



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

March 26, 2015

EA-14-091

Mr. Scott Batson  
Site Vice President  
Duke Energy Carolinas, LLC  
Oconee Nuclear Station  
7800 Rochester Highway  
Seneca, SC 29672

**SUBJECT: OCONEE NUCLEAR STATION - NRC SUPPLEMENTAL INSPECTION REPORT  
AND ASSESSMENT FOLLOW-UP LETTER (NRC INSPECTION REPORT NO.  
05000269/2015008)**

Dear Mr. Batson:

Prior to November 11, 2013, your staff failed to establish measures to promptly identify and correct a significant condition adverse to quality involving a circumferential crack in weld 1-RC-201-105 located on the Unit 1 High Pressure Injection (HPI) piping-to-cold leg nozzle safe end interface of the 1B2 reactor coolant pump suction pipe. This performance deficiency resulted in non-isolable pressure boundary leakage while the reactor was in Mode 1.

On June 23, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station, Unit 1. Based on the results of this inspection, documented in NRC Inspection Report 05000269/2014011 dated June 26, 2014, (ADAMS Accession Number ML14177A333) and the final significance determination documented in NRC Inspection Report 05000269/2014012 dated August 12, 2014 (ADAMS Accession Number ML14224A629), the NRC assigned a White finding Action Matrix input to the initiating events cornerstone in the second quarter of 2014.

In response to this Action Matrix input, the NRC informed you that a supplemental inspection under Inspection Procedure 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area," would be required. On January 20, 2015, you informed the NRC that Oconee Nuclear Station was ready for the supplemental inspection.

On February 27, 2015, the NRC completed the supplemental inspection and the NRC inspection team discussed the results with you and other members of your staff. Additionally, I discussed the implementation of your corrective actions during a regulatory performance meeting with you and other members of your staff on the same date. The inspection team documented the results of this inspection in the enclosed inspection report.

The NRC performed this supplemental inspection to determine if: (1) the root and contributing causes for the significant issues were understood, (2) the extent of condition and extent of cause for the identified issues were understood, and (3) your completed or planned corrective actions were sufficient to address and prevent repetition of the root and contributing causes.

The NRC determined that your staff's evaluation identified the two primary root causes of the issue to be: (1) high cycle fatigue which caused a through-wall crack in the butt weld between the safe end and HPI pipe and (2) inadequate ownership and oversight of the augmented examination program. Corrective actions to address the root and contributing causes included increasing the inspection frequency of the most susceptible lines, and revising a number of non-destructive examination procedures and reorganizing the inservice inspection (ISI) program so that the augmented portion functions as an independent program.

As a result of its continuous review of plant performance, which was completed on March 25, 2015, the NRC updated its assessment of Oconee Nuclear Station Unit 1. The NRC's evaluation consisted of a review of performance indicators and inspection results. This letter supplements, but does not supersede, the annual assessment letter issued on March 4, 2015.

After reviewing Oconee Nuclear Station Unit 1 performance in addressing the White finding subject of this Inspection Procedure 95001, the NRC concluded your actions met the objectives of this inspection. Therefore, in accordance with the guidance in Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," the White finding will only be considered in assessing plant performance for a total of four quarters. As a result, the NRC determined the performance at Oconee Nuclear Station Unit 1 to be in the Licensee Response Column the ROP Action Matrix as of April 1, 2015.

The NRC inspectors did not identify any findings or violations of more than minor significance. In accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," a copy of this letter, its Enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

S. Batson

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Please contact me at 404-997-4611 with any questions you have regarding this letter.

Sincerely,

*/RA/*

Frank Ehrhardt, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Docket Nos.: 50-269

License Nos.: DPR-38

Enclosure: IR 05000269/2015008

w/Attachment: Supplementary Information

cc Distribution via Listserv

S. Batson

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Sincerely,

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OFFICE	RII:DRP	RII:DRS	RII:DRP	RII:DRP		
SIGNATURE	RNP1 via email	REW1	JGW1	FJE		
NAME	R. Patterson	R. Williams	J. Worosilo	F. Ehrhardt		
DATE	03/25 /2015	03/25/2015	03/24/2015	03/26/2015		
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S. Batson

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Letter to S. Batson from Frank Ehrhardt dated March 26, 2015.

