UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

January 25, 2002

Southern Nuclear Operating Company, Inc.
ATTN: Mr. J. B. Beasley, Jr. Vice President
Vogtle Electric Generating Plant
P. O. Box 1295
Birmingham, AL 35201-1295

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT - NRC INSPECTION REPORT 50-424/01-08 AND 50-425/01-08

Dear Mr. Beasley:

On December 14, 2001, the NRC completed a safety system design and performance capability inspection at your Vogtle Electric Generating Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on December 14, 2001, with Mr. J. Gasser and other members of your staff.

The inspection examined activities conducted under your license as these relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspection team identified one issue of very low safety significance (Green). This issue was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because this issue has been entered into your corrective action program, the NRC is treating the issue as a non-cited violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny the non-cited violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region II, the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001, and the NRC Resident Inspector at the Vogtle Electric Generating Plant.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure 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 http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Mark S. Lesser, Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos. 50-424, 50-425
License Nos. NPF-68, NPF-81

Enclosure: NRC Inspection Report
Nos. 50-424/01-08 and 50-425/01-08 w/Attachment

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-424, 50-425
License No:	NPF-68, NPF-81
Report No:	50-424/01-08 and 425/01-08
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Electric Generating Plant, Units 1 and 2
Location:	8805 River Road Waynesboro, GA 30830
Dates:	November 26-30, 2001(Week 1) December 10-14, 2001 (Week 2)
Lead Inspector:	P. Van Doorn, Senior Reactor Inspector
Team:	P. Fillion, Reactor Inspector J. Lenahan, Senior Reactor Inspector M. Maymi, Reactor Inspector C. Smith, Senior Reactor Inspector M. Thomas, Senior Reactor Inspector
Approved:	Mark Lesser, Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000424-01-08 and 05000425-01-08 on 11/26/01-12/14/01, Southern Nuclear Operating Company, Inc., Vogtle Electric Generating Plant, Units 1 and 2, safety system design and performance capability.

This inspection was conducted by a team of region-based inspectors. The inspection identified one green finding which was a non-cited 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 SDP 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://nrr10.nrc.gov/NRR/OVERSIGHT/index.html.

Cornerstones: Initiating Events, Mitigating Systems

- Green. A non-cited violation (NCV) of Technical Specification (TS) 5.4.1.a. was identified for an inadequate abnormal operating procedure (AOP). The procedural guidance contained in AOP 18021-C, Loss of Nuclear Service Cooling Water System (NSCW), directed the operators to use a system operating procedure that did not provide adequate guidance to establish NSCW single pump operation for the condition that was being addressed by AOP 18021-C.

  This finding had a credible impact on safety, in that, the inadequate guidance in AOP 18021-C could affect the ability of the operators to establish cooling to the reactor coolant pump (RCP) seals in a timely manner to reduce the likelihood of a RCP seal loss of coolant accident following a loss of both trains of the NSCW system. This finding was of very low safety significance based on the minimal risk increase associated with a non-proceduralized recovery action in the control room, given ample time to accomplish the task and sufficient indications and general training to know what to do, versus taking the same recovery action with the benefit of a procedure. (Section 1R21.1)

REPORT DETAILS

1. REACTOR SAFETY
Cornerstones: Initiating Events and Mitigating Systems

1R21 Safety System Design and Performance Capability (71111.21)

Through a review of the Vogtle Plant Individual Plant Examination (IPE) submittal, the team selected the Nuclear Service Cooling Water (NSCW) system for review. Documents reviewed during the inspection are listed in the Appendix in this report.

.1 System Needs

a. Inspection Scope

Process Medium

The team reviewed NSCW system flow requirements, calculations, drawings, flow balance trending, and technical specification level requirements to verify sufficient volume was available in the tower basins to meet design requirements.

The team reviewed chemistry data for an approximate two year period to confirm system water chemistry was being maintained in accordance with licensee procedural guidelines. In addition, the team reviewed corrosion coupon test data to confirm that significant corrosion was not occurring as indicated by the data.

