



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV  
612 EAST LAMAR BLVD, SUITE 400  
ARLINGTON, TEXAS 76011-4125

March 29, 2011

Christopher Schwarz, Vice President, Operations  
Arkansas Nuclear One  
Entergy Operations, Inc.  
1448 S.R. 333  
Russellville, AR 72802

Subject: ARKANSAS NUCLEAR ONE - NRC PROBLEM IDENTIFICATION AND RESOLUTION  
INSPECTION REPORT 05000313/2011006 AND 05000368/2011006

Dear Mr. Schwarz:

On February 18, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed a team inspection at your Arkansas Nuclear One facility. The enclosed inspection report documents the inspection findings, which were discussed on February 18, 2011, with Mr. M. Chisum, General Manager, Plant Operations, and other members of your staff.

The inspection examined activities conducted under your license as they relate to identification and resolution of problems, safety and compliance with the Commission's rules and regulations and with the conditions of your operating license. The team reviewed selected procedures and records, observed activities, and interviewed personnel. The team also interviewed a representative sample of personnel regarding the condition of your safety conscious work environment.

Based on the samples selected for review and the interviews conducted, the inspection team concluded that Arkansas Nuclear One, Units 1 and 2, was generally effective in identifying, evaluating and resolving problems. The team determined that your plant personnel consistently identified problems and entered them into the corrective action program at a low threshold. The team noted that plant personnel appropriately screened issues for operability and reportability, and prioritized issues commensurate with the safety significance of the problems. The team also determined that the facility has a strong safety conscious work environment. Although the team concluded that the implementation of your corrective action program at Arkansas Nuclear One, Units 1 and 2, was generally effective, this report documents one NRC-identified finding of very low safety significance (Green). The finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance of the violation and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV; 612 East Lamar Blvd., Suite 400, Arlington, Texas 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory

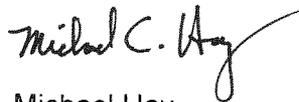
Entergy Operations, Inc.

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Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspectors at the Arkansas Nuclear One, Units 1 and 2, facility.

In accordance with 10 CFR 2.390 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 Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web-site at [www.nrc.gov/reading-rm/adams.html](http://www.nrc.gov/reading-rm/adams.html) (the Public Electronic Reading Room).

Sincerely,

A handwritten signature in black ink that reads "Michael C. Hay". The signature is written in a cursive style with a long, sweeping tail on the letter "y".

Michael Hay,  
Chief, Technical Support Branch  
Division of Reactor Projects

Docket: 50-313 and 50-368  
License: DPR-51 and NPF-6

Enclosure:  
NRC Inspection Report 05000313/2011006; 05000368/2011006  
w/Attachment: Supplemental Information

cc w/Enclosure:

Distribution via ListServ for Arkansas Nuclear One (ANO)

**U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV**

Docket: 05000313 and 05000368

License: DPR - 51 and NPF - 6

Report: 05000313/2011006 and 05000368/2011006

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One, Units 1 and 2

Location: Russellville, Arkansas

Dates: January 31 through February 18, 2011

Team Leader: M. Davis, Senior Resident Inspector

Inspectors: I. Anchondo, Reactor Engineer  
W. Schaup, Resident Inspector  
G. Tutak, Project Engineer

Approved By: Michael Hay, Chief, Technical Support Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

IR05000313/201106; 05000368/2011006; 01/31 - 2/18/2011; "Biennial Baseline Inspection of the Identification and Resolution of Problems"

The team inspection was performed by one senior resident inspector, one resident inspector, and two regional inspectors. One finding of very low safety significance (Green) was identified during this inspection. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process". Findings for which the significance determination process does not apply, may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG 1649, "Reactor Oversight Process," Revision 4, dated December 2006.

### Identification and Resolution of Problems

The team concluded that site was generally effective in identifying, evaluating, and resolving problems. Plant personnel consistently identified problems and entered them into the corrective action program at a low threshold. In general, the licensee appropriately screened issues for operability and reportability, and prioritized issues commensurate with the safety significance of the problems. The licensee effectively used industry operating experience when performing root cause and apparent cause evaluations and appropriately evaluated industry operating experience for relevance to the facility and had entered applicable items in the corrective action program. The licensee performed effective quality assurance audits and self assessments. Additionally, the team concluded from interviews that a healthy safety conscious work environment exists where personnel felt free to raise safety concerns.

Although the team concluded that the implementation of the licensee's corrective action program at Arkansas Nuclear One, Units 1 and 2, was generally effective and that the documentation and tracking of corrective actions were adequate, the team identified some minor exceptions in the following areas: (1) Identification of Issues, (2) Prioritization and Evaluation of Issues, (3) Effectiveness of Corrective Actions, (4) Use of Operating Experience, and (5) Self Assessments and Audits.

### **Cornerstone: Mitigating Systems**

- Green. The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," because the licensee did not promptly identify and correct a condition adverse to quality that affected static uninterruptible power supply inverters used to power vital and safety related loads. Specifically, the licensee did not identify and correct an issue with undersized constant voltage transformers installed in safety-related 120-volt alternate current inverters. As a result, when a constant voltage transformer in one of the inverters became saturated from a voltage spike or electrical malfunction, it would impact an entire train of inverters. The licensee entered this issue into their corrective action program for resolution as CR-ANO-C-2011-0440. The immediate corrective actions following the additional failures included installation of direct current fuses. The planned corrective actions included installation of a

modification to install blocking diodes in the 125 volt direct current input of each vital inverter to prevent faults or transients from adversely affecting the other inverters connected to the same bus.