SUBJECT: OCONEE NUCLEAR STATION - NRC SUPPLEMENTAL INSPECTION REPORT  
AND ASSESSMENT FOLLOW-UP LETTER (NRC INSPECTION REPORT NO.  
05000269/2015008)

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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No.: 50-269

License No.: DPR-38

Report No: 05000269/2015008

Licensee: Duke Energy Carolinas, LLC

Facility: Oconee Nuclear Station, Unit 1

Location: Seneca, SC 29672

Dates: February 23-27, 2015

Inspectors: R. Patterson, Reactor Inspector (lead)  
R. Williams, Senior Reactor Inspector

Approved by: Frank Ehrhardt, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

Inspection Report (IR) 05000269/2015008; 2/23/2015 – 2/27/2015; Oconee Nuclear Station, Unit 1; Supplemental Inspection – Inspection Procedure (IP) 95001.

The inspection was conducted by one reactor inspector and one senior reactor inspector. No findings were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

### Cornerstone: Mitigating Systems

The NRC staff performed this supplemental inspection in accordance with IP 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area," to assess the licensee's evaluation associated with a pressure boundary leak from a crack in a weld located in the Unit 1 high pressure injection (HPI) system that was identified on November 8, 2013. The NRC staff previously characterized this issue as having low to moderate safety significance (White), as documented in NRC IR 05000269/2014012 (ADAMS Accession Number ML14224A629).

During this supplemental inspection, the inspectors determined that the licensee performed a comprehensive evaluation of the pressure boundary leak through a crack in a weld located in the Unit 1 HPI system that was identified on November 11, 2013. The licensee identified the two primary root causes of the issue to be: (1) high cycle fatigue which caused a through-wall crack in the butt weld between the safe end and HPI pipe and (2) inadequate ownership and oversight of the augmented examination program. In 2004, the licensee issued procedure NDE-995, "Ultrasonic Examination of Small Diameter Piping Butt Welds and Base Material for Thermal Fatigue Damage." This procedure limited the number and type of ultrasonic test (UT) probes permitted for use and omitted earlier guidance on how to address limitations encountered during the examination which resulted in the examination coverage not being achieved. As a result, numerous examinations performed on HPI safe end-to-piping welds using procedure NDE-995 did not completely cover the affected area and the less than adequate coverage was not assessed. Following the identification of the 1B2 HPI through-wall crack, the licensee performed extent of condition inspections using phased-array UT on the other units. Indications identified during these examinations were analyzed and found to be acceptable for continued service. Corrective actions to address the root causes and contributing causes included increasing the inspection frequency of the most susceptible lines, revising a number of non-destructive examination (NDE) procedures to include additional guidance on how to address limitations, improving Level III examiner oversight, and reorganizing the inservice inspection (ISI) program so that the augmented portion functions as an independent program.

### NRC-Identified and Self-Revealing Findings

None

### Licensee-Identified Violations

None

## REPORT DETAILS

### 4. OTHER ACTIVITIES

#### 4OA3 Follow-up of Events and Notices of Enforcement Discretion (NOED)

(Closed) Licensee Event Report (LER) 05000269/2013-04-001: High Cycle Fatigue Resulted in Reactor Coolant Leak and Unit Shutdown

##### a. Inspection Scope

On November 11, 2013, the licensee determined that a leak in the 1B2 HPI line was pressure boundary leakage. Unit 1 was subsequently shutdown as required by Technical Specification 3.4.13. The inspectors monitored the orderly shutdown of Unit 1 and the licensee's repair activities. The inspectors also evaluated the licensee's extent of condition review and activities associated with additional non-destructive evaluations performed on other Unit 1 HPI nozzles. Unit 2 was shutdown for a refueling outage at the time of this event; therefore, the Unit 2 HPI nozzles were accessible for NDE which were also reviewed by the inspectors. The licensee entered this issue into their corrective action program as PIP O-13-13168. The inspectors verified the accuracy of the LER, the appropriateness of completed and planned corrective actions, and reviewed the licensee's revised root cause evaluation.

