



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064**

August 21, 2001

Craig G. Anderson, Vice President,  
Operations  
Arkansas Nuclear One  
Entergy Operations, Inc.2222  
1448 S.R. 333  
Russellville, Arkansas 72801-0967

**SUBJECT: ARKANSAS NUCLEAR ONE, UNITS 1 AND 2 - NRC INSPECTION  
REPORT NO. 50-313/01-04; 50-368/01-04**

Dear Mr. Anderson:

On July 26, 2001, the NRC completed an inspection at your Arkansas Nuclear One, Units 1 and 2. The enclosed report documents the inspection findings, which were discussed on July 26 and 31, 2001, with you and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has identified an issue of very low safety significance (Green). The issue involved inadequate design control measures to assure the correct test criteria for the Unit 1 safety-related batteries. The NRC has also determined that a violation is associated with this issue. Because of the very low safety significance, the violation is being treated as a noncited violation, consistent with Section VI.A.1 of the Enforcement Policy. If you deny the noncited 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, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Arkansas Nuclear One facility.

Entergy Operations, Inc.

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Sincerely,

**/RA/**

Charles S. Marschall, Chief  
Engineering and Maintenance Branch  
Division of Reactor Safety

Dockets: 50-313; 50-368  
Licenses: DPR-51; NPF-6

Enclosure:  
NRC Inspection Report No.  
50-313/01-04; 50-368/01-04

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**ENCLOSURE**

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket No.: 50-313;368

License Nos.: DPR-51;NPF-6

Report No.: 50-313;50-368/01-04

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One, Units 1 and 2

Location: Junction of Hwy. 64W and Hwy. 333 South  
Russellville, Arkansas

Dates: July 9-26, 2001

Team Leader: J. E. Whittemore, Senior Reactor Inspector  
Engineering and Maintenance Branch

Inspectors: R. P. Mullikin, Senior Reactor Inspector  
Engineering and Maintenance Branch

P. A. Goldberg, Reactor Inspector  
Engineering and Maintenance Branch

W. M. McNeill, Reactor Inspector  
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Accompanying Personnel: Robert Quirk, Consultant  
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A. Garcia, Associate Engineer  
Engineering and Maintenance Branch

Approved By: Charles S. Marschall, Chief  
Engineering and Maintenance Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

IR 05000313;05000368/01-04, on 07/09-27/2001, Entergy Operations Inc., Arkansas Nuclear One, Units 1 and 2, safety system design and performance capability.

The inspection was conducted by four regional inspectors and one contractor. The inspection identified one Green finding, which was characterized as a noncited violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process (SDP)." Findings for which the significance determination process does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

### **Cornerstone: Mitigating Systems**

- Green. The design control measures established by the licensee for the translation of design requirements were not adequate to assure that the correct test discharge rate for the Unit 1 safety-related batteries was used to evaluate battery operability. The team determined that the failure to properly translate design basis electrical load information into Calculation 92-E-0021-01, "Unit 1 Emergency Duty Cycle and Battery Sizing Calculation," that resulted in non-conservative surveillance testing was a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." However, the battery remained operable because it was relatively new and had a capacity well beyond the load requirements.

The safety significance of the finding was very low because there was no loss of battery safety function. Since the licensee has included the item in their corrective action program as Condition Report 1-2001-0793, this design control violation is being treated as a noncited violation (50-313/0104-01) in accordance with Section VI.A.1 of the Enforcement Policy.

## Report Details

### Summary of Plant Status

During the onsite inspection periods, both nuclear units operated at or near full power. Unit 1 experienced an unscheduled shutdown during the second onsite week, but was returned to power prior to the end of the inspection.

## 1 **REACTOR SAFETY**

### Introduction

An inspection of safety system design and performance capability was performed at Arkansas Nuclear One, Units 1 and 2, to verify that the initial design and subsequent modifications have preserved the design basis of the selected systems and related support systems. Additionally, the inspection effort served to monitor the capability of the selected systems to perform the current design basis functions. This inspection verifies through sampling, the inspectable aspects of the initiating events, mitigating systems, and barrier cornerstones.

