         Comments:       60RL scanning db - 82.5       Jake Ross Level II       Mph       09/07/2009         Results:       Accept       Reject II       Info       Percent Of Coverage Obtained > 90%:       No       Reviewed Previous Data:       Yes         xaminer       Level II-N       Signature       Date       Signature       Date         saminer       Level II-N       Signature       Date       Signature       Date         and       Mffred C.       Winfred C.       Winfred C.       Signature       Date       Signature       Date         answiner       Level II-N       Signature       Date       Signature       Date       Signature       Date       Signature       Date       Signature       Date       Signature       D	Lo Location:		9.2.3		Wol	ocation:	Centerline of We	<u>ld</u>	Couplant:	ULTRAGE	EL. II	Batch No.: _	0812	5
CAL-09-259,260, 261, 262, 263, 264 & 265         Angle Used       0       45       457       60       607       35         Scanning dB       40.1       53       53       66.6       64         Indication(s):       Yes       No Ø       Scan Coverage:       Upstream Ø       Downstream Ø       CW Ø       CCW Ø         Comments:       60RL scanning db - 82.5       Jake Ross Level II       Ø       Ø       Ø       Ø         Besults:       Accept C       Reject Ø       Info C       Percent Of Coverage Obtained > 90%:       No       Reviewed Previous Data:       Yes         xaminer       Level JI-N       Stanature       9/7/2009       Jate       Signature       Date         staminer       Level JI-N       Signature       9/7/2009       Jate       Signature       Date         sterent       9/7/2009       Jate       Signature       Date       And Mars       Signature       Date         attered       JI-N       Signature       9/7/2009       Jate       Signature       Date         ther       Level JI-N       Signature       9/7/2009       Jate       Signature       Date         signature       9/7/2009       Jate       Signatu	Temp. Tool M	g.:	Flu	ke	Se	rial No.:	OCQUA33090		Surface Temp.:	84	°F			
Angle Used 0 45 45T 60 60T 35   Scanning dB 40.1 53 53 46.6 64   Indication(s): Yes No Ø Scan Coverage: Upstream Ø Downstream Ø CW Ø   Comments:   60RL scanning db - 82.5   Jake Ross Level II   Øberent Of Coverage Obtained > 90%:   No   Reviewed Previous Data:   Yes   Results: Accept © Reviewed Previous Data: Yes Xaminer Level II-N Signature Signature Date 9/7/2009 Kaminer Level II-N Signature Ølex Date 9/7/2009 Signature Date Signature Date 9/7/2009 Kaminer Level II-N Signature Date 9/7/2009 And March Signature Date 9/7/2009 And March Curve Signature Date 9/7/2009 And March Curve Curve Signature Date Signature Date Signature Date Output Signature Date Signature Output Signature Date Signature Output Signature Date Output Signature Signature Output Signature Signature Output Sign	Cal. Report No	).:				CAL-09-25	59,260, 261, 262, 263, 2	264 & 265						
Scanning dB       40.1       53       53       66.6       64.4         Indication(s):       Yes       No Ø       Scan Coverage:       Upstream Ø       Downstream Ø       CW Ø       CCW Ø         Comments:       50RL scanning db - 82.5       09/07/2009       09/07/2009         Results:       Accept       Reject Ø       Info	Angle Used	0	45 4	45T 60	60T	35								
Indication(s):       Yes       No       Scan Coverage:       Upstream       Downstream       CW       CCW       CW         Comments:       60RL scanning db - 82.5       9/07/2009       9/07/2009         Results:       Accept       Reject       Info	Scanning dB	40.1	53	53 \$6.6	66.6	64								
Comments: 60RL scanning db - 82.5 Jake Ross Level II Juny 09/07/2009 Results: Accept Reject I Info Percent Of Coverage Obtained > 90%: <u>No</u> Reviewed Previous Data: <u>Yes</u> xaminer Level II-N Stopature Date Reviewerf Amy Signature Date eeper, Winfred C. Using Keegen 9/7/2009 xaminer Level II-N Signature Date Site Review Signature Date ean, Steven Hur Signature Date 9/7/2009 ther Level II-N Signature Date Otto Signature Date ean, Steven Signature Date 9/7/2009 His II, Kenneth R. Signature Date Otto ANII Review AF Marcan 10 - 4 - 04	Indication(s):	Yes [		2			Scan Coverage: Upst	ream 🖌	Downstream 🗹	CW 🗹	ccw			
60RL scanning db - 82.5 Jake Ross Level II     09/07/2009       Results: Accept Reject Info       Percent Of Coverage Obtained > 90%:     No     Reviewed Previous Data:     Yes       xaminer     Level H-N     Signature     Date       eeper, Winfred C.     Winfred C.     Winfred C.     Signature     Date       yaminer     Level H-N     Signature     Date     Signature     Date       ean, Steven     Miler     9/7/2009     Jam Mars     Signature     Date       ean, Steven     Miler     9/7/2009     Jam Mars     Signature     Date       ither     Level JI-N     Signature     Date     ANII Review     Signature     Date       IIIs II, Kenneth R.     Winfred R.     9/7/2009     Miler     ANII Review     Signature     Date	Comments:									•				
Results:       Accept       Reject       Info         Percent Of Coverage Obtained > 90%:       No       Reviewed Previous Data:       Yes         xaminer       Level H-N       Signature       Date       Reviewerl       Amage Mark       Signature       Date         xaminer       Level H-N       Signature       Date       Reviewerl       Amage Mark       Signature       Date         xaminer       Level H-N       Signature       Date       Signature       Date       Signature       Date         xaminer       Level H-N       Signature       Date       Site Review       Signature       Date         xaminer       Level JI-N       Signature       Date       Site Review       Signature       Date         ther       Level JI-N       Signature       Date       ANII Review       Signature       Date         IIs II, Kenneth R.       Kenneth R.       Signature       Date       9/7/2009       ATHOR       ATHOR       Co- 4 - 04	60RL scannir Jake Ross Li	ig db - 8 evel II (	2.5 John fr	~~~			09/07/2009							
Percent Of Coverage Obtained > 90%:       No       Reviewed Previous Data:       Yes         xaminer       Level H-N       Signature       Date       Reviewerl       Signature       Date         eeper, Winfred C.       Winfred C.       Winfred C.       Signature       Date       9/7/2009       Jam Morr       ID-1-04         xaminer       Level H-N       Signature       Date       Site Review       Signature       Date         ean, Steven       Hurder       Date       Site Review       Signature       Date         ther       Level H-N       Signature       Date       ANII Review       Signature       Date         tils II, Kenneth R.       Winferd M.       Signature       9/7/2009       ANII Review       ATAWAR       O-4-01	Results:	Acci	ept 🔲	Reject 🔽	Inf	• []								
xaminer       Level II-N       Stonature       Date       Reviewerf       Signature       Date         eeper, Winfred C.       Winfred C.       Winfred C.       9/7/2009       Jam Morr       10-1-04         xaminer       Level II-N       Signature       Date       Site Review       Signature       Date         ean, Steven       Mile       9/7/2009       Date       Signature       Date         ther       Level II-N       Signature       Date       ANII Review       Signature       Date         Ilis II, Kenneth R.       Signature       9/7/2009       Date       ATH Review       ATH Review       ATH Review       ATH Review       Date	Percent Of Co	verage (	Obtained >	90%:	No		Reviewed Previous	Data:	Yes	•				
eeper, Winfred C.       User C.       User C.       Image: Construct of the second o	xaminer L	evel H-	N	111-1	Stonatur	₽	Date R	eviewer	1 m		Signa	ature		Date
ither Level JI-N Signature Date Site Review V Signature Date Ither Level JI-N Signature Date ANII Review J Signature Date Ilis II, Kenneth R. Signature J J7/2009 IIIs II, Kenneth R. J J J J J J J J J J J J J J J J J J	eeper, Winfre	d C.	l	Derpla	<u>L. Ke</u>	igen	9/7/2009		an Alle	202			10-1-00	(
ther Level II-N Signature Date ANII Review AFAStan 10-4-09 Date IIIs II, Kenneth R. 9/7/2009	xaminer L ean, Steven	evel <u>H</u> .	N	Aler	Signatur	6	Date Si 9/7/2009	te Review	"	n	Signa	ature		Uate
Ilis II, Kenneth R. Kenneth & 9/7/2009 Ht Avan 10-7-01	ther L	evel jį.	N	1/al	Signatur	a):_	Date Al	NII Review	1-	. /	Signa	ature	EP/	Date
	llis II, Kenne	h R.		Rent	K.E	<u> </u>	9/7/2009		HF	<u>150</u>		10 - 7 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 7 - 10 - 10		]

## Pressurizer Safety/Relief Nozzle to Head % of Coverage

## Item No. : M2.B3.110.0003

Weld No.: 2PZR-13

## Weld Coverage

<u>Scan</u>	Angle	<u>% Coverage Obtained</u>		
<b>S</b> 1	45°	95.13		
<b>S</b> 1	60°	93		
S2	35°	45.89		
S2	45°	34.65		
CW	35°	100		
CW	45°	100		
CCW	35°	100		
CCW	45°	<u>100</u>		
	Total	668.67		
6	68.67 ÷8 =	<u>83.6</u>	% Coverage	25
Base Mate	rial Coverage			
<b>S</b> 1	35°,45°&60°	78.01		
CW & CC	W 35°,45°&60°	63.1		
	Total	141.11		
1	41.11 ÷2 =	70.555	% Coverage	
<u>0° Scan Co</u>	overage =	<u>81.95</u>	% Coverage	R. 4. 17. 09

## Aggregate Coverage = Weld + Base Material + $0^{\circ} \div 3$

=

<u>78.7</u>

<u>% Coverage</u>

Inspector / Date : \_\_\_\_\_\_ avil ( - \_\_\_\_\_ / 9/24/09

Page ] of 12

ATTACHMENT

				ATTACHNEN
DI	KE POWER COMPA	ANY		<del>****</del> >-#+-
	SI LIMITATION REPOR	RT		
Component/Weld ID: 2PZR - 13 Item No: M2.B3.110.0003		remarks:		
NO SCAN	SURFACE BEAM I	DIRECTION	Nozzle configuration	
LIMITED SCAN		2 🗌 cw 🗌 ccw		
FROM L N/A to L N/A	INCHES FROM WO +0.	1" to Beyond		
ANGLE: 0 1 45 🛛 60	other <u>35</u> FROM <u>0</u>	DEG to 360 DEG		
NO SCAN	SURFACE BEAM [	DIRECTION	Nozzle configuration	
LIMITED SCAN		2 🗌 cw 🗌 ccw 🛛		
FROM L N/A to L N/A	INCHES FROM W0 +0.5"	to <u>Beyond</u>	<b></b>	-
ANGLE: 0 0 45 8 60	other FROM 0	DEG to <u>360</u> DEG		
NO SCAN	SURFACE BEAM (	DIRECTION	Nozzle configuration	
LIMITED SCAN	1 2 2 1 2	2 🗌 cw 🗌 ccw		
FROM L N/A to L N/A	INCHES FROM W00.2"	to <u>Beyond</u>		
ANGLE: 🗌 0 🗌 45 🖾 60	other FROM 0	DEG to <u>360</u> DEG		
NO SCAN	SURFACE BEAM [	DIRECTION	Nozzle configuration	
LIMITED SCAN	□ 1 ⊠ 2 ⊠ 1 □ :	2 🗌 cw 🗌 ccw 🛛		
FROM L to L	INCHES FROM W0 -0.6"	to Beyond	Sketch(s) attache	d
4 ANGLE: □ 0 ⊠ 5 □ 60	other 35 FROM 0	DEG to 360 DEG	🛛 yes	🗌 No
Prepared By: Steve Dean Aller	Level: II Date: 09	/09/09 Sheet	of	
Reviewed By: San Mor	Date: Aut	horized Inspector: AFL	Date	4-09
$\mathcal{V}(\cdot)$			<i>k</i>	

N	r Source and	ATTACHNENT B		
DU	KE ENERGY COMPANY	PAGE 7 UN 7		
ISI LIMITATION REPORT				
Summary #: _2PZR-13	Component ID <u>M2.B3.110.0003</u>	remarks:		
🖾 NO SCAN	SURFACE BEAM DIRECTION	Nozzle Configuration		
LIMITED SCAN	□ 1 ⊠ 2 □ 1 □ 2 ⊠ cw ⊠ ccw			
FROM L <u>N/A</u> to L <u>N/A</u>	INCHES FROM W0 1.2 to Beyond			
ANGLE: 🗌 0 🖾 45 🖾 60	other 35 FROM 0 DEG to 360 DEG			
🛛 NO SCAN	SURFACE BEAM DIRECTION	Nozzle Configuration		
LIMITED SCAN	□ 1 ⊠ 2 □ 1 □ 2 ⊠ cw ⊠ ccw			
FROM L <u>N/A</u> to L <u>N/A</u>	INCHES FROM WO 1.5 to Beyond			
ANGLE: 🛛 0 🗌 45 🔲 60	other FROM 0 DEG to 360 DEG			
NO SCAN	SURFACE BEAM DIRECTION	· · · · · · · · · · · · · · · · · · ·		
LIMITED SCAN	1     2     1     2     cw     ccw			
FROM L to L	INCHES FROM W0 to			
ANGLE: 0 45 60	other FROM DEG to DEG			
NO SCAN	SURFACE BEAM DIRECTION			
LIMITED SCAN	□ 1 □ 2 □ 1 □ 2 □ cw □ ccw	· · · · · · · · · · · · · · · · · · ·		
FROM L to L	INCHES FROM W0 to	Sketch(s) attached		
ANGLE: 0 0 45 60	other FROM DEG to DEG	Vyes No on		
Prepared By: Steve Dean Alura	Level: II Date: 9/09/09 Shee	t <u>3</u> of <u>12</u>		
Reviewed By: Day Mon Date: Authorized Inspector: AFfician 10-1-09				
Υ	$\mathcal{O}^{\ast}$			

# Pressurizer Safety / Reliet Nozzle to Head Total Area Weld & Base Material

Item No.: M2.B3.110.0003

ATTACHMENT B

PAGE 5 OF 94

Weld No.: 2PZR-13

Total Weld Area = 3.29 sq. in.

Total Area of Base Material = 3.59 + 3.87 = 7.46 sq. in.