Energy Source

The team reviewed design basis documents, calculations, vendor information and design drawings for Unit 1 Class 1E 4160 VAC and 480 VAC electrical distribution systems. The team evaluated the adequacy of the licensee's analysis of the Class 1E electrical distribution system and its compliance with the guidance of Branch Technical Position PSB-1, Adequacy of Station Electric Distribution System Voltages. Loss of voltage relay set point values and degraded voltage relay set point values, described in Updated Final Safety Analysis Report (UFSAR) section 8.3.1.1.3 and Technical Specification section 3.3.5, were reviewed to ensure that licensing bases requirements were consistent with the licensee's analysis. The analytical voltage limit described in UFSAR Section 8.3.1.1.3, upon which the degraded voltage dropout set point was based, was also reviewed to ensure that steady state voltage criteria specified in design bases, DC-1804, for the risk significant NSCW system equipment motors was not violated when fed from the preferred power supply during degraded voltage conditions. The team also reviewed the instrument loop accuracy calculation for the degraded voltage relay to ensure that the instrument was sufficiently accurate to perform its design function without exceeding the analytical limit described in the UFSAR. The team performed a design review for possible common cause failure of NSCW risk significant equipment motors and motor operated valves (MOVs) to operate because of inadequate equipment utilization voltage.

The team reviewed the overcurrent relay set points for the NSCW pump motors and cooling fan motors to verify that the relay would not interfere with successful completion of the safety function and that motor protection would be achieved. The team also verified proper coordination with other overcurrent protection devices. The team made an in field examination of three of these devices.

Controls

The team reviewed the control logic elementary diagrams for the NSCW pumps, the pump discharge valves, the spray and bypass valves, and the cooling fan motors. The criteria for this review was that the implemented logic was consistent with statements of system operation in the UFSAR and that response of the logic was correct for all permissible configurations and credible scenarios. In addition, the team considered potential failures in the logic and how those failures would be detected, e.g. annunciators, operator rounds checks, etc.

Operator Actions

The team reviewed selected abnormal operating procedures (AOPs) and system operating procedures (SOPs) associated with the NSCW system to verify that the procedures specified operator actions that were consistent with design and licensing requirements during normal and accident conditions. The team discussed selected tasks (e.g., job performance measures and simulator guides) with operations personnel to understand operator actions and important equipment functions. Operator actions were also evaluated for consistency with events described in the UFSAR, Section 9.2.1, "Nuclear Service Cooling Water System," and Section 9.2.5, "Ultimate Heat Sink." The team also performed a walkdown of the main control room instrumentation and alarms to verify that appropriate indications and controls were available and adequate for operators to make the necessary decisions during performance of the specific AOPs and SOPs.

b. Findings

One finding of very low safety significance (Green) was identified as a non-cited violation (NCV) of Technical Specification (TS) 5.4.1.a. for an inadequate AOP related to NSCW system single pump operation. On November 27, 2001, the inspection team identified that the procedural guidance contained in AOP 18021-C, Loss of Nuclear Service Cooling Water System, directed the operators to use an SOP that did not provide adequate guidance to establish NSCW single pump operation for the condition that was being addressed by AOP 18021-C.

The IPE stated that on loss of both trains of NSCW, as a potential means to mitigate core damage, the operator could establish one pump NSCW operation by reducing auxiliary component cooling water (ACCW) heat loads to keep the reactor coolant pump (RCP) seals cooled and isolating or reducing NSCW loads. In addition to the load adjustments, the operator was required to start the standby NSCW pump on either train, and start a charging pump. The IPE further stated that AOP 18021-C was to be revised to include steps for this activity. The procedural guidance contained in AOP 18021-C

directed the operator to attempt to place one train of NSCW in single pump operation by initiating SOP 13150, Nuclear Service Cooling Water System. However, the guidance in SOP 13150 only addressed NSCW single pump operation during a refueling outage, and not during power operation conditions. The team noted that the procedural guidance concerning NSCW single pump operation was not consistent with the assumptions of heat load reduction and isolation credited in the IPE for loss of NSCW. The procedures had not been revised to reflect the IPE assumptions.

This finding had a credible impact on safety, in that, the inadequate guidance in AOP 18021-C could affect the ability of the operators to establish cooling to the RCP seals in a timely manner after a loss of both trains of the NSCW system. This issue affects both the initiating events and mitigating systems cornerstones and was determined to be of very low safety significance (Green) by the Reactor Safety Significance Determination Process. This conclusion was based on the minimal risk increase associated with a non-proceduralized recovery action in the control room, given ample time to accomplish the task and sufficient indications and general training to know what to do, versus taking the same recovery action with the benefit of a procedure.

Vogtle Technical Specification 5.4.1.a and Regulatory Guide 1.33, Revision 2, Appendix A, Item 6.g., require, in part, that written procedures be established, implemented, and maintained for plant operations during emergencies such as loss of service water.