This finding is greater than minor because it is associated with the design and equipment performance attributes of the Mitigating System cornerstone and affects the cornerstone objective to ensure the availability and reliability of safety-related inverters that respond to initiating events to prevent undesirable consequences in that these inverters supply power to vital and safety related loads. The inspectors evaluated the significance of this finding using Phase 1 of the IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations" given the importance of the system and the fact that this condition affected an entire train of safety-related inverters due to a voltage spike or electrical malfunction. The inspectors determined that the finding was of very low safety significance (Green) because it is not a qualification deficiency, did not represent a loss of a safety function of a system or a single train greater than its Technical Specification completion time, and did not screen as potentially risk significant due to external events. The inspectors did not assign a crosscutting aspect because the finding is not reflective of current performance (Section 4OA2.5).

## **Other Findings**

### Licensee – Identified Violations

None.

## REPORT DETAILS

### 4. OTHER ACTIVITIES (OA)

#### 4OA2 Problem Identification and Resolution (Biennial 71152)

The team based the following conclusions on the sample of corrective action documents that were initiated in the assessment period, which ranged from February 20, 2009, through the end of the on-site portion of the inspection on February 18, 2011.

#### .1 **Assessment of the Corrective Action Program Effectiveness**

##### a. Inspection Scope

The team reviewed several hundred condition reports, including associated root cause, apparent cause, and direct cause evaluations, from approximately twelve thousand condition reports that had been issued between February 20, 2009, and February 18, 2011, to determine if problems were being properly identified, characterized, and entered into the corrective action program for evaluation and resolution. The team reviewed a sample of system health reports, operability determinations, self-assessments, trending reports and metrics, and various other documents related to the corrective action program. The team evaluated the licensee's efforts in establishing the scope of problems by reviewing selected databases, work requests and orders, self-assessments results, audits, system reports, and results from surveillance tests and preventive maintenance tasks. The team attended the licensee's Condition Review Group screening committee meetings and Corrective Action Review Board meetings to assess the reporting threshold, prioritization efforts, and significance determination process, as well as observe the interfaces with different organizations and processes when applicable. The team's review included verifying that the licensee considered the full extent of cause and extent of condition for problems, as well as how the licensee assessed generic implications and previous occurrences. The team assessed the timeliness and effectiveness of completed or planned corrective actions, and looked for additional examples of similar problems. The team conducted interviews with plant personnel to identify other processes that may exist where problems may be identified and addressed outside the corrective action program.

The team also reviewed corrective action documents that addressed past NRC-identified violations to ensure that the corrective actions addressed the issues as described in the inspection reports. The inspectors reviewed a sample of corrective actions closed to other corrective action documents to ensure that corrective actions were still appropriate and timely.

Furthermore, the team reviewed condition reports selected across the seven cornerstones of safety in the NRC's Reactor Oversight Process. The team selected a risk-informed sample of condition reports that had been processed through the corrective action program and that had been issued since the last team inspection. The team considered risk insights from the NRC's and licensee's risk assessments to focus

the sample selection on risk-significant systems and components. The samples focused on, but were not limited to these above mention systems. The team also expanded the corrective action review to include five years of evaluations involving the following three systems: (1) 480 volt motor control center loads, (2) the Unit 2, 120 volt alternate current system, and (3) the service water system to determine whether problems were being effectively addressed. Additionally, the team conducted walkdowns of these systems to assess if problems were being identified and entered into the corrective action program.

b. Assessments

1. Assessment - Effectiveness of Problem Identification

Based on the samples selected and plant tours, the team determined that the licensee personnel identified problems and entered them into the corrective action program in accordance with the licensee's corrective action program guidance and NRC requirements. The team determined that the licensee was identifying problems at a low threshold because over 13,000 condition reports were written during the two year period of review. However, the team did identify some examples of conditions adverse to quality that were not placed in the licensee's corrective action program. Those examples are as follows:

- The team identified an issue of concern with the preventive maintenance deferral process in that one procedure referred to a time requirement in another procedure, which had been deleted. The team concluded that with no time requirement to complete evaluations before deferring the performance of a preventive maintenance task beyond its late date could potentially extend a preventive maintenance task without proper justification. The licensee entered this issue into their corrective action program as CR-HQN-2011-0126 for resolution. The team did not identify any preventive maintenance tasks that were beyond their specific date without a proper justification.
- The team identified a latent procedure issue related to the licensee's operator work around and main control room deficiencies process in that the corporate procedure and site-specific procedure did not contain the same guidance on identifying, tracking, and correcting plant deficiencies that impacted Operations. The team noted during a control room walkdown that the control room deficiencies were being tracked in several areas and were not readily available for the control room staff to obtain. The team also noted that there was a lack of operator knowledge as to which guidance to follow due to the conflicting information. The team concluded that with this conflicting guidance this could delay the resolution of deficiencies and make it difficult to assess the cumulative effects for operator work around and main control room deficiencies. The licensee entered this issue into their corrective action program for resolution as CR-ANO-C-2011-0142.
- The team reviewed two category 'D' condition reports ANO-1-2010-2810 and ANO-2-2009-3417, respectively. These particular condition reports were closed to work orders that did not have the correct work order priority associated with them as required by operating procedures OP-1107-004 and OP-2107-004, respectively. The

procedures state, in part, that if voltages on a direct current bus fall below a certain value then perform the following: (1) Contact the system engineer; (2) Initiate a maintenance call-out, and (3) Initiate emergency maintenance and a priority 1 work request and/or work order to repair the degraded condition. In both cases, operators initiated a priority 2 work request. The team concluded that operators did not follow procedures as written. The licensee entered this issue into their corrective action program as CR-ANO-1-2011-0268 for resolution. The team determined that this issue is minor because it involved an administrative requirement that had no safety impact.

