



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8931**

July 27, 2001

EA-01-177

Southern Nuclear Operating Company, Inc.  
ATTN: Mr. H. L. Sumner, Jr.  
Vice President  
P. O. Box 1295  
Birmingham, AL 35201-1295

**SUBJECT: HATCH NUCLEAR PLANT- NRC INSPECTION REPORT 50-321/2001-04 AND  
50-366/2001-04**

Dear Mr. Sumner:

On June 15, 2001, the NRC completed a safety system design and performance capability inspection at your Hatch Nuclear Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on June 15, 2001, with Mr. P. Wells and other members of your staff. A follow up conference call to discuss further the inspection findings was held on June 25, 2001 with Mr. S. Tipps.

The 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the NRC has identified one issue that was evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that a violation is associated with this issue. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A.1 of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001, and the NRC Resident Inspector at the Hatch facility.

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

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(ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Charles R. Ogle, Chief  
Engineering Branch 1  
Division of Reactor Safety

Docket Nos: 50-321, 50-366  
License Nos: DPR-57, NPF-5

Enclosure: NRC Inspection Report  
No. 50-321/2001-04, 50-366/2001-04 w/Attachment

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PUBLIC DOCUMENT (circle one): YES NO

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-321, 50-366

License Nos: DPR-57, NPF-5

Report Nos: 50-321/2001-04, 50-366/2001-04

Licensee: Southern Nuclear Operating Company, Inc.

Facility E.I. Hatch Nuclear Plant, Units 1 & 2

Location: P.O. Box 2010  
Baxley, GA 31515

Dates: May 29, 2001- June 15, 2001

Lead Inspector: F. Jape, Senior Project Manager

Team: R. Chou, Reactor Inspector  
P. Fillion, Reactor Inspector  
K. Maxey, Reactor Inspector  
N. Merriweather, Senior Reactor Inspector  
M. Scott, Senior Reactor Inspector

Approved by: C. R. Ogle, Chief  
Engineering Branch 1  
Division of Reactor Safety

Enclosure

## SUMMARY OF FINDINGS

IR 05000321-01-04 and 05000366-01-04 on 5/29/01-06/15/01, Southern Nuclear Operating Company, Inc., E.I. Hatch Nuclear Plant, Units 1 & 2, safety system design.

This inspection was conducted by a team of region-based inspectors. The inspection identified one green finding and 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://www.nrc.gov/NRR/OVERSIGHT/index.html>.

### Cornerstone: Mitigating Systems

- A non-cited violation of 10 CFR 50.59 was identified for an inadequate evaluation associated with the licensee's change to the river intake structure. Specifically, the 10 CFR 50.59 safety analyses associated with lifting and bolting maintenance plugs in the roof of the intake structure, by temporary modification and then by procedure, did not provide an adequate technical basis to support the determination that an unreviewed safety question did not exist. The evaluation failed to address the consequences of a postulated loss of one or two pumps of the residual heat removal service water due to tornado-generated missiles passing through the gap caused by raising the maintenance plug. This condition existed periodically since 1993. (Section 1R21.2)
- GREEN. A change to the intake structure was completed by lifting and bolting maintenance plugs in each side of the common roof structure to provide additional cooling. This modification performed periodically since 1993, by temporary modification and then by procedure, left the residual heat removal service water pumps susceptible to a tornado-generated missile.

Because of the relatively low probability of a tornado-generated missile traversing the gap between the intake structure roof and maintenance plug, this finding was considered of very low safety significance. (Section 1R21.2)

## REPORT DETAILS

### 1. **REACTOR SAFETY** **Cornerstones: Mitigating Systems, Barrier Integrity**

#### 1R21 Safety System Design and Performance Capability

##### .1 System Needs

##### a. Inspection Scope

###### Process Medium

The team reviewed the reliability and availability of service water for the site, in which the Plant Service Water (PSW) and Residual Heat Removal Service Water (RHRSW) system pumps take suction from the Altamaha River via a basin in the intake structure. The inspectors reviewed Drought Contingency Actions, HNEL-WP-59, to ascertain the licensee's plans to provide and maintain a source of water in case of low river water conditions. Dredging activities in front of the intake structure were reviewed to determine if silt deposits were properly controlled and removed.