Contrary to the above, the licensee failed to maintain adequate procedural guidance for establishing NSCW single pump operation following a loss of the NSCW system during power operation.

Because of the very low safety significance of the item and because the licensee has included this item in their corrective action program as Condition Report (CR) 2001002851, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. This violation is identified as NCV 50-424,425/01-08-01, Inadequate Procedural Guidance for Establishing NSCW Single Pump Operation.

.2 System Conditions and Capability

a. Inspection Scope

Installed Configuration

The team performed a walkdown of accessible equipment in the NSCW system. This included the cooling towers, NSCW pumps, NSCW transfer pumps, pump discharge valves, tower spray and bypass valves, and flow and pressure instrumentation. This review was performed to assess material condition, identify degraded equipment, and verify installed configuration was consistent with design drawings and calculation design inputs. The team also reviewed the results of underwater visual inspections performed by divers to access the condition of the concrete in the NSCW pump wells and to remove debris. The team also verified that modifications had been completed to

reduce/eliminate debris in the NSCW pump wells and basins which could affect performance of the NSCW system.

Mechanical Design

The team reviewed design documentation, technical specifications, drawings, calculations, system trending, and installed equipment to verify that the system met mechanical design basis assumptions of system capabilities specified in accident analysis. This included Net Positive Suction Head (NPSH) calculations and pump curves to verify that adequate basin levels were maintained to provide required NPSH for NSCW pumps and transfer pumps. Additionally, the team reviewed the pump's vendor manual, surveillance records, maintenance work orders, and oil analysis reports to verify proper maintenance was established. The NSCW pump discharge and tower spray and bypass valves set point calculations were reviewed to verify assumptions were consistent with design requirements.

The team also reviewed heat exchanger design to verify design requirements were being maintained. This included the review of heat exchanger data sheets, flow and heat load calculations, and engineering analysis. These were also reviewed for adequate system flow capability during accident conditions for various coolers, Diesel Generator (DG) jacket water heat exchangers, and pump motor cooling.

Civil Design

The team reviewed design documentation, drawings, and calculations for design of the NSCW structures. Included in the review were the following: calculations for missile protection, embedded plates, and seismic design of beams which support the NSCW tower drift eliminator and fill panels. The team also reviewed calculations performed to demonstrate that piping and heat exchangers (coolers) and other system components would not be affected by a water hammer or internal boiling resulting from a coincident loss of offsite power and loss of coolant accident.

The team reviewed design calculations and applicable test results which established the basis for the thirty day seepage losses from the NSCW basins to confirm the available 30 day supply of water required for shutdown of the reactor would not be affected by seepage losses.

Testing

The team reviewed testing and inspection data to assess the licensee's actions to verify and maintain the safety function, reliability, and availability of selected components supplied by cooling water from the NSCW system. Test and inspection results were reviewed to verify that: 1) test acceptance criteria and test results appropriately considered differences between testing conditions and design conditions; 2) inspection and test results met established acceptance criteria; and 3) test results considered instrument inaccuracies and differences. Components reviewed included ACCW, component cooling water (CCW), and DG jacket water heat exchanger performance tests; safety related pump motor coolers debris inspection and flow tests; containment

fan coolers debris inspections and flow tests; NSCW cooling tower fan tests, and NSCW transfer pumps inservice tests.

The team also reviewed NSCW pump, pump discharge valves, recirculation check valves, and the tower spray and bypass valves surveillance records to verify these were consistent with design requirements and to confirm performance was being maintained. Additionally, the team reviewed system trending of flow balance testing to confirm adequately balanced flow was being maintained to all components.

The team reviewed documentation of testing performed to verify the condition of the NSCW asbestos cement board (ACB) drift eliminator panels and fill panels. This testing was conducted to determine the remaining service life of the panels. The review included the testing methods and basis, acceptance criteria, evaluation of the test data, and maintenance inspections performed to determine conditions of the ACB panels in the NSCW towers.

b. Findings

No findings of significance were identified.

.3 Selected Components

a. Inspection Scope

Mechanical Components

The team reviewed condition reports (CRs), maintenance work orders, and surveillance and calibration records to assess the licensee's actions to verify and maintain the safety function, reliability, and availability of selected components for the NSCW system. The selected components included the NSCW pump's discharge motor operated valves and check valves, and the tower spray and bypass valves. Also included were system flow instrumentation, recirculation check valves, containment fan coolers, ACCW heat exchangers, residual heat removal (RHR) pump motor coolers and the DG jacket water coolers.