## 2. Assessment - Effectiveness of Prioritization and Evaluation of Issues

The team determined that, in general, the licensee appropriately prioritized and evaluated issues commensurate with the safety significance of the identified problem. The team screened a number of condition reports that involved operability and reportability reviews to assess the quality, timeliness, and prioritization of these issues. The team noted that the immediate and prompt operability assessments reviewed were completed in a timely manner. The team also noted that for the most part the evaluations were thorough such that the resolutions addressed causes and extent of conditions, as necessary. However, the team identified an exception with a root cause evaluation. The team reviewed condition report, ANO-1-2010-2056, and its associated non-cited violation 2010003-06 that documented a failure of the licensee personnel to follow procedure, which led to a reactor trip. The team noted that the root cause evaluation and the corrective actions to prevent reoccurrence did not fully address the non-cited violation. The licensee determined that the cause of the reactor trip was a failure to follow procedure and the corrective action to prevent reoccurrence was to change the procedure. The team determined that a change in the procedure did address the root cause. However, the contributing causes associated with the evaluation addressed the behavior issue of not following procedures. Additionally, the root cause evaluation did not include all the organizational and programmatic weakness associated with the contributing causes identified in the evaluation. This is contrary to the procedure requirements contained in Section 5.2.3 of EN-LI-118, Root Cause Analysis Process. The inspectors noted to the licensee that the cause and corrective action did not conform to their procedural guidance. The licensee also identified areas of concern with this evaluation and decided to revise the root cause evaluation. The licensee entered this issue into their corrective action program as CR-ANO-C-2010-02920 for resolution.

## 3. Assessment – Effectiveness of Corrective Action Program

Overall, the team concluded that the licensee developed appropriate corrective actions to address problems. The team determined that corrective actions for identified deficiencies were generally timely and adequately implemented. In most cases, the licensee appropriately self-identified ineffective or improper closeout of corrective actions. However, the team noted instances where corrective actions were not fully effective and implemented in a timely manner. Some examples included:

- The Unit 2, 120 volt vital power system has experience multiple inverter failures since installation in 1999. The team identified a non-cited violation that is discussed in Section 4OA2.5 of this report.
- The team reviewed condition report ANO-C-2010-1676 written to address a non-cited violation 2010402-01 for security waivers. The team noted that the condition report was improperly closed to another condition report that did not take into account the actions necessary to resolve the non-cited violation. This is contrary to the procedure requirements contained in Section 5.10 of EN-LI-102, Corrective Action Process. The team determined that this issue is minor because even though it was improperly closed the actions to resolve the non-cited violation were addressed in another condition report. The licensee entered this issue into their corrective action program as CR-ANO-1-2011-00428 for resolution.
- The team reviewed a self assessment for the Boric Acid Corrosion Control Program, LO-ALO-2008-90. The team identified that the corrective actions associated with the self assessment contained due dates extended without proper approvals. This is contrary to the procedure requirements contained in Section 5.5 of EN-LI-104, Self-Assessment and Benchmark Process. Additionally, the team noted that corrective action number 8 was not completed. The team determined that this issue is minor because it involved administrative requirements that had no safety impact, although the corrective actions were not implemented in a timely fashion. The licensee entered these issues into their corrective action program as CR-ANO-C-2011-00376 and CR-ANO-C-2011-00376 for resolution, respectively.
- The team reviewed ANO-1-2010-0404, which documented a fire impairment that impacted the diesel fire pump's ability to start from the control room. The licensee implemented a fire watch but did not assign any corrective actions to resolve the issue. The team concluded that the condition report was closed without actually resolving the issue. The licensee entered this issue into their corrective action program as CR-ANO-1-2011-00426 for resolution. The team determined that this issue is minor because compensatory measures were in place.
- The team reviewed ANO-C-2010-0654, a roll-up condition report, which documented minor security equipment deficiencies. The team noted that this condition report documented deficiencies from 2008 that were never corrected from the original condition report. The team determined that this issue is minor because it did not result in a reasonable doubt on the operability of the equipment and the licensee has compensatory measures in place.

## **.2 Assessment of the Use of Operating Experience**

### **a. Inspection Scope**

The team examined the licensee's program for reviewing industry operating experience, including reviewing the governing procedure and self assessments. The team reviewed a number of operating experience notifications that had been issued during the assessment period to assess whether the licensee had appropriately evaluated the

notification for relevance to the facility. The team also examined whether the licensee had entered those items into their corrective action program and assigned actions to address the issues. The team reviewed a sample of root cause evaluations and corrective action documents to verify if the licensee had appropriately included industry operating experience.

b. Assessment

Overall, the team determined that the licensee adequately evaluated industry operating experience for relevance to the facility, based on a number of industry operating experience reviewed. The inspectors concluded that the licensee entered applicable items in the corrective action program in accordance with station procedures. The team concluded that the licensee evaluated industry operating experience when performing root and apparent cause evaluations. Both internal and external operating experience was being incorporated into lessons learned for training and pre-job briefs. However, the team noted an exception as a part of the review. The team reviewed CR-ANO-2009-1421 and the associated apparent cause evaluation that documented a condition in which a past operability evaluation of a High Energy Line Barrier (HELB) Door was not thoroughly evaluated because the door was unlatched. The team noted a potential weakness in the licensee's risk assessment guidelines because it did not, in all cases, account for increase risk when a HELB door became inoperable or out of service for maintenance related activities. The team determined that if the licensee had screened applicable operating experience such as the NRC Regulatory Issue Summary (RIS) 2001-09, Control of Hazards Barriers, then the licensee should have risk assessed or determined the impact of an unlatched HELB door. As a result, the team requested a copy of the screening evaluation for NRC RIS 2001-09 since this operating experience was applicable to both units. The team noted that the licensee could not retrieve a copy of the evaluation. Moreover, the licensee had a difficult time retrieving other information related to other NRC related operating experience such as regulatory issue summaries and information notices, prior to 2005. The team concluded that the licensee may have a weakness in the area of NRC related operating experience.