The probabilistic risk assessment model for each unit is based on the capability of the as-built safety systems to perform their intended safety functions successfully. The area and scope of the inspection were determined by reviewing the licensee's probabilistic risk analysis models to identify the most risk significant systems, structures, and components according to their ranking and potential contribution to dominant accident sequences and/or initiators. Deterministic effort was also applied in the selection process by considering recent inspection history, recent problem area history, and all modifications developed and implemented. The team reviewed in detail the safety-related dc electrical power system in Unit 1, and the containment spray and containment cooling systems in Unit 2. The primary review prompted parallel review and examination of support systems, such as, electrical power, instrumentation, room cooling systems, and related structures and components.

The objective of this inspection was to assess the adequacy of calculations, analyses, engineering processes, and engineering and operating practices that were used to support the performance of the safety systems selected for review and the necessary support systems during normal, abnormal, and accident conditions. Acceptance criteria utilized by the NRC inspection team included NRC Regulations, the technical specifications, applicable sections of the Updated Final Safety Analysis Reports, applicable industry codes and standards, as well as industry initiatives implemented by the licensee's programs.

1R21 Safety System Design and Performance Capability (71111.21)

.1 System Requirements

a. Inspection Scope

The team reviewed the following attributes for the Unit 1 dc power system and the Unit 2 containment cooling and spray systems, as applicable: (1) process medium (water and air), (2) energy sources (electrical and air), (3) control systems, and (4) equipment protection. The team then verified that procedural instructions to operators were consistent with operator actions required to meet, prevent, and/or mitigate design basis accidents.

The team verified equipment for the containment spray and cooling systems required to operate and/or change state during accidents and events would have control power available. The team reviewed alarm setpoints and verified that instrumentation and alarms were available to operators for making necessary decisions in coping with postulated accident conditions. In addition, the team verified that 125Vdc power system alignments were consistent with design and licensing basis assumptions. The review also considered requirements and commitments identified in the Updated Final Safety Analysis Report, technical specifications, design basis documents, and plant drawings. The purpose of these reviews was to verify that the 125Vdc power, containment spray, and containment cooling systems support requirements were met.

b. Findings

No findings of significance were identified.

.2 System Condition and Capability

a. Inspection Scope

The team reviewed for selected systems the periodic testing procedures for the Unit 1 125Vdc power system and Unit 2 containment spray and containment cooling systems to verify that the design requirements were adequately demonstrated. The team then verified the environmental qualification of a sample of system components for operation under design environmental conditions and the assumed operating parameters (e.g., voltage, speed, power, flow, temperature, and pressure).

The team also reviewed the systems' operations by conducting system walkdowns; reviewing normal, abnormal, and emergency operating procedures; and reviewing the Updated Final Safety Analysis Report, technical specifications, design calculations, drawings, and procedures. In addition, the team reviewed the operations department list of active and closed standing orders and operator work-arounds to ensure no design assumptions were invalidated by past or current operator daily practices. The team critiqued the bases of each of the applicable standing orders and work-arounds.



b. Findings

No findings of significance were identified.

.3 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed a sample of problems identified by the licensee in the corrective action program to evaluate the effectiveness of corrective actions related to design issues. The sample included open and closed condition reports going back 3 years that identified issues related to or affecting the Unit 1 safety-related dc power system, Unit 2 containment spray and cooling systems, and safety-related setpoint issues. The team also reviewed Procedure LI-102, "Entergy Corrective Action Process," Revision 0. The specific corrective action documents that were sampled and reviewed by the team are listed in the attachment to this report. Inspection Procedure 71152, "Identification and Resolution of Problems," was used as guidance to perform this part of the inspection.

The issues addressed by the condition reports reviewed included:

- The disposition of technical specification interpretations to address system and component operability,
- The identification and correction of configuration control events and errors,
- The identification and correction of issues related to testing failures,
- The identification and corrective action associated with personnel errors, primarily in the operations area, and
- The identification and correction of safety-related setpoint issues.

The team also reviewed the engineering analysis associated with accepting test results from a battery service test when the actual test profile differed from specified profile, and the post-transient preliminary review report associated with a turbine and reactor trip.