## ATTACHMENT B PAGE 6 OF 94

## Pressurizer Safety / Reliet Nozzle to Head

Weld Material Coverage - Axial Scans

Item No. : M2.B3.110.0003

Weld No.: 2PZR-13

100% Coverage 35°, 45°, 60° Scans CW, CCW from Surface 1

Total Weld Coverage 45° from Surface  $1 = 3.13 / 3.29 \times 100 = 95.13\%$ 

Total Weld Coverage 60° from Surface  $1 = 3.06 / 3.29 \times 100 = 93.0\%$ 



# <u>Pressurizer Safety / Relier Nozzle to Head</u> Weld Coverage - Axial & Circumferential Scans

Item No. : M2.B3.110.0003

ATTACHMENT B PAGE 7 OF 94

100% Coverage 35°, 45°, & 60° Scans CW, CCW, from Surface 2

Weld No. : 2PZR-13

Total Weld Coverage 35° from Surface  $2 = 1.51 / 3.29 \times 100 = 45.89\%$ 

Total Weld Coverage 45° from Surface  $2 = 1.14 / 3.29 \times 100 = 34.65\%$ 



# Pressurizer Safety / Reliet Nozzle to Head

• • • •

# Weld Material Coverage - 60° RLAxial Scan

Item No.: M2.B3.110.0003

ATTACHMENT B PAGE 8 OF 94

Weld No.: 2PZR-13




Weld Coverage - 60° RLAxial Scan

Item No. : M2.B3.110.0003

Weld No.: 2PZR-13



### **Base Material Coverage - Axial Scans**

Item No. : M2.B3.110.0003

Weld No.: 2PZR-13

Total Area of Base Material = 3.59 + 2.23 = 5.82 sq. in.

Total Base Material Scan Coverage =  $5.82 / 7.46 \times 100 = 78.01 \%$ 



;

### Base Material Coverage - 60° RLAxial Scan

Item No. : M2.B3.110.0003

Weld No.: 2PZR-13



# <u>Pressurizer Safety / Reliet Nozzle to Head</u> Base Material Coverage - Circumferential Scans

ATTACHMENT B PAGE 12 OF 94

Item No. : M2.B3.110.0003

Total Area of Base Material = 3.59 + 1.12 = 4.71 sq. in. Total Base Material Scan Coverage =  $4.71 / 7.46 \times 100 = 63.1$  % Weld No. : 2PZR-13



0° Scan Coverage

Item No. : M2.B3.110.0003

ATTACHMENT B PAGE 13 OF 94

Weld No.: 2PZR-13

 $0^{\circ}$  Scan Total Area = 8.81 sq. in.

Total 0° Scan Coverage =  $8.81 / 10.75 \times 100 = 81.95 \%$ 



	ə 97.				UT Vessel Exa	minatio	n			A 1 P A	ITACHMENT Ibe 14 OF 9	B 14
Sit	e/Unit: M	cGuire /	2		Proc	edure:	NDE-820			Outage No.:	M2-19	
Summa	ry No.:	M2.B3.11	0.0004		Procedure	Rev.:	4			Report No.:	UT-09-099	
Works	scope:	ISI	ي الم الم		Work Orde	er No.:	01845833	}		Page: <u>1</u>	of	
Code:	19	98/2000 A		Cat./It	em: <b>B-D/B3.11</b> 0	)	Location:		······································			-
Drawing No.:		MCM 220	1.01-015	·····	Description: NO	ZZLE to HE	AD					-
System ID: Component ID:	NC 2PZR-14		<u></u>				Size/Length:	N/A	Thi	ckness/Diameter:	2.35 / 15.000	-
Limitations:	Yes						Sta	rt Time:	1410	Finish Time:	1542	-
Examination S	urface:	Inside 📋	Outsi	de 🗹	Surface Condition	on: <u>As Man</u> i	ufactured					
Lo Location:		9.2.3		Wo Locatio	n: <u>Centerline of We</u>	<u>Id</u> C	Couplant:	ULTRAG	ELII	Batch No.:	08125	
Temp. Tool Mi	g.:	Fluke		Serial No		s	urface Temp.:	84	•F			
Cal. Report No				CAL-0	-259, 260, 261, 262, 263, 2	<u>164 &amp; 265</u>						
Angle Used	0	45 45T	60	60T 35								
Scanning dB	40.1	53 53	66.6	66.6 64								
Indication(s):	Yes 🗌	No 🔽			Scan Coverage: Upstr	eam 🔽 🛛 D	)ownstream 🔽	cw 🗹	CCN			
Comments:												
60RL scannin Jake Ross Le	g db - 82 ! evel II	in he	, in the second s		09/07/2009							
Results:	Accept	C Reje	ct 🔽	Info 🔲								
Percent Of Cov	verage Obt	ained > 90%:	<u></u>	No	<b>Reviewed Previous</b>	Data:	Yes	-				-
Examiner L	evel II-N		Sig	mature	Date R	sviewen,	1: 00		Sign	ature	Dai	te
Leeper, Winfred	d C.	_ We	file	. been	9/7/2009	<u> </u>	m/ 11/0	~>>			10-1-09	
Examiner Li Dean, Steven	evei II-N	T	Hor L	pature	Date Sit 9/7/2009	le Review		5. 2.	Sign	ature.	Dal	te (
Other Li Ellis II, Kenneti	evel II-N h R.	Kan	Sig-	inature	2 Date At 9/7/2009	III Review	IF L	ेन	Sign	ature Inc.4.	09 Dat	te
				<b>A.</b>	**************************************	$\overline{\langle \rangle}$	1					ليسب

·---- ·

#### Pressurizer Safety/Relief Nozzle to Head % of Coverage

#### Item No. : M2.B3.110.0004

Weld No.: 2PZR-14

#### Weld Coverage

<u>Scan</u>	Angle	% Coverage Obtained		
<b>S</b> 1	45°	95.13		
<b>S</b> 1	60°	93		
S2	35°	45.89		
S2	45°	34.65		
CW	35°	100		
CW	45°	100		
CCW	35°	100		
CCW	45°	<u>100</u>		
	Total	668.67		
668	8.67 ÷8 =	<u>83.6</u>	% Coverage	•
<u>Base Materi</u>	ial Coverage			×
<b>S</b> 1	35°,45°&60°	78.01		
CW & CCW	/ 35°,45°&60°	<u>63.1</u>		
	Total	141.11		
14	$1.11 \div 2 =$	<u>70.555</u>	% Coverage	
<u>0° Scan Cov</u>	erage =	<u>81.95</u>	% Coverage	

#### Aggregate Coverage = Weld + Base Material + $0^{\circ} \div 3$

Aggregate Coverage = vv elu + Dasc Interest =  $\frac{78.7}{\frac{\% \text{ Coverage}}{\frac{1}{200}}}$   $\frac{\%}{\frac{1}{200}}$ Inspector / Date :  $\int \frac{1}{\sqrt{200}} \frac{\sqrt{200}}{\sqrt{200}}$  Page  $\int \frac{1}{\sqrt{200}}$   $\int \frac{1}{\sqrt{200}}$ 

.

ATTACHMENT B PAGE 16 OF 94

DU	KE POWER COMPANY									
ISI LIMITATION REPORT										
Component/Weld ID: _2PZR - 14	remarks:									
🛛 NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration								
LIMITED SCAN	⊠ 1 □ 2 □ 1 ⊠ 2 □ cw □ ccw									
FROM L N/A to L N/A	INCHES FROM W0 +0.1" to Beyond									
ANGLE: 0 45 🛛 60	other <u>35</u> FROM <u>0</u> DEG to <u>360</u> DEG									
NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration								
LIMITED SCAN	[ 1 □ 2 □ 1 □ 2 □ cw □ ccw ]									
FROM L N/A to L N/A	INCHES FROM W0 +0.5" to Beyond									
ANGLE: 0 🛛 45 🗌 60	other FROM 0 DEG to 360 DEG									
NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration								
LIMITED SCAN	□ 1									
FROM L N/A to L N/A	INCHES FROM W0 _0.2" to Beyond									
ANGLE: 0 45 860	other FROM 0 DEG to 360 DEG									
NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration								
LIMITED SCAN	□ 1									
FROM L to L	INCHES FROM W00.6 to _Beyond	Sketch(s) attached								
ANGLE: □ 0 ⊠ 5 □ 60	other 35 FROM DEG to DEG	🖾 yes 🗌 No								
Prepared By: Steve Dean Allor 2	Level: II Date: 09/09/09 Shee	it _2_ of _12								
Reviewed By: Day A Nor	Date: Authorized Inspector:	Jub 10-4-09								
γ (*	$\mathcal{A}^{-1}$	1								

- - - -

#### ATTACHMENT B PAGE 17 OF 94

- --

DU	KE POWER COMPANY										
ISI LIMITATION REPORT											
Component/Weld ID: 2PZR - 14	remarks:										
🖾 NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration									
LIMITED SCAN	□ 1       1   □ 2                  C c w										
FROM L N/A to L N/A	INCHES FROM W0 1.2 to Beyond										
ANGLE: 0 🛛 45 🖾 60	other <u>35</u> FROM <u>0</u> DEG to <u>360</u> DEG										
🛛 NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration									
LIMITED SCAN	□ 1										
FROM L N/A to L N/A	INCHES FROM W0 1.5 to Beyond										
ANGLE: 🛛 0 🗌 45 🗍 60	other FROM 0 DEG to 360 DEG										
NO SCAN	SURFACE BEAM DIRECTION										
LIMITED SCAN	1 2 1 2 cw ccw										
FROM L to L	INCHES FROM WO to										
ANGLE: 0 0 45 60	other FROM DEG to DEG										
NO SCAN	SURFACE BEAM DIRECTION										
LIMITED SCAN	□ 1 □ 2 □ 1 □ 2 □ cw □ ccw										
FROM L to L	INCHES FROM W0 to	Sketch(s) attached									
ANGLE: 0 5 60	other FROM DEG to DEG	🛛 yes 🗌 No									
Prepared By: Steve Dean	Level: II Date: 09/09/09 Shee	t <u>3</u> of <u>12</u>									
Reviewed By: Jay / Mor.	Date: Authorized Inspector:	Juan 10-4-09									
V	$\mathcal{O}$	(									

ATTACHMENT B PAGE 19 OF

### <u>Pressurizer Safety / Reliet Nozzle to Head</u> Total Area Weld & Base Material

Item No. : M2.B3.110.0004

Weld No.: 2PZR-14

Total Weld Area = 3.29 sq. in.

×., .

Total Area of Base Material = 3.59 + 3.87 = 7.46 sq. in.



#### ATTACHMENT B PAGE 19 OF 94

### Pressurizer Safety / Reliet Nozzle to Head

### Weld Material Coverage - Axial Scans

Item No.: M2.B3.110.0004

Weld No. : 2PZR-14

100% Coverage 35°, 45°, 60° Scans CW, CCW from Surface 1

Total Weld Coverage 45° from Surface  $1 = 3.13 / 3.29 \times 100 = 95.13\%$ 

Total Weld Coverage 60° from Surface  $1 = 3.06 / 3.29 \times 100 = 93.0\%$ 



ATTACHMENT B PAGE 20 DF 94

## <u>Pressurizer Safety / Reliet Nozzle to Head</u> Weld Coverage - Axial & Circumferential Scans

Item No.: M2.B3.110.0004

Weld No.: 2PZR-14

100% Coverage 35°, 45°, & 60° Scans CW, CCW, from Surface 2

Total Weld Coverage 35° from Surface  $2 = 1.51 / 3.29 \times 100 = 45.89\%$ 

Total Weld Coverage 45° from Surface  $2 = 1.14 / 3.29 \times 100 = 34.65\%$ 





×. ,

### Weld Material Coverage - 60° RLAxial Scan

Item No.: M2.B3.110.0004

Weld No.: 2PZR-14





·...

### Weld Coverage - 60° RLAxial Scan

Item No.: M2.B3.110.0004

Weld No. : 2PZR-14



### **Base Material Coverage - Axial Scans**

Item No.: M2.B3.110.0004

Weld No. : 2PZR-14

Total Area of Base Material = 3.59 + 2.23 = 5.82 sq. in.

Total Base Material Scan Coverage = 5.82 / 7.46 x 100 = 78.01 %



ATTACHMENT B PAGE 24 OF 94

Base Material Coverage - 60° RLAxial Scan

Item No.: M2.B3.110.0004

Weld No.: 2PZR-14



ATTACHMENT  $\mathcal B$ PAGE 25 OF 94

### **Base Material Coverage - Circumferential Scans**

Item No.: M2.B3.110.0004

Weld No. : 2PZR-14

Total Area of Base Material = 3.59 + 1.12 = 4.71 sq. in.

Total Base Material Scan Coverage =  $4.71 / 7.46 \times 100 = 63.1 \%$ 



ATTACHMENT B PADE 26 OF 94

0° Scan Coverage

Item No.: M2.B3.110.0004

Weld No.: 2PZR-14

 $0^{\circ}$  Scan Total Area = 8.81 sq. in.

Total 0° Scan Coverage =  $8.81 / 10.75 \times 100 = 81.95 \%$ 



ATTACHMENT	B
PAGE 27 0F9	4

\_\_\_\_\_

### UT Vessel Examination

Puke Energy.

Site/Unit: Summary No.: Workscope:		McGuire	• /	2			Procedure	e:	NDE-820			Outage No.:	M2-1	9
		: M2.B3.110.0005				Procedu		lure Rev.: 4				Report No.:	UT-09-	098
			151				Work Order No	.:	01845833			Page:	of	
Code:		1998/20	00 A			Cat./Item	: <b>B-D/B3.110</b>		Location:					
Drawing No.:		A	ACM 220	1.01-01	5		Description: NOZZL	E to H	EAD					<del></del>
System ID:	NC					*****************	·······						······································	<del></del>
Component ID:	2PZR-	15							Size/Length:	N/A	Th	ickness/Diameter	2.35	/ 15.000
Limitations:	Yes								Star	t Time:	1354	Finish Time	:1	541
Examination S	urface:	Insie	te 📋	Out	side 🗹		Surface Condition:	As Ma	nufactured			· · · · · · · · · · · · · · · · · · ·		
Lo Location:		9.2	2.3		Wo Lo	cation:	Centerline of Weld		Couplant:	ULTRAG	<u>EL II</u>	Batch No.:	08	125
Temp. Tool Mf	g.:	F	luke		Ser	ial No.:	OCQUA33090	. <u> </u>	Surface Temp.:	84	• <b>F</b>			
Cal. Report No	.:				C	AL-09-2	59, 260, 261, 262, 263, 264	<u>8 265</u>			·			
Angle Used	0	45	45T	60	60T	35								
Scanning dB	40.1	53	53	66.6	66.6	64								
Indication(s):	Yes [	No					Scan Coverage: Upstream		Downstream 🗹	cw 🗹	CCV	V 🗹		
Comments:														
60RL scannin Jake Ross Le	ig db - 8 evel II	12.5 JAN-	h	-			09/07/2009							
Results:	Acc	ept 📋	Rejec	ct 🖌	Info									
Percent Of Co	verage (	Obtained	<b>&gt; 90%</b> :		No		Reviewed Previous Data	a:	Yes	-				
Examiner L	evel II.	N	11.	- / 5	ignature	·	Date Review	wer	Sla 1	M	Sigr	nature		Date
Examiner L	evel jj.	-N	<u> </u>	11 S	ionature	er-	Date_Site_R	eview	sanf	11 07-	Sigr	nature	70	Date 0
Dean, Steven		- 		flie.	len		9/7/2009		· · ·					()
Other L Ellis II, Kennet	evel  ]. h R.	·N	Kan	A	ignature	B	Date ANII R 9/7/2009	leview	AF1	won	Sigr	hature	1-0	) P Date
<u></u>							an a		0	<u> </u>		· · · · · · · · · · · · · · · · · · ·		