###### Energy Source

The team performed a design review of risk significant equipment related to PSW and RHRSW for probable common cause failure as a result of under voltage. This was accomplished by determining whether the PSW and RHRSW pumps and valves were appropriately evaluated in voltage calculations. The team reviewed the control circuits drawings for the main breakers at 4160V buses E, F, and G to verify that the redundant divisions of PSW and RHRSW pumps and valves were energized from separate power sources and distribution systems. The team also reviewed the design configuration of a sample of air operated valves in the PSW system to verify that upon loss of instrument air, the valves would fail in the required safe position.

###### Controls

The team reviewed control circuits for the PSW pumps and turbine building isolation valves and the RHRSW pumps and flow control valves against design requirements and the Updated Final Safety Analysis Report (UFSAR) description. In addition, the team reviewed the electrical control circuit for the PSW strainer automatic backwash function and the potential for possible loss of this function during certain accident conditions due to its non-safety design and classification. The team also reviewed the controls for the intake structure fans to verify that no single failure could cause a loss of all intake fans.

###### Operator Actions

The team reviewed PSW and RHRSW system operating procedures to verify that they were consistent with the requirements for accident and normal conditions. The inspectors discussed selected tasks, (i.e., job performance measures and simulator guides) with training personnel and operators to understand critical operator actions and

important equipment functions. Also, the procedures were reviewed against known equipment responses, capabilities, and operator workarounds. Specific scenarios of interest assessed were: loss of shutdown cooling; loss of plant service water; loss of off site power; and shutdown from outside the control room.

Alarm response procedures 34AR-601-327-1S and 34AR-601-230-2S for Unit 1 & 2 RHRSW Pump A were reviewed to verify appropriate actions were taken after a pump trip on a manual start attempt. The team reviewed plant drawings to verify that sufficient process instrumentation and annunciators were available in the PSW and RHRSW systems to support plant operations during normal and accident conditions.

### Heat Removal

The team examined the heat removal capability of the systems or components supplied by the PSW and RHRSW. The team reviewed: mechanical and hydraulic calculations and equipment specifications; flow data to various PSW supplied reactor building heat exchangers to verify the flow value specified met design requirements; and licensee provided controls in the form of preventive maintenance documents and administrative scheduling to maintain equipment functionality. This information was used to verify the internal cooling systems and strainers for the PSW and RHRSW pumps, motors, RHR seal coolers, and emergency core cooling system (ECCS) room coolers would operate as required.

#### b. Findings

No findings of significance were identified.

### .2 System Condition and Capability

#### a. Inspection Scope

##### Installed Configuration

The team performed field walkdown inspections of associated PSW and RHRSW equipment in the intake structure and diesel building. The walkdowns were performed to assess material condition, identify degraded conditions, and verify the installed configurations were consistent with design drawings and design calculation inputs. Additional walkdowns were previously performed during the inspection for license renewal and are described in NRC Inspection Report 50-321, 366/2000-10. Also, aspects of the PSW and RHRSW systems were walked down as indicated in a recent resident NRC Inspection Report 50-321, 366/2001-03.

##### Design

The team reviewed mechanical design assumptions, specific American Society of Mechanical Engineers (ASME) code requirements, and vendor details to verify they were incorporated into procedures and calculations. The inspectors examined in-service pump test procedures, potential intake pump vortexing issues, and system flow



test procedures to ensure they contained the above information. The team verified the licensee had used appropriate design inputs in reviewing degraded piping. The inspectors examined pumping capability of the system under all conditions to assure that the system would provide necessary emergency cooling.

The team reviewed cable data sheets and routing information for associated PSW and RHRSW pumps to verify adequate cable sizing and to check for physical separation between redundant divisions of control cables. The overcurrent protection relay setpoints for PSW and RHRSW pump motors and the breaker setpoints for PSW turbine building isolation valves and RHRSW flow control valves were reviewed.

The team reviewed one uncertainty calculation for the low river water level alarm setpoint and a design change package on the RHRSW pump motor lower guide bearing temperature alarm setpoint to verify technical adequacy. The team also reviewed the technical adequacy of several equivalency determinations for replacement of obsolete components.

