UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

August 11, 2003

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

SUBJECT: ARKANSAS NUCLEAR ONE, UNITS 1 and 2 - NRC INSPECTION REPORT 05000313/2003007; 05000368/2003007

Dear Mr. Anderson:

On August 1, 2003, the NRC completed an inspection at your Arkansas Nuclear One, Units 1 and 2, facility. The enclosed report documents the inspection findings, which were discussed on August 1, 2003, with you and other members of your staff.

This inspection examined activities conducted under your licenses 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 one finding of very low safety significance (Green). The finding did not present an immediate safety concern. Because of the very low significance and because you entered it into your corrective action program, the NRC is treating it as a noncited violation, consistent with Section VI.A of the Enforcement Policy. The noncited violation is described in the subject inspection report. If you contest the violation or significance of 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 Arkansas Nuclear One, Units 1 and 2.

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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
05000313/2003007; 05000368/2003007

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets:	50-313, 50-368
Licenses:	DPR-51, NPF-6
Report :	05000313/2003007, 05000368/2003007
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 14 through August 1, 2003
Team Leader:	C. Paulk, Senior Reactor Inspector, Engineering and Maintenance Branch
Inspectors:	P. Goldberg, Reactor Inspector, Engineering and Maintenance Branch J. Mateychick, Reactor Inspector, Engineering and Maintenance Branch W. McNeill, Reactor Inspector, Engineering and Maintenance Branch G. Miller, Reactor Inspector, Engineering and Maintenance Branch
Accompanying Persons:	C. Baron, Contractor, Beckman and Associates S. Meyers, Engineering Associate
Approved By:	Charles S. Marschall, Chief Engineering and Maintenance Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000313/2003007, 05000368/2003007; 07/14/2003 - 08/01/2003; Arkansas Nuclear One, Units 1 and 2; Plant Design Pilot, Enclosures 1 and 3

The NRC conducted an inspection with five regional inspectors and one contractor. The inspection identified one green noncited violation. 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 3, dated July 2000.

Cornerstone: Barrier Integrity

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, the inspectors identified four examples of failures to correctly translate the design basis into specifications, procedures, and instructions. The inspectors considered the barrier integrity cornerstone affected because of the potential of containment and engineered safety features integrity being degraded by these conditions.

  The inspectors considered this finding greater than minor because it paralleled Example 3.i of Appendix E to Inspection Manual Chapter 0612. The licensee's engineering staff had to perform reanalyses and operability evaluations due to these conditions. The inspectors considered this finding of very low safety significance because it did not represent an actual loss-of-safety function (Section 1RDS1.5).

Report Details

1. REACTOR SAFETY

Introduction

The NRC has undertaken a pilot inspection program to determine if efficiencies or resource savings can be gained by consolidating selected baseline inspection procedures. This inspection report documents the performance of Attachment 71111.DS, "Plant Design - Pilot," Enclosures 1 and 3. These enclosures are normally performed using Attachments 71111.21, "Safety System Design and Performance Capability," and 71111.02, "Evaluation of Changes, Tests, or Experiments."

The NRC conducted an inspection to verify the adequacy of the original design and subsequent modifications to safety systems and to monitor the capability of the selected systems to perform their design basis functions. The inspection was also conducted to monitor the effectiveness of the licensee’s implementation of changes to facility structures, systems, and components, risk-significant normal and emergency operating procedures; test programs; and the updated final safety analysis reports in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments."

The team reviewed in detail the containment structures. The primary review prompted parallel review and examination of support systems, such as, high and low pressure injection systems; building spray systems; penetrations; electrical power; air supplies; instrumentation; and related structures and components.

The team assessed the adequacy of calculations, analyses, engineering processes, and engineering and operating practices that the licensee used for the selected safety system and the necessary support systems during normal, abnormal, and accident conditions. Acceptance criteria used by the NRC inspectors included NRC regulations, the technical specifications, applicable sections of the Updated Safety Analysis Report, applicable industry codes and standards, and industry initiatives implemented by the licensee’s programs.

1RDS Plant Design (71111.DS)

1RDS1 Enclosure 1: Safety System Design and Performance

.1 System Requirements

a. Inspection Scope

The team inspected the following attributes of the reactor containment structures: (1) process medium (water, steam, and air), (2) energy sources, (3) control systems, and (4) equipment protection. The team examined the procedural instructions to verify instructions as consistent with actions required to meet, prevent, and/or mitigate design basis accidents. The team also considered requirements and commitments identified in the Updated Safety Analysis Report, technical specifications, design basis documents, and plant drawings.

The reviews also include support systems required for the containment structures to perform their mitigating function. These systems included high and low pressure injection systems, building spray systems, hydrogen control systems, and penetrations.

b. Findings

No findings of significance were identified.

.2 System Condition and Capability

a. Inspection Scope

The team reviewed the periodic testing procedures for the containment and support systems to verify that the capabilities of the systems were verified periodically. 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 Reports, technical specifications, design calculations, drawings, and procedures.

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 samples included open and closed condition reports for the past 3 years and 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. Older condition reports, identified while performing other areas of the inspection, were also reviewed.

b. Issues and Findings

No findings of significance were identified.