The team reviewed selected components for potential degradation by examining test performance data trends. Test data trends reviewed included the CCW, NSCW, centrifugal charging pump (CCP), safety injection (SI), containment spray, RHR pump, and piping penetration area motor coolers; CCP and SI pump lube oil coolers; eddy current inspection data of selected ACCW and CCW heat exchanger tubes; and fouling factor test data for selected CCW and diesel generator jacket water heat exchangers and evaluating maintenance performance efforts. The team also reviewed the trend data to verify that the frequency of testing or inspections was sufficient to detect degradation prior to loss of heat removal capabilities below design values and that the licensee was maintaining the components consistent with expected design and vendor requirements.

Electrical Components

The team reviewed pump performance curves and motor/pump speed torque curves for the NSCW pump motors. The team independently verified that the NSCW pump motors were adequately sized with positive margin based on the mechanical load demand. The team also reviewed the licensee's analysis of the NSCW pump motors and NSCW tower fan motors operation under degraded voltage steady state conditions and transient voltage starting conditions. Acceptable motor operation was evaluated based on design criteria requirements specified in DC-1804 and DC-1805. Risk significant NSCW MOVs motor operation was also evaluated for steady state degraded voltage conditions. Acceptable motor operation was verified based on the developed motor torque calculated in the licensee's MOV operator and capabilities calculation using specified degraded voltage factor inputs**.** Possible common cause failure of MOVs to start or run because of inadequate process system interlocks with the MOV control circuit was evaluated. The team reviewed instrument loop accuracy calculations for the NSCW supply header temperature and pressure in order to verify that bistable interlocks to the MOV control circuit would perform their intended function without safety, analytical, or operational limits being exceeded.

Design Changes

The team reviewed design changes of NSCW system related equipment accomplished through the licensee's design change process to verify that system and equipment function was appropriately evaluated and maintained. These design changes included removal of standby pump discharge check valve internal's, NSCW pump packing change, and a flow orifice size change for the NSCW piping to the NSCW and RHR pumps.

The team also reviewed design change DCPT-99-V1N0020-001, which replaced the motor on the NSCW tower "A" return valve 1HV-1668A. The team evaluated the adequacy of the 10 CFR 50.59 Safety Evaluation prepared for the design change.

b. Findings

No findings of significance were identified.

.4 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed Deficiency Cards (DCs)/CRs, corrective Maintenance Work Order (MWO) information, and respective corrective actions related to NSCW components and towers. The team verified that the licensee was identifying deficiencies at an appropriate threshold, that the deficiencies were entered into the corrective action program, and that corrective actions were being implemented or were planned.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Management Meeting

The team presented the inspection results to Mr. J. Gasser and other members of the licensee management at the conclusion of the inspection on December 14, 2001. The licensee acknowledged the findings presented. Proprietary information is not included in the inspection report.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

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S. Bradley, Nuclear Systems Engineering Supervisor
B. Burmeister, Manager Engineering Support
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L. Plisco, Acting Deputy Regional Administrator
J. Zeiller, SRI, Vogtle Nuclear Plant

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

50-424,425/01-08-01	NCV	Inadequate Procedural Guidance for Establishing NSCW Single Pump Operation (Section 1R21.1)

APPENDIX

LIST OF DOCUMENTS REVIEWED

CRs or Deficiency Notices (Dns) Initiated as a Result of this Inspection

DN 01-050, Calculation X3CA19 was not Revised Regarding a Change to the Thermal Overload Relay, 11/28/01
DN 01-051, Calculation Implied Further Evaluation was to be Performed which was never Completed, 12/03/01
DN 01-052, NPSH calculation for NSCW pumps is not current and superseded, and needs to address the unusable level of water in the tower basin, 12/04/01
DN 01-053, NSCW Transfer Pump NPSH calculation needs to be updated to reflect the depth of the pump impeller below the bottom of the tower basin, 12/04/01
DN 01-055, Several Calculations Contained Minor Inconsistencies, 12/05/01
DN 01-056, Failure to Update Design Documents Regarding Load Changes for NSCW Pump Supports, 12/06/01
CR 2001002851, Failure to Develop Adequate Procedures for NSCW Single Pump Operation, 11/28/01
CR 2001002865, Failure to Initiate a CR for a Potential Overpressure Condition, 12/03/01
CR 2001002949, Minor Drawing Discrepancies, 12/11/01
CR 2001002956, Corrosion on NSCW Pipe Support, 12/11/01