### Testing

The team reviewed mechanical tests to ensure they had been performed in accordance with regulatory and design requirements and that test criteria related to or were performed at accident conditions. The inspectors reviewed test data and procedures for both systems. Further, the inspectors reviewed pump performance tests, air operated valve stroke times, pump discharge check valve seating tests, turbine building isolation valve stroke tests, and RHRSW motor cooler flow tests.

The team reviewed the procedures for testing the safety-related control circuitry for the RHRSW pumps and the PSW pumps and turbine building isolation valves. Also, test results for logic testing conducted during April 1999 and October 2000 on Unit 1 using Procedure 42SV-R43-021-1S, Diesel Generator 1A LOCA/LOSP LSFT, were reviewed.

The team reviewed calibration records for a sample of instruments selected from the systems to verify that they were calibrated in accordance with setpoint documents and plant procedures. The records were also reviewed to verify that out of tolerance conditions were adequately addressed.

### b. Findings

A green finding was identified for a change to the intake structure which left the residual heat removal service water pumps susceptible to a tornado generated missile. One NCV was identified due to a intermittent change to the intake structure which was based on an inadequate 10 CFR 50.59 evaluation.

The team identified that the licensee had modified the intake structure, which housed Unit 1 and 2 PSW and RHRSW systems, using Temporary Modification 1-93-66, without properly evaluating postulated events described in the UFSAR. General Maintenance Procedure 52GM-MNT-021-0S Intake Structure Auxiliary Cooling, Revision 0, dated

July 3, 2000, replaced the temporary modification previously used for the seasonal change. The licensee lifted and bolted maintenance plugs on each side of the common roof on the intake structure, roughly centered over one pump in each division of the RHRSW pumps, onto two, 12-inch high I-beams per plug. The I-beams were bolted to the existing roof plug fastener receiving pads in the roof, leaving air gaps on either side of the plugs for convection chimneys to improve air flow and cooling.

The plugs were pulled to increase summer cooling of the entire intake structure. The plugs were usually raised and mounted following an increase in ambient temperature in April and reinstalled in their per plan location in the roof near the end of September or when the weather had cooled. This activity had been done since 1993.

Unit 1 UFSAR Sections 10.6 and 10.7 and Unit 2 UFSAR Sections 3.2.1, 3.3.3, and 1.2.7.18, 1.2.7.19 and 3.5.3.3 indicate that the intake structure is seismic category I and is designed to withstand tornado loadings and tornado generated missiles.

The potential entry of a missile through the grated, 14-square foot opening, created by this modification, could disable one or two RHRSW pumps. This was unlikely, however, due to the tortuous path of entry. The Technical Specifications requires one of four RHRSW pumps for decay heat removal, therefore, the potential loss of one pump was of a small risk importance. Water could also enter the opening, but the RHRSW motors are waterproof. In addition, the intake structure roof has a two foot high parapet around the edge that would deter many objects from entering the opening. The raised plugs are about seven feet square by 44 inches high and weight 10,000 pounds. Based on these circumstances, the modification affected the Mitigating Systems cornerstone and was determined to be of very low risk significance (GREEN) in accordance with the Significance Determination Process (SDP).

The temporary modification and the Procedure 52GM-MNT-021-0S changed the facility as described in the UFSAR with a safety evaluation which did not provide a clear basis for the determination that the change did not involve an unreviewed safety question (USQ). Neither the procedure nor the 10 CFR 50.59 evaluation addressed a postulated missile or tornado impact on the altered structure. The licensee's failure to perform an adequate safety evaluation is a violation of 10 CFR 50.59. This violation was not processed through the SDP since it is outside the scope of the SDP. This Severity Level IV violation is associated with an inspection finding that is characterized by the Significance Determination Process as having very low risk significance (i.e., green) and is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as Condition Report (CR) 2001004707. This is identified as NCV 50-321, 366/2001-04-01: Failure to Perform an Adequate 50.59 Evaluation for Modification to the Intake Structure.

### .3 Selected Components

#### a. Inspection Scope

The team reviewed equipment history, testing, and preventive maintenance procedures to assess the licensee's actions to verify and maintain the design functions, reliability, and availability of selected systems. The selected components included the PSW and RHRSW pumps, mini-flow valves, discharge check valves, and PSW turbine building isolation and emergency diesel generator cooling water valves. The inspectors reviewed maintenance work orders (MWO) and historical documentation of equipment failures of selected high risk components of the system to understand actual failure rates and their relative risk impact.