.4 System Walkdowns

a. Inspection Scope

The team performed walkdowns of the accessible portions of the containment structures and support systems. 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;
- The materiel condition and preservation of systems and equipment; and
- The conformance of the currently-installed system configurations to the design and licensing bases.

b. Findings

No findings of significance were identified.

.5 Design Review

a. Inspection Scope

The team reviewed the current as-built instrument and control, electrical, and mechanical design of the containment structures and support systems. These reviews included an examination of design assumptions, calculations, required system thermal-hydraulic performance, electrical power system performance, control logic, and instrument setpoints and uncertainties. The team also performed selected single-failure evaluations of individual components and circuits to determine the effects of such failures on the capability of the system to perform its design safety functions. The team also reviewed the licensee's calculations and methodology for ensuring the component cooling water system was protected against seismic, flooding, fire, and high energy line break events.

The team reviewed calculations, drawings, specifications, vendor documents, Final Safety Analysis Report, technical specifications, emergency operating procedures, and temporary and permanent modifications.

b. Findings

Introduction

The team identified a finding of very low safety significance involving a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, the inspectors identified four examples of failures to correctly translate the design basis into specifications, procedures, and instructions.

Description

Arkansas Nuclear One, Unit 1, Calculation 97-E-0212-01, "BWST Draindown Analysis," Revision 2, addressed the flowrate from the borated water storage tank during the post-accident transfer of the engineered safety features pumps from the tank to the containment sump. The inspectors noted that the calculation did not consider the potential single active failure of one of the borated water storage tank outlet valves to close, potentially allowing air to reach the suction of the engineered safety features pumps. In response, the Arkansas Nuclear One staff initiated Condition Reports CR-ANO-1-2003-00755 on July 16, 2003 and CR-ANO-1-2003-00769 on July 18, 2003. Condition Report CR-ANO-1-2003-00755 included an operability evaluation, and stated that air would not reach the suctions of the engineered safety features pumps.

Arkansas Nuclear One, Unit 2, Calculation 98-E-0044-01, "RWT Draindown Analysis," Revision 2, addressed the flow rate from the refueling water tank during the post-accident transfer of the engineered safety features pumps from the tank to the containment sump (similar to the Unit 1 calculation above). The calculation determined that the water level remaining in the tank at the completion of the transfer would be adequate to prevent air entrainment in the system. However, the team noted that the calculation did not consider the potential single active failure of one of the refueling water tank outlet valves to close. In response, the licensee’s staff initiated Condition Report CR-ANO-2-2003-00977 on July 15, 2003. This condition report included an operability evaluation, and stated that air could potentially enter the piping, but would not reach the suctions of the engineered safety features pumps.

Arkansas Nuclear One, Unit 1, Updated Safety Analysis Report, Section 14.2.2.6.6, stated that the decay heat vaults (containing engineered safety features pumps) were sealed rooms. The radiological analyses did not consider leakage from equipment in these rooms. However, the inspectors noted that the leakage acceptance criteria for the closed room drain valves (ABS-13/14) was 0.43 gpm. In response, the Arkansas Nuclear One staff initiated Condition Report CR-ANO-1-2003-00761 on July 17, 2003. This condition report included an operability evaluation in which licensee engineers concluded that there was negligible effect on the off-site dose. Also, this condition report included an action to develop a leakage acceptance criterion that is consistent with the licensing/design basis of Arkansas Nuclear One, Unit 1.

Calculation 88-E-0100-33, "ANO U1 Spent Fuel Cooling System P/T Calculation," did not consider the maximum pressure in a section of the spent fuel cooling system due to potential leakage from the decay heat system through Check Valve SF-21. The inspectors questioned the boundary between these systems. In response, the Arkansas Nuclear One staff initiated Condition Report CR-ANO-1-2003-00814 on July 29, 2003. This condition report included an operability evaluation in which licensee engineers concluded that there was no immediate operability concern. As a result of the operability evaluation, the licensee engineers included actions to update Calculation 88-E-0100-33 and corresponding pipe stress calculations.

<u>Analysis</u>

The team considered the barrier integrity cornerstone affected because of the potential of containment and engineered safety features integrity being degraded by these conditions. The team considered this finding more than minor since the findings fit with

Example 3.i of Appendix E of Manual Chapter 612. The licensee's engineering staff had to perform reanalyses and operability evaluations due to these conditions.

The team found these issues resulted from a performance deficiency of very low safety significance. The team determined no other cornerstones were degraded as a result of this finding.

The team assessed this finding as green because it does not represent an actual loss of the containment or engineered safety features safety functions. The specific accident conditions that could have challenged the systems have not existed. The licensee has implemented appropriate corrective actions to ensure continued operability.

Enforcement

Criterion III of 10 CFR Part 50, Appendix B, "Design Control," states, in part, that measures shall be established to assure that the design basis is correctly translated into specifications, procedures, and instructions. Contrary to the Appendix B, Arkansas Nuclear One engineering did not correctly translate the design basis into these design documents. As a result, the subject analyses and test criteria were non-conservative. After the identification of these issues by the inspectors, the licensee implemented appropriate corrective actions. The Arkansas Nuclear One staff initiated condition reports and entered this finding into its corrective action program.