#### Pressurizer Safety/Relief Nozzle to Head % of Coverage

#### Item No. : M2.B3.110.0005

Weld No.: 2PZR-15

#### Weld Coverage

<u>Scan</u>	Angle	% Coverage Obtained	
<b>S</b> 1	45°	95.13	
<b>S</b> 1	60°	93	
S2	35°	45.89	
S2	45°	34.65	
CW	35°	100	
CW	45°	100	
CCW	35°	100	
CCW	45°	<u>100</u>	
	Total	668.67	
668.0	57 ÷8 =	<u>83.6</u>	% Coverage
Base Materia	Coverage		
S1	35°,45°&60°	78.01	
CW & CCW	35°,45°&60°	<u>63.1</u>	
	Total	141.11	
141.	11 ÷2 =	<u>70.555</u>	% Coverage
<u>0° Scan Cove</u>	rage =	<u>81.95</u>	% Coverage

#### Aggregate Coverage = Weld + Base Material + $0^{\circ} \div 3$

<u>78.7</u> Inspector / Date : Davidk 3 II / 09/24/09

Page  $\perp$  of  $\perp$ 

% Coverage

ATTACHMENT

### ATTACHMENT B PAGE 29 OF 94

\_ ---

DU	KE POWER COMPANY										
ISI LIMITATION REPORT											
Component/Weld ID: 2PZR - 15	remarks:										
NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration									
LIMITED SCAN	⊠ 1 □ 2 □ 1 ⊠ 2 □ cw □ ccw										
FROM L N/A to L N/A	INCHES FROM W0 +0.1 to Beyond										
ANGLE: 0 45 8 60	other <u>35</u> FROM <u>0</u> DEG to <u>360</u> DEG										
NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration									
LIMITED SCAN	⊠ 1 □ 2 □ 1 ⊠ 2 □ cw □ ccw										
FROM L N/A to L N/A	INCHES FROM W0 +0.5 to Beyond										
ANGLE: 0 🛛 45 🗍 60	other FROM 0 DEG to 360 DEG										
NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration									
LIMITED SCAN	□ 1										
FROM L <u>N/A</u> to L <u>N/A</u>	INCHES FROM W0 +0.2 to Beyond										
ANGLE: 0 45 8 60	other FROM 0 DEG to 360 DEG										
🛛 NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration									
LIMITED SCAN	□ 1										
FROM L to L	INCHES FROM W0 _0.6 to Beyond	Sketch(s) attached									
4 ANGLE: □ 0 ⊠ 5 □ 60	other 35 FROM 0 DEG to 360 DEG	🛛 yes 🗌 No									
Prepared By: Steve Dean	Level: II Date: 09/09/200/ Shee	st_2_ of _/2									
Reviewed By: Janual Mar	Date: Authorized Inspector:	Wan 10 - 4 - 59									
7/	0										

		PAGE 30 0F 9
DU	KE POWER COMPANY	
]	SI LIMITATION REPORT	
Component/Weld ID: 2PZR - 15	Item No: <u>M2.B3.110.0005</u>	remarks:
NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration
LIMITED SCAN	□ 1	
FROM L N/A to L N/A	INCHES FROM W0 1.2 to Beyond	
ANGLE: 🗍 0 🖾 45 🖾 60	other 35 FROM 0 DEG to 360 DEG	
NO SCAN	SURFACE BEAM DIRECTION	Nozzle configuration
LIMITED SCAN	□ 1   2   □ 1 □ 2   cw   ccw	
FROM L N/A to L N/A	INCHES FROM W0 1.5 to Beyond	
ANGLE: 🛛 0 🗌 45 🔲 60	other FROM 0 DEG to 360 DEG	
	SURFACE BEAM DIRECTION	
LIMITED SCAN	1 2 1 2 cw ccw	
FROM L to L	INCHES FROM W0 to	
ANGLE: 0 0 45 0 60	other FROM DEG to DEG	
	SURFACE BEAM DIRECTION	
LIMITED SCAN	□ 1 □ 2 □ 1 □ 2 □ cw □ ccw	
FROM L to L	INCHES FROM W0 to	Sketch(s) attached
4 ANGLE: 0 0 5 60	other FROM DEG to DEG	🛛 yes 🗌 No
Prepared By: Steve Dean	Level: II Date: 09/09/2009 Shee	at, <u>3</u> of <u>12</u>
Reviewed By: Man A Man	Date: Authorized Inspector	Wan 18-4-09
VI	A A	

\_ \_

ATTACHMENT B

----

ATTACHMENT B PAGE 31 OF 94

### Pressurizer Safety / Relief Nozzle to Head Total Area Weld & Base Material

Item No. : M2.B3.110.0005

Weld No. : 2PZR-15

Total Weld Area = 3.29 sq. in.

Total Area of Base Material = 3.59 + 3.87 = 7.46 sq. in.



ATTACHMENT B PAGE 320F 94

BA 12.0

### Pressurizer Safety / Reliet Nozzle to Head

### Weld Material Coverage - Axial Scans

Item No. : M2.B3.110.0005

Weld No.: 2PZR-15

100% Coverage 35°, 45°, 60° Scans CW, CCW from Surface 1

\*. .... ·

Total Weld Coverage 45° from Surface  $1 = 3.13 / 3.29 \times 100 = 95.13\%$ 

Total Weld Coverage 60° from Surface  $1 = 3.06 / 3.29 \times 100 = 93.0\%$ 





## <u>Pressurizer Safety / Reliet Nozzle to Head</u> Weld Coverage - Axial & Circumferential Scans

Item No.: M2.B3.110.0005

Weld No.: 2PZR-15

100% Coverage 35°, 45°, & 60° Scans CW, CCW, from Surface 2

Total Weld Coverage 35° from Surface  $2 = 1.51 / 3.29 \times 100 = 45.89\%$ 

Total Weld Coverage 45° from Surface  $2 = 1.14 / 3.29 \times 100 = 34.65\%$ 



ATTACHMENT B PAGE 34 OF 94

N .

### Weld Material Coverage - 60° RLAxial Scan

Item No. : M2.B3.110.0005

Weld No.: 2PZR-15





.

### Weld Coverage - 60° RLAxial Scan

Item No.: M2.B3.110.0005

Weld No. : 2PZR-15



ATTACHMENT B PAGE 36 OF 94

En 12.0

### Pressurizer Safety / Reliet Nozzle to Head

### **Base Material Coverage - Axial Scans**

Item No.: M2.B3.110.0005

Weld No. : 2PZR-15

Total Area of Base Material = 3.59 + 2.23 = 5.82 sq. in.

Total Base Material Scan Coverage =  $5.82 / 7.46 \times 100 = 78.01 \%$ 



ATTACHMENT B PADE 37 0F94

### Base Material Coverage - 60° RLAxial Scan

Item No.: M2.B3.110.0005

Weld No. : 2PZR-15





### **Base Material Coverage - Circumferential Scans**

Item No. : M2.B3.110.0005

Weld No. : 2PZR-15

Total Area of Base Material = 3.59 + 1.12 = 4.71 sq. in.

. . . . .

Total Base Material Scan Coverage =  $4.71 / 7.46 \times 100 = 63.1 \%$ 



0° Scan Coverage

Item No.: M2.B3.110.0005

Weld No. : 2PZR-15

 $0^{\circ}$  Scan Total Area = 8.81 sq. in.

Total 0° Scan Coverage =  $8.81 / 10.75 \times 100 = 81.95 \%$ 



ATTACHMENT B PAGE 3905 94

ATTACHMEN	i B
PAGE 40 0F	94



-

#### **UT Vessel Examination**

Summary N Workscop ode:	No.: M2.C1.30	.0006		Deservices Device						
Worksco ode:	pe: ISI			Procedure Rev.:	1		Report No.: Page:		UT-09-037	
ode:		······································		Work Order No.:	01845739				<u>1</u> of <u>4</u>	
	1998/2000 A	Ca	t./Item:	C-A/C1.30	Location:					
rawing No.:	MCM 120	1.06-025	Desc	ription: SHELL to	TUBESHEET				,,	
ystem ID: NS	S									
omponent ID: 2A	CSHX-SH-48				Size/Length:	N/A	Thickness/C	)iameter:	0.625/55	j.250
mitations: Ye	<u>)S</u>				Star	. Time:1	102 Fini	sh Time:	112!	5
Examination Surfa	ace: Inside 🗌	Outside 🖌	Surf	ace Condition: AS	GROUND					
Lo Location:	9.2.1	Wo Loc	ation: <u>Cente</u>	rline of Weld	Couplant:	ULTRAGEL	II Batc	h No.:	0812	5
Temp. Tool Mfg.:	Fluke	Seria	No.:OC	QUA33090	Surface Temp.:	80	,°F			
Cal. Report No.:			CAL-09-184,	CAL-09-185						
Angle Used	0 45 45T	60 601								
Scanning dB	• •									
ndication(s): Y	Yes 🗍 No 🔽		Scan Cover.	age: Upstream 🖌	Downstream 🗹	CW 🗹	ccw 🗹			
Commonte				-						
*Transducer 5" (	diamotor 45 5db: Tra	neducar 25" dian	ator 51 2 dh							
Transducer .5 c										
Results:	Accept C Reie	ct 🔽 Info. I		1						
Percent Of Covera	age Obtained > 90%:	<u>No</u>	Reviewe	ed Previous Data:	Yes	<u></u>		<u></u>		
xaminer Leve	el II-N	Signature		Date Reviewe	- 1 M		Signature			Date
eeper, Winfred C.	· U	Verteral.	egen 81	20/2009	an/ 11/on	L		9/30	109	
xaminer Leve uirhead, Barry A	el II-N Bare	Signature	8/	Date   Sile Revie 20/2009	w K /	л	Signature	/		Date
ther Leve	el N/A	Signature	∞	Date ANII Revi	èw //	EL	Signature	10-	4 5	Date
//A		<u></u>	<u></u>	<b>_</b>	¥	Tilde	10-11_	10-		1



#### **Determination of Percent Coverage for UT Examinations - Vessels**

Site/Unit:	McGuire /	2	Procedure:	NDE-3630	_ Outage No.: _	M2-19
Summary No.: M2.C1.30.0006		0.0006	Procedure Rev.:	· 1	Report No.:	UT-09-037
Workscope:	ISI	<u> </u>	Work Order No.:	01845739	Page:	-4-2 of 4
<u>0 deg P</u> Scan	lanar	% Length X	% vo	lume of length / 100 ⊐	. Tuz 9/21	B/09 total for 0 deg
<u>45 deg</u> Scan	123.400	% Length X	<u>100.000</u> % vo	Nume of length / $100 =$	23.400 %	total for Scan 1
Scan	2 23,400	% Length X	<u>100.000</u> %vc	sume of length / $100 =$	23.400 %	total for Scan 2
Scan	4	% Length X	<u>100.000</u> % vc	blume of length / 100 =	<u>23.400</u> %	total for Scan 4
Ade	d totals and divid	le by∦scans ⊐	<u>23.400</u> % tota	l for 45 deg		
<u>Other</u>	deg					
Scar	11	% Length X	% v	olume of length / 100 = _	%	total for Scan 1
Scar	12	% Length X		volume of length / 100 = _	%	total for Scan 2
Scar	n 3	% Length X	% v	rolume of length / 100 = _	<u> </u>	6 total for Scan 3
Scal	n 4	% Length X	% v	volume of length / 100 =	%	6 total for Scan 4
Ac	id totais and divi	de by # scans ≓	% tot	al for deg		

#### Percent complete coverage

Add totals for each angle and scan required and divide by # of angles to determine;

23.400 % Total for complete exam

#### Note:

Supplemental coverage may be achieved by use of other angles / methods. When used, the coverage for volume not obtained with angles as noted above shall be calculated and added to the total to provide the percent total for the complete examination.

Site Field Supervisor:

\_\_\_\_\_ Date: <u>4/28/09</u> David K

### ATTACHMENT B PAGE 42 OF 94

DUKE		
ISI		
Component/Weld ID: 2ACSHX-SH-48	Item No: <u>M2.C1.30.0006</u>	remarks:
🖾 NO SCAN S	SURFACE BEAM DIRECTION	
LIMITED SCAN	1 🛛 2 🖂 1 🖾 2 🖂 cw 🖾 ccw	These areas are not
FROM L _0-10" to L _0+10"	INCHES FROM W0 to S1+1.5 to	accessible to prep the
ANGLE: 🛛 0 🖾 45 🔲 60 oth	er FROM DEG to DEG	weld, due to weld supports
🛛 NO SCAN S	SURFACE BEAM DIRECTION	100% of weld examined
LIMITED SCAN	1 🛛 2 🖾 1 🖾 2 🖾 cw 🖾 ccw 🕚	in areas that were scanned.
FROM L 0+20" to L 0+65.5"	INCHES FROM W0 to S2+.5	
ANGLE: 🛛 0 🖾 45 🗔 60 oth	er FROM DEG to DEG	~
🛛 NO SCAN S	SURFACE BEAM DIRECTION	Total coverage = 24% 23.4% CK 2 9/28/09
LIMITED SCAN	1 🛛 2 🖾 1 🖾 2 🖾 cw 🖾 ccw	
FROM L <u>0+77.5"</u> to L <u>0+95.5"</u>	INCHES FROM W0 to	
ANGLE: 🛛 0 🗍 45 🗍 60 oth	er FROM DEG to DEG	
🛛 NO SCAN S	SURFACE BEAM DIRECTION	
LIMITED SCAN	$1 \boxtimes 2 \boxtimes 1 \boxtimes 2 \boxtimes cw \boxtimes ccw$	
FROM L 0.105.5" to L 0+155"	INCHES FROM W0 to S2+.5	Sketch(s) attached
ANGLE: ⊠ 0 ⊠ 5 □ 60, oth	er FROM DEG to DEG	🖾 yes 🗌 No
Prepared By: Winfred Leeper	Level: 11 Date: 08/20/09 Shee	t <u>3</u> of <u>4</u>
Reviewed By: JE Housen	Date: Authorized Inspector.	Date: 10-4-09
- / 0		•



....

....