#### Modifications

The team reviewed recent modifications to the PSW and RHRSW systems to determine that the modifications had not reduced system performance or introduced additional risk into the design. The team specifically reviewed: the technical adequacy of the licensee's plant change documentation associated with defeating the automatic transfer of plant service water to the 1B EDG and a main control room cooler during low flow conditions; the replacement of the Unit 1 PSW strainers with a different design strainer; and the replacement of a section of PSW pipe with a different piping material. The team reviewed design changes to equipment accomplished through the licensee's design change process to verify that system and equipment function were appropriately evaluated and maintained.

#### Component Degradation

The team reviewed selected components for potential degradation by examining test data trends and evaluating maintenance performance efforts. The team also ascertained that the licensee was maintaining the systems consistent with expected equipment operational life.

The team focused on the design application and/or surveillance testing of selected relays to determine if degradation of these components was occurring. The relays chosen were: P41K16, which controls eight solenoid valves in a 120 volt circuit, the CX relays, which are in the PSW and RHRSW pump control circuits, and P41K12A, which gives the close signal to turbine isolation valves. The team reviewed the reliability of the power line filters and varistors installed in the control circuits for valves 1P41-F313A/B. These valves are used in the strainer backwash function.

#### Equipment Protection

The team verified that selected equipment related problems identified in Condition Reports (CRs) had been appropriately identified in the maintenance corrective action program and that those problems were being addressed. In the cases such as the discharge check valve wear, silt deposition at the intake structure, and RHRSW motor cooling problems, the inspectors reviewed the licensee's ongoing plans and actions.

b. Findings

No findings of significance were identified.

4. Identification and Resolution of Problems

a. Inspection Scope

The team reviewed CRs and corrective MWOs on risk significant equipment related to the PSW and RHRSW and their support systems to evaluate failure trends and to assess the adequacy of corrective actions for identified problems. The team also verified that the licensee was identifying procedural deficiencies at an appropriate threshold, was entering the deficiencies into the corrective action program, and that corrective actions were being taken for the identified deficiencies. The team reviewed CR 1995003766, which addressed the automatic closure of PSW turbine building isolation valve. The review focused on the investigation to determine the root cause for the isolation and the planned corrective actions to prevent recurrence of the problem.

The team reviewed Failure Cause Report (FCR) 00-06 and FCR 01-07 for the failure of PSW pump 1A motor on December 1, 2000, and PSW pump 1D motor on December 17, 2000, to ensure appropriate corrective actions were taken to troubleshoot and mitigate the failure.

The team reviewed Licensee Event Report (LER) 50-321/92-013 and associated CRs to verify appropriate corrective actions had been implemented for the 1992 single failure vulnerability with the intake structure ventilation.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA6 Management Meeting

The inspectors presented the inspection results to Mr. P. Wells and other members of licensee management at the conclusion of the inspection on June 15, 2001. The licensee acknowledged the findings presented. Proprietary information is not included in the inspection report.

Subsequent to the onsite inspection, additional review of the inspection results was completed on June 25, 2001. The lead inspector held a follow up conference call with Steve Tipps, Manager of Nuclear Safety and Compliance. The licensee acknowledged the findings presented.

**PARTIAL LIST OF PERSONS CONTACTED**Licensee

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 J. Munday, SRI, Hatch Nuclear Plant  
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**ITEMS OPENED AND CLOSED**

Opened and Closed During This Inspection.

50-321, 366/2001-04-01	NCV	Failure to Perform Adequate 50.59 Evaluation for Modification to Intake Structure (Section 1R21.2)
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## **APPENDIX**