LER 05000269/2013-04-001 is closed. Revision 0 of this LER was closed in inspection report 05000269/2014011.

##### b. Findings

No findings were identified.

#### 4OA4 Supplemental Inspection (95001)

##### .1 Inspection Scope

The licensee entered the Regulatory Response Column of the NRC's Action Matrix in the second quarter of 2014 as a result of one inspection finding of low to moderate safety significance (White) associated with a pressure boundary leak from a crack in a weld located in the Unit 1 High Pressure Injection (HPI) system that was identified on November 8, 2013. The white finding was associated with a violation of Appendix B to 10 *Code of Federal Regulations* (CFR) Part 50, Criterion XVI, "Corrective Action," for failure to identify and correct a significant condition adverse to quality involving a crack in a weld located in the Unit 1 HPI system piping.

The supplemental inspection was performed in accordance with IP 95001 to assess the licensee's evaluation of the White finding which affected the mitigating systems cornerstone objective in the reactor safety strategic performance area. The inspection objectives were to:



- provide assurance that the root and contributing causes were understood
- provide assurance that the extent of condition and extent of cause were identified
- provide assurance that the licensee's corrective actions were sufficient to address the root and contributing causes and to preclude repetition.

The inspectors also held discussions with licensee personnel to ensure that the root and contributing causes and the contribution of safety culture components were understood and corrective actions taken or planned were appropriate to address the causes and preclude repetition.

## .2 Evaluation of the Inspection Requirements

### .01 Problem Identification

- a. Determine that the evaluation documented who identified the issue (i.e. licensee, self-revealing, or NRC) and under what conditions the issue was identified

The inspectors determined that the licensee's evaluation of the circumferential crack in the safe end-to-pipe butt weld (1-RC-201-105) appropriately determined who identified the issue and under what conditions the issue was identified.

On November 11, 2013, a reactor building entry revealed reactor coolant system (RCS) pressure boundary leakage from the 1B2 HPI injection nozzle. The licensee's evaluation classified the issue as a self-revealing event.

- b. Determine that the evaluation documented how long the issue existed, and prior opportunities for identification

In 2004, the licensee implemented procedure, NDE-995, "Ultrasonic Examination of Small Diameter Piping Butt Welds and Base Material for Thermal Fatigue Damage," to perform augmented inservice inspection program ultrasonic examinations. Procedure NDE-995 did not provide measures to assure that HPI nozzle component cracking would be identified and corrected. Subsequently, in 2012, the licensee performed procedure NDE-995 on weld 1-RC-201-105, and did not identify any reportable indications, even though an approximately 50 percent through-wall circumferential crack was present in the weld. The presence of the crack was confirmed after a re-review of a radiographic film obtained during a non-destructive test of the 1B2 thermal sleeve in 2011. On November 11, 2013, the licensee identified the through-wall circumferential crack in weld 1-RC 201-105 after transitioning Unit 1 to Mode 3 to investigate a non-isolable pressure boundary leak.

The inspectors determined that the licensee appropriately identified how long the condition existed and any prior opportunities for identification.

- c. Determine that the evaluation documented the plant risk-specific consequences (as applicable) and compliance concerns associated with the issue

The inspectors determined that the root cause evaluation (RCE) adequately documented the risk consequences and compliance concerns. A probabilistic risk assessment analysis was completed by the licensee for all three units to determine any increase in core damage frequency. In addition, the licensee implemented corrective actions to restore compliance.