Attachment  ${\cal B}$  page 44 of 94



### UT Pipe Welo Examination

------

Site/Unit: Mc Summary No.: Workscope:		McGuire /	2		Procedure:		PDI-UT-2	Outage No.:			M2-19		
		M2.R1.11	.0048		Procedure Rev.:	ure Rev.:	С	Report No.:			UT-09-091		
		ISI			Work Order No.:		01845833		Page: 1		1	of <u>8</u>	
Code:	199	8/2000 Addenda		Cat./Item:	R-A/R1.	.11	Location:						
Drawing No.:		MCFI-2	NC39		Description:	Pipe to Nozz	le						
System ID:	NC	····	······································							·····			
Component ID:	2NC2F	W39-1					Size/Length:	N/A	Thic	kness/Diame	ter: _0	.281 /	1.5/SS
Limitations:	See Lin	nitations Report					Sta	art Time:	1305	Finish Ti	ne:	13	25
Examination S	urface:	Inside 🔲	Outside 🖌		Surface Cond	dition: AS G	ROUND						
Lo Location:		9.1.1.4	Wo Lo	ocation:	Centerline of V	Weld	Couplant:	ULTRAG	<u>EL II</u>	Batch No.	:	081	25
Temp. Tool Mf	'g.:	D.A.S	Ser	ial No.:	MCNDE328	33	Surface Temp.:	80	°F				
Cal. Report No	<b>)</b> .:		CAL-09-249.	CAL-09-250	. & CAL-09-251								
Angle Used		45 45T	60 <b>38</b> T	70	· · · · · · · · · · · · · · · · · · ·								
Scanning dB		49.8	64.0	60.9									
Indication(s):	Yes [			Scar	i n Coverage: Ur	ostream 🔽	Downstream	cw 🔽	ccw				
Comments:	· · · · L								-				
EC 08-01 08-	04 09-03	7											
100001,004	04, 0 <i>3-</i> 0/												
Rosults: A	ccent [	Beingt [7]	info [	ł									
Resourt Of Cau				) 	Deviewed Bravies								
		btained > 90%.				is Dala.	Tes						
Examiner L	evel II-	N /	Signature	/	Date	Reviewer	1 200	0,11	Sign	ature			Date
Tucker, David	K.	<u>hlaud</u>	Creb-		9/21/2009		mest. Mc	Gall	<u>***</u>		·		-29-09 Date
Koster, Rickey	ever II-		Signature		9/21/2009	Sile Review	V T		Jyn	10:0			Vale
Other L	evel N/	IA / T	Signature		Date	ANII Review	· 1	El.	Signa	ature 10) - P	2-0	59	Date
			<del></del>			L	X	- que	<u>in a</u>	<u> </u>	<u> </u>	<u> </u>	
-- ---- -

----- .

#### **Circumferential Scan Impingement Angle Calculation**

(ID/OD ratio must equal or exceed 45°)

OD = 1.90"

ID = 1.90" - (2 X .281") = 1.338"

ID/OD = 1.338"/1.90" = .704 = Sin 44.77°

Calculation to determine needed impingement angle

 $ID/OD \times \sin 60^\circ = .704 \times \sin 60^\circ = .610 = 37.6^\circ$ 

Use 38° for circ. scan

Inspector / Date \_\_\_\_\_\_ K. 3\_\_\_\_ 1\_9/29/09

Page 2 of 8

## ATTACHMENT B PAGE 44 OF 94

DU	JKE POWE	R COMPANY										
ISI LIMITATION REPORT												
Component/Weld ID: 2NC2FW-39-1 Item No: M2.R1.11.0048 remarks:												
🛛 NO SCAN	SURFACE	BEAM DIRECTION	Nozzle Configuration									
LIMITED SCAN	🛛 1 🗌 2	🗌 1 🛛 2 🗍 cw 🗌 ccw										
FROM L N/A to L N/A	INCHES F	ROM WO .5" to Beyond										
ANGLE: 0 🛛 45 🗌 60	other	FROM 0 DEG to 360 DEG										
🖾 NO SCAN	SURFACE	BEAM DIRECTION	Nozzle Configuration									
LIMITED SCAN	🗌 1 🛛 2	🛛 1 🗌 2 🗋 cw 🗋 ccw										
FROM L N/A to L N/A	INCHES FR	OM W04" to _Beyond_										
ANGLE: 0 🛛 45 🗌 60	other <u>70</u>	FROM 0 DEG to 360 DEG										
🖾 NO SCAN	SURFACE	BEAM DIRECTION	Nozzle Configuration									
LIMITED SCAN	1 2	🗌 1 🗌 2 🛛 cw 🖾 ccw										
FROM L N/A to L N/A	INCHES FR	OM W0 .35 to Beyond										
ANGLE: 0 45 60	other <u>38</u>	FROM 0 DEG to 360 DEG										
NO SCAN	SURFACE	BEAM DIRECTION										
LIMITED SCAN	1 2	🗌 1 🗌 2 🗌 cw 🗌 ccw										
FROM L to L		OM <b>W0</b> to	Sketch(s) attached									
ANGLE: 0 5 60	other	FROM DEG to DEG	🛛 yes 🗌 No									
Prepared By: David Tucker	Kuch Level: 1	Date: 09/21/09 Shee	et <u>3</u> of <u>8</u>									
Reviewed By: Jan 1 Mor	Date:	11-23-09 Authorized Inspector	Date: -7-09									
- V(		$\int d^{-1}$										

C Being	K.	Supplemental Report	ATTACHMENT B PAGE $\frac{47}{7}$ OF $\frac{94}{7}$ Report No.: UT-09-091 Page: 4 of 8
Summary No.: Examiner: Examiner: Other:	M2.R1.11.0048 Tucker, David K. Koster, Rickey	Level: II-N Reviewer: James J. McGuller Level: II-N Site Review: Level: N/A ANII Review: J. Fluxe	Date: <u>9-29-09</u> Date: Date:/ <u>0-7-0</u> 9
Comments: A	Area of Interest - S1 Nozzle	ABCD: .09 in * 1.45	$in = ./3in^2$
Sketch or Photo: 2	:\UT\IDDEAL\ProfileLine2.jpg		
			<ul> <li>*</li> <li>*</li> <li>*</li> </ul>
	SI NOZZLE		2 Pipe
		SCALE : FUL	

C. Delas	Supplemental Report	AIIACHMENT B PAGE 48 OF 94 Report No.: <u>UT-09-091</u> Page: <u>5 of 8</u>
Summary No.: M2.R1.11.0048 Examiner: Tucker, David K. Examiner: Koster, Rickey Other: N/A	Level: II-N Reviewer: James J. M.C. Level: II-N Site Review: Level: N/A ANII Review: AF	<u>Culler</u> Date: <u>9-29-09</u> Date: <u>Cura</u> Date: <u>/0-7-</u> 09
Comments: S1 Axial Scan Sketch or Photo: Z:\UT\IDDEAL\ProfileLine2.jpg	No C	overnae: DTo
	-+ -+ 45 ++	52 Prive
	Scale : Full	

~--

······

i.



C. Dides Energy.	Supplemental Report	ATTACHMENT B PAGE 50 DF 94 Report No.: <u>UT-09-091</u> Page: <u>7 of 8</u>
Summary No.: M2.R1.11.0048 Examiner: Tucker, David K. Examiner: Koster, Rickey Other: N/A	Level: II-N Reviewer: fame J. Mc ( Level: <u>II-N</u> Site Review: Level: <u>N/A</u> ANII Review: Ffuran	Date: <u>9-29-09</u> Date: <u></u> Date: <u></u> Date: <u>/0-9-09</u>
Comments: CW, CCW Circ. Scan		
Sketch or Photo; Z:\UT\IDDEAL\ProfileLine2.jpg	ABCD: .09IN .036IN <sup>2</sup> /1.3IN	$x . 40 \text{ in } = .036 \text{ in }^2$ $z (100) = \underline{27.7\%}$
		"
SI Nozzus		52 Pipe
	SCALE : FULL	



#### **Determination of Percent Coverage for UT Examinations - Pipe**

Site/Unit:	McGuire /	ire / 2		dure:	PDI-UT-2	Outage No	o.:	M2-19			
Summary No.:	M2.R1.1	1.0048	Procedure	Rev.:	C	Report No.:		UT-09-0	91		
Workscope: <u>45 deg</u> Scan 1	IS		Work Orde	r No.:	01845833	Pag	)e: <u>8</u>	of	8		
45 deg											
Scan 1	1 100.000	% Length X _	0.000	% volu	me of length / 100 = _	0.000	_% tota	l for Sca	an 1		
Scan 2	2 100.000	% Length X	50.000	% volu	me of length / 100 =	50.000	_% tota	al for Sc	an 2		
Scan (	3	% Length X		% volu	me of length / 100 = _		_% tot	al for Sc	an 3		
Scan 4	4	% Length X		% volu	me of length / 100 =		% tot	al for Sc	an 4		

Other deg - \_\_\_\_38 \_\_\_ (to be used for supplemental scans)

The data to be listed below is for coverage that was not obtained with the 45 deg scans.

Scan 1		% Length X		% volume of length / 100 =		% total for Scan 1
Scan 2		% Length X		% volume of length / 100 =		% total for Scan 2
Scan 3	100.000	% Length X	27.700	% volume of length / 100 =	27.700	% total for Scan 3
Scan 4	100.000	% Length X	27.700	% volume of length / 100 =	27.700	% total for Scan 4

#### Percent complete coverage

Add totals for each scan required and divide by # of scans to determine;

26.350 % Total for complete exam

Navid K. 3 \_\_\_\_ Date: 9/29/09 Site Field Supervisor:

# ATTACHMENT B PAGE 52 OF 94



#### UT Pipe Wela Examination

S	Site/Unit:	McGuire /	2	Proce	edure: PDI-UT-2	<u> </u>	Outage No.:	M2-19	
Summ	nary No.:	M2.R1.11	.0049	Procedure	Rev.: C		Report No.:	UT-09-090	
Wo	rkscope:	ISI		Work Orde	er No.: 01845833	<u>}</u>	Page:	1_ of _2	<u>:</u>
Code:	199	8/2000 Addenda	Cat./Ite	em: <b>R-A/R1.11</b>	Location:				
Drawing No.:		MCFI-2	NC40	Description: Pip	e to Nozzle		·····		
System ID:	NC						•.	•••	
Component ID:	: 2NC2F	W40-11			Size/Length:	n/a	Thickness/Diameter	er: 0.281/1.5/	SS
Limitations:	See lim	itation sheet			Sta	rt Time: 08	17 Finish Tim	e: 0852	
Examination	Surface:	Inside	Outside 🖌	Surface Condition	on: AS GROUND				
Lo Location:		9.2.3	Wo Location:	Centerline of We	ld Couplant:		Batch No.:	08125	
Temp. Tool M	fg.:	Fluke	Serial No.:	OCQUA33090	Surface Temp.:	<b>78</b> °ľ	F		
Cal. Report N	ю.:		CAL-09-246, CAL-0	9-247, CAL-09-248					
Angle Used	0	45 45T	60 70 38						
Scanning dB		41.9	60.5 37.	5					
Indication(s):	Yes [			Scan Coverage: Upstr	ream 🗹 🛛 Downstream 🗌	cw 🗹	ccw 🗹		
Comments	-								
EC 08-01. 08		7							
	-941 02-0	-							
Doculte	Accept [		loto 🗖						
								<u> </u>	
Percent Of Co	werage O	btained > 90%:	<u>No</u>	Reviewed Previous I	Data: Yes	*			والمتعادية الأفاقية الم
Examiner	Level II.	N /	Signature	Date R	eviewer		Signature		Date
Ellis II, Kenne	th R.		FR. Elle I	9/23/2009	Dang ,	Inh	4	9-30.	09
Examiner	Level H-	N	Signature	Date Si	ite Review		Signature		Date (
Other	lovei M		Signature	9/23/2009 Data At			Signature		Date
N/A	Level N		ວາຊາກລະບາອ	Dale A	13	FA Ja	- 10-4	1-09	
		- <u></u>	en e	ern – Statermann för et det spært n <sub>en st</sub> ökand fölf <sup>ark</sup> stære <b>A</b> nne föl	Ì			•	

#### Item No. M2.R1.11.0049



1

ŀ



Scale : 1" = 1"

## % Coverage Calculations

Total	=	150/4	= 37.5 % Aggregate Coverage
S4 = CCW	=	<u>50</u> %	(100% of the length x 50% of the volume)
S3 = CW	=	50%	(100% of the length x 50% of the volume)
S2 = Pipe =		50%	(100% of the length x 50% of the volume)
S1 = Nozzle	Ξ	0%	(0%  of the length x  0%  of the volume)

Inspector / Date: Kunst R. Ells. 9.23-09

Page <u>7</u> of <u>7</u>



- -

I



## UT Pipe Weld Examination

S	Site/Unit: 1	McGuire /	2		Pro	ocedure:	PDI-UT-2		O	utage No.:		M2-19		
Summary No.:		M2.R1.11	.0050		Procedu	ire Rev.:	С		R	eport No.:	U	1-09-057		
Wo	rkscope:	ISI				Work Order No.:		1		Page:	1	1 of 1		
Code:	1998/	/2000 Addenda		Cat./item:	R-A/R1.	11	Location:						<u></u>	
Drawing No.:		MCFI-2	NC43		Description:	Pipe to Nozz	le							
System ID:	NC						······	· · · ·						
Component ID:	2NC2FW	/43-1			·····		Size/Length:	N/A	Thick	ness/Diame	ter: _0	.281/1.5	0/55	
imitations:	Yes - Se	e attached limit	ation report		·	······	Sta	rt Time:	1013	Finish Ti	me:	1115		
Examination S	Surface:	Inside 🔲	Outside 🖌		Surface Cond	tition: AS G	ROUND							
Lo Location:		9.2.3	WoLo	cation:	Centerline of V	Neld	Couplant:	ULTRAG		Batch No.	:	08125	<u>\$</u>	
Temp. Tool M	lfg.:	Fluke	Seri	al No.:	OCQUA3309	90	Surface Temp.:	75	°F					
Cal. Report N	<b>o</b> .:		CAL-09-229	CAL-09-23	1. CAL-09-232									
Angle Used		45 45T	60 70	38	1		<u>,, ., ., ., ., ., ., ., ., ., ., ., .</u> ,							
Scanning dB		53.2	66.5	44.3										
Indication(s):	Yes []			Sca	n Coverage: Up	ostream 🗹	Downstream 🗌	cw 🗹	CCW	2				
Comments:														
FC 08-01, 08-	-04, 09-02													
,														
Recults: J	Accent [7]	Reject 🖬	Into 🗔											
Parcent Of Ca			ane		Poviewed Proview	n Data:						w		
				r 	Vevieweu Fieviou		165	•						
Examiner Ellis II, Kenne	Level II-N eth R.		Signature	26.	Date 9/17/2009	Reviewer	any 1.	Nel	Signati	ure	9.	23.0	Date 9	
Examiner	Level II-N	M.	Signature		Date	Site Review	0		Signati	91C			Date	
Other	J. Level Ma	meg	Signature		9/17/2009 Date	ANII Review	, 1	$= \theta$	Signat	lite o			Date	
N/A			4. S. Marine C.		2,010		IP	- Jac	Tan	- 9-	$\underline{\lambda}'$	1-0	7	
N/A		-					_JF	- Jac	Tan	<u></u>	<u> </u>	<u> </u>	- 9-21-0	





ATTACHMENT B PAGE 55 OF 94

Item No. M2.R1.11.0050

Scale : 1" = 1"