Procedures

35360, Circulating Water, NSCW and River Water Make-Up Chemistry Control, Rev. 22
17062-1, Annunciator Response Procedures for ALB 62 on Process Control Panel, Rev. 16
17006-1, Annunciator Response Procedures for ALB 06 on Panel 1A2 on MCB, Rev. 25
17003-1, Annunciator Response Procedures for ALB 03 on Panel 1A1 on MCB, page 26 Rev. 11
27012-C, Bringham Williamette Type VCM “NSCW” Pump Removal and Installation, Rev. 11
00254-C, Foreign Material Exclusion and Plant Housekeeping Programs, Rev. 21.1
11150-1, Nuclear Service Cooling Water System Alignment, Rev. 15
11889-C, Severe Weather Checklist, Rev. 13
11882-1, Outside Area Rounds Sheets, Rev. 53
27918-C, Removal and Testing of the NSCW Cooling Tower Fill Test Specimens, Rev. 0
27919-C, NSCW ACB Test Specimen Evaluations, Rev. 0
13145-1, Diesel Generators, Rev. 49
13150-1, Nuclear Service Cooling Water System, Rev. 25.1
18021-C, Abnormal Operating Procedure Loss of Nuclear Service Cooling Water System, Rev. 12
18022-C, Abnormal Operating Procedure Loss of Auxiliary Component Cooling Water, Rev. 11
19100-C, Emergency Operating Procedure ECA-0.0 Loss of All AC Power, Rev. 26.1

Drawings

1X3D-AA-M08A-33, Unit 1 Relaying Data, Rev. 2
1X3D-BD-K04A, Elementary Diagram Nuclear Service Cooling Water System 1-1202-P4-001-M01, Rev. 15
1X3D-BD-K04C, Elementary Diagram Nuclear Service Cooling Water System 1-1202-P4-003-M01, Rev. 13
1X3D-BD-K04E, Elementary Diagram Nuclear Service Cooling Water System 1-1202-P4-005-M01, Rev. 14
1X3D-BD-K03A, Elementary Diagram Nuclear Service Cooling Water System 1-1202-W4-001-M01, Rev. 11
1X3D-BD-K04Z, Elementary Diagram Nuclear Service Cooling Water System 1HV-11600-5,06, Rev. 5
1X3D-BD-K05U, Elementary Diagram Nuclear Service Cooling Water System 1HV-1668A, Rev. 11
1X3D-BD-K05V, Elementary Diagram Nuclear Service Cooling Water System 1HV-1668B, Rev. 8
1X4DB133-1, P & I Diagram Nuclear Service Cooling Water System, Rev. 40
1X4DB133-2, P & I Diagram Nuclear Service Cooling Water System, Rev. 46
1X4DB134, P & I Diagram Nuclear Service Cooling Water System, Rev. 27
1XDB135-1, P & I Diagram Nuclear Service Cooling Water System, Rev. 27
1X4DB135-2, P & I Diagram Nuclear Service Cooling Water System, Rev. 30
1X4DB170-1, P & I Diagram Diesel Generator System Train A, Rev. 39
1X4DB170-2, P & I Diagram Diesel Generator System Train B, Rev. 38
CX4DB153, P & I Diagram Plant Make-Up Water Well Potable Water System, Rev. 27
1X4DB149-1, Flow Diagram Cooling Water System, Rev. 5
1X4DB149-2, Flow Diagram Cooling Water System, Rev. 5
1X4DB149-4, Flow Diagram Cooling Water System, Rev. 5
6435E55, RHR Pump Motor Outline, Sheets 1 & 2, Rev. 1
Marley Drawing 78-4715 (Log # AX4AD02-35-8), Load Tables for Fill and Eliminators, Rev. F
Marley Drawing 78-4717 (Log # AX4AD02-37-7), Spray System Anchorage and Load points, 2@ MS-4-88D, Rev. E
Marley Drawing 78-42910 (Log # AX4AD02-41-8), Typical Cross Section 2@ MS-4-88D, Rev. L
Marley Drawing 78-42911 (Log # AX4AD02-42-8), Plan View of Fan Deck, 2@ MS-4-88D, Rev. N
Marley Drawing 78-42912 (Log # AX4AD02-43-7), Plan View of Eliminators 2@ MS-4-88D, Rev. K
Marley Drawing 78-42913 (Log # AX4AD02-44-3), Plan View of Spray System 2@ MS-4-88D, Rev. F
Marley Drawing 79-41021 (Log # AX4AD02-57-6), ACB Fill Installation RHR Tower, Rev. D
Marley Drawing 79-41022 (Log # AX4A002-55-3), Retainer Angle Installation, RHR Tower, Rev. B
Marley Drawing 78-41027 (Log # AX4A002-85-9), Mechanical Equipment Installation, RHR Tower, Rev. H
Bingham-Willamette Drawing 17573 (Log # 1X4AF02-18-8), Nuclear Service Cooling Water Pump Size and Type: 18x27B VCM, Rev. F