**.3 Assessment of Self-Assessments and Audits**

a. Inspection Scope

The team reviewed a sample population of the licensee's self-assessments, surveillances, and audits to assess whether the licensee was regularly identifying performance trends and effectively addressing them. The team reviewed audit reports to assess the effectiveness of assessments in specific areas. The team evaluated the use of self and third party assessments, the role of the quality assurance department, and the role of the performance improvement group related to the licensee's performance. The specific self-assessment documents reviewed are included in the attachment to this report.

b. Assessment

The team concluded that audits and self-assessments were critical and, in most cases, appropriate actions were taken to address identified issues. The team determined that corrective actions associated with identified issues were implemented commensurate with their safety significance. However, the team noted in one case that the licensee was not as critical. As a part of the team condition report review, the team noted that the licensee generated an adverse trend condition report ANO-C-2009-00074 due to a large number of preventive maintenance deferral problems. The team reviewed the engineering/maintenance self-assessment (QA-04-2009-ANO-1) and noted that the licensee did not identify this adverse trend with the preventive maintenance program, when part of the scope of the audit was to review this particular aspect of the program. The team determined that this was a missed opportunity to evaluate and resolve an issue with the preventive maintenance program through the licensee's self assessment process.

**.4 Assessment of Safety-Conscious Work Environment**

a. Inspection Scope

The inspection team conducted individual interviews with a number of individuals across different departments. The individuals performed various functions throughout the organization and at different levels such as contractors, staff, and supervisors. The team conducted these interviews to assess whether conditions existed that would challenge the establishment of a safety conscious work environment at Arkansas Nuclear One, Units 1 and 2.

b. Assessment

The team determined that the plant staff were aware of the importance of having a strong safety conscious work environment and expressed a willingness to raise safety issues. No one interviewed had experienced retaliation for safety issues raised, or knew of anyone who had failed to raise issues. Based on a limited number of interviews, the team concluded that there was no evidence of an unacceptable safety conscious work environment. In most cases, the plant staff knew who the Employee Concerns Program coordinator was but did not necessary know where the office was located or knew that the Employee Concerns Program was an avenue to raise safety concerns. The team observed this when conducting interviews with groups of one to three years of experience and was only limited to certain Departments. However, those particular Department employees' felt comfortable in bringing any concerns to their supervisors.

**.5 Specific Issues Identified During This Inspection**

Failure to Resolve Adverse Conditions in a Timely Manner related to 120 Volt Vital Inverters

Introduction. The team identified a Green finding associated with a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," because the licensee did not promptly identify and correct a condition adverse to quality that affected static uninterruptible power supply inverters used to power vital and safety related loads. Specifically, the licensee did not identify and correct an issue with undersized constant voltage transformers installed in safety-related 120-volt vital inverters. As a result, when a constant voltage transformer (CVT) in one of the inverters became saturated from a voltage spike or electrical malfunction, it would impact an entire train of inverters.

Description. On September 4, 2008, an entire train of 120-volt alternate current (VAC) vital inverters failed due to blown fuses from a fault in a transfer switch. At the time of this occurrence, Unit 2 Operators were attempting to place the vital inverter 2Y-11 on its alternate source in preparation for parallel operation with the swing inverter 2Y-1113. During the transfer operation, the 2Y-11 experienced a fault on the static transfer control board, which caused the inverter's output voltage to increase from 120 VAC to 125 VAC. This positive step change caused the inverter's constant voltage transformer (CVT) windings to saturate. The CVT is not designed to operate in a saturated region. The voltage transient through the CVT caused the direct current (DC) input fuses in 2Y-11, 2Y-1113, and 2Y-13 to blow. The licensee initiated a higher tier apparent cause evaluation ANO-2-2008-2076 and determined that the apparent cause was blown fuses caused by a saturated CVT.

The team reviewed the apparent cause evaluation, associated condition reports, work orders, and other related documents as a part of the five year review. The team noted that the licensee had previous failures dating back to the initial installation of the 120 volt vital inverters. The first failure occurred during inverter startup activities, on January 27, 1999, when a fault in 2Y-22 caused the fuse to blow in another inverter 2Y-24. On October 4, 2000, 2Y-1113 malfunctioned when operators attempted to place it in service. This failure caused the fuses to blow in 2Y-11 and 2Y-13. For the above failures, the licensee corrected the conditions that led to the initial faults, but did not evaluate a single failure having an adverse affect on the other inverters in the train. On November 8, 2006, 2Y-22 failed and the fuses in 2Y-2224 and 2Y-24 blew. The licensee determined that a voltage transient through the CVT caused the other inverters' DC input fuses to blow due to the CVT operating in a saturated region. For each of these conditions identified above, a single failure impacted other inverters in the train. The corrective actions performed for each case was to replace the input fuses.

The team determined that the licensee missed opportunities to identify and correct a condition adverse to quality related to an undersized CVT that affected an entire train of vital inverters. The licensee entered the issue into their corrective action program for resolution as CR-ANO-C-2011-0440. The licensee evaluated the condition adverse to quality and determined that a modification to install a blocking diode in the 125 VDC input of each vital inverter would prevent future faults from affecting multiple inverters connected to the same DC bus.