The team also conducted interviews with the appropriate system engineers and the design engineer with responsibility for safety-related setpoint control program.

b. Findings

No findings of significance were identified.

#### .4 System Walkdowns

##### a. Inspection Scope

The team performed walkdowns of the accessible portions of the Unit 1 safety-related dc power system and the Unit 2 containment cooling and spray systems, as well as the required support systems. The walkdowns focused on the installation and configuration of power supplies, piping, components, and instruments. During the walkdowns, the team assessed:

- The placement of protective barriers and systems,
- The susceptibility to flooding, fire, or environmental conditions,
- The physical separation of trains and the provisions for seismic concerns,
- Accessibility and lighting for any required local operator action, and
- The materiel condition and preservation of systems and equipment.

Finally, the team assessed the conformance of the currently installed system configurations to the current design and licensing bases.

##### b. Findings

No findings of significance were identified.

#### .5 Design Review

##### a. Inspection Scope

The team reviewed the Unit 1 dc power system design, electrical calculations, drawings, specifications, vendor documents, Updated Final Safety Analysis Report, technical specifications, emergency operating procedures, and temporary and permanent modifications. These reviews were focused to ensure that both trains would provide adequate power to dc components during normal operation, transients, and design basis events.

The team reviewed the instrumentation and control aspects of the Unit 2 containment spray and cooling systems. These reviews included a review of design assumptions, calculations, boundary conditions, instrument setpoint and uncertainty calculations, control circuits (supporting initiation), and control of equipment. The team also performed a single failure review of individual components to determine the potential effects of such failures on the capability of the system to perform its safety functions.

The team also reviewed the electrical aspects of the containment spray and cooling systems in Unit 2, including design assumptions, calculations, and boundary conditions. The review also included the identification and assessment of changes in electrical

loading that resulted from a recent change in containment design pressure. Further review was performed to verify that current design was reflected by motor data sheets and valid breaker coordination curves. Additionally, the latest offsite power study was reviewed to verify that minimum voltage would be available for containment cooling and spray electrical loads during accident conditions with offsite power available.

The team reviewed the mechanical aspects of the Unit 2 containment spray and containment cooling systems. This review also assessed the validity of design assumptions, calculation inputs, and the assumed bounding conditions. Additional review was focused to assure the design of these systems would assure safety system piping overpressure protection, containment isolation on demand, and adequate heat removal capabilities. Several component failure scenarios were considered to evaluate the effects on the containment cooling and spray systems, and potential impact on the performance of other safety systems.

b. Findings

Battery Duty Cycle Errors

The team identified non-conservative assumptions and parameters in Calculation 92-E-0021-01, "Emergency Duty Cycle and Battery Sizing Calculation," Revision 7. As a result the battery duty profiles used in the battery service tests required by Unit 1 Technical Specification 4.6.2.2 were significantly non-conservative. The non-conservative errors resulted in a condition where the Unit 1 station batteries have never been subjected to loads equivalent to what could be expected during a design and licensing basis station blackout.

The purpose of Calculation 92-E-0021-01 was to determine the emergency duty cycle for Station Batteries D06 and D07 by using guidance in IEEE Std 485-1983, "IEEE Recommended Practice for Sizing Large Lead Storage Batteries for Generating Stations and Substation." The emergency duty cycle was used for various purposes, including initial battery cell sizing, establishing the battery service discharge rate (load) and test duration, and determining the post-modification test battery discharge rate. Procedure 1307.036, "Unit 1 D06 and D07 Battery Surveillance," Revision 000-04-0, Supplement 4, "Service Discharge Test," Section 5.2, "Discharge Current Calculation," required the use of the battery discharge rate specified in Calculation 92-E-0021-01.

The incorrect or non-supported assumptions included the failure to ensure the battery load sequencing during a station blackout was correctly modeled, and the loads on the Vital Inverters Y11 and Y13 during a station blackout event were bounded by dc current measurements at full power. Incorrect parameters used in the calculation included the use of breaker charging spring motor running currents rather than more limiting surge currents. Using appropriate load sequences and surge currents the licensee performed a preliminary calculation and concluded the discharge rate for the first and last minute were non-conservative, and initiated Condition Report ANO-1-2001-0793.