Because of the very low safety significance of the finding and because the licensee has entered these issues into their corrective action program, the inspectors treated this as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000313/2003007-001; 05000368/2003007-001).

.6 Safety System Inspection and Testing

a. Inspection Scope

The team reviewed the program and procedures for testing and inspecting selected components for the containment structures and support systems. The review included the results of surveillance tests required by the technical specifications and selective review of in-service tests.

b. Findings

No findings of significance were identified.

1RDS3Enclosure 3: Changes, Tests, or Experiments

a. Inspection Scope

The team reviewed the licensee's procedures for performing evaluations and screenings for changes to the facility, procedures and tests in accordance with 10 CFR 50.59. The team reviewed samples of plant modifications, operating procedures, test procedures, and plant analysis methods.

The team reviewed 7 evaluations to verify that the licensee personnel had appropriately considered the conditions under which the licensee may make changes to the facility or procedures or conduct tests or experiments without prior NRC approval. The team reviewed 13 screenings, in which the licensee personnel determined that evaluations were not required, to ensure that the exclusion of a full evaluation was consistent with the requirements of 10 CFR 50.59.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA6 Management Meetings

Exit Meeting Summary

On August 1, 2003, the team leader presented the inspection results to Mr. C. G. Anderson, Vice President Operations, and other members of licensee management and staff who acknowledged the findings. The team leader confirmed that no proprietary information was provided or examined during the inspection.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee:

C. Anderson, Vice President Operations
G. Ashley, Manager Licensing
D. Bice, Licensing Specialist IV
E. Blackard, Design Engineering Supervisor
M. Byram, Senior Lead Engineer
H. Chadbourn, Supervisor Engineering
M. Chism, System Engineering Manager
M. Cooper, Licensing Specialist
R. Cooper, Supervisor Control Room
W. Cottingham, Senior Staff Engineer
J. Cotton, Senior Engineer
R. Cuilty, Senior Operations Specialist
C. Eubanks, General Manager
D. Fouts, Supervisor Engineering
M. Fuller, Senior Engineer
W. Greeson, Supervisor Engineering
J. Hale, Senior Engineer
D. Hawkins, Licensing Specialist II
W. Hinton, Senior Engineer
P. Kearney, Technical Assistant II
J. Kowalewski, Design Engineering Director
D. MacPhee, Senior Staff Engineer
S. McKissack, Senior Lead Engineer
R. McWilliams, Senior Engineer
D. Phillips, Supervisor Engineering
J. Richardson, Senior Engineer
W. Rowlett, Senior Lead Engineer
S. Smith, Senior Engineer
M. Smith, Engineer
R. To, Senior Engineer
R. Wilson, Senior Staff Engineer
C. Zimmerman, Plant Manager, Support

LIST OF ITEMS OPENED AND CLOSED

Opened and Closed

05000313/2003007-001	NCV	Failure to correctly translate a design basis into calculations (Section 1RDS1.5).
05000368/2003007-001	NCV	Failure to correctly translate a design basis into calculations (1RDS1.5).

DOCUMENTS REVIEWED

Calculations

NUMBER	DESCRIPTION	REVISION
00-E-0035-01	Allowable Leakage in the DHR Vaults	0
01-EQ-1001-01	MFW Critical Crack HELB Analysis	0
2CCB-48-3-H009	Evaluation of Pipe Support 2CCB-48-3-H009 for Additional Pipe Loads due to the Addition of Relief Valve Piping	0
2HCD-1-H2	Evaluation of Pipe Support 2HCD-1-H2 for Additional Loads due to the Addition of Relief Valve Piping	3
2HCB-5-H4	Evaluation of Pipe Support 2HCB-5-H4 for Additional Pipe Loads due to the Addition of Relief Valve Piping	0
83-D-1153-01	Error and Setpoint Analyses for BWST Instrumentations Loops	4
86-D-1105-37	Letdown Piping Analysis for MOVAT Modification of Valves CV-1213 and CV-1215	5
86-D-1106-39	ASME Class 1 Stress Report - Letdown System	3
86-EQ-0002-06	Loop Accuracy Analysis for Shutdown Cooling and Low Pressure Safety Injection Flow	4
87-E-0085	Combustion Engineering Calculation for Reduction of HPSI Differential Pressure Requirement	0
88-E-0098-20	Arkansas Nuclear One - 1 Design Basis Accident Reanalysis	1
88-E-0144-01	ANO-2 EDG Loading for Buses 2A3 and 2A4	4
88-E-0200-07	Pressure Temperature Calculation for Unit 2 High Pressure Safety Injection System	1
89-E-0010-26	LPI Pump NPSH	5