### **LIST OF DOCUMENTS REVIEWED**

#### **CRs Initiated as a Result of this Inspection**

CR 2001004242, D11001 Does Not Show Control Room Indication for 1P41-N575  
CR 2001004248, Coating Degradation on 2P41-C001A Minimum Flow Piping Has Not Been Corrected  
CR 2001004282, Drawing H-11600 to be Revised to Show Motor Operated Valves Closed  
CR 2001004307, Verify Locally that 1P41-F310 Closes After Auto-isolation  
CR 2001004449, Revise Operability Procedures to be Consistent Among Units For Reverse Flow Verification For Check Valve  
CR 2001004479, Bechtel to Provide PSW Flow Model Justifications  
CR 2001004635, Drawing S-52400 to be Revised to Show Correct MPLs  
CR 2001004651, Calibrate PSW System Header Pressure  
CR 2001004653, Pressure Indicator Without MPL Tag  
CR 2001004666, Incorrect P&ID Reference for MPLs  
CR 2001004681, Column Title in Procedure 34V-E11-1S&2S is Confusing  
CR 2001004704, The 50.59 Evaluation for DCR 97-027 Did Not Address the Change in Strainer Mesh Size  
CR 2001004707, The 50.59 Evaluation for 52GM-MNT-021-0S Did Not Address the Potential Impact of Tornado-generated Missiles  
CR 2001004711, Stress Calculation Errors for RHR Service Water Minimum Flow Line  
CR 2001004714, DC Inductive Break Rating of Potter Brumfield Relay P41-K16 Utilized as Interposing Relay  
CR 2001004715, Instantaneous Setting of Phase Overcurrent Relay Less than Twice Locked Rotor Current

#### **Technical Specifications**

Unit 1 TS Section 3.7.1 RHR Service Water System  
Unit 1 TS Section 3.7.2 PSW System and Ultimate Heat Sink

#### **UFSAR**

Unit 2 Section 1.2.7.18, PSW System  
Unit 2 Section 1.2.7.19, RHR System  
Unit 2 Section 3.2.1, Seismic Classification  
Unit 2 Section 3.5.3.3, Selected Environmentally Generated Missiles  
Unit 1 Section 10.6, RHR Service Water  
Unit 1 Section 10.7, PSW System

#### **Condition Reports**

CR 2001000027, PSW Motors Without Lube Ports  
CR 2001004449, Check Valve Reverse Flow Verification

CR 2001004707, Intake Roof Plug Supporting 50.59 Did Not Describe Tornado Impact  
 CR 1999000198, Pump Vibration In The Alert Range  
 CR 1998002615, RHR Heat Exchanger Relief Valves Failed  
 CR 2000000438, RHR Service Water Minimum Flow Piping Thinning  
 CR 1997004152, High Temperature at RHR Service Water Pump Lower Guide Bearings  
 CR 1999005080, High Temperature at RHR Service Water Pump Lower Guide Bearings  
 CR 1996000952, Low Flow Rate at RHR Service Water Pump Motor Oil Cooling  
 CR 1997005302, Manual Operation on the RHR Differential Pressure Instead of Automatic Operation as Designed  
 CR 1997000320, Valve Closing Indicator Function Failure  
 CR 2000004378, No Seals on the Intake Structure Piping Penetrations  
 CR 1995004518, High Temperature Alarm Received From a RHR Service Water Pump Bearing  
 CR 2000007177, Procedure 52PM-E11-C005-0S Was Not Revised Per CR C0000928  
 CR 1996004146, Low Flow Rate at RHR Service Water Pump Motor Oil Cooling  
 CR 1996004639, Main Plant Service Water Strainer Packing Leak  
 CR 1998000382, Valves at Plant Service Water Makeup Lines not Included in the In Service Testing Program  
 CR 1998000510, Plant Service Water Piping outside the Diesel Generator Building Not the Missile Protection  
 CR 1998002589, Valve Bolt Head Missing Due To the Corrosion

### **LERs**

LER 50-366/92-013, Single Failure Vulnerability Discovered in the Intake Structure Ventilation System

### **Engineering Documentation**

Engineering Review , DCR 2H01-005PSW Standby-By Service Water Cutter Pump  
 Bechtel Letter, dated 1/20/91, B-GP-16916, Heat Exchanger Performance Evaluation  
 Bechtel Letter, dated 7/22/91, B-GP-16801, Cooler PSW Requirements  
 Vendor Documentation, Johnston Pump Company Letter, dated 1/27/94, Unit 1 and 2 RHR Service Water and Plant Service Water Pump Pre-Lube  
 Vendor Documentation, Johnston Pump Company Letter, dated 4/10/89, Flow Requirements for RHR Service Water and PSW Pumps  
 Vendor Documentation, Johnston Pump Company Letter, dated 7/21/86, RHR Service Water, PSW, Standby Service Water Pumps Submergence Requirements  
 Southern Company Services letter HTX 60-57-42, dated 4/17/85, Standby Diesel Service Water Pump Flow and Pressure Requirement  
 Southern Company Services letter HE-3088, dated 2/9/01, RCIC Operation without Room Cooling  
 Southern Company Services letter HTX 60  
 Southern Company Services letter LSH-NS-3660, dated 8/8/86, River Intake Structure Pump Well Safe Shutdown  
 Perf. X Corporation, Berlin Chapman Division, Heat Exchanger Specification Sheet, Order No. SI-7214, Revision 2