The Unit 1 preliminary calculation revision using surge current and correct load sequencing demonstrated both trains of the station batteries required 6 positive plates per cell; the installed cells had 10 positive plates. Therefore, the licensee concluded there was sufficient design margin in the battery capacity to significantly increase the probability that the installed equipment would be adequate to handle required dc loads during normal, transient, and accident operations.

Based on the large design margin and other factors, the team found that Station Batteries D06 and D07 were operable and would perform their safety function under the analyzed conditions. This determination was based on the fact that the batteries were relatively new, the testing had demonstrated battery behavior within expected norms, and the implementation of maintenance practice were consistent with vendor recommendation. However, as the battery aged there was possibility that the battery could degrade to a condition where it was not operable but could still successfully pass the less conservative service test load profile.

The team processed this finding in accordance with NRC Inspection Manual Chapter 0610\*, "Power Reactor Inspection Reports," Appendix B. The team determined that although the batteries were currently operable, this could not be assured in the future. Hence, there was a credible impact on safety and the issue was more than a minor violation. The team also concluded that the issue affected the mitigating system cornerstone because vital equipment required to mitigate a design basis event may not operate or perform as expected. Therefore, the significance determination process, as described in NRC Inspection Manual Chapter 0609 was entered.

The team determined only the mitigating systems cornerstone was affected and there was no actual loss of safety function as the batteries were determined to be operable. Therefore, the problem had very low safety significance (Green).

The team determined that the failure to properly translate design basis electrical load information into Calculation 92-E-0021-01 that resulted in non-conservative surveillance testing was a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." However, because of the very low safety significance, and because the licensee has included the item in their corrective action program as Condition Report 1-2001-0793, this design control violation is being treated as a noncited violation (50-313/0104-01) in accordance with Section VI.A.1 of the Enforcement Policy.

.6 Safety System Testing

a. Inspection Scope

The team reviewed the program and procedures for testing and inspecting the Unit 1 safety-related 125Vdc power system, including battery factory acceptance, post modification, and routine surveillance tests and inspections.

The calibration testing requirements for Unit 2 containment spray and containment cooling related instruments were reviewed and assessed. The team also reviewed the testing and surveillance program requirements for testing and inspecting the safety-related valves and pumps in the the Unit 2 containment spray and containment cooling systems. The testing program requirements for heat exchangers were also reviewed. Once the testing requirements were identified, the procedures for testing and the testing results were reviewed to determine if the regulatory and the facility license testing requirements were met by the procedures and test results. The team further reviewed the accuracy requirements for test instrumentation to determine if the licensee's program would assure the accuracy of test data.

b. Findings

No findings of significance were identified.

**4 OTHER ACTIVITIES (OA)**

4OA6 Management Meetings

Meeting to Address Unit 1 Battery Operability

A telephonic meeting was conducted on July 27, 2001, prior to the inspection team's departure from the site. Participants in this meeting included Region IV management personnel, representatives from the Office of Nuclear Reactor Regulation, the inspection team, and licensee management. During this meeting, it was established that the Unit 1 batteries were capable of performing their required safety function.

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Craig Anderson, Vice-President, Operations, and other members of licensee management at the conclusion of the onsite inspection on July 26, 2001.

A telephonic meeting was conducted on July 31, 2001, between the licensee's management and the inspection team leader. During this second exit meeting, the finding related to the Unit 1 batteries was characterized as a green finding that resulted in a noncited violation.