Calculations

NUMBER	DESCRIPTION	REVISION
89-E-0010-28	P-34A/B and P-35A/B Net Positive Suction Head from BWST	0
89-E-0018-06	DHR Heat Exchanger Performance	2
89-E-0164-06	Spray Lambdas and LOCA Radiation Doses Offsite with Reduced Spray Flows	1
89-E-0164-08	Maximum and Minimum Spray and Sump pH	0
90-D-1043-02	Hazards Calc for RG 1.97 Upgrade of LPI and RBS Flow indication Loops	1
90-D-2015-06	Sizing Calculation for LPSI Runout Orifice 2FO-5090	0
90-D-2017-11	Backside Anchor Loading for 2DCD-5-H5 and 2DCD-5-H6	2
90-E-0041-10	Minimum ANO-1 RB Pressure at Time of Swapover to Recirculation	0
90-E-0046-01	Arkansas Nuclear One-1 Reactor Building Spray Pump Net Positive Suction Head	5
90-E-0058-01	Allowed Operator Tolerance Error and Loop Error Analysis	1
90-E-0100-03	Total Contained Volume of Reactor Water Tank	4
90-E-0116-01	ANO-2 EOP Setpoint Document	11
90-E-0116-04	Evaluation of HPSI Minimum Flow Strategy	0
91-E-0016-53	Qualification of R.C. Pump Seal Return to CVC Header Piping System	2
91-E-0016-183	Qualification of Line CCA-13-1” & 3/4” on Iso’s SA-273, SA-233, SA-216	1
91-E-0019-01	Loop Error Analysis for Sodium Hydroxide Tank T-10 Level	5

Calculations

NUMBER	DESCRIPTION	REVISION
91-E-0021-01	Parametric TORC Model	0
91-E-0035-08	Allowable Initial Containment Conditions Accounting for Instrument Errors	3
91-E-0116-01	NPSH Calculation for HPSI and RB Spray	4
91-R-1010-02	ANO-1 EOP Setpoint Basis Document	7
91-R-1018-02	ANO-1 EOP Setpoint Basis Document	8
91-R-2013-01	Service Water Performance Testing Methodology	9
92-E-0005-01	Required HPSI System single Pump Flow	0
92-E-0077-01,	Hydraulic Model of the Arkansas Nuclear One-1 Reactor Building Spray System	1
92-E-0077-02	ANO-1 HPI System Pump Performance Requirements	0
92-E-0077-03	ANO-1 LPI System Pump Performance Requirements	0
92-E-0078-08	LPSI Pump NPSH Calculation	0
92-E-0078-09	ANO-2 LPSI Pump Runout Calculation	0
92-E-0079-01	Determination of SW Cooled Room Heat Loads Under Various Operating Conditions	1 PC-2
92-E-0079-01,	Determine Service Water Cooled Room Heat Loads Under Various Operating Conditions	2
92-R-1017-23	Unit One Setpoint Document Package for the Reactor Building Spray System	3
92-R-2016-01	ANO-2 Post Accident Operator Doses Performing EOP Local Actions	2
93-E-0058-01	HPI NPSH from the BWST	0

Calculations

NUMBER	DESCRIPTION	REVISION
93-R-0010-01	Evaluation of Safety Related Power Operated Gate Valves for Thermal Binding and Hydraulic Locking	0
94-E-0038-01	Code Qualification for R.B. Sump Drain 2HCB-5 to Aux, Bldg. Rad. Waste System	2
94-E-0095-18	Room 2007/2009 Heat Load Evaluation	1
94-E-0095-19	Room Heat Load Evaluation	1
94-E-0095-20	Room 2013/2014 Heat Load Evaluation	0
97-E-0009-15	Containment Basemat Design Investigation Report	2
97-E-0009-17	Rebar Strength Data for Unit 2 Containment	1
97-E-0045-01	HPSI Pump Suction Pressure Required for Adequate NPSH - AOP Setpoint	0
97-E-0211-01	BWST Level Analysis	0
97-E-0212-01	BWST Draindown Analysis	2
97-R-0001-01	ECCS Leakage SAR Clarification	1
97-R-1002-01	ECCS Leakage Quantities to the Auxiliary Building	0
97-R-2002-01	ECCS Leakage Quantities to the Auxiliary Building	4
974813D101-01	Setpoint Determination for Thermal Relief Valves Installed as a Result of NRC Generic Letter 96-06 (Mechanical)	0
974813D101-02	Pressure Design of Piping & Valves as a Result of Overpressure Protection in Response to Generic Letter 96-06	0(2)
974813D101-03	Evaluation of the Effects of Thermal Relief Vent Line on Small Bore Containment Piping Associated with Penetrations P-9, P-10, and P-12	0

Calculations

NUMBER	DESCRIPTION	REVISION
974813D101-04	Qualification of Large Bore Piping Systems and Supports Affected by the Addition of Thermal Relief Valves	0, 1
974813D101-05	Qualification of One (P14) Large Bore Piping System and Supports Affected by the Addition of Thermal Relief Valve	0
974814D201-01	Evaluation of the Effects of Thermal Relief Vent Lines Associated with Penetrations 2P-51, 2P-59, and 2P-69	0(1)
98-E-0041-02	Model for Evaluating Injected Volume from BWST (T3)	0
98-E-0044-01	RWT Draindown Analysis	2
99-R-0002-01	Evaluation of High/Low Pressure Interface Valves with Respect to 10CFR50 Appendix R	0
EBD-19-H14	Qualification of Pipe Support EBD-19-H14	2
EBD-19-H75	Qualification of Pipe Support EBD-19-H75	2
G-286-5	Volume of Water in BWST when Suction is Transferred to RB Sump for Recirc.	0