In addition, the inspectors determined that the RCE adequately addressed the condition on Unit 1. Weld 1B2 HPI was replaced and post-replacement radiography testing (RT) was successfully completed. The licensee inspected all HPI lines using diverse techniques (e.g., PDI-UT-2, Phased Array, and RT). The licensee revised Procedure NDE-995 to incorporate the root cause lessons learned. Subsequently, the licensee revised UT NDE procedures to include similar guidance. The licensee also revised governing procedures to require documentation of volume coverage limitations in the corrective action program (CAP) and review by the UT Level III examiner and the program owner. Additionally, the licensee is developing an engineering change to increase the 1B2 emergency injection line's resistance to piping vibration.

- d. Findings

No findings were identified.

.02 Root Cause, Extent of Condition, and Extent of Cause Evaluation

- a. Determine that the problem was evaluated using a systematic methodology to identify the root and contributing causes

The inspectors noted that the licensee used a combination of different systematic methods to identify root and contributing causes for the pressure boundary leakage event on the Unit 1 HPI nozzle, including:

- fault tree analysis
- human performance evaluation
- events and causal factor analysis
- interviewing
- change analysis
- organization and programmatic evaluation matrix

The inspectors determined that the methods used were appropriate for the technical complexity of the issue that was evaluated.

b. Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem

The root and contributing causes identified in the licensee's evaluation are summarized below:

- The licensee determined that the root cause of the unisolable RCS leak on the 1B2 HPI line was mechanical, high-cycle fatigue which caused a through wall crack in the butt weld between the safe end and HPI pipe.
  - Contributing cause: The licensee concluded that crack initiation was due to a high vibration event, likely associated with the 2008 1B2 reactor coolant pump seal failure.
- The licensee determined the second root cause to be the lack of ownership and oversight of the augmented examination program.
  - Contributing cause 1: The licensee concluded that the guidance within UT procedure NDE-995 was not adequate to ensure consistent examination of weld 1RC-201-105.
  - Contributing cause 2: The licensee determined that the oversight provided for augmented ISI examinations was ineffective at multiple organizational levels including the augmented ISI program content, NDE programmatic requirements, and NDE implementation requirements.

The inspectors determined that the RCE was of sufficient detail to support the identified root and contributing causes and was commensurate with the significance of the problem.

c. Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience

The licensee identified several industry issues associated with through-wall cracking due to thermal fatigue and high cycle fatigue. Based on an extensive review of operating experience, the licensee determined there was a missed opportunity to prevent this event. For the Oconee 1997 RCS leak at the 2A1 safe end-to-HPI pipe weld, examination commitments for the HPI nozzle components were inadequately controlled by the ISI program and augmented inspections of the safe end-to-HPI pipe weld were not performed. A thermal fatigue crack in the area went undetected and propagated through wall. Additionally, an investigation associated with the NRC violation in Inspection Report 2008-03, dated July 25, 2008 [Root Cause in Problem Identification Program (PIP) 06-2903] identified that the "existing process for reviewing and evaluating limited examination results was inadequate," but the licensee focused all corrective actions on Section XI required inspections.

The inspectors determined that the RCE for the pressure boundary leakage event on the Unit 1 HPI nozzle considered prior occurrences of the problem and knowledge of prior operating experience.

d. Determine that the root cause evaluation addressed the extent of condition and the extent of cause of the problem

The extent of condition review focused on other weld locations, that were examined per NDE-995 and other NDE procedures, where limitations were not adequately addressed. The ISI and NDE groups reviewed these locations to determine if there were any documented limitations. The Oconee Nuclear Station (ONS) Units 1, 2, and 3 locations with documented limitations were re-examined with no additional indications found. The Unit 1 and 2 locations with limitations were re-examined using NDEMAN-PDI-UT-2-F, "Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds", Rev. F and all results were deemed acceptable. The Unit 3 NDE examination results were reviewed and four examinations with limitations were identified. These limitations were valve to valve welds that had an RT performed and determined no indications. In addition, the licensee conducted a review of UT NDE procedures to determine if the procedures appropriately addressed limitations. All applicable NDE procedures were found to appropriately address limitations, with the exception of NDE-995, "Ultrasonic Examination of Small Diameter Piping Butt Welds and Base Material for Thermal Fatigue Damage," and NDE-998, "Ultrasonic Examination of Mid and Large Diameter Piping Butt Welds and Base Material for Thermal Fatigue Damage." Both NDE-995 and NDE-998 were later revised to include adequate guidance and instruction to ensure that all limitations were addressed.