Vendor Documentation, H. Clay Moore & Associates, Inc, dated 3/7/01, Southern Nuclear -  
 Plant Hatch Service Water Strainers  
 PRA Conversion Accident Sequence Analysis Notebook, dated 10/8/98, Revision 0  
 Calculation Change Notice 002 to Calculation No. PD 5109, Stress Analysis Problem 99  
 RHR Service Water System, Rev. 2  
 Calculation Change Notice 001 to Calculation No. PD5115, Stress Analysis Problem 1021,  
 Plant Service Water System Return SE Quadrant, Rev. 2  
 Inquiry (Specification) No. SS-2109-4, Large Nuclear Strainer for Hatch Nuclear Plant Unit 2,  
 Rev.6  
 Specification No. SM-DS-98-02, Specification for Plant Service Water Strainers for Hatch  
 Nuclear Plant unit 1, Rev. 5  
 10 CFR 50.59 Evaluation for Procedure No.52GM-MNT-021-0S, Intake Structure Auxiliary  
 Cooling, Rev. 0  
 Licensing Document Change Request 98-177, Revision 0  
 HNEL-WP-59, Drought Contingency Actions, Revision 0

### **Calculations**

SCNH-00-017, River Flow Rating Curve Verification  
 SENH 97-002, Unit 1 - As-Built Base Calculation for Safety Related AC MOV's, Revision 3  
 M 0559, PSW Impact with Minimum Flow Valve Stuck Open, Revision 0  
 BPC185, Engineered Safeguard Cooling System, Revision 2  
 M 0071, RHR Service Water Pump TDH Requirements  
 M 0027, Minimum Acceptable PSW Flow for 2T41-B005 A, B, Revision 0  
 SINH 98-001, 1P41N200A/B PSW Strainer Differential Pressure Switch Setpoints, Rev. 0  
 SMNH 88-010, Low River Water Level Alarm, Revision 0  
 SMNH 88-011, Low River Watch Level Alarm, Revision 1  
 SMNH 92-013, Intake Structure Temperature Analysis with HVAC Failure, Revision 2

### **Procedures**

01RC-SUV-002-OS, Discharge Rating Curve Reporting Requirements, Revision 6  
 LT-SG-50616-03, LOSEP/Station Blackout  
 LT-SG-50406-08, Station Blackout/Loss of All Injection/Steam Cooling  
 LT-SG-50322-11, Shutdown Cooling Operation/Loss of Shutdown Cooling  
 34AB-R22-002-1S, Loss of 4160V Emergency Bus, Revision 1 ED 1  
 31RS-OPS-001-1S, Shutdown Cooling From Outside of the Control Room, Revision 5 ED 3  
 31EO-EOP-110-1S, Alternate RPV Water Level Control, Revision 2  
 34AB-E11-001-2S, Loss of Shutdown Cooling, Revision 6  
 34AB-P41-001-1S & 2S, Loss of Plant Service Water, Revision 7 ED 1  
 34GO-OPS-031-1S, Daily Outside Rounds, Revision 21ED4  
 SI-LP-03301-01, Plant Service Water (PSW) & Standby Service Water System  
 34SO-P41-001-1S, Plant Service Water System, Revision 28 ED 5  
 34SV-SUV-012-1S, Plant Service Water and Residual Heat Removal Service Water Valve  
 Position Verification, Revision 4 ED 2  
 34SO-E11-010-1S, Residual Heat Removal System, Revision 29