Condition Reports

CR-ANO-1-2000-00011
CR-ANO-1-2001-00084
CR-ANO-1-2001-00208
CR-ANO-1-2001-00350
CR-ANO-1-2001-00486
CR-ANO-1-2002-00101
CR-ANO-1-2002-01268
CR-ANO-1-2002-01342
CR-ANO-1-2003-00626
CR-ANO-1-2003-00755
CR-ANO-1-2003-00760
CR-ANO-1-2003-00761
CR-ANO-1-2003-00764
CR-ANO-1-2003-00765
CR-ANO-1-2003-00769
CR-ANO-1-2003-00811
CR-ANO-1-2003-00814
CR-ANO-1-2003-00827
CR-ANO-1-2003-00830
CR-ANO-2-1991-00557
CR-ANO-2-2000-00245
CR-ANO-2-2000-00270
CR-ANO-2-2000-00511
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CR-ANO-2-2000-00622
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CR-ANO-2-2001-01114
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CR-ANO-2-2002-00245
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CR-ANO-2-2002-00993
CR-ANO-2-2003-00381
CR-ANO-2-2003-00451
CR-ANO-2-2003-00640
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CR-ANO-2-2003-00991
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CR-ANO-2-2003-01044
CR-ANO-2-2003-01053
CR-ANO-C-1991-00103
CR-ANO-C-1996-00135
CR-ANO-C-1996-00210
CR-ANO-C-2001-00183
CR-ANO-C-2002-00101
CR-ANO-C-2003-00558
CR-ANO-C-2003-00565
CR-ANO-C-2003-00568
CR-ANO-C-2003-00576
CR-ANO-C-2003-00612
CR-ECH-2001-00113

Drawings

NUMBER	DESCRIPTION	REVISION
7-DH-106	Large Pipe Isometric Borated Water Storage Tank Level Detection to LT-1421	0
74-2680, Drw 1	General Plan, Dome Roof Tank	6
74-2680, Drw 10	Pad Details for Bottom Connections	3
74-2680, Drw 20	Vortex Breaker for 24 Outlet Pipe	2
74-3486	General Plan, Dome Roof Tank, Drawing 1	7
C-46	Field Erected Tanks	16
C-46	Field Erected Tanks, Borated Water Storage Tank Details, Sheet 2	N
CA-307	Small Pipe Isometric Boric Acid Supply to Borated Water Tank	4
E-692	Equipment Arrangement Borated Water Storage Tank Area , Sheet 3	2
E-692	Equipment Arrangement Plant System Outdoor Areas, Sheet 4	1
E-2198	Schematic Diagram Low Pressure Safety Injection Pump 2P60A, Sheet 1	18
E-2115	Schematic Diagram Containment Spray Pump 2P35A, Sheet 1	25
E-2217	Schematic Diagram Spray Header Isolation Valve 2CV5612-1, Sheet 1	20
FSK-C-847	Documentation of Tank T-3 Borated Water Storage Tank	0
JN-D37178	Borated Water Storage Tank, Sheet 1	5
M-206	Steam Generator Secondary System, Sheet 1	123

Drawings

NUMBER	DESCRIPTION	REVISION
M-213	Laundry Waste and Containment and Aux Building Sump Drainage, Sheet 2	23
M-214	Clean Liquid Radioactive Waste, Sheet 3	17
M-219	Fire Water, Sheet 1	77
M-220	Plant Heating and Start-up Boiler, Sheet 3	14
M-222	Chilled Water System, Reactor and Auxiliary Buildings, Sheet 1	68
M-230	Reactor Coolant System, Sheet 1	106
M-230	Reactor Coolant System, Sheet 2	35
M-231	Makeup and Purification System, Sheet 1	107
M-231	Makeup and Purification System, Sheet 2	43
M-232	Decay Heat Removal System, Sheet 1	96
M-233	Piping & Instrument Diagram, Chemical Addition System, Sheet 1	74
M-234	Intermediate Cooling System, Sheet 1	88
M-234	Intermediate Cooling System, Sheet 2	41
M-235	Spent Fuel Cooling System, Sheet 1	61
M-236	Reactor Building Spray and Core Flooding Systems, Sheet 1	87
M-237	Sampling System, Sheet 1	52
M-237	ANO-1 P&ID Post Accident Containment Atmosphere Sampling System, Sheet 4	15
M-2213	Liquid Radioactive Waste System, Sheet 1	59