#### % Coverage Calculations

Total	=	150/4	= <u>37.5 %</u> Aggregate Coverage
S4 = CCW	=	<u>50</u> %	(100% of the length x 50% of the volume)
S3 = CW	=	50%	(100% of the length x 50% of the volume)
S2 = Pipe =		50%	(100% of the length x 50% of the volume)
S1 = Nozzle	=	0%	(0%  of the length x  0%  of the volume)

ano J. M. Guller 10-1-09 Inspector / Date:

Page  $\int of \underline{\lambda}$ 

11111

ATTACHMENT B PAGE 56 OF 94

DL	KE POWER COMPANY											
]	ISI LIMITATION REPORT											
Component/Weld ID: 2NC2FW4	Component/Weid ID: 2NC2FW43-1 Item No: M2.R1.11.0050 remarks:											
	SURFACE BEAM DIRECTION	Nozzle Configuration										
LIMITED SCAN	□ 1											
FROM L <u>N/A</u> to L <u>N/A</u>	INCHES FROM WO _CL to5											
ANGLE: 🗌 0 🖾 45 🔲 60	other FROM 0 DEG to 360 DEG											
NO SCAN	SURFACE BEAM DIRECTION	Nozzle Configuration										
	⊠ 1 □ 2 □ 1 ⊠ 2 □ cw □ ccw											
FROM L <u>N/A</u> to L <u>N/A</u>	INCHES FROM W0 CL to Beyond											
ANGLE: 🗌 0 🛛 45 🗌 60	other <u>70</u> FROM <u>0</u> DEG to <u>360</u> DEG	·										
NO SCAN	SURFACE BEAM DIRECTION	Nozzle Configuration										
	⊠ 1 □ 2 □ 1 □ 2 ⊠ cw ⊠ ccw											
FROM L <u>N/A</u> to L <u>N/A</u>	INCHES FROM W0 CL to Beyond											
ANGLE: 0 0 45 60	other <u>38</u> FROM <u>0</u> DEG to <u>360</u> DEG											
NO SCAN	SURFACE BEAM DIRECTION											
LIMITED SCAN												
FROM L to L	INCHES FROM W0 to	Sketch(s) attached										
4 ANGLE: □ 0 □ 5 □ 60	other FROM DEG to DEG	🛛 yes 🗌 No										
Prepared By: Kenneth Ellis	Level: 11 Date: 09/17/09 A Shee	<u>2</u> of <u>2</u>										
Reviewed By: ME Housen	Date: 9-17-09 Authorized Inspector:	Date: 10-7-09										

-----

-----

ATTACHMENT B PAGE 57 OF 94

----

-----

#### UT Base Metal Lamination

-----

-----



	Site	/Unit: <u>McGu</u>	lire /	2					Procedu	ıre:	ND	E-640			Outage No.:		N/A	
	Summary	No.:	M2.R1.	11.1566				Proce	edure Re	ev.:		5			Report No.:	BOP	UT-0	9-140
	Works	оре:	B	OP				Work	Order N	lo.:	018	45739			Page:	1	of	2
Code:		1998/2	2000A			Cat./It	em:	R-/	A/R1.11		Loca	ition:						
Drawing	No.:		MCFI	2NV180			D	escription	REDL	JCER TO	PIPE			-				
System	ID: N	v																
Compor	nent ID: 2	NV2FW180-	1								Size/Len	gth:	N/A	Th	ickness/Diam	eter:	.344	12"/SS
Limitatio	ons: N	one										Start	Time:	0913	Finish T	ime: _	0	918
Examir	ation Surf	ace: Ins	ide 🗌	Out	tside 🔽		S	urface Co	ndition:	AS GRO	DUND							
Lo Loc	ation:		1.1.1		. Wo Lo	cation:	Ce	nterilne c	of Weld	(	Couplant:		ULTRAGE	L 11	Batch No	.:	08	125
Temp.	Tool Mfg.:		Fluke		Ser	ial No.:		DCQUA3	3090	8	Surface Te	mp.: _	97	_•F	Scann	ning dE	:	52.4
Cal. Re	port No.:	<u>,</u>				CAL-09	-199											
Ind.		Amplitude %	Amplitude Position One			Position			n Max	Max Position Two			on Two			Remarl	s	
No.	Back Wal	Full Screen	L1	W1	W2	MP LM W1 W2 MP L2 W1 V		W2	MP			-						
NRI																		
										1								
				1	<u> </u>		1	<b> </b>		1								
ļ — —				1														 1
Comm	ents: N/	<u> </u>	<u> </u>	<u>I</u>	l	l	1	I	1	[			<u> </u>		I			i
Results	5:	Accept 🔽	Rej	ect 📋	Info													
Percen	t Of Cove	age Obtaine	d > 90%		Yes		Revie	ewed Pre	vious Da	ta:	NO	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						·····
Examin Dean, S	er Le Steven	vei II-N		Hu.	Signatur	e		Da 8/26/20	ate Rev 09 Bar	iewer ry Muirhe	ead /	Su	m	Sig	nature			Dat 9/14/200
Examin	er Le	vel II-N			Signatur	e 111 -		Da	ate Site	Review			0	Sig	gnature	e		Dat
Ellis II	, Kenneth	R.		lent	11	Vý-L	<u> </u>	8/26/20	09 N/A	<u>ا</u>		•————	_/_					
Other N/A	Le	vel N/A			Signatur	e		Da	ate ANI Jero	l Review o <mark>me Swa</mark>	in d	E	fura	Się	gnature			Dat 9/24/200
											Ū	-7						

ATTACHMENT B PAGE 58 OF 94



#### **Supplemental Report**

C Enerm	,	F	Report No.:	BOP-UT-09-140					
	7 •					Page:	_2	of <u>2</u>	
Summary No.:	M2.R1.11.1566								
Examiner:	Dean, Steven Allor Le	Level: II-N	Reviewer:	Banz	Marke		Date:	9-14-09	,
Examiner:	Ellis II, Kenneth R. Kennet R. H.	Level: II-N	Site Review:		<u> </u>		Date:		_
Other:	N/A	Level: N/A	ANII Review:		ABLie-		Date:	<u>7-25-E</u>	27
				$\mathcal{O}$	/ 1				

Comments: WELD: 2FW180-1

Sketch or Photo: Z:\UT\IDDEAL\ProfileLine2.jpg



ATTACHMENT B PAGE 59 OF 94



#### **UT Pipe Weld Examination**

8	Site/Unit:	McGui	re /	2			Pro	ocedure:	PDI-UT-	2		Outage No.:	M2-	19	
Summ	nary No.:		M2.R1.11	.1566			Procedu	ure Rev.:	<u> </u>			Report No.:	UT-09	-042	
Wo	rkscope:		151				Work O	rder No.:	0184573	9		Page:	<b>1</b> of	<u>\$5</u>	eh
Code:		1998/20	00 A			Cat./Item		11	Location:						
Drawing No.:			MCFI-2	NV180			Description:	Reducer to F	lpe			<u></u>			
System ID:	NV												<u></u>		
Component ID:	2NV2F	W180-1						<u></u>	Size/Length: _	N/A	Th	ickness/Diameto	er: _0.34	4/2.0/SS	
Limitations:	None								St	art Time:	1447	Finish Tim	1e:	1500	
Examination	Surface:	Insi	de 📋	Out	side 🗹		Surface Cond	dition: AS G	ROUND						- 
Lo Location:		9.1	.1.1		Wo Loo	ation:	Centerline of 1	Weld	Couplant:	ULTRAG	EL II	Batch No.:	(	08125	
Temp. Tool N	//fg.:	1	Fluke		Seria	al No.:	OCQUA330	90	Surface Temp.	. 97	°F				
Cal. Report N	lo.:				CAL-0	9-197 & C	AL-09-198								
Angle Used	0	45	45T	60	70	1	7								
Scanning dB		41.4	41.4		63.5		-								
Indication(s):	Yes [		• 🖌			Sc	an Coverage: U	ostream 🗹	Downstream 🖌	cw 💽		N 🔽			
Comments:															
Limited Exa	m														
													,		
Results:	Accept [	] R	eject 🔽		Info 📋		Initial Section XI	Exam							
Percent Of Co	overage C	Obtained	> 90%:		No		Reviewed Previou	us Data:	N/A	<u> </u>					
Examiner	Level 1	-N		H.	Signature		Date	Reviewer	, all.	/ /	Sig	natúre	9.	D:	ite
Examiner	Level n	-N		- YANA	Signature		Date	Site Review	ing Ma	<u>A</u>	Sig	nature		Da	ite
Ellis II, Kenne	eth R.	••	R	hand	RU	C:	8/26/2009		A_	1					- Ex. 9
Other N/A	Level N	I/A		ę	lignature		Date	ANII Review		FL.	Sig	$-9-\overline{\alpha}$	25-	07	te 11.18.0
				,					Ő	7					

 $\begin{array}{c} \text{Report No: UT-09-042} \\ \text{Page} \underline{\textbf{Z}} \text{ of } \underline{\textbf{5}} \end{array}$ 

Summary No: M2.R1.11.1566

Pipe OD = 2.5"

Circumference = 7.85"

Area examined axially on Surface 1 = 0%

Area examined axially on Surface 2 = 50%

Area examined circumferentially CW = 75%

Area examined circumferentially CCW = 75%

Total area covered =  $(0 + 50 + 75 + 75) \div 4 = 50.0\%$ 

James J. Mc Gille Ett James J. Mc Ardle III Level: III UT

Examiner:

Date: 12/21/2009

# ATTACHMENT B PAGE 61 DF 94

	UKE POWE	R COMPANY	· · · · · · · · · · · · · · · · · · ·		
	ISI LIMITAT	ION REPORT			
Component/Weld ID: 2NV 2Fu	180-13 a. 24. 09 Iter	m No: <u>M2.R1.11.1566</u>		remarks:	
NO SCAN	SURFACE	BEAM DIRECTION		Reducer configuration	
LIMITED SCAN	⊠ 1 🗌 2	🗌 1 🖾 2 🗌 cw	🗌 ccw		
FROM L N/A to L N/A	INCHES F	FROM W03 to _E	Beyond	······································	
ANGLE: 0 🛛 45 🗌 60	other 70°	FROM <u>0°</u> DEG to <u>36</u>	0 DEG		
NO SCAN	SURFACE	BEAM DIRECTION			
LIMITED SCAN	1 2	🗌 1 🗌 2 🗌 cw	🗌 ccw		
FROM L to L	INCHES FF	ROM W0 to			
ANGLE: 0 0 45 0 60	other	FROM DEG to	DEG		
NO SCAN	SURFACE	BEAM DIRECTION		Reducer configuration	
LIMITED SCAN	🛛 1 🗌 2	🗌 1 🗌 2 🛛 cw	🖾 ccw		
FROM L N/A to L N/A	INCHES FF	ROM W03 to _E	Beyond		
ANGLE: 0 🛛 45 🗍 60	other	FROM DEG to	DEG		
	SURFACE	BEAM DIRECTION	······································		
LIMITED SCAN	1 2	🗌 1 🗌 2 🗌 cw	ccw		
FROM L to L	INCHES FF	ROM <b>W0</b> to		Sketch(s) attached	
ANGLE: 0 0 5 0 60	other	FROM DEG to	DEG	🛛 yes 🗌 N	Ø
Prepared By: Kenneth Ellis	Level:	II Date: 08/26/2009	Shee	1 3 of \$5 geh 9.25.09	
Reviewed By: Barry Mark	1 Date: 9-	Authorized Inspect	FA	wan 9-25-09	
-		C			

·-- . .

# ATTACHMENI B PAGE 62 OF 94

Duke Energy	Supplemental Report	Report No.: UT-09-042
Summary No.: M2.R1.11.1566		Page: 54 of 8 5 Solarson 9 9
Examiner: Dean, Steven	Level: II-N Reviewer: Ba	man Machel Date: 9-14.09
Examiner: Ellis II, Kenneth R.	Level: II-N Site Review:	Date:
Other: <u>N/A</u>	Level: N/A ANII Review:	fakaa Date: 9-25-0
Comments: S2 Axial		
		-5
Sketch of Photo: 21/17/100541.3Pmfilel.ine2.ing		
and an a poly, and induction of the start of	¢	``
	<i>h</i>	
	70°	×.
	45° 45°	
	le q	
	1 TILL B	-
	STILL B	- Arral Course Als F
DOSA AF-NTPH	55T	ARTAL COVERAGE
AREA OF INTRE	£3T	- AXTAL COVERAGE EFGH: 65in X.115in=.0748
AREA OF INTRE	EST	- ArTAL COVERAGE EFGH: 65inx.115in=.0748, 0748in <sup>2</sup> /1495in <sup>2</sup> /1001=50.
AREA OF INTRE ABCD: 1.3 in X.	EST 115 in = .1495 in 2	- ArTAL COVERAGE EFGH: 65inx.115in=.0748 .0748in <sup>2</sup> /.1495in <sup>2</sup> (100)=50.
AREA OF INTRE ABCD: 1.3 in X.	EST .115 in = .1495 in 2	- AXTAL COVERABE EFGH: 65in X.115in=.0748 .0748in <sup>2</sup> /.1495in <sup>2</sup> (100)=50.

-----

# ATTACHMENT B PAGE 63 DF 94

Duke Energy.	Supplemental Report	Report No.: UT-09-042
Summary No.: M2.R1.11.1566 Examiner: Dean, Steven Examiner: Ellis II, Kenneth F Other: N/A	Alter Level: II-N Reviewer: Barry M R. Kouthoff Level: II-N Site Review: Level: N/A ANII Review: AFL:	Page: <u>B5</u> of <u>B5</u> geh ScG.35.09 C1.25.09 Date: <u>9-14-09</u> Date: <u>9-25-09</u> Date: <u>9-25-09</u>
Comments: CW, CCW Coverag	ge	
Sketch or Photo: Z:\UT\IDDEAL\ProfileL	L1ne2.jpg	
	45° 45° A E C C C C C C C C C C C C C C C C C C	
COVERAGE	OBTAINED	
EFCD: . .1121 in <sup>2</sup> /	975" 115" 112/in 2 1.1495 in 2 (100)= 74.18% = 75.0%	
SI-RED	SCALE : FULL	SZ-PIPE

.