While the licensee's RCE was intended to resolve an ONS specific issue, the extent of condition review included the Duke Energy nuclear fleet where applicable. The extent of condition review included the following:

- ONS HPI safe end-to-pipe butt welds
- All ONS welds inspected using NDE-995 that resulted in limited coverage
- Fleet review of augmented examinations that are inspected using NDE-995
- NDE procedures used to perform inspections as part of the augmented program portion of the ISI plan to determine if a weakness similar to what was identified in NDE-995 exists
- Fleet review of augmented examinations that are inspected using procedures identified as being similar to NDE-995

The inspectors determined that the evaluation for the pressure boundary leakage event on the Unit 1 HPI nozzle adequately addressed the extent of condition and extent of cause. The inspectors also noted that the licensee implemented fleet wide corrective actions to address issues identified by the extent of condition and extent of cause analyses.

- e. Determine that the root cause, extent of condition, and extent of cause evaluations appropriately considered the safety culture components as described in Inspection Manual Chapter (IMC) 0310

The licensee's evaluation identified weaknesses within the cross-cutting areas of human performance and problem identification and resolution. Additionally, the licensee's evaluation identified a weakness within the following supplemental cross-cutting aspect:

- Supplemental component of leader behaviors (X.5): The implementing Level III was not adequately involved in the work activities to appropriately exhibit desired behaviors. Pre-job briefs and critiques were often not performed and examination results were not reviewed in a timely manner. Limitations were accepted because they had been encountered previously. Programmatically, the augmented examination program was not defined, so owners/leaders were not identified. This is related to the one of the contributing causes which highlights the ineffective oversight provided for augmented ISI examinations at multiple organizational levels including augmented ISI program content, NDE programmatic requirements, and NDE implementation requirements.

The inspectors determined that the safety culture components were appropriately considered and reviewed in the licensee's evaluation.

- f. Findings

No findings were identified.

### .03 Corrective Actions

- a. Determine that appropriate corrective actions were specified for each root and contributing cause or that there was an adequate evaluation for why no corrective actions were necessary

The inspectors determined that appropriate corrective actions were established to address each of the root and contributing causes for the Unit 1 unisolable reactor coolant system leak from a weld on the 1B2 HPI line.

To address the root causes, the licensee implemented corrective actions to prevent reoccurrence (CAPRs) of the event. The CAPRs encompassed several actions including increasing the inspection frequency of the failed HPI weld (and other comparable welds identified during the licensee's extent of condition evaluation) and addressing the lack of ownership and oversight of the augmented inspection program.

For the contributing causes, the licensee implemented CAPRs to include increasing the amount of Level III examiner oversight during the inspection planning and results evaluation stages, revising the implementing procedures used to inspect the class of components that included the 1B2 HPI line, revising the procedure used to report inspection coverage during augmented examinations, and separating the augmented

inspection program portion of the ISI program from the ASME Section XI portion so that it can function as an independent engineering program.

- b. Determine that the corrective actions have been prioritized with consideration of the risk significance and regulatory compliance

The inspectors determined that the corrective actions for the events were appropriately prioritized relative to their risk significance and regulatory compliance.

- c. Determine that a schedule has been established for implementing and completing the corrective actions

The inspectors determined that the corrective actions for the risk significant issues had been completed or reasonably scheduled.

The identified procedure updates and changes to the weld inspection frequencies had been implemented at the time of this inspection. Additionally, the augmented inspection program was set up as a stand alone program with a program owner independent from the ASME Section XI inspection program, clearly defined examination scopes, frequencies and bases, and additional Level III examiners to provide technical oversight, program implementation, and program administration.

- d. Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence

The inspectors determined that effectiveness reviews had been completed or were scheduled for the root cause and contributing causes of the Unit 1 unisolable reactor coolant system leak from a weld on the 1B2 HPI line. Additionally, the inspectors determined that each effectiveness review had quantitative or qualitative criteria established to measure success.