34SO-W33-001)N, Traveling Water Screen and Intake Trash Rake Operation, Revision 8 ED 1  
 34SO-P41-005-2S, Standby Diesel Service Water System, Revision 8 ED 3  
 34SV-P41-003-2S, Standby Diesel Service Water System Operability, Revision 1 ED 3  
 52GM-MNT-021-0S, Intake Structure Auxiliary Cooling, Rev. 0  
 34SV-P41-001-1S, Plant Service Water Pump Operability, Revision 10 ED 3  
 34SV-E11-004-1S, RHR Service Water Pump Operability, 17 ED 5  
 34AR-650-303-1S, Intake Screen or Low River Level Alarm, Revision 3 ED 1  
 34AR-650-157-1S and 2S, Condenser Room Flooding, Revision 2  
 34 AB-X43-002-0S, Fire Protection System Failures, Revision 1 ED 1  
 34AR-601-327-1S, Alarm Response for Unit 1 RHR Service Water pump trip, Revision 6  
 34AR-601-230-2S, Alarm Response for Unit 2 RHR Service Water pump trip, Revision 2  
 42EN-ENG-033-1S, PSW Flow Model Confirmation Data, Revision 0 ED 1  
 42EN-ENG-033-2S, PSW Flow Model Confirmation Data, Revision 0 ED 1  
 42SV-P41-001-2S, PSW Pump and Isolation Valve Auto Function Functional Test, Revision 4  
 ED 1  
 34SV-P41-003-2S, Standby Diesel Service Water System Operability, Revision 1 ED 3  
 34SV-P41-001-1S, Plant Service Water Pump Operability, Revision 10 ED 3  
 34SV-E11-004-1S, RHR Service Water Pump Operability, 17 ED 5  
 42EN-ENG-026-0S, Service Water Systems Heat Exchanger Testing, Revision 4 ED 2  
 42IT-TET-014-1S and 2S, Safeguard Equipment Room Coolers Data, Revision 0 ED 1  
 52PM-MME-006-OS, Intake Structure Pit Inspections/Cleaning Activities, Revision 6

### **Modifications**

DCR 07-027, Replace Unit 1 Plant Service Water Strainer  
 Equivalency Determinations (EDs): 97-9115, Rev. 0; 96-9052, Rev. 0; 96-9071, Rev. 0;  
 99-9081, Rev. 0; 99-9161, Rev. 0; 00-9021, Rev 0; and 00-9179, Rev. 0  
 Setpoint Design Change 98-6006

### **Drawings**

A-16397, Unit 1 and 2 Instrument Setpoint index for systems P41 and E11, Revision 63  
 D-11004, P&ID - RHR Service Water Outside Building, Revision 33  
 H-13350, Master Single Line Diagram Unit 1, Revision 18  
 H-23350, Master Single Line Diagram Unit 2, Revision 8  
 H-13356, Single Line Diagram 4160V Bus 1E and 1F, Revision 29  
 H-13357, Single Line Diagram 4160V Bus 1G, Revision, 12  
 H-13557, Elementary Diagram Circulating Water And Condenser Equipment and Auxiliaries,  
 Revision 30  
 H-13586, Elementary Diagram Plant Service Water Pumps, Revision 24  
 H-13610, Elementary Diagram Misc. Pumps, Valves, & Equipment, Sht. 1, Revision 35  
 H-13388, Elementary Diagram PSW M.O. Valves, Sht. 1, Revision 25  
 H-13388, Elementary Diagram Plant Service Water M.O. Valves, Sht. 2, Revision 3  
 H-13388, Elementary Diagram PSW M.O. Valves, Sht. 3, Revision 3  
 H-16329, RHR System P&ID, Sht. 1, Revision 60  
 H-16330, RHR System P&ID, Revision 50

H-17781, Elementary Diagram Residual Heat Removal System 1E11, Revision 11  
 H-17760, Elementary Diagram Residual Heat Removal System E11 Sheet 1 of 23, Revision 44  
 H-17761, Elementary Diagram Residual Heat Removal System E11 Sheet 2 of 23, Revision 23  
 H-17762, Elementary Diagram Residual Heat Removal System E11 Sheet 3 of 23, Revision 29  
 H-17763, Elementary Diagram Residual Heat Removal System E11 Sheet 4 of 23, Revision 33  
 H-17764, Elementary Diagram Residual Heat Removal System E11 Sheet 5 of 23, Revision 17  
 H-17766, Elementary Diagram Residual Heat Removal System E11 Sheet 7 of 23, Revision 31  
 H-17767, Elementary Diagram Residual Heat Removal System E11 Sheet 8 of 23, Revision 16  
  