# UT Pipe Weld Examination



S	Site/Unit:	McGuire /	2	Procedure:	PDI-UT-2		Outage No.:		12-19	
Summ	ary No.:	M2.R1.11.17	30	Procedure Rev.:	C		Report No.:	UT	-09-055	
Wor	kscope:	151		Work Order No.:	01845833		Page:	_1	of <u>9</u>	
Code:	1998	/2000 Addenda	Cat./Ite	em: <b>R-A/R1.11</b>	Location:					
Drawing No.:		MCFI-2NC	2	Description: Nozzle to	Pipe					
System ID:	NC	·····								
Component ID:	2NC2FW	2-2			Size/Length:	<b>N/A</b> 7	hickness/Diam	eter:	1.406/14.	.0
Limitations:	YES - Se	e Limitation Sheet		······································	Star	t Time:1108	Finish T	ime:	1215	
Examination S	iurface:	Inside 🗌	Outside 🗹	Surface Condition: AS	GROUND					······································
Lo Location:		9.1.1.1	Wo Location:	Centerline of Weld	_ Couplant:	ULTRAGEL II	Batch No	.:	08125	
Temp. Tool Mi	g.:	FISHER	Serial No.:	MCNDE32768	_ Surface Temp.:	<u>74</u> °F				
Cal. Report No	).:		CAL-09-223 &	CAL-09-224						
Angle Used	0	45 45T 60								
Scanning dB		37.7 37.7 66.	4							
Indication(s):	Yes 🖌	No 🗍	:	Scan Coverage: Upstream 🗹	Downstream 🗹	cw 🗹 🛛 co	w 🗹			
Comments:										
FC 08-01, 08-0	04, 09-02 D <sup>MG</sup>	9-11-09 pmba-11-1	A							
Results: A	ccept 🙀	Reject	Info 🗌							
Percent Of Cov	erage Obt	ained > 90%:	No	Reviewed Previous Data:	Yes	- <u>1944</u>	·····			
Examiner L	evel II-N		Signature	Date Reviewer	>	Sig	nature	0		Date
Framiner	M.		Signature	9/11/2009	any /	Hehn Sin		7	. < 3 . 0	Y Deta
Coster, Rickey	9707 II-N	1/2	orginatule	9/11/2009	**	51 <u>5</u> A	Indiana			Dale
Olher L	evel	w p	Signature	Date ANII Revie	w /	F		7-5	27-1	Date
					A	i fans	<u> </u>	<u> </u>		╧╌╃╌┙

A	11	AC	HM	ËŇ	; ;	B
P	A 6 I	-6	5	0 F	91	ł

,

# **Ultrasonic Indication Report**

- -

	Sur V	Site/Unii nmary No. Vorkscope	t: <u>McC</u> .:	Guire M2	/ .R1.11.1 ISI	2 730		l Proce Wark	Procedur dure Rev Order No	re: /.: p.:	PD[- ( 0184	UT-2 C -5833	Outage No.:         M2-19           Report No.:         UT-09-055           Page:         2         of         9
Sea	arch Unit An Wo Locat Lo Locat	gle: ion: <u>We</u> ion:	45 & 6 eld Cent 9.1.1.	i0 erline 1	- - -			<ul> <li>Pi</li> <li>F</li> <li>O</li> <li>O</li> </ul>	ping We erritic Ve ther	lds ssels ≥	2"T		Wo Wmax Cr. W1 W2
MP RBF L Corr	Metal P R Remain Distanc ments: In	ath ing Back F e From Da adication i	Reflection atum recorder	n d is the f	Wr W1 W2 trailing s	nax [ c hear co	Distance Distance Distance mponen	From Wo From Wo From Wo t from th	o To S.U. o At o At ne 60° Ri	. At Maxir Of Of L.	num Re Max (Fo Max (Fo	sponse orward) orward)	DATUM Lo Lo Wi Wimax W2
Angle	Indication No.	% 10	V M	V lax	For	ward Of Max	Bac	kward Of Max	L1 OI	L Max	L2 Of	RBR Amp.	Remarks.
60°	1	78	.75**	мр 1.5*	N/A	MP N/A	W2 N/A	N/A	Max N/A	10.0" C, W.	Max N/A	N/A	Geometry - 360° intermittent
			·										
miner	Level avid M.	II-N	1.4.1	KI.	Signature	<u>)</u>		D 9/11/20	ate Revi 109	iewer Ba	m	M	Signature Date 9-23-09
ebel, C	Level	11-N 7	477	1	Signature	2		D 9/11/20	ate Site	Review	v		Signature Date

Contraction of the second seco	Supplementa Report	ATTACHMENT $B$ PAGE-66 OF 94 Report No.: UT-6 35 Page: 3 of 9
Summary No.: M2.R1.11.1730 Examiner: Griebel, David M. Examiner: Koster, Rickey Other:	Level: II-N Reviewer: <u>Barry Mice</u> Level: II-N Site Review: Level: ANII Review:	Date:         9-23-09           Date:
Comments: 60°RL - Trailing shear component	FZOW OBRINGER	PIPE

•

.

···· --

-----

1.14.0M

\_\_\_\_



#### Determination of Percent Coverage for UT Examinations - Pipe

Site/Unit:	McGuire /	2	Procedure:	PDI-UT-2	Outage No.:	M2-19
Summary No.:	M2.R1.11.	.1730	Procedure Rev.:	C	Report No.:	UT-09-055
Workscope:	ISI		Work Order No.:	01845833	Page:	4.8 of 9

<u>45 deg</u>

Scan 1	100.000	% Length X	50.000	% volume of length / 100 =	50.000	% total for Scan 1
Scan 2	100.000	% Length X	5.600	% volume of length / 100 =	5.600	% total for Scan 2
Scan 3	100.000	% Length X	100.000	% volume of length / 100 =	100.000	% total for Scan 3
Scan 4	100.000	% Length X	100.000	% volume of length / 100 =	100.000	% total for Scan 4

Add totals and divide by # scans = 63.900 % total for 45 deg

Other deg - (to be used for supplemental scans)

The data to be listed below is for coverage that was not obtained with the 45 deg scans.

Scan 1	% Length X	% volume of length / 100 =	% total for Scan 1
Scan 2	% Length X	% volume of length / 100 =	% total for Scan 2
Scan 3		% volume of length / 100 =	% total for Scan 3
Scan 4	% Length X	% volume of length / 100 =	% total for Scan 4

#### Percent complete coverage

Add totals for each scan required and divide by # of scans to determine;

63.900 % Total for complete exam

匝 David K. Z Site Field Supervisor:

Date: <u>9/22/09</u>

ATTACHMENT B

# ATTACHMENT B PAGE 68 OF 94

DUKE POWER COMPANY										
ISI LIMITATION REPORT										
Component/Weld ID: 2NC2FW2-2 Item No: M2.R1.11.1730 remarks:										
	SURFACE	BEAM DIRECTION	Limited scan on nozzle							
🖾 LIMITED SCAN	1 2 🛛	1 🗌 2 🗋 cw 🗋 ccw	side due to nozzle							
FROM L to L 360°		VO CL+1.0" to Beyond	configuration							
ANGLE: 0 🛛 45 🗌 60	other FRO	M DEG to DEG								
NO SCAN	SURFACE	BEAM DIRECTION	· · · · ·							
LIMITED SCAN	1 2 🛛	1 🗌 2 🗌 cw 🗌 ccw								
FROM L to L 560°		CL+1.0" to Beyond								
ANGLE: 🗌 0 🗍 45 🖾 60	other FRO	M DEG to DEG								
NO SCAN	SURFACE	BEAM DIRECTION								
LIMITED SCAN	□ 1 □ 2 □	1 🗌 2 🗌 cw 🔲 ccw								
FROM L to L		) to								
ANGLE: 0 0 45 60	other FRO	M DEG to DEG								
D NO SCAN	SURFACE	BEAM DIRECTION								
LIMITED SCAN	1 2	1 🗌 2 🗌 cw 🗌 ccw								
FROM L to L	INCHES FROM WO	) to	Sketch(s) attached							
ANGLE: 0 5 60	other FRO	M DEG to DEG	🛛 yes 🗌 No							
Prepared By: David Griebel	Level: II	Date: 09/11/09 Shee	et <u>5</u> of <u>9</u>							
Reviewed By: Bang	Date: 11-18-0	9 Authorized Inspector:	van 9-27-09							
	1	0-1	- (							



P. 12. 81





C. Bides Dennergy.	Supplement Report	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$
Summary No.: M2.R1.11.1730 Examiner: Griebel, David M. Contract of the second s	Level: II-N Reviewer: Barry Level: II-N Site Review: Level: ANII Review: F	Mahi Date: 9-23-09 Date: <u>Date:</u> Date: <u>9-27</u> -09
Comments: CW & CW 45° shear	0	
NOZZLE	FLOW	PIPE
	50° E -	<u>415°</u>

<u>\_52</u>

100% COVERACIE
----------------

Energy.

)

.

UT Base Met. Lamination

	Sit	e/Unit: <u>McGi</u>	ine I	2					Procedi	ure:	NDE-640			Outage No.	:	<u>N/A</u>		
	Summa	y No.:	ŃVFY	V10-20				Proc	edure Re	ev.:	5			Report No.	BOP	UT-09	-155	
	Works	scope:	ß	O.P				Worl	k Order M	ło.:	Q17	38678			Page	: 1	of	2
Code:		Ņ	/A			Cat/I	em:		N/A		Loca	ation:			N/A			
Drawing	No.:		1	N/A			C	Description	n: PIPE	TO FL	ANGE							
System	ID:	NV																
Compon	ent ID:	NVFW10-20									Size/Len	gth:	3" SCH 4	т <sup>1</sup> с	hickness/Diam	ieler:	.21	<u>6</u>
Limitatio	ns:	Yes - See atte	ched lir	nitation	sheet						<u> </u>	Star	Time:	1350	Finish 1	lime: _	140	0
Examin	ation Sur	face: Ins	ide 📋	Οu	tside 🗹		S	iurface Co	ondition:	AS GI	ROUND							
Lo Loca	ation:	9.1	1.1.2		Wold	cation:	Ce	nterline (	of Weid		Couplant:		ULTRAG	EL A	Batch No	.:	0812	5
Temp.	Toal Mig.	:	D.A.S		Se	ial No.:		MCNDEJ	2835		Surface Te	mp.: _	74	•1=	Scan	ning dB:		26
Cal. Re	port Na.:	<u></u>	C	AL:09-20	8, CAL-(	19-209, C	AL-09-21	10 &CAL	09-212									
Ind.	% L035	Amplitude %		Positi	on Cne	······		Positik	on Max		Position Two		ion Two		Remark	marks		
No.	Back Wa	I Full Screen	L1	W1	W2	MP	LM	Wi	W2	MP	12	ŴŤ	₩2	MP				
NRI																		
	····			1				1								·····		
					<u> </u>							<del></del>			1			
				[	ļ	<b></b>		ļ		[	╉┯┯╾╉		<u> </u>		· [			{
				L	l										<u> </u>			]
Comme	nts: N/	A																
Results	:	Accept 🕅	Reje	ect 🗂	ínío	п	INITIA	AL PSI EX	MA									
Percent	Of Cove	rage Obtained	1 > 90%;		les	_	Revie	ewed Prey	vious Dat	a:	NO						·"	·
Examine	sr Le	ivel II-N	Λ	7	Signatur	3		Da	te Revi	ewsyl	1			Sig	nature			Dato
Ross, J	ake E.		(hthe	100				8/26/201	99	<u>IR</u>	Low	<u>~</u>			/	0.2	2-0	<u>i</u>
Examine Day, Joi	ir Le h <i>n</i> .C.	vel II-N	V		Egentur,	W		Da 8/26/201	te Sile I 9	Review			~	Sig	malure			Date
Other N/A	Le	vel N/A			Signaturi		<u> </u>	Da	te ANII	Review	ÎF	·	9 1 T	Sig	inature 10-	26	5-8	) 9
	<u>·</u>			<u></u>							71-	7			-1.9-			<u>-</u>

Duke Ceneray	Supplemental Report	Report No.: BOP-UT-09-155
	1	Page: 2 of 2
Summary No.: NVFW10-20	In 1	
Examiner: Ross, Jake E. Ann	Level: II-N Reviewer:	Date: 10-20-09
Examiner: Day, John, C. JA-DA	Level: II-N Site Review:	Date:
Other: N/A	Level: N/A ANII Review:	Date:/0-26-09
	<i>(</i>	

Comments:

Sketch or Photo: Z:\UTVIDDEAL\ProfileLine2.jpg



Ŷ

.

· ----

·---- ···· .

#### Diber Energy.

J

#### UT Pipe Welu Examination

•

\$	Site/Unit:	McGuire /	2	Procedure: PDI-UT-2			Outage N	lo.:		N/A			
Summ	ary No.:	No.: <u>NVFW10-20</u> Pro				re Rev.:	С		Report N	o.: E	30P-(	JT-09-	151
Wo	rkscope:	BOP	<b>X</b>		Work Orc	ier No.: _	01738678		Pag	je:	1	of _	8
Code:		N/A		Cat./Item:	N/A		Location:		N/A				
Drawing No.:		N/A	<b>\</b>		Description: N	IA	-		,				
System ID:	NV												
Component ID:	NV-FW	10-20	•				Size/Length:	N/A	Thickness/Dia	amete	.r:	.216/3/	SS
Limitations:	Yes - S	ee attached limit	ation report				Start	Time:	1401 Finisl	h Time	e:	144(	)
Examination	Surface:	Inside 📋	Outside 🗹		Surface Condi	tion: AS G	ROUND			·			
Lo Location:		9.1.1.1	Wo Loc	ation:	Centerline of W	/eld	Couplant:	ULTRAGEL	II Batch	No.:		0812	5
Temp. Tool M	líg.:	D.A.\$	Seria	No.:	MCNDE3283	5	Surface Temp.:	74	°F				
Cal. Report N	lo.:	CA	L-09-208, CAL-09	-209, CAL-	09-210 & CAL-09	-212							
Angle Used	0	45 45T	60 70	<u> </u>	1								
Scanning dB		51.2 51.2	69.2										
Indication(s):	Yes [	] No 🔽		Sca	, n Coverage: Ups	stream 🗍	Downstream 🗸	cw 🖸	ccw 🕅				
Comments	_												
FC 08-01 08	-04 09-03												
100001,00	-04, 09-02	<b>L</b>											
Results:	Accept (	Reject 🔽	Info ()	In	itial Section XI F	Yam							
Percent Of Co	verage O	ptained > 90%:	No	 F	Reviewed Previous	Data:	 No				+		*******
													······
Ross, Jake E.	Level 11-1	hvi	by how		Date F 8/26/09	Reviewer	Bang	M	Signature		4	1=30	Date
Examiner Day, John, C.	Level II-	N /	Signature	$\langle$	Date S 8/24/09	Site Review		. 1	Signature				Date
Other N/A	Level N/	A	Signature	•	Date A	NII Revièw	ÎF	1.50	Signature	 ۲ ۷		59	Date
<u> </u>				·····	L	·		pero			<u> </u>	<u>~</u>	