The licensee scheduled a focused assessment of the augmented inspection program for 2015 to evaluate whether the separation of the augmented inspection program from the ASME inspection program was effective. This review is planned to ensure that the newly created program addressed several inspection attributes including: the source of the inspection requirement, the source of the inspection technical basis, the owner of the inspection, the inspection frequency, and the inspection acceptance criteria. Additional reviews during 2015 will verify procedure changes have been implemented, review samples of examination records that are initiated from the use of the revised procedures, and perform interviews to ensure that Level III oversight is being provided. The licensee also scheduled an effectiveness review for 2017 to verify that the increased inspection frequencies are completed and maintained, and to assess the organizational readiness if another RCS vibration event occurs.

- e. Determine that the corrective actions planned or taken adequately address a Notice of Violation (NOV) that was the basis for the supplemental inspection, if applicable

The NRC issued an Apparent Violation (AV) to the licensee on May 12, 2014 (ADAMS Accession Number ML14132A203). The NRC issued an NOV to the licensee on August 12, 2014 (ADAMS Accession Number ML14224A629). The licensee provided the NRC with a written response on September 11, 2014. The licensee's response described: (1) corrective steps which have been taken and the results achieved; (2) corrective steps which will be taken; (3) that full compliance was achieved; and (4) the reasons for the violation. During this inspection, the inspectors confirmed that the licensee's RCE and planned and completed corrective actions addressed the NOV. The licensee implemented immediate corrective actions following the pressure boundary leakage event on the Unit 1 HPI nozzle on November 11, 2013. To provide reasonable assurance, the licensee replaced 1B2 weld, successfully completed post-replacement radiography testing (RT) and inspected all HPI lines using diverse techniques.

- f. Findings

No findings were identified.

- .04 Evaluation of IMC 0305 Criteria for Treatment of Old Design Issues

The licensee did not request credit for self-identification of an old design issue. Therefore, the issue was not evaluated against the IMC 0305 criteria for treatment of an old design issue.

- 40A6 Meetings, Including Exit

- .1 Exit Meeting

On February 27, 2015, the inspectors presented the inspection results to Mr. Batson, Site Vice President, and other members of the licensee's staff. The inspectors confirmed that no proprietary information was obtained during the course of the inspection.

- .2 Regulatory Performance Meeting

On February 27, 2015, Frank Ehrhardt, Chief Projects Branch 1, held a regulatory performance meeting with Mr. Batson and the licensee's staff to review the results of the root cause evaluation and proposed corrective actions.

ATTACHMENT: SUPPLEMENTARY INFORMATION

## **SUPPLEMENTARY INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

S. Batson, Site Vice President  
E. Burchfield, Engineering Manager  
R. Guy, Organization Effectiveness Manager  
T. Patterson, Safety Assurance Manager  
T. Ray, Station Manager  
C. Wasik, Regulatory Compliance Manager

#### NRC

R. Hall, Project Manager, NRR

### **LIST OF ITEMS OPENED, CLOSED, DISCUSSED AND UPDATED**

#### Closed

05000269/2013-04-01	LER	High Cycle Fatigue Resulted in Reactor Coolant Leak and Unit Shutdown (Section 4OA3.1)
05000269/2014011-01	VIO	Failure to Identify and Correct Weld Cracking in HPI Nozzle (Section 4OA4)