At the conclusion of this meeting, the team leader asked the licensee's management whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

**ATTACHMENT**

Licensee Contacts :

- C. Anderson, Vice President, Operations
- R. Bement, General Manager
- M. Chisum, Manager, System Engineering, Unit 2
- R. Cooper, Senior Licensing Specialist
- C. Eubanks, Project Manager, Unit 2 Power Uprate
- R. Gordon, Outage manager, Unit 2
- K. Head, Manager, Safety Analysis
- J. Hoffpauir, Plant Manager, Unit 2
- D. James, Manager, Licensing
- W. James, Manager, Maintenance
- J. Kowalewski, Manager, Director, Engineering
- R. Lane, Director, Engineering
- M. Smith, Manager, Engineering Programs and Components
- J. Vandergrift, Director, Nuclear Safety
- C. Zimmerman, Plant Manager, Unit 1

NRC:

- R. Bywater, Senior Resident Inspector
- K. Weaver, Resident Inspector

**DOCUMENTS REVIEWED**

The following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings:

**ITEM OPENED AND CLOSED**

Opened and Closed

50-313/0104-01    NCV    Inadequate design control measures to assure the correct translation of the design basis for the safety-related batteries into Technical Specification 4.6.2.2 and the applicable surveillance procedures. The failure to accurately translate design basis was a violation of Criterion III of Appendix B to 10 CFR Part 50 (1R21.3b)

**CALCULATIONS**

NUMBER	DESCRIPTION	REVISION
EQ-85-0004-03	Loop Error Analysis for Containment Building Narrow Range Pressure Instrument Loops (P)	5

**CALCULATIONS**

NUMBER	DESCRIPTION	REVISION
EQ-85-0004-05	Loop Error Analysis for Containment Building Wide Range Pressure Instrument Loops (P)	2
EQ-85-0004-08	Loop Error Analysis for Containment for the Containment Sump and Flood Level loops 2LE-5641-2, 2LE-5645A-1/B-1, and E2L-5646A-2/B-2	3
83-D-2003-06	HPSI/PMR Piping Analysis of Model A	2
84-E-0103-05	Breaker Coordination Curves for Containment Spray Pump Motors	0
88-E-0032-05	Unit 2 Containment Service Water Cooling Coils Thermal Performance	3
88-E-0032-12	LOCA Containment Analysis for ANO-2 SGR and Power Uprate	01
88-E-0086-06	NRCB-88-04 Review for 2P-35A & B Minimum Recirculation Flow for Containment Spray Pumps	1
88-E-0200-09	P-T Calculation for Unit 2 Containment Spray System	1
89-D-2003-06	HPSI/PMR Piping Analysis of Model A	2
90-E-0096-03	Boric Acid Concentration Reduction Effort	2
91-E-0015-01	Loop Error Analysis for Thermal Performance Testing of Service Water	0
91-E-0115-01	Containment Cooler Fan Motor Horsepower Requirement During DBA	2
91-E-0116-01	Minimum Containment Water Level During Recirculation to Provide Adequate NPSH for Containment Spray Pumps and "C" HPSI Pump	3
92-E-0021-01	ANO Unit 1 Emergency Duty Cycle and Battery Sizing Calculation	7
92-E-0021-09	ANO Unit 1 Class 1E 125Vdc Train 2 (Green) DC Voltage Drop Study	0
92-E-0065-01	Provide Verification that the ANO Unit 2 Safety Bus Voltages are Acceptable when the Unit is in Accident Condition (MSLB) and Unit 1 is in LOOP	0

**CALCULATIONS**

NUMBER	DESCRIPTION	REVISION
92-E-0069-01	ANO-2 Containment Spray Pump NPSH During Shutdown Cooling Operation	0
93-E-0042-01	Risk Significant Determination for Maintenance Rule	3
93-EQ-2001-01	Loop Error, Setpoint and Response Time Analysis for PPS Trip Functions and Loop Error Analysis for CPC Inputs	4
94-E-0001-01	ANO Unit 2 Millstone Study - Main Calculation	1
94-E-0001-02	Document the Load Reduction on the ANO-2 Connected Load, MCC Circuit Voltage Drop Calculation & Load Sequencing Documentation Calculation as a Result of the Deletion of the Sodium Hydroxide (NaOH) System	1
94-E-0001-05	Provide Verification that the ANO Unit 2 Safety Bus Voltages are Acceptable when the Auxiliary Power to the Safety Loads is Supplied through Startup Transformer No.3 under Various Conditions	0
95-R-2009-01	Final Report for ANO-2 Containment Service Water Cooling Coils Thermal Performance	0
963474N201-01 Attachment 3.4	Beaker Coordination Curves for Containment Cooling Fan Motors	0
97-E-0036-01	ANO-2 Reactor Building Cooling Supplement 7	1
97-E-0036-01 Supplement 16	System Analysis Work Package Containment Spray System	1
97-E-0097-08	ANO-2 MSLB Containment Analysis	01
97-E-203-01	ANO-2 Vital AC Loads	0
97-3950D201-01	ANO-2 Post LOCA pH Analysis	1
97-3950D201-05	ANO-2 Post LOCA pH Analysis Report	1
97-3950D201-06	ANO-2 Calculation for Minimum Fill Line on TSP Basket	1
98-E-0044-01	RWT Drindown Analysis	1
99-E-0033-03	ANO-2 Containment Cooler Fan Motor Horsepower During a DbA under Power Uprate Conditions	0
991528E-201-01	ANO-2 Containment Duct Overpressure	0