Drawings

NUMBER	DESCRIPTION	REVISION
M-2214	Boron Management System, Sheet 1	84
M-2220	Plant Heating System, Sheet 1	64
M-2222	Chilled Water System, Containment, Turbine, and Aux Buildings, Sheet 1	54
M-2230	Reactor Coolant System, Sheet 1	73
M-2230	Reactor Coolant System, Sheet 2	36
M-2231	Chemical And Volume Control System, Sheet 1	138
M-2232	Safety Injection System, Sheet 1	110
M-2235	Fuel Pool System, Sheet 1	66
M-2236	Containment Spray System, Sheet 1	89
M-2236	Containment Spray System, Sheet 2	18
M-2237	Sampling System, Sheet 1	63
M-2260	HVAC Control Room Expansion Facility, Sheet 5	2
M-2263	Units 1 & 2 Control & Computer Rooms HVAC, Sheet 1,	72
M-2422	Functional Description and Logic Diagram Containment Spray System, Sheet 3	15
M-2505	Level Setting Diagram, Sheet 95	2
P-200	Instrumentation, Component Symbols, and Drawing Index Sheet, Sheet 1	0
P-232	Boundary Diagram, Decay Heat Removal System, Sheet 1	0

Engineering Requests

NUMBER	DESCRIPTION	REVISION
002311-B201	Review Inline Instruments for Impacts due to Pressure and Temperature Changes in Calculation 88-E-0200-09, Containment Spray System	0
002311-E201	Unit 2 Containment Spray System Calculation 88-E-0200-09, Revision 0, Discrepancy Resolution	0
002311-E206	Review Valve Body ANSI ratings for Unit 2 Calculation 88-E-022-09	0
002311-E207	Review Stress Calculations for Impact Due to Pressure and Temperature Changes to Containment Spray System form Calculation 88-E-0200-09, Revision	0
002311-E209	Evaluate Vendor Piping to Determine Effects Due to Changes in Pressure and Temperature in Reactor Building Spray Calculation 88-E-0200-09	0
002311-I202	Calculation 88-E-0200-09 Evaluation for Potential Missiles	0
002311-R202	Review Fire Barriers for Impact Due to Design/operating Temperature Increase in Calculation 88-E-0200-09	0
002415-E102	Arkansas Nuclear One-1 Spray Pump Lube Oil Evaluation	0
002415-E103	Prediction of Pump 35A/B Bearing Temperatures at Elevated Service Water Temperatures	0
002415-E104	Temporary Alteration Work Plan 1409,713 Screening	0
002415-E105	Operability Evaluation for Pump 35A and Pump 35B	0
010263-E101	Hydrogen Recombiner Reference Power Re-calculation	August 1, 2000
963137-R201	Add Hinges to Front Panels on 2C182 & 184	0
991572-E201	Evaluation of Hydrogen Recombiners for an Increase in Containment Pressure to 59 psig	0

Engineering Requests

NUMBER	DESCRIPTION	REVISION
991864-E229	Containment Structural Analysis for Uprate @ 59 psig	0
992054 E103	Provide the Instrument Loop Error Applicable to the Differential Pressure Calculated via Subtracting the SPDS Suction Pressure from the SPDS Discharge Pressure for LPI Pumps P-34A and P-34B	0
ER 002773 E101	Reverse Testing of Crosby Omni Series 900 Style 9551814B Pressure Relief Valves in Unit 1 Containment Penetrations	0
ER 002971 E201	Engineering evaluation for Alternative 2P-89A Flow Test	0
ER-ANO-0528-005	HPSI Pump NPSH Margin Improvement	0
ER002612N101	ANO-1 GL 96-06 Phase II Modifications	0
ER2003-0332-012	Add Additional Footnote to LPI Flow Assumption Table for LBLOCA in ANO-1 Groundrules Document CALC-A1-NE	0
ER991864E229	Containment Analysis for Uprate to 59 psig	0
PEAR-95-0170	Extend the Scale for LG-1616, Sodium Hydroxide Tank Level Gauge	June 8, 1995

Miscellaneous Documents

NUMBER	DESCRIPTION	REVISION
	Containment (Building) Spray - Arkansas Unit 2	June 24, 2003
	ESI - EMD Owners Group Recommended Maintenance Program - Mechanical	3
	Letter - NRC to ANO - Issuance of Amendment Nos. 185 and 176 to Facility Operating License	October 3, 1996
	Reactor Building Spray - Arkansas Unit 1	June 24, 2003