Analysis. The performance deficiency is that the licensee did not identify and correct an issue with undersized constant voltage transformers installed in safety-related 120-volt vital inverters in a timely manner. The licensee missed opportunities to identify and correct this issue during previous evaluations of failures. As a result, when a constant voltage transformer (CVT) in one of the inverters became saturated from a voltage spike or electrical malfunction, it would impact an entire train of inverters. This finding is greater than minor because it is associated with the design and equipment performance attributes of the Mitigating System cornerstone and affects the cornerstone objective to ensure the availability and reliability of safety-related inverters that respond to initiating events to prevent undesirable consequences in that these inverters supply power to vital and safety related loads. The inspectors evaluated the significance of this finding using Phase 1 of the IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations" given the importance of the system and the fact that this condition affected an entire train of safety-related inverters due to a voltage spike or electrical malfunction. The inspectors determined that the finding was of very low safety significance (Green) because it is not a qualification deficiency, did not represent a loss of a safety function of a system or a single train greater than its Technical Specification completion time, and did not screen as potentially risk significant due to external events. The inspectors did not assign a crosscutting aspect because the finding is not reflective of current performance.

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, from 1999 through September 4, 2008, the licensee missed opportunities to identify and correct a problem of single inverter faults affecting the entire train of inverters in a timely manner. Because the violation is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-ANO-C-2011-0440, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000368/2011006-01, "Failure to Resolve Adverse Conditions in a Timely Manner Related to the 120 Volt Vital Inverters."

## **40A6 Meetings**

### Exit Meeting Summary

On February 18, 2011, the resident inspectors presented the inspection results to Mr. M. Chisum, General Manager, Plant Operations, and other members of the licensee's staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENTS: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Entergy Personnel

C. Schwarz, Site Vice President, Operations  
M. Chisum, General Manager, Plant Operations  
D. James, Director, Nuclear Safety Assurance  
J. Eichenberger, Manager, Corrective Actions and Assessments  
S. Pyle, Acting Manager, Licensing  
B. Lorin, Manager, Security  
B. Short, Licensing Specialist  
D. Fowler, Manager, Quality Assurance  
J. McCoy, Director, Engineering  
L. McCarty, Corrective Actions and Assessments Specialist  
R. Phillips, Manager, Planning, Scheduling, and Outages  
S. Cotton, Manager, Training

#### NRC Personnel

M. Hay, Chief, Technical Support Branch  
M. Davis, Team Leader, Senior Resident Inspector

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

#### Opened and Closed

05000368/2011006-01	NCV	Failure to Resolve Adverse Conditions in 120 Volt Vital Inverters in a Timely Manner (4OA2.5)
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## LIST OF DOCUMENTS REVIEWED

### Section 4OA2: Problem Identification and Resolution

#### Procedures/Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
1015.033	Switchyard Controls	13
1104.024	Instrument Air System	38
1104.025	Service Air System	16
1104.027	Battery and Switchgear Emergency Cooling System	37
1107.004	Battery and 125 V DC Distribution	17
1304.043	Unit 1 Reactor Protection System Channel C Calibration	43
2104.005	Containment Spray	59
2106.009	Turbine Generator Operations	60
2107.001	Electrical System Operations	81
2307.043	Unit 2 2D-11, 2D-12 and 2D-13 Battery Yearly Inspection	4
COPD-13	Operations Maintenance Interface Standards/Expectations	32
COPD-20	ANO Operations Concerns Program	9
COPD-24	Risk Assessment Guidelines	36
EN-AD-102	Procedure Adherence and Level of Use	5
EN-DC-136	Temporary Modifications	5
EN-DC-153	Preventive Maintenance Component Classification	5
EN-DC-203	Maintenance Rule Program	1
EN-DC-204	Maintenance Rule Scope and Basis	2
EN-DC-205	Maintenance Rule Monitoring	2
EN-DC-206	Maintenance Rule (a)(1) Process	1
EN-DC-324	Preventive Maintenance Program	6
EN-DC-335	PM Basis Template	2
EN-DC-340	Microbiology Influenced Corrosion Monitoring Program	0
EN-FAP-OP-006	Operator Aggregate Impact Index Performance Indicator	0
EN-FAP-WM-008	Outage Preparation and Recovery	0
EN-FAP-WM-011	Work Planning Standard	0

EN-HU-113	Human Performance Error Review	4
EN-LI-102	Corrective Action Process	16
EN-LI-104	Self-Assessment and Benchmark Process	6
EN-LI-118	Root Cause Analysis Process	13
EN-LI-118-06	Common Cause Analysis (CCA)	1
EN-LI-119	Apparent Cause Evaluation (ACE) Process	11
EN-LI-121	Energy Trending Process	8
EN-MA-101	Conduct of Maintenance	9
EN-NS-102	Fitness for Duty Program	9
EN-NS-117	Fitness for Duty Process	6
EN-NS-200	Security Reporting Requirements	5
EN-NS-215	Conduct of Security Force Exercises and Drills	10
EN-OM-123	Fatigue Management Program	3
EN-OP-102	Protective and Caution Tagging	13
EN-OP-102	Protective and Caution Tagging	13
EN-OP-104	Operability Determination Process	5
EN-OP-104	Operability Determination Process	4
EN-OP-104	Operability Determination Process	4
EN-OP-111	Operational Decision-making Issue Process	6
EN-OP-115	Conduct of Operations	5
EN-QV-108	QA Surveillance Process	8
EN-QV-109	Audit Process	19
EN-QV-126	Oversight Follow-Up Procedure	14
EN-QV-128	Assessments of Nuclear Oversight	4
EN-TQ-212	Conduct of Training and Qualification	9
EN-WM-109	Scheduling	5
OP-1015.001	Conduct of Operations	84
OP-1015.048	Shutdown Operations Plan	3
OP-1203.008	Natural Emergencies (Unit 2)	20
OP-1203.025	Natural Emergencies (Unit 1)	32
OP-2305.054	Offsite Power Transfer Test	7