## Determination of Percent Coverage for UT Examinations - Pipe

nmary No.:		2	Procedur	e: PDI-UT-2	Outage No.:	N/A		
1	NVFW10-20		Procedure Rev	/.: <u>C</u>	Report No.:	BOP-UT-09-151		
vorkscope:	BO	BOP		01738678	Page:	of		
<u>45 deg</u>								
Scan 1	100.000	% Length X	50.000	% volume of length / 100 =	50.000 %	6 total for Scan 1		
Scan 2	2 100.000	% Length X	0.000	% volume of length / 100 =	0.000 %	6 total for Scan 2		
Scan 3	3 100.000	% Length X	50.000	% volume of length / 100 =	50.000 %	6 total for Scan 3		
Scan 4	100.000	% Length X	50.000	% volume of length / 100 =	<b>50.0</b> 00 %	% total for Scan 4		
	Add totals and	d divide by # sca	ns = 37.500	% total for 45 deg				
<u>Other de</u>	<u>eq 1</u>	_ (to be used for	supplemental sci	ans)				
The data	a to be listed belo	w is for coverage	that was not obta	ined with the 45 deg scans.				
Scan 1	1	% Length X		_% volume of length / 100 =		% total for Scan 1		
Scan 1 Scan 2	2	% Length X		% volume of length / 100 =		% total for Scan 1		
Scan 1 Scan 2 Scan 3	1 2 3	% Length X % Length X % Length X		% volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3		
Scan 2 Scan 2 Scan 3 Scan 4	1 2 3 4	<ul> <li>% Length X</li> <li>% Length X</li> <li>% Length X</li> <li>% Length X</li> </ul>		% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 3 Scan 4	1 2 3 4	<ul> <li>% Length X</li> <li>% Length X</li> <li>% Length X</li> <li>% Length X</li> </ul>		% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 3 Scan 4 <u>Percent</u>	12 23 44 2 complete cove	<ul> <li>% Length X</li> </ul>		% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 2 Scan 4 Percent		% Length X rage		% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 3 Scan 4 Percent Add tota	complete cove	<ul> <li>% Length X</li> <li>% Length X</li> <li>% Length X</li> <li>% Length X</li> <li>rage</li> <li>required and divid</li> </ul>	de by # of scans to	% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 4 Scan 4 Percent Add tota 37.500	complete cove	% Length X % Length X % Length X % Length X rage required and divid complete exam	de by # of scans to	% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 4 Scan 4 Percent Add tota 37.500		<ul> <li>% Length X</li> <li>rage</li> <li>required and divid complete exam</li> </ul>	de by # of scans to	% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 4 Scan 4 Percent Add tota 37.500	complete cove	% Length X % Length X % Length X % Length X rage required and divid complete exam	de by # of scans to	% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 =		% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 3 Scan 4 Percent Add tota 37.500 Site Fiel	complete cove	% Length X % Length X % Length X % Length X rage required and divid complete exam	de by # of scans to	% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 = o determine;	<u>)9/24/09</u>	% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		
Scan 2 Scan 2 Scan 4 Percent Add tota 37.500	1	% Length X % Length X % Length X % Length X rage required and divid complete exam	de by # of scans to	% volume of length / 100 = % volume of length / 100 = % volume of length / 100 = % volume of length / 100 = 0 determine;	)9/Z4/09	% total for Scan 1 % total for Scan 2 % total for Scan 3 % total for Scan 4		

#### ATTACHMENT B PAGE 77 OF 94

DUKE POWER COMPANY									
ISI LIMITATION REPORT									
Component/Weld ID: NVFW10-2	remarks:								
🕅 NO SCAN	SURFACE BEAM DIRECTION								
LIMITED SCAN	🗋 1 🖾 2 🖾 1 🗍 2 🗌 cw 🗋 ccw	PIPE TO FLANGE							
FROM L N/A to L N/A	INCHES FROM W0 0.5 to Beyond	CONFIGURATION							
ANGLE: 0 🛛 45 🗌 60	other FROM 0 DEG to 360 DEG								
🛛 NO SCAN	SURFACE BEAM DIRECTION	PIPE TO FLANGE							
LIMITED SCAN	⊠ 1 □ 2 □ 1 ⊠ 2 □ cw □ ccw	CONFIGURATION							
FROM L <u>N/A</u> to L <u>N/A</u>	INCHES FROM W0 0.3 to Beyond								
ANGLE: 0 🛛 45 🗌 60	other 70 FROM 0 DEG to 360 DEG								
NO SCAN	SURFACE BEAM DIRECTION	PIPE TO FLANGE							
LIMITED SCAN	□ 1 ⊠ 2 □ 1 □ 2 ⊠ cw ⊠ ccw	CONFIGURATION							
FROM L N/A to L N/A	INCHES FROM W0 CL to Beyond								
ANGLE: 0 🛛 45 🗍 60	other FROM 0 DEG to 360 DEG								
NO SCAN	SURFACE BEAM DIRECTION								
LIMITED SCAN	[] 1 [] 2 [] 1 [] 2 [] cw [] ccw								
FROM L to L	INCHES FROM W0 to	Sketch(s) attached							
4 ANGLE: 0 0 5 60	other FROM DEG to DEG	🛛 yes 🗌 No							
Prepared By: Jake Ross Why	Level: II Date: 08/26/09 Sheet	<u>3</u> of <u>8</u>							
Reviewed By: Bang M	Date: 9-30-09 Authorized Inspector: AF	Date: 18-4-09							

# ATTACHMENT B PAGE 78 OF 94

·-----

-----

.

#### Supplemental Report

1

Denerov.			Supplemental Report					Report No.: BOr-JT-05				
	<b>.</b> .					N			Page:	4	of	8
Summary No.:	NVFW10-20						0		,		_	
Examiner:	Ross, Jake E.	Jus Re		Level:	li-N	Reviewer:	Dang	Mus	$\swarrow$	Dale:	9-1	30.09
Examiner:	Day, John, C.	' Eff	27	Level:	_ <u></u>	Site Review:	151			Date:	6.	509
Other.	<u>N/A</u>			Level:	<u>N/A</u>	ANII Review: _	- Hala	Jan-		Uale?		
Comments:	Area of Interest						·					
			·			ABOD	: OTin X	14in =	5 10.0			
Sketch or Photo:	Z:\UT\IDDEAL\Profil	leLine2.jpg										
					1							
<u></u>						e +				ļ		
			•	ß		0						
								N.				
						,						
,						_						
JURFACE I	-				JULE	<u>fuu</u>			<u> </u>	ACE	2	

ATTACHMENT  $\mathcal{B}$ PAGE 79 OF 94

#### Supplemental Report Report No.: BOr-UT-09-151 5 of 8 Page: Summary No.: NVFW10-20 Mh Date: 9-30.09 Examiner: Ross, Jake E. Whe Reviewer: Level: II-N Examiner: Day, John, C. Date: II-N Site Review: Level: Date: 10 - 4-09 Other: N/A Level: N/A ANII Review: Comments: S1 Axial Coverage 45° ¿ 70°. CovERACRE $\frac{AB(0! 0.7in \times .70in = 0.05in^{2}}{0.05in^{2}/0.10in^{2}(100) = 50^{\frac{9}{6}}}$ Sketch or Photo: Z:\UT\IDDEAL\ProfileLine2.jpg 24 в 50 SCALE: FULL SURFACE 1 -SURFACE 2

ATTACHMENT B PAGE 80 DF94

Dune Einergy.	Supplemental Report	Report No.: <u>BOP-UT-09-151</u> Page: <u>6</u> of <u>8</u>
Summary No.: NVFW10-20 Examiner: Ross, Jake E. MMM Examiner: Day, John, C. J. MM Other: N/A	Level: II-N Reviewer: Band Level: II-N Site Review: I Level: N/A ANII Review: IFA	Date: 9-30-09 Date: Date: Date: <u>/0-4-09</u>
Comments: S1 Axial Coverage		
Sketch or Photo: Z:\UT\IDDEAL\ProfileLine2.jpg		
х `у . и		
+	1	
SURFACE 1	SCALE : FILL	SURFACE 2

-
# ATTACHMENT B PAGE 81 OF 94

.

.



Supplemental Report

---- --

----

C Linener	f.				<b>,</b>		Report No .:	BOP	-UT-09	9-151
	-						Page:	7	of	8
Summary No.:	NVFW10-20									
Examiner:	Ross, Jake E.	in the	Level:	11-N	Reviewer:	Ban_ 11	hha!	Date:	9.	- 30.0
- Examiner: [	Day, John, C.	All Dr	Level:	(I-N	Site Review:	. 1		Date:		
Other:	N/A	<i>p j</i>	Level:	N/A	ANII Review:	File		Date	6-4	1-09
Comments: C	CW, CCW Coverage	8						<del>7,-,,</del>		<u></u>
						45_(ax	ERAINE	-		
ketch or Photo: 7	Z:\UT\IDDEAL\ProfileL	Line2.jpg				ABCD: 07in >	1.70 in 05m2	) #*		
						:05in 2/10 . 2	(100) = 50%			
					1 _					
·····		<b> </b>						- <u> </u>		
			Δ	ß	TITA					
					ſ					
					·					
SURFACE 1	. ~			SCAL	E: Fur		SUR	FACC	- 2	

# ATTACHMENT B PAGE 82 OF 94



DRiveryy.	Supplemental Repo	)rt Report No.: Page:	BOP-UT-09-151 8 of 8
Summary No.: NVFW10-20 Examiner: Ross, Jake E. Juhn Kong Examiner: Day, John, C. Jhr Dy Other: N/A	Level: II-N Review Level: II-N Site Revie Level: N/A ANII Revie	ver: Bay Mhl ew: ew: JFfwain	Date: $9.30.09$ Date: Date: $20-4-09$
Comments: Supplemental Coverage			
Sketch or Photo: Z:\UT\IDDEAL\ProfileLine2.jpg		ABLD: 07in (	) 3.03in <sup>2</sup> 3.0 %



SCALE + FUL SURFACE 2 SURFACE 1-

•

.

,

.



.

•

### UT Base Mets. Lamination

.

-----

	Site	/Unit: McG	uire /	2					Proced	ure:	<u> </u>	DE-640			Outage No.:	N/A	
	Summaŋ	No.:	NVFW	180-46				Pro	cedure R	ev.:		5			Report No.: BC	P-UT-0	9-157
	Works	:ope:	8	OP				Wor	k Order I	No.: _	01	73867 <u>8</u>			Page: 1	of	
Code:		N	/A			Cal./	lem:		N/A		Loc	ation:			N/A		
Drawing	J No.:			NIA			C	Descriptio	n: Pipe	to valv	e						
System	ID: N	v															
Compo	nent ID: 2	NVFW180-4	6								Size/Le	ngth:	4" SCH 4	0 TI	nickness/Diameter:	.2	37
Limitatio	ons: Y	es - See atta	ached IIr	nitation	sheet							Start	Time:	1320	Finish Time:	13	30
Examir	hation Surf	açe: Ins	ide 🗍	Ου	iside 🛃		s	urface Co	ondition:	AS G	ROUND						
Lo Loc	ation:	9.	1,1.1	<u></u>	Wold	cation:	Ce	nterline	of Weld		Couplant:		ULTRAG	EL II	Batch No.:	0.81	25
Temp.	Tool Mfg.:		D.A.S		Ser	ial No.:		MCNDE3	2835		Surface Te	emp.: _	74	- <b>F</b>	Scanning d	B:	26
Cal. Re	aport No.:		<u>c</u> ,	AL-09-20	8, CAL-0	9 <del>,</del> 209, C	AL-09-2	10 &CAL	-09-212								
Ind	%	Amplitude		Positi	on One	· · · · · · · · · · · · · · · · · · ·		Positio	on Max			Positi	ian Two				
No.	Losa	%		Ì				1		T			1	Γ	Remo	ks	
<b> </b>	Back Wall	Full Screen	<u> </u>	W1	W2	MP	L.M.	W1	W2	MP		W1	W2	<u>М</u> Р			
NRI																	
					}				<u> </u>		+						
			. <u></u>						·	ļ	- <b> </b>		ļ			····	
Comme	ents: N/A																
Results		Accent C2	Roid		lafa	n	INITIA		AM								
Percent	Of Cover	noo Obtainea	1 > 00%	~u 、			Bouio		doue Dal		NO						
			J = 50 /4.														
Examine Ross, J	er Lev ake E.	el II-N	Anni	180	Signature			Da 8/26/200	ite Revie 19	ewor //	Eth	ioen		Sigr	nature	, <i>~</i> ~	Date م م -
Examine Day to	er Lev	el II-N	V		Signature	V		Da 8/26/200	te Site I	Review				Sigr	ature	<u></u>	Date
Other N/A	Leve	N/A			Signature	2.4		Da	te ANII	Review	1:	= /		Sign	alure	- N	9 Date
		- <u>.</u>				<u></u>				(	r	170		<u>~</u>	10-00		<u> </u>

A Rubo			Supplement	tai Report	Report No.:	BOP-UT-09-157
. Penny	<b>y.</b>				Page:	2 of 2
Summary No.:	NVFW180-46		_	ne ll		(
Examiner:	Ross, Jake E.	Jan Am	Level: II-N	Reviewer: DEHA	ioen	Date: <u>/0 · 20 · 07</u>
Examiner:	Day, John, C.	194-12	Level: <u>II-N</u>	Site Review:	9	Date:
Other:	<u>N/A</u>		Level: N/A	ANII Review:	when	Date: 0-00-0
			<u></u>			
Comments:	Limitation			V		

Sketch or Photo: 2:\UT\IDDEAL\ProfileLine2.jpg



# ATTACHMENT B PAGE 85 OF 94

.

.....

D	ike
[@En	ergy,

.