**CALCULATIONS**

NUMBER	DESCRIPTION	REVISION
991967E201-01	Containment Coolers Emergency Condensate Drain Capacity	0
00-E-0012-03	Evaluation of Flashing Within the Service Water Coils of the Containment Air Coolers	0

**CONDITION REPORTS**

1-1998-0647	2-1998-0459	2-1999-0709	2-2000-0797
1-1999-0117	2-1999-0029	2-1999-0710	2-2000-0954
1-1999-0123	2-1999-0200	2-2000-0139	2-2000-1009
1-1999-0200	2-1999-0243	2-2000-0311	2-2000-1027
1-1999-0206	2-1999-0259	2-2000-0342	2-2001-0056
1-2001-0079	2-1999-0288	2-2000-0388	2-2001-0129
1-2001-0122	2-1999-0294	2-2000-0504	2-2001-0172
2-1994-0107	2-1999-0299	2-2000-0630	2-2001-0225
2-1998-0190	2-1999-0539	2-2000-0687	2-2001-0492
2-1998-0230	2-1999-0540	2-2000-0691	2-2001-0557
2-1998-0329	2-1999-0554	2-2000-0710	2-2001-0566
2-1998-0332	2-1999-0589	2-2000-0772	
2-1998-0405	2-1999-0662		

**CORRECTIVE ACTIONS INITIATED AS A RESULT OF THE INSPECTION**

Condition Reports:

1-2001-0793	2-2001-0573
2-2001-0557	2-2001-0594

Maintenance Action Items:

MAI 49235    MAI 49247

ULD-1-SYS-03 Change Request dated 7/11/01

Plant Labeling Request Form dated 7/16/01

**DRAWINGS**

NUMBER	DESCRIPTION	REVISION
2HCB-13-1, Sheet 1	Large Pipe Isometric from Containment Sump to Containment Spray Pump 2P-35B Inlet	15
2HCB-13-2, Sheet 1	Large Pipe Isometric from Containment Sump to Containment Spray Pump 2P-35B	4
2HCB-15-1, Sheet 1	Large Pipe Isometric from Containment Sump to Containment Spray Pump 2P-35A	17
2HCB-15-2, Sheet 1	Large Pipe Isometric from Containment Sump to Containment Spray Pumps	6
2HCB-3-1, Sheet 1	Containment Spray Header from Containment Penetration 2P-17	16
2HCB-3-1, Sheet 2	Containment Spray Header from Containment Penetration 2P-17	3
2HCB-3-1, Sheet 3	Containment Spray Header from Containment Penetration 2P-17	2
2HCB-3-2, Sheet 1	Large Pipe Isometric Containment Spray Ring Header	11
6600-M2291-1-6	RWT General Plan Drawing (Unit 2)	6
E-1, Sheet 1	Station Single Line Diagram (Unit 1)	45
E-17, Sheet 1A	Green Train Vital AC and 125Vdc Single Line and Distribution (Unit 1)	6
E-17, Sheet 1	Red Train Vital AC and 125Vdc Single Line and Distribution (Unit 1)	40
E-2001, Sheet 1	Station Single Line Diagram	22
E-2014, Sheet 1	Single Line Diagram - 480 Volt Motor Control Center 2B51	47
E-2014, Sheet 3	Single Line Diagram - 480 Volt Motor Control Center 2B53	36
E-2015, Sheet 1	Single Line Diagram - 480 Volt Motor Control Center 2B61	41
E-2015, Sheet 2	Single Line Diagram - 480 Volt Motor Control Center 2B62	36
E-2015, Sheet 3	Single Line Diagram - 480 Volt Motor Control Center 2B63	35
E-2015, Sheet 4	Single Line Diagram - 480 Volt Motor Control Center 2B64	42