Condition Reports

ANO-1-2010-0711      ANO-1-2008-0637      ANO-1-2010-0627      ANO-1-2010-0892

ANO-2-2009-3454	ANO-2-2009-3862	ANO-C-2009-0484	ANO-C-2009-0752
ANO-1-2010-0369	ANO-1-2007-0339	ANO-1-2010-0165	ANO-2-2009-0817
ANO-2-2010-3294	ANO-1-2009-0476	ANO-1-2009-0819	ANO-1-2009-0959
ANO-2-2009-3234	ANO-2-2010-0473	ANO-1-2008-0649	ANO-2-2009-0964
ANO-1-2010-3113	ANO-1-2010-3255	ANO-1-2010-3260	ANO-1-2010-0348
ANO-1-2010-3078	ANO-C-2010-2166	ANO-C-2010-3197	ANO-C-2010-1866
ANO-1-2010-2815	ANO-1-2010-2819	ANO-1-2010-2822	ANO-1-2010-0850
ANO-C-2010-2787	ANO-2-2010-2476	ANO-1-2010-3563	ANO-C-2010-2896
ANO-C-2009-2662	ANO-C-2009-2664	ANO-C-2009-2669	ANO-2-2009-0308
ANO-C-2009-2652	ANO-1-2010-1795	ANO-C-2009-0934	ANO-2-2009-2031
ANO-C-2009-2637	ANO-C-2009-2642	ANO-1-2009-2340	ANO-2-2010-0032
ANO-C-2009-2597	ANO-C-2009-0580	ANO-C-2009-0140	ANO-C-2010-0497
ANO-2-2009-2576	ANO-2-2009-2600	ANO-2-2009-2658	ANO-C-2010-2913
ANO-2-2010-2488	ANO-2-2010-2543	ANO-2-2010-2594	ANO-2-2010-2685
ANO-C-2009-2420	ANO-C-2010-1058	ANO-2-2010-0417	ANO-C-2010-1687
ANO-C-2009-2405	ANO-C-2010-1470	ANO-2-2009-0275	ANO-C-2010-2502
ANO-C-2009-2378	ANO-C-2010-1275	ANO-2-2009-1801	ANO-C-2010-1888
ANO-1-2010-2333	ANO-1-2010-2680	ANO-1-2010-2979	ANO-1-2010-3069
ANO-2-2009-2324	ANO-2-2009-2330	ANO-2-2009-2244	ANO-2-2009-2471
ANO-C-2009-2326	ANO-C-2010-1288	ANO-2-2009-3646	ANO-C-2010-1862
ANO-1-2009-2297	ANO-1-2010-1316	ANO-2-2009-0788	ANO-2-2009-1200
ANO-C-2009-2241	ANO-2-2009-3515	ANO-C-2009-2349	ANO-2-2009-3785
ANO-1-2010-2231	ANO-1-2010-2821	ANO-1-2010-2822	ANO-1-2010-3037
ANO-C-2010-2119	ANO-C-2009-1209	ANO-1-2009-1322	ANO-2-2009-2149
ANO-C-2009-2118	ANO-C-2009-1315	ANO-C-2009-0002	ANO-C-2010-0977
ANO-C-2009-2107	ANO-C-2010-1071	ANO-2-2010-0911	ANO-C-2010-1560
ANO-1-2009-2061	ANO-1-2010-0908	ANO-C-2008-2033	ANO-1-2009-0876
ANO-1-2010-2056	ANO-C-2009-0406	ANO-C-2009-0059	ANO-C-2009-0811
ANO-2-2009-2019	ANO-2-2009-2021	ANO-2-2009-2074	ANO-2-2009-2242
ANO-1-2009-1996	ANO-C-2010-0118	ANO-C-2010-0163	ANO-C-2010-0515
ANO-2-2008-1965	ANO-2-2010-2186	ANO-2-2010-1925	ANO-2-2010-1796
ANO-2-2010-1790	ANO-2-2010-1787	ANO-2-2010-1718	ANO-C-2010-0329
ANO-C-2009-1627	ANO-2-2009-3378	ANO-2-2009-2700	ANO-C-2010-0037
ANO-2-2010-01622	ANO-2-2010-2404	ANO-2-2010-0338	ANO-1-2010-0316