Bingham-Willamette Drawing FD-1A064/67 (Log # AX4AF02–3-11), Transfer Pump 8x12A VCM, Rev. X
1X2D05E001, NSCW Cooling Towers 1A & 1B, General Arrangement Plan, Elevation and Sections, Rev. 15
1X2D05A001, NSCW Cooling Tower 1A Forming Plan - Elev 137, Unit 1, Rev. 11
1X2D05A006, NSCW Cooling Tower 1A Forming plan, Sections and Details, Rev. 8
1X2D05A021, NSCW Cooling Tower 1B, Forming Plan - Elev 137, Unit 1, Rev. 10
1X2D05A026, NSCW Cooling Tower 1B, Forming Plan, Sections and Details, Rev. 10
1X2D05E001, NSCW Cooling Tower 1A, Miscellaneous Steel, Sections and Details, Rev. 12
1X4DE328, NSCW Tower, Equipment Location Drawing Train A, Unit 1 Plan Level 1 Elev 220, Rev. 5
1X2DE329, NSCW Tower, Equipment Location Drawing Train B, Unit 1 Plan Level 1 Elev 220, Rev. 5

Calculations

X4C1202V28, NSCW Pump Minimum Flow Verification, Rev. 0
X4C1202V05, Nuclear Service Cooling Water Transfer Pump Verification, Rev. 2
X4C1202V52, NSCW Flows Following DBA, Rev.0
X4C1202W23, Total Solid Buildup in NSCW Trains with 30 Days Post LOCA Operation, Rev. 0
X4C1202W26, Evaluation of 96 °F NSCW Peak Temperature, Rev. 0
X4C1202V29, Effects of Delayed NSCW Full Flow After a Loss of Offsite Power Event, Rev. 0
X4C1202V38, NSCW Pump Flow with Bypass and Spray Valves Open, Rev. 0
X4C1202U51, Nuclear Service Cooling Water System Check Valve Size Verification, Rev. 0
X5CP11742, Nuclear Service Cooling Water Train B Pump Discharge Pressure, Rev. 4
X5CP11741, Nuclear Service Cooling Water Train A Pump Discharge Pressure, Rev. 4
X5CP1642, Trains A and B NSCW Pumps Discharge Temperature Indication, Rev. 3
X4C1202V50, D/G JCW Flowrate Evaluation for RER #88-0674, Rev. 0
X4C1202S07, NSCW Pumps-Possible Intake of Concrete Chips, Rev. B
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22346-C, Differential Pressure and/or Flow Gauge Calibration, Unit 1 FI 11760, 11761, 11762, 2156, completed 03/28/01
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14825-2, Quarterly Inservice Valve Test, Unit 2 HV-1169A, 1669B, completed 10/22/01, 02/13/01
28722-C, Anchor Darling Check Valve IST, Unit 2 1202U4A07, A08, A09, completed 10/15/99, 04/13/01
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MWO 29601077, Inspect and Rebuild NSCW Pump, 08/30/96
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MWO 29802746, NSCW Pump Discharge Pressure Gauge was Reading Erratically During Surveillance Test, 11/11/98
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MWO 29903813, Unit 2 NSCW Pump #4 Motor Cooler had Lower than Excepted Flow, 12/28/99
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CR 2001000970, The Tubesheets of the 2B CCW Heat Exchanger were Inadvertently Sandblasted, 04/18/01
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CR 1998001163, Unauthorized Work Performed on B NSCW Transfer Pump which Rendered Pump Inoperable, 12/04/98
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UFSAR

Section 3.5.3, Barrier Design Procedures
Section 7.3.9, Nuclear Service Cooling Water
Unit 1 Section 8.3, Onsite Power System
Section 9.2.1, Nuclear Service Cooling Water System
Section 9.2.5, Ultimate Heat Sink

Technical Specifications

3.3.5, 4.16 KV ESF Bus Loss of Power (LOP) Instrumentation
3.6.6, Containment Spray and Cooling Systems
3.7.8 Nuclear Service Cooling Water (NSCW) System
3.7.9 Ultimate Heat Sink (UHS)

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