**DRAWINGS**

NUMBER	DESCRIPTION	REVISION
E-2198	Low Pressure Safety Injection Pump 2P60B Schematic Diagram (Unit 2)	17
E-22, Sheet 1	Engineered Safeguard & 125Vdc Power Distribution Panels (Unit 1)	68
E-22, Sheet 2	DC Loading Table D11 (Unit 1)	16
E-22, Sheet 3	DC Loading Table RA1, D01, and MCCD15 (Unit 1)	17
E-22, Sheet 4	DC Loading Table Panel D21 and MCCD25 (Unit 1)	11
E-22, Sheet 5	DC Loading Table D02 and RA2 (Unit 1)	15
E-22, Sheet 6	DC Loading Table D41 and D46 (Unit 1)	1
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M-2661, Sheet 1	Air Flow and Control Diagram Heating, Ventilating, and Air Conditioning Containment Building Piping and Instrument Diagram	79

**MAINTENANCE ACTION ITEMS**

05543	15011	15456	24272	34433
13423	15120	20313	31860	35270

**ENGINEERING REPORTS**

NUMBER	DESCRIPTION	REVISION
91-R-2013-01	Service Water Performance Testing Methodology	6
93-R-0003-01	Offsite Power System Voltage Re-Evaluation	0
95-R-2009-01	Final Report for ANO-2 Containment Cooler Fans and Motor Testing and Evaluation	0
97R-2018-01	ANO-2 Cycle 14 Fuel Management Information and Ground Rules	1
98-R-2005-01	ANO-2 Cycle 15 Fuel Management Information and 15/16 Safety Analysis Ground Rules	1

**ENGINEERING REQUESTS**

NUMBER	DESCRIPTION	REVISION
0023691-N201	Provide Any Changes in Motor HP Requirements to the Attached Motors for Cycle 15 and Cycle 16	0
ER 980084-E101	Support for Replacement of D06 & D07 Batteries - Post Maintenance Test Requirements	0
ER 980120-E201	Review the Seismic Impact of the Installed RTDs on the Containment Cooling Coils	0
ER 99152N201	ANO-2 Containment Cooler Chilled Water Coil Replacement and Fan Pitch Change	4
ER 991864-E201	Containment Heating and Ventilating Fans, Etc. at 59 psig and Evaluate the Required Fan Pitch Due to Higher Air Densities During SIT and ILRT	0

**ENGINEERING REQUESTS**

NUMBER	DESCRIPTION	REVISION
ER 010087-E101	Provide Temporary Power From Opposite Train to Vital Battery Chargers	0
ER 010118-E101	Provide Temporary Power to D11 and D21 In Support of Transfer Switch Preventive Maintenance	0
ER 010293E101	Evaluation of Test Problems Encountered During Battery D07 Service Discharge Test	0

**PROCEDURES**

NUMBER	DESCRIPTION	REVISION
1000.024	Control of Maintenance	4
1000.028	Control of Temporary Alterations	23
1000.104	Condition Reporting and Corrective Actions	15
1000.104	Condition Reporting Operability and Immediate Reportability Determinations	17
1000.153	Engineering Request Process	5
1202.008	Blackout EOP	6
1307.063	Unit 1 D06 and D07 Battery Surveillance	0
2104.033	Containment Atmosphere Control	40
2304.041	Unit 2 Plant Protection System Channel A Field Calibration	21
2304.041	Unit 2 Plant Protection System Channel C Field Calibration	23
2305.001	Integrated Engineering Safeguards Test	15
2305.003	ESF Response Time Test	14
2305.005	Valve Stroke and Position Verification	20
2305.006	Cold Shutdown Valve Testing	16
2311-002	Service Water System Flow Test	9
GES-43	Engineering Standard for Plant Setpoint Documentation	8
LI-102	Entergy Corrective Action Process	0