ANO-C-2009-1619	ANO-C-2010-0671	ANO-2-2010-0903	ANO-C-2010-1488
ANO-C-2010-1551	ANO-C-2010-1552	ANO-1-2009-0066	ANO-1-2009-0058
ANO-2-2007-1512	ANO-2-2006-2496	ANO-C-2008-1140	ANO-C-2009-0074
ANO-1-2009-1421	ANO-C-2011-0428	ANO-C-2011-0426	ANO-C-2011-0412
ANO-C-2009-1393	ANO-C-2009-1394	ANO-C-2010-0726	ANO-C-2010-1037
ANO-C-2009-1386	ANO-C-2009-1908	ANO-1-2009-2167	ANO-C-2010-1126
ANO-C-2009-1385	ANO-C-2010-0670	ANO-1-2010-2242	ANO-C-2010-1486
ANO-C-2010-1353	ANO-C-2010-1959	ANO-C-2010-3025	ANO-C-2010-2102
ANO-1-2010-1330	ANO-2-2010-1385	ANO-C-2010-1446	ANO-1-2010-2810
ANO-C-2009-1332	ANO-C-2009-0666	ANO-C-2009-0175	ANO-C-2010-0943
ANO-2-2005-1307	ANO-C-2010-1964	ANO-C-2010-2114	ANO-C-2010-2140
ANO-1-2009-1193	ANO-C-2009-1342	ANO-1-2010-2127	ANO-2-2010-1203
ANO-2-2009-1180	ANO-2-2009-1327	ANO-2-2009-2991	ANO-2-2009-3293
ANO-C-2010-1178	ANO-C-2010-0371	ANO-1-2010-2218	ANO-C-2010-1482
ANO-2-2009-1157	ANO-2-2005-2151	ANO-1-2010-3763	ANO-C-2006-0852
ANO-1-2010-1149	ANO-1-2010-1316	ANO-1-2010-1982	ANO-1-2010-2522
ANO-C-2010-1133	ANO-C-2009-0613	ANO-C-2009-0151	ANO-C-2010-0792
ANO-1-2009-1051	ANO-1-2009-1111	ANO-1-2010-0364	ANO-1-2010-0501
ANO-C-2010-1048	ANO-C-2010-1793	ANO-C-2010-2176	ANO-C-2010-0450
ANO-2-2010-0896	ANO-2-2010-2318	ANO-1-2009-0357	ANO-C-2009-1400
ANO-1-2009-0872	ANO-1-2009-0984	ANO-1-2009-0993	ANO-2-2009-1573
ANO-C-2006-0852	ANO-C-2002-0921	HQN-2011-0126	ANO-1-2009-0655
ANO-C-2010-0808	ANO-C-2009-2599	ANO-C-2009-3916	ANO-C-2009-2658
ANO-C-2009-0755	ANO-C-2009-1506	ANO-1-2009-1578	ANO-C-2010-1066
ANO-1-2009-0695	ANO-1-2009-0880	ANO-1-2009-2144	ANO-1-2009-2273
ANO-C-2010-0693	ANO-1-2010-1050	ANO-C-2009-2562	ANO-C-2009-2561
ANO-C-2010-0691	ANO-C-2010-1048	ANO-C-2010-1140	ANO-C-2010-1810
ANO-C-2009-0649	ANO-C-2009-1417	ANO-1-2009-0178	ANO-C-2010-1062
ANO-C-2010-0536	ANO-C-2009-0025	ANO-C-2010-0802	ANO-1-2009-0794
ANO-C-2009-0474	ANO-2-2009-2332	ANO-C-2009-2571	ANO-C-2010-0691
ANO-2-2010-0470	ANO-C-2009-2664	ANO-1-2011-0268	ANO-2-2011-0425
ANO-C-2010-0452	ANO-2-2009-0491	ANO-2-2009-1492	ANO-2-2008-2076
ANO-1-2009-0428	ANO-C-2009-1582	ANO-1-2009-0449	ANO-1-2009-0574
ANO-C-2010-0415	ANO-C-2009-0012	ANO-C-2010-0715	ANO-1-2009-0650

ANO-C-2011-0412	ANO-C-2009-0539	ANO-C-2009-0091	ANO-C-2009-2686
ANO-C-2010-0405	ANO-C-2009-0014	ANO-C-2010-0711	ANO-2-2009-0771
ANO-2-2009-0352	ANO-1-2009-0257	ANO-2-2009-0332	ANO-C-2009-0262
ANO-C-2009-0331	ANO-C-2009-1355	ANO-1-2009-0029	ANO-C-2010-0986
ANO-1-2009-0318	ANO-1-2010-2887	ANO-1-2010-2957	ANO-C-2010-1965
ANO-1-2010-0304	ANO-1-2008-0544	ANO-2-2009-3019	ANO-1-2010-2102
ANO-C-2010-0272	ANO-C-2009-0007	ANO-C-2010-0549	ANO-2-2009-0141
ANO-C-2010-0248	ANO-C-2009-0005	ANO 2-2009-0025	ANO-2-2009-0111
ANO-C-2010-0246	ANO-C-2009-2372	ANO-1-2010-0317	ANO-C-2010-1475
ANO-1-2009-0225	ANO-2-2009-0658	ANO-C-2010-1351	ANO-C-2010-1352
ANO-1-2009-0216	ANO-1-2009-0337	ANO-2-2010-2241	ANO-2-2010-2379
ANO-2-2010-0189	ANO-2-2010-1487	ANO-2-2009-2671	ANO-2-2010-0120
ANO-C-2010-0148	ANO-1-2010-2859	ANO-C-2009-1840	ANO-2-2009-3831
ANO-C-2010-0057	ANO-C-2010-2920	ANO-1-2010-0127	ANO-1-2010-0389
ANO-C-2010-0013	ANO-2-2010-0944	ANO-2-2009-2031	ANO-1-2009-2089
ANO-C-2010-2112			

Work Orders

73525	136213	156344	130289
191737	51511439	136660	219604
212805	218613	174198	218614
138588	132593	174187	129845
129845	134538	174193	155887
52191209	52036682	52206839-1	00178928
51676088	50240094	00252784-01	00256586
00210819	50013499	50013514	00240431
00226754	00215986	00220801	