Miscellaneous Documents

NUMBER	DESCRIPTION	REVISION
0CAN019702	Letter - ANO to NRC - 120-Day Response to Generic Letter 96-06	January 28, 1997
0CAN019903	Additional Information Pertaining to Generic Letter 96-06	January 25, 1999
0CAN019903	Letter - ANO to NRC - Additional Information Pertaining to Generic Letter 96-06	January 25, 1999
0CAN049602	Letter - ANO to NRC - Tech Spec Change Request Concerning Implementation of 10CFR50, Appendix J, Option B	April 11, 1996
0CAN060301	Letter - ANO to NRC - ANO-1 & ANO-2 Commitment Change Summary Report and ANO-1 10CFR50.59 Summary Report	June 11, 2003
0CAN079710	Final Resolution of Generic Letter 96-06	July 31, 1997
0CAN089606	Letter - ANO to NRC - Modification of Proposed Tech Spec Change Request Concerning Implementation of 10CFR50, Appendix J, Option B	August 23, 1996
0CAN129703	Letter - ANO to NRC - Response to Generic Letter 96-06, Supplement 1	December 18, 1997
0CNA020005	Completion of Licensing Action for Generic Letter 96-06	February 7, 2000
0CNA069716	Letter - NRC to ANO - NRC Inspection Report 50-313/97-13; 50-368/97-13 and Notice of Violation and Notice of Deviation	June 28, 1997
2CNA067837	Testing and Inspection of Piping Systems Penetrating Containment	June 29, 1978
CEP-IST-2	IST Plan, Valve Summary List, ANO-1 Appendix and ANO-2 Appendix	2
DCN 96-02193	Drawing Revision Notice As-Built M-237 for LCP 94-5034 Rev 0	0

Miscellaneous Documents

NUMBER	DESCRIPTION	REVISION
DRN 03-01205	Calculation Change CALC-92-E-0078-09	July 30, 2003
EN-S Nuclear Management Manual LI-101	10 CFR 50.59 Review Program	3
EN-S Nuclear Management Manual DC-115	ER Response Development	3
Engineering Report No. 02-R-1002-01	ANO-1 LOCA Analysis Summary Report	0
HES-02	Containment Leak Rate Testing Program	9
LBD Change 2-6.2-0087	SAR Section 6.2.3.2.2.2 Does not Reflect the Current System Design	July 14, 2003
MAI 25517	SIS Drn from SI Tank to RWT Valve Op	November 5, 2000
MAI 31490	Personnel Lock	September 16, 2000
MAI 34204	DH Suction Relief	April 5, 2001
MAI 44158	DH Suction Relief	March 27, 2001
STM 1-08	Reactor Building Spray and Containment Building	7
STM 2-08	Containment Spray System	8
TD W120 2200	Technical Manual for Electric Hydrogen Recombiner Unit No. 2	2
TD W120.2230	Installation, Setup and Troubleshooting Hydrogen Recombiner Power Supply Panel	0
TD W120.3450	Instruction Manual for Electric Hydrogen Recombiner Model B	0

Miscellaneous Documents

NUMBER	DESCRIPTION	REVISION
Technical Specification 3.6.1	ANO-1 Technical Specification, Reactor Building	215
Technical Specification 3/4.6	ANO-2 Technical Specification, Containment Systems	226
Technical Specification 5.5.16	ANO-1 Technical Specification, Reactor Building Leak Test Program	219
ULD-0-TOP-14	Containment Isolation and Containment Leak Rate Testing	1
ULD-1-STR-02	ANO-1 Reactor Building	2
ULD-1-SYS-05	Arkansas Nuclear One-1 Reactor Building Spray System	3
ULD-1-SYS-18	ANO-1 Containment Hydrogen Control System	3
ULD-1-TOP-04	ANO-1 Containment Response to Design Basis Accidents	7
ULD-2-STR-02	ANO-2 Containment Building	1
ULD-2-SYS-05	ANO-2 Containment Spray System	3
ULD-2-SYS-06	ANO-2 Containment Heating and Ventilation/Purge System	2
ULD-2-SYS-18	ANO-2 Containment Hydrogen Control System	2
ULD-2-TOP-03	ANO-2 Containment Response to Design Basis Accidents	3
USAR Section 1.2.2	ANO-2 USAR, Concise Plant Description	17
USAR Section 1.4	ANO-1 USAR, General Design Criteria	18
USAR Section 14	ANO-1 USAR, Safety Analysis	18
USAR Section 15	ANO-2 USAR, Accident Analysis	17

Miscellaneous Documents

NUMBER	DESCRIPTION	REVISION
USAR Section 5.2	ANO-1 USAR, Reactor Building	18
USAR Section 6	ANO-2 USAR, Engineered Safety Features	17
USAR Section 6	ANO-1 USAR, Engineered Safeguards	18
Workplan 1409.731	Control Room Envelope Unfiltered Air Inleakage Measurement Test	0

Modifications

NUMBER	DESCRIPTION	REVISION
DCP 97-4813-D101	Install Pressure Relieving Devices on Containment Penetrations to Comply with NRC Generic Letter 96-06	May 6, 1999
ER-ANO-2000-2255-001	Filter Addition to Cabinet C-178 and C-179	0
ER-ANO-2002-0357-0000	Replacement of ACW Boundary Isolation Valve CV-3643	0
ER-ANO-2002-0363-000	MFW Pump Lube Oil Pump P-26A/B and P-27A/B Motor Equivalents	0
ER-ANO-2002-0929-000	Upgrade of overload protection of all ICW Pumps (P-33A, B, C)	0
ER-ANO-2002-1223-001	Add Room Flooding Alarms to Decay Heat Vaults	0
ER-ANO-2003-0099-000	Install splice on 2PM4C power cables	0
LCP 94-5034	ANO-1 Hydrogen Analyzer Modification	1, 2