**DESIGN CHANGES**

NUMBER	DESCRIPTION	REVISION
DCP 82-2116	Reactor Building Service Water Cooling Coil Replacement	0
PC 94-8002	Containment Spray Header Low Level Alarm Setpoint Change	0
973759P201	Replacement of Handswitches for Containment Building Cooler Fans 2VSF1A, B, B, and D	0

**MISCELLANEOUS DOCUMENTS**

NUMBER	DESCRIPTION	REVISION
	American Air Filter Letter Containing AAF Proposal 172 for Containment Cooling Units	8/2/73
	Licensee White Paper on Potential for and Impact of Flashing Associated with Clean Containment Air Coolers	
	Safety Evaluation Related to ANO Unit 1 Technical Specification Amendment No. 200	9/14/99
ER 980084	D07 Modified Service Discharge Test (Post Modification Test) Results	4/14/98
ER 980084	D06 Modified Service Discharge Test (Post Modification Test) Results	4/9/98
EQDRSS No. 2A085	EQ Data Record Summary Sheet - Electric Motor 2VSF-1A	1
FP-2125	Measured Capacity Discharge (125Vdc Battery Factory Acceptance Test Report)	4/5/98
OWA 2-00-9	Operator Work Around to provide Override Capability to Containment Spray Header MOV's	2/22/00
PTPRR-1-07-24-2001	Post Transient Preliminary Review Report - Turbine and Reactor Trip	7/25/01
SCEW No. 2A085	System Component Evaluation Worksheet - Electric Motor 2VSF-1A	5
TAP 00-2-005	Temporary Alteration of Installation of Temporary Chillers During Outage	23
TD C173.0230	Installation and Operating Instructions for C & D Batteries Stationary Batteries	0
ULD-0-TOP-10	Station Blackout Upper Level Document	0



**MISCELLANEOUS DOCUMENTS**

NUMBER	DESCRIPTION	REVISION
ULD-1-SYS-03	Unit 1 125 Volt DC System Upper Level Document	4
ULD-2-SYS-05	Containment Spray System Upper Level Document	2
ULD-2-SYS-06	ANO Unit 2 Containment Heating and Ventilation/Purge System Upper Level Document	2
ULD-0-TOP-11	ANO Unit 1 and 2 Degraded Grid Voltage	3
2CAN119903	Proposed Technical Specification Change Request Supporting Containment Building Design Pressure Increase to 59 psig	11/3/99
2CAN060003	Technical Specification Change Request for ANO-2 Containment Cooling System	6/29/00
2CNA110002	Issuance of Amendment Regarding Technical Specification Changes and Unreviewed Safety Question Resolution	11/13/00
2CNA110003	Issuance of Amendment Regarding Containment Cooling System	11/13/00
6600-M2264-2-1	Report on Containment Building Startup Systems	2/14/78
99-R-2006-01	Topical Report AAF-TR-7101 Design and Testing of Fan Cooler-Filter Systems for Nuclear Applications	2/20/72
6600-M-2061	Purchase Requisition for Containment Cooling Units	5
X-604	Qualification Testing of Joy Axivane Fan and Reliance Electric Motor for Service for Nuclear Containment	2/16/98
1307.065	D07 Yearly Inspection Data Sheet (Connection Resistance) Results	4/3/01

**SAFETY EVALUATIONS**

NUMBER	DESCRIPTION	REVISION
DCP 93-1010	Class 1E Inverter Replacement	0
FFN 00-055	Actuator Modification for 2CV-5630-1 and 2CV5631-2	0

**SCREENING REVIEWS**

NUMBER	DESCRIPTION	REVISION
FFN 00-055	Actuator Modification for 2CV-5630-1 and 2CV5631-2	0