### UT Pipe Weld Examination

5	Site/Unit	McGuire /	2		Procedure:	PDI-UT	2	Ou	taga No.:	NIA	
Summ	ary No.:	NVFW180	-46		Procedure Rev.:	C		Re	port No.: B	OP-UT-09-	154
Wa	kscope:	<u>80</u> P			Work Order No.:	0173867	8		Page:		4
Code:		NA	Cat.	filem:	N/A	Location:			NIA		
Drawing No.:		NIA			Description: Elbow pipe	to valve					
System ID:	NV				30200	9¶					
Component ID:	NVFW1	80-46				Size/Length:	N/A	Thickne	ss/Diameter:	.237/4*	/55
Limitations:	See att	chments				St	arl Time:	1410	Finish Time:	145	<u> </u>
Examination 5	Surface:	Inside 📋	Outside 🗹		Surface Condition: AS G	ROUND					
Lo Location:		9,1,1.1	Wo Location		Centerline of Weld	Coupfant:	ULTRAGE	<u>. II</u> i	Balch No.: _	0812	5
Temp. Tool M	fg.:	D.A.S	Serial No.:		MCNDE32835	Surface Temp:	74	. <b>*</b> F			
Cal. Report No	o.:	CAL-	09-208, CAL-09-209,	CAL-09	-210 & CAL-09-212						
Angle Used	0	45 45T	60 70								
Scanning dB	L	51.2 51.2	68,9								
Indication(s):	Yes [	) No 🕢		Scan (	Coverage: Upstream 🗹	Downstream []	cw 🗹	CCW 🗹			
Comments:											
FC 08-01, 08-0	04, 09-02										
Results: A	ccept 📋	Reject 🖸	🗋 ahri	INIT	TAL PSI EXAM						
Percent Of Cov	rerage Ob	tained > 90%:	No	Re	vlewed Previous Data:	NO			****		
Examiner L Ross, Jake E.	evel N-N	An	Siglature		Daté Reviewer	Et Jame	4	Signature	-/6	.20-0	Date 3
Examiner L Day, John, C.	evel IFH	i gitte	CITE W	•	Date Site Review 8/26/2009	A	1	Signature			Date
Other L N/A	evel N/A	•	/ Signature /		Date ANII Review	FEL	1.78-	Signature	0-2	6-0	Date 9
<u></u>	**** <u>*</u> ,	*****				Or fr	~~ <del>~~~</del> ~				┉┋╴ݐ┛



DI	KE POW	ER COMPANY		
]	ISI LIMITAT	FION REPORT		
Component/Weld ID: <u>NVFW180</u>	<u>-46 [t</u>	em Ňo: <u>N/A</u>		remarks:
🛛 NO SCAN	SURFACE	BEAM DIRECTION		No scan on valve side due to
LIMITED SCAN	⊠ 1 🗌 2	🗌 1 🛛 2 🖾 cw 🖾	ccw	taper.supplemental scan with
FROM L <u>0"</u> to L <u>14.1"</u>	INCHES	FROM W0 N/A to N/A	<u> </u>	70° shear from elbow side
ANGLE: 0 🛛 45 🗍 60	other	FROM N/A DEG to N/A	DEG	
NO SCAN	SURFACE	BEAM DIRECTION		
LIMITED SCAN	1 2	🗌 1 🗌 2 🗌 cw 🗍	ccw	
FROM L to L	INCHES F	ROM W0 to		
ANGLE: 0 45 60	other	FROM DEG to	DEG	
NO SCAN	SURFACE	BEAM DIRECTION		
LIMITED SCAN	1 2	1 2 cw 1	ccw	
FROM L to L	INCHES F	ROM W0 to		
ANGLE: 0 45 60	other	FROM DEG to	DEG	
🗍 NO SCAN	SURFACE	BEAM DIRECTION		
LIMITED SCAN	1 2	🗌 1 🗌 2 🗌 cw 🗍 d	cw [	
FROM L to L	INCHES FI	ROM W0 to	[	Sketch(s) attached
ANGLE: 0 0 5 0 60	other	FROM DEG to	DEG	🗌 yes 📋 No
Prepared By: Jake Ross.	f Level:	II Date: 08/26/09	Sheet	<u>3</u> of <u>4</u>
Reviewed By: JE Anah	Date:	ん つう Authorized Inspector:	EL	Jale: 10-26-09
			ľ	•



# Determination of Percent Coverage for **UT Examinations - Pipe**

Site/Unit:	McGuire /	2	Procedure	: <u>PDI-UT-2</u>	Outage No.:		N/A	
mmary No.:	NVFW18	0-46	Procedure Rev.	: <u> </u>	Report No.:	BOP	UT-09-	.154
Norkscope:	BOF	) 	Work Order No.	.: 01738678	- Page:	4	of _	4
			••••••••••••••••••••••••••••••••••••••					
<u>45 deg</u>								
Scan	1 100.000	% Length X	0.000 %	% volume of length / 100 =	0.000 %	% total f	or Sca	n 1
Scan	2 100.000	% Length X	25.000	% volume of length / 100 =	25.000	% total :	for Sca	n 2
Scan	3 100.000	% Length X	50.000	% volume of length / 100 =	50.000	% total	for Sca	n 3
Scan	4 100.000	% Length X	50.000	% volume of length / 100 =	50.000	% totał	fór Sca	n 4
·	Add totals and	d divide by # sca	ans = <u>31.250</u>	% total for 45 deg	,			
<u>Other</u> The da	Add totals and deg - 1	d divide by # sca (to be used fo ow is for coverage	ans = <u>31.250</u> or supplemental sc e that was not obta	% total for 45 deg ans) ained with the 45 deg scans.		D/ 101	al for S	000 1
<u>Other</u> The da Scar	Add totals and deg - 11 ita to be listed belo	d divide by # sca (to be used fo ow is for coverage 	ans = <u>31.250</u> or supplemental sc e that was not obta	% total for 45 deg ans) ained with the 45 deg scans. _ % volume of length / 100 =	· •	_ % tot	al for S	can 1
<u>Other (</u> The da Scar	Add totals and deg - 1 ita to be listed below 1 1 1 2	d divide by # sca (to be used fo ow is for coverage % Length > % Length >	ans = <u>31.250</u> or supplemental sc e that was not obta	% total for 45 deg ans) ained with the 45 deg scans. % volume of length / 100 = % volume of length / 100 =		% tot	al for S al for S	can 1 can 2
<u>Other</u> The da Scar Scar Scar	Add totals and deg - 1 ita to be listed below 1	d divide by # sca (to be used fo ow is for coverage % Length > % Length >	ans =31.250	% total for 45 deg ans) ained with the 45 deg scans. _ % volume of length / 100 = _ % volume of length / 100 = _ % volume of length / 100 =	· ·	% tot % tot	al for S al for S al for S	can 1 can 2 ican 3

Add totals for each scan required and divide by # of scans to determine;

31.250 % Total for complete exam

David K. 3 Th Date: 10/18/09 Site Field Supervisor:

\_\_\_\_



.

# UT Base Met: Lamination

÷

	Sil	e/Unit: McG	uire /	2					Proced	ure:	N	DE-64	)	-	Outage No.:		N/A	
	Summa	'y No.:	NVFV	¥180-45				Pro	cedure R	ev.:		5			Report No.:	BOP	-UT-09	-156
	Works	scope:	E	IOP				Wor	k Order l	No.:	01	73867	8		Page: 1			2
Code:		N	I/A			Cat./	Item:		N/A		Lọc	cation:			N/A			
Drawing	3 No.:			N/A				Descriptio	n: ELB	OW TO	VALVE		4979,					
System	ID: 1	NV					~		<u></u>		· · · · · · · · ·		······································					
Compoi	nent ID: 1	VVFE180-45		<u></u>							Size/Le	ngih;	4" SCH 4	0. TI	hickness/Dlamet	er:	.2:	37
Limitatio	ons:	res • See att	ached li	mitation	sheet							Sta	rt Time:	1330	Finish Tin	ne:	13/	10
Examir	nation Su	face: Ins	siđe 📋	Ou	tside 😡		s	uiface C	ondition:	AS GI	ROUND							
Lo Loc	ation:	9.	1.1.1		Wolld	cation:	Ce	nterline	of Weld		Couplant:		ULTRAG	E <u>l. II</u>	Batch No.:		0812	5
Temp.	Tool Mig.	:	D.A.S	<u> </u>	Sei	ial No.:		MCNDE3	2835		Suríace T	emp.:	74	°F	Scannin	ıg dB:		26
Cal. Re	port No.:		<u> </u>	AL-09-20	8. CAL-0	9-209, C	AL-09-2	10 &CAL	09-212									
Ind.	%	Amplitude		Positi	on One		1	Positio	on Max			Pos	ition Two					
No.	Loss Back Wa	%			w2		1.84	1.1.1	W2	MP	1,2	w1		NP	R	marks		ļ
		ļ	ļ	<u> </u>				L	ļ	ļ								]
						<b> </b>		<u> </u>										
				<u> </u>									+					
			l	<u> </u>	ļ	l	[	ļi		L	l	<del>.</del>						J
ÇOQUINE		~																
Results	-	Accept 🗹	Rej	ect 📋	Info		INITIA	L PSI EX	CAM									
Percent	Of Cove	rage Obtaine	d > 90%:		les	-	Revie	wed Prev	ious Dat	a:	NO							
Examine	er Le	vel II-N /		1	Signature			Da	te Revie	ewerA	· ,1			Sigr	nature			Date
Ross, J	ake E.		Mn/	p	<u> </u>			8/26/200	99	R	- Ktores	pan				/0	· 20.	09
Examine Day Jo	er Le hn C	vel II-N			Signature	5		eO nciacia	te   Site F	Review		ŕ		Sign	ature			Date
Other	Le	vel N/A	·		Signature	З		Da	te ANII	Review	······	/	-1	Sign	alure		~	Date
N/A											<u></u>	_k	FAL	wa-	<u>~/0-</u>	3	6-	- <u>07</u>
											/	1	Ľ					
											Ĺ	/						

- -

.

.

Po Puice Compose	Supplemental Report	Report No.: BOP-UT-09-156
Summary No.: NVFW180-45 Examiner: Ross, Jake E. Janna Francisco Examiner: Day, John, C. Jahna Jahna Other: N/A	Level: II-N Reviewer: NEX Jougen Level: II-N Site Review:	Page: $2 \text{ of } 2$ Date: $0.00-09$ Date: $0 \text{ of } 2$ Date: $0 \text{ of } 2$
Commenis:	<i>(</i> ]`	
Sketch or Photo: Z:\UT\IDDEAL\ProfileLine2.jpg	51	
.160	197 .183 1.198 1.198 .233	
	FLOW	

•

.

.

.

+

Duke Energy.
-----------------

.

# UT Pipe Weld Examination

----

\_\_\_\_\_

S	ite/Unit:	McGuire /	2		Procedure:	PDI-UT-2	2	Out	age No.: _	N//	<u>م</u>
Summ	ary No.:	NVFW1	80-45		Procedure Rev.:	C		Rej	port No.; _E	30P-UT-	29-152
Wor	kscope:	BC	Р		Work Order No.:	0173867	8		Page:	<u>1</u> of	4
Code:		N/A		Cat./Item:	N/A	Location:			N/A		;
Drawing No.:		Ń	/A		Description: Elbow to v	atve					
System ID:	2NV										
Component ID:	NVFW1	80-45				Size/Length:	N/A	Thickne	ss/Diamete	r. <u>.23</u> 7	/4"/SS
Limitations:	Yes - S	ee attached lim	tation report.			Sta	rt Time:	1415	Finish Tim	e: <u>1</u>	445
Examination S	Surface:	Inside []	Outside 🔽		Surface Condition: AS	GROUND				·····	
Lo Location:		9.1.1.2	Wo L	ocation:	Centerline of Weld	Couplant:	ULTRAGE	<u>_n (</u>	Batch No.:	08	125
Temp. Tool M	íg.:	D.A.S	Se	rial No.:	MCNDE32835	Surface Temp.:	74	•F			
Cal. Report N	o.:	CAL-0	-208, CAL-09-2	09, CAL-09-21	0 & CAL-09- CAL-09-212						
Angle Used	0	45 45T	60 70								
Scanning dB		51.2 51.2	68.9								
Indication(s):	Yes [	) No 🗹		Scar	Coverage: Upstream	Downstream 🗹	cw 🗹	ccw 🛛			
Comments:											
FG 80-01, 08-	04, 09-02	2									
Results: A	ccept (	) Relect 🖓	info f	או ר	ITIAL PSI EXAM						
Percent Of Cov	erage O	btained > 90%:	No		eviewed Previous Data:	NO /					
					·						
Examiner L Ross, Jake E.	evel II.	" Anto	Signalure		Date Reviewer 8/26/2009	Etnser	•	Signature	10 .	20-0	7 7
Examiner L Day, John, C.	evel II-	N	Signature	W	Date Site Review 8/26/2009	, /	1	Signature			Date
Other L N/A	evel N/	<b>Δ</b>	Signature	1	Date ANII Review	FEL		Signature	-26	-0	9 Date
		**************************************				1					

#### 2MNS NVFW180-45

SZ-ELBOW

VALVE- 51



AREA OF JUTEREST

ABEE: 1.Din x. OBin = . OBin 2

COVERACTE: 52, Cur, CCW

COVERAGE: SI = 0%

ABOD : 0.5in x. 08in = Olin  $04in^2/08in^2(100) = 50^{\circ/0}$ 

Examiner David K. 3 Date 10/18/09 Page 2 of J

·\_\_\_\_

DUKE POWER COMPANY				
ISI LIMITATION REPORT				
Component/Weld ID: NVFW180-45 Item No: N/A remarks:				
NO SCAN	NO SCAN SURFACE BEAM DIRECTION			
LIMITED SCAN	⊠ 1 □ 2 □ 1 ⊠ 2 ⊠ cw ⊠ ccw	taper supplemental scan with		
FROM L _0" to L _ 14.1"	INCHES FROM W0 0 to Beyond	70° shear from elbow side		
ANGLE: 0 🛛 45 🗌 60	other FROM N/A DEG to N/A DEG			
NO SCAN	SURFACE BEAM DIRECTION			
LIMITED SCAN				
FROM L to L	INCHES FROM W0 to	·		
ANGLE: 0 45 60	other FROM DEG to DEG	and an and a support of the support		
D NO SCAN	SURFACE BEAM DIRECTION			
LIMITED SCAN				
FROM L to L	INCHES FROM W0 to			
ANGLE: 0 0 45 0 60	other FROM DEG to DEG			
NO SCAN	SURFACE BEAM DIRECTION			
LIMITED SCAN				
FROM L to L	INCHES FROM WO to	Sketch(s) attached		
4 ANGLE: 0 0 5 60	other FROM DEG to DEG	🛛 yes 🗌 No		
Prepared By: Jake Ross MA	Level: II Date: 08/26/09 Sheet	2 of		
Reviewed By: DEL Joubon Date: 10:20.09 Authorized Inspector: F. Juson 10-26-09				

ACHMENI B	Duke Energy.
A 1 1 P A 6 E	Site/Unit: Mo

## Determination of Percent Coverage for UT Examinations - Pipe

Site/Unit:	McGuire /	2	Procedure:	PDI-UT-2	Outage No.:		N/A	
Summary No.:	NVFW1	80-45	Procedure Rev.:	C	Report No.:	BOP	UT-0	9-152
Workscope:	e: BOP		Work Order No.:	01738678	_ Page:	: _4_ of _4_		_4

<u>45 deg</u>

Scan 1	100.000	% Length X _	0.000	% volume of length / 100 =	0.000	% total for Scan 1
Scan 2	100,000	% Length X	50.000	% volume of length / 100 =	50.000	% total for Scan 2
Scan 3	100.000	% Length X	50.000	% volume of length / 100 =	50.000	% total for Scan 3
Scan 4	100.000	% Length X	50.000	% volume of length / 100 =	50.000	% total for Scan 4

Add totals and divide by # scans = 37.500 % total for 45 deg

Other deg - 1 (to be used for supplemental scans)

The data to be listed below is for coverage that was not obtained with the 45 deg scans.

Scan 1	% Length X	% volume of length / 100 =	% total for Scan 1
Scan 2	% Length X	% volume of length / 100 =	% total for Scan 2
Scan 3	% Length X	% volume of length / 100 =	% total for Scan 3
Scan 4	% Length X	% volume of length / 100 =	% total for Scan 4

#### Percent complete coverage

Add totals for each scan required and divide by # of scans to determine;

37.500 % Total for complete exam

Pavid 16 Ē Site Field Supervisor:

Date: 10/18/109