Procedures

NUMBER	DESCRIPTION	REVISION
1000.131	10CFR50.59 Review Program	003-04-0
1015.003A	Unit 1 Operations Logs	050-04-0
1022.011	Reactor Core Monitoring Activities	005-00-0
1032.037	Inspection and Evaluation of Boric Acid Leaks	000-05-0
1102.010	Plant Shutdown and Cooldown	053-02-0
1104.005	Reactor Building Spray System Operation	042-04-0
1104.031	Containment Hydrogen Control	014-01-0
1202.010	Engineered Safety Feature Actuation System	005-01-0
1202.012	Repetitive Tasks	004-02-0
1203.024	Loss of Instrument Air	010-07-0
1203.028	Loss of Decay Heat Removal	016-02-0
1203.030	Loss of Service Water	013-00-0
1307.031	Unit 1 Hydrogen Recombiners (M55A & B Surveillance Testing)	004-03-0
1307.037	Unit 1 Plant Freeze Protection Testing	014-00-0
1309.013	Unit One Service Water Flow Test	009-06-0
1403.007	Unit 1 Heat Trace System Maintenance	004-03-0
1412.001	Preventive Maintenance of Limitorque SB/SMB Motor Operators	012-03-0
2102.002	Plant Heatup	051-02-0
2104.005	Containment Spray	041-07-0
2104.033	Containment Atmosphere Control	042-00-0
2104.039	HPSI System Operation	041-06-0

Procedures

NUMBER	DESCRIPTION	REVISION
2106.032	Unit 2 Freeze Protection Guide	009-04-0
2202.003	Unisolated Loss of Coolant Accident	006-00-0
2203.012T	Annunciator 2K20 Corrective Action	014-01-0
2304.029	Unit 2 Hydrogen Purge System Analyzer 2AITS-8371-1	020-00-0
2304.031	Hydrogen Recombiner Temperature Calibration	009-00-0
2305.006	Cold Shutdown Valve Testing	017-01-0
2305.009	Containment spray System Integrity Test and Leak Rate Determination	N/A
2311.008	EDG Heat Exchanger Performance Test	004-00-0
2403.016	Unit Two Hydrogen Recombiner Inspection and Electrical Testing	008-04-0
2409.707	2P-89A HPSI Pump Alternate Testing	0
5010.004	Design Document Changes	005-01-0
5120.402	Unit 1 Primary Containment Leak Rate Running Total	008-00-0
5120.403	Unit 2 Primary Containment Leak Rate Running Total	008-00-0
5120.422	Containment Recirc Fan Flow Rate Surveillance Test	001-01-0
LI-102	Corrective Action Process	2
SES16	Spring Can Setting Tolerances	0

Safety Evaluations

NUMBER	DESCRIPTION	REVISION
1995 - 225	ANO-1 Hydrogen Analyzer Modification	11/30/95
2001 - 46	Reanalysis of the ANO-1 Main Feedwater HELB	10/25/01

Safety Evaluations

NUMBER	DESCRIPTION	REVISION
2001 - 48	Control Room Envelope Unfiltered Air Inleakage Measurement Test Plan)	10/18/01
2002 - 22	Unit 1 ITS 3.5.4 Bases BWST Temperature Limit Surveillance	6/27/02
2002 - 24	ANO-1 LOCA Analysis Summary Report	7/25/02
2002 - 31	EDG Test Requirements Frequency	9/18/02
FFN-00-080	Install Pressure Relieving Devices on Containment Penetrations to Comply with NRC GL 96-06 - Unit 2	0
FFN-01-018	ANO-1 GL 96-06 Phase II Modifications	0
FFN-99-074	Install Pressure Relieving Devices on Containment Penetrations to Comply with NRC GL 96-06	0
LCP 94-5034	ANO-1 Hydrogen Analyzer Modification	1

Safety Evaluation Sceenings

NUMBER	DESCRIPTION	REVISION
1032.037	Inspection and Evaluation of Boric Acid Leaks	000-05-0
1102.010	Plant Shutdown and Cooldown	053-02-0
1202.010	ESAS	005-01-0
2305.006	Cold Shutdown Valve Testing	017-01-0
2311.008	EDG Heat Exchanger Performance Test	004-00-0
ER-ANO-2000-2255-001	Filter Addition to Cabinet C-178 and C-179	0
ER-ANO-2002-0357-0000	Replacement of ACW Boundary Isolation Valve CV-3643	0

Safety Evaluation Sceenings

NUMBER	DESCRIPTION	REVISION
ER-ANO-2002-0363-000	MFW Pump Lube Oil Pump P-26A/B and P-27A/B Motor Equivalents	0
ER-ANO-2002-0929-000	Upgrade of overload protection of all ICW Pumps (P-33A, B, C)	0
ER-ANO-2002-1223-001	Add Room Flooding Alarms to Decay Heat Vaults	0
ER-ANO-2003-0099-000	Install splice on 2PM4C power cables	0
ER991864E238	Civil Uprate of Containment Structure from 54 psig to 59 psig	1
OP 2409.707	2P-89A HPSI Pump Alternate Testing	0
OP-1022.011	Reactor Core Monitoring Activities	005-00-0