## LIST OF DOCUMENTS REVIEWED

### Procedures

AP/1/A/1700/016, Abnormal Reactor Coolant Pump Operation, Rev. 24  
AP/1/A/1700/016, Abnormal Reactor Coolant Pump Operation, Rev. 33  
OP/1/A/6101/009, Alarm Response Guide 1SA-09, Rev. 47  
OP/1/A/6101/009, Alarm Response Guide 1SA-09, Rev. 30  
PT/0/A/0811/002, Trip/Transient Review, Rev. 16  
PT/0/A/0811/002, Trip/Transient Review, Rev. 14  
NDEMAN-NDE-995, Ultrasonic Examination of Small Diameter Piping Butt Welds and Base Material for Thermal Fatigue Damage, Rev. 7  
NDEMAN-NDE-995, Ultrasonic Examination of Small Diameter Piping Butt Welds and Base Material for Thermal Fatigue Damage, Rev. 5  
NDEMAN-NDE-69, Visual Examination of Reactor Pressure Vessel Bottom Mounted Instrument Penetration, Rev. 1  
NDEMAN-NDE-68, Visual Examination for Leakage and Boric Acid Corrosion Control, Rev. 5  
NDEMAN-NDE-70, Visual Examination of Reactor Pressure Vessel Upper Head Penetrations, Rev. 1  
NDEMAN-NDE-680, Ultrasonic Examination of Nozzle Inner Radii in Ferritic Pressure Vessels and Ocone HPI Piping, Rev. 6  
NDEMAN-NDE-998, Ultrasonic Examination of Mid and Large Diameter Piping Butt Welds and Base Material for Thermal Fatigue Damage, Rev. 2  
NDEMAN-PDI-UT-2-F, Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds, Rev. F  
NDEMAN-PDI-UT-10, Generic Procedure for the Examination of Dissimilar Metal Welds, Rev. E  
NDEMAN-EPRI-DMW-PA-1, Procedure for Manual Phased Array Ultrasonic Testing of Dissimilar Metal Welds, Rev. 1

### Drawings

OFD-101A-1.4, Flow Diagram of U1 HPI System, Rev. 46  
OFD-100A-1.1, Flow Diagram of Reactor Coolant System, Rev. 40

### Problem Identification Program Reports

PIP O-13-13168, U1 RCS Pressure Boundary Leak at 1B2 HPI Injection Line  
PIP O-14-12010, Area of Scanning Coverage Limitation Encountered During UT Exams  
PIP O-14-12052, Area of Scanning Coverage Limitation Encountered During UT Exams  
PIP O-15-00909, Document Potential Vibration Effects on RCS Piping as a Result of U3 Reactor Trip on 1/31/15  
PIP O-14-11946, Compliance with NRC Commitment to Develop Specific UT Examination Procedures for HPI Nozzle Components  
PIP O-07-02844, Leak at 2HP-487 During HPI Full Flow Test  
PIP O-10-08873, 3HP-186 Handwheel Missing  
PIP O-11-06540, During Procedure PT/1/A/0251/024 1HP-153 Handwheel Fell Off

### Problem Identification Program Reports (as a result of the 95001 Inspection)

PIP O-15-01866, Organization/Programmatic Matrix was Not Readily Available  
PIP O-15-01738, Evaluate the Need to Develop KPIs for NDE Inspection Organizational Effectiveness Reviews

PIP O-15-01799, Clarify NDE Procedural Requirements for Using The CAP When Acceptance Criteria are Not Met

PIP O-15-01801, Evaluate NDE/ISI Pre-Inspection Data Package Content

PIP O-15-01830, Conflict Exists Between NDE Procedures Related to NDE Coverage Plots

PIP O-15-00426, Develop and Administrative Procedure for Assessing Team Scanning

PIP O-15-00429, NDE Pre-Job Briefs Not Performed per Procedural Guidance

PIP O-15-01828, Apparent Inadequate Change Management for Recent Separation of the Augmented Inspection Program

#### Other Documents

UT Calibration/Examination Report Nos.: UT-14-1401, UT-14-1402, UT-14-1346, UT-14-279, BOP-UT-14-279, BOP-UT-14-281

OISI-0169.10-0050-5ONS2-004, Oconee Nuclear Station – Fifth Inspection Interval Inservice Inspection NDE Plan – Unit 2 Addendum 5ONS2-004, Rev. 0

Root Cause Evaluation Report U1 RCS Pressure Boundary Leak at 1B2 HPI Injection Line, Rev. 5

AD-EG-ALL-1704, Augmented Inservice Inspection Program Administration, Rev. 0

Interview Questions Used During UT Level II Interviews