Audits and Surveillances

NQ-2009-0014	NQ-2010-014	NQ-2010-013	NQ-2009-023
NQ-2009-0039	NQ-2009-010	NQ-2009-030	NQ-2010-001
LO-ALO-2008-00080	LO-ALO-2010-00001	LO-ALO-2008-00001	LO-ALO-2008-00096
LO-ALO-2009-00018	LO-ALO-2009-00029	LO-ALO-2009-00031	LO-ALO-2009-00045
LO-ALO-2009-00061	LO-ALO-2009-00062	LO-ALO-2009-00065	

LO-ALO-2009-00054    LO-ALO-2008-00090    LO-ALO-2009-0065

Operating Experience

GE-TIL-1631	LO-NOE-2009-0090	CR-NOE-2009-0206	CR-NOE-2009-0382
CR-NOE-2009-0479	WH-TB-10-1-A2- ANO-0001	WH-TB-09-4-R1-A2- ANO-0001	WH-TB-09-4-R1-A2- ANO-0002
GE-TIL-1656-A2- ANO-0001	WH-TB-10-4-A2- ANO-0001	WH-TB-10-4-A2- ANO-0002	LO-NOE-2009-0136
LO-NOE-2009-357	LO-NOE-2009-099	LO-NOE-2009-361	
NRC RIS 2001-09	ER-ANO-2004-0735		

Miscellaneous

<u>Number</u>	<u>Title</u>	<u>Revision</u>
	ANO 2010 Second Quarter Oversight Report	
EP-006	ANO Emergency Planning Desk Guide Drill/Exercise Manual Addendum	10
FLP-MMBA-FASNR	Fasteners, Torque, and Gaskets	0
EC-23566	Defeat TS-6060 on VCH-4B by Turning to the Off Position	0
EC-25759	ANO-1 VCH-4A/4B Trip Hardening	0
EC-19590	Install Blocking Diode on DC Input of Unit 1 and Unit 2 Safety Related Inverters	0
980020E201	Engineering Request	0
STM 1-42	Service & Auxiliary Cooling Water (Unit 1)	20
STM 2-42	Service Water & Auxiliary Cooling Water Systems (Unit 2)	34

**Information Request  
December 5, 2010  
Biennial Problem Identification and Resolution Inspection –  
Arkansas Nuclear One  
Inspection Report Number 2011006**

This inspection will cover the period from February 20, 2009 to January 15, 2011. All requested information should be limited to this period unless otherwise specified. To the extent possible, the requested information should be provided electronically in Adobe PDF or Microsoft Office format. Lists of documents should be provided in Microsoft Excel or a similar sortable format.

A supplemental information request will likely be sent during the week of January 10, 2011, or before.

Please provide the following no later than December 30, 2010:

1. Document Lists

Note: for these summary lists, please include the document/reference number, the document title or a description of the issue, initiation date, and current status.

- a. Summary list of all corrective action documents related to significant conditions adverse to quality that were opened, closed, or evaluated during the period
- b. Summary list of all corrective action documents related to conditions adverse to quality that were opened or closed during the period
- c. Summary lists of operator workarounds, engineering review requests and/or operability evaluations, temporary modifications, and control room and safety system deficiencies opened, closed, or evaluated during the period
- d. Summary list of plant safety issues raised or addressed by the Employee Concerns Program (or equivalent)
- e. Summary list of all Apparent Cause Evaluations completed during the period
- f. Summary list of all Root Cause Evaluations planned or in progress but not complete at the end of the period

2. Full Documents, with Attachments

- a. Root Cause Evaluations completed during the period
- b. Quality assurance audits performed during the period
- c. All audits/surveillances performed during the period of the Corrective Action Program, of individual corrective actions, and of cause evaluations
- d. Corrective action activity reports, functional area self-assessments, and non-NRC third party assessments completed during the period (do not include INPO assessments)

- e. Corrective action documents generated during the period for the following:
  - i. NCV's and Violations issued
  - ii. LER's submitted
- f. Corrective action documents generated for the following (for those that were evaluated but determined not to be applicable, provide a summary list):
  - i. NRC Information Notices, Bulletins, and Generic Letters issued or evaluated during the period
  - ii. Part 21 reports issued or evaluated during the period
  - iii. Vendor safety information letters (or equivalent) issued or evaluated during the period
  - iv. Other external events and/or Operating Experience evaluated for applicability during the period
- g. Corrective action documents generated for the following:
  - i. Emergency planning drills and tabletop exercises performed during the period
  - ii. Maintenance preventable functional failures which occurred or were evaluated during the period
  - iii. Adverse trends in equipment, processes, procedures, or programs which were evaluated during the period
  - iv. Action items generated or addressed by plant safety review committees during the period

3. Logs and Reports

- a. Corrective action performance trending/tracking information generated during the period and broken down by functional organization
- b. Corrective action effectiveness review reports generated during the period
- c. Current system health reports or similar information
- d. Radiation protection event logs during the period
- e. Security event logs and security incidents during the period (sensitive information can be provided by hard copy during first week on site)
- f. Employee Concern Program (or equivalent) logs (sensitive information can be provided by hard copy during first week on site)

- g. List of Training deficiencies, requests for training improvements, and simulator deficiencies for the period

4. Procedures

- a. Corrective action program procedures, to include initiation and evaluation procedures, operability determination procedures, apparent and root cause evaluation/determination procedures, and any other procedures which implement the corrective action program.
- b. Quality Assurance program procedures
- c. Employee Concerns Program (or equivalent) procedures
- d. Procedures which implement/maintain a Safety Conscious Work Environment

5. Other

- a. List of risk significant components and systems
- b. Organization charts for plant staff and long-term/permanent contractors