 H-17773, Elementary Diagram Residual Heat Removal System E11 Sheet 14 of 23,  
 Revision 37  
 H-17775, Elementary Diagram Residual Heat Removal System E11 Sheet 16 of 23,  
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 H-13587, Diesel Generator Controls Contact Tabulation, Revision 28  
 H-13412, Elementary Diagram Diesel Generator 1A, Revision 40 H-17109, Elementary Diagram  
 Core Spray System E11, Revision 33  
 H-13589, Elementary Diagram Emergency Station Service Miscellaneous, Revision 20  
 A-21000, Piping Class Summary Sheet 213A, Unit 2, Southern Services, Revision 2  
 H-51529, Hydraulic Network Model, Unit 2, sheet 4, Revision 2  
 H-51530, Hydraulic Network Model, Unit 2, sheet 5, Revision 3  
 H-51527, Hydraulic Network Model, Unit 2, sheet 2, Revision 1  
 H-51528, Hydraulic Network Model, Unit 2, sheet 3, Revision 0

### **Maintenance Work Orders**

MWO 29900235, RHR Service Water Pump B Motor Cooler High Temperature  
 MWO 29902924, RHR Service Water Pump B Motor Cooler High Temperature  
 MWO 29602721, RHR Service Water Pump D Reduced Flow While Flow Testing Motor Cooler  
 MWO 29702344, 2A EDG Jacket Water Temperature Low  
 MWO 29802827, PSW Admission Valve Leaking by the Seat  
 MWO 20000620, PSW Admission Valve Temperature Switch Not Functioning  
 MWO 29202218, PSW Valve Leaking by Seat  
 MWO 29400511, PSW Valve Operate Cycling  
 MWO 29802246, Reactor Building Drain Valve Leaking by Seat During Outage  
 MWO 10003379, 1E11-F053B Valve Needing Repacking  
 MWO 10003651, 1E11-C001A Flow and Pressure Drop Due to Degradation  
 MWO 10003580, 1E11-C001C Flow and Pressure Drop Due to Degradation  
 MWO 10100162, Mismatch of the Pressure Indicators in the Field and the Control Room  
 MWO 10002276, 1E11-R004B Repeated Gauge Failures  
 MWO 10100204, 1P41B7 Pipe Thinning  
 MWO 10001976, 1P41-C001A Bolt Failures  
 MWO 10001591, 1P41-D172B Strainer Clogging  
 MWO 10003650, 1P41-F042A Actuator Support Not Reinstalled  
 MWO 10100821, Correct the inadequate Testing for the MWO 1-01-0457  
 MWO 10000107, Replace Piping Due To the Wall Thinning  
 MWO 10000108, Replace Piping Due To The Wall Thinning

MWO 1-98-3239, PSW Silt Deposits

1P41F035A1, Disassemble, Inspect, and Setup Unit 1 Room Cooler Inlet Valve

1P41F035B-SV-1, Replace ASCO Solenoid Per Applicable Procedure

1P41F036A1, Disassemble, Inspect, and Setup Unit 1 Room Cooler Inlet Valve 2P41F035A1,

Disassemble, Inspect, and Setup Unit 2 Room Cooler Inlet Valve

2P41F035B-SV-1, Replace ASCO Solenoid Per Applicable Procedure

2P41F036A1, Disassemble, Inspect, and Setup Unit 2 Room Cooler Inlet Valve

1E11B002A1, Perform RHR Pump Seal Water Cooler Cleaning Per Procedure

FCR 00-06, Plant Service Water Pump 1D Motor Failure

FCR 01-07, Plant Service Water Pump 1A Motor Failure

**CALIBRATION RECORDS FOR THE FOLLOWING INSTRUMENTS:**

DPIS-E11-N502	PS-E11-N017A	P41-DPS-N518	2N71-LS-N322D
DPIS-E11-N503	PS-E11-N017B	P41-DPS-N519	2N71-LS-N323A
DPIS-E11-N504	PS-E11-N017C	P41-DPS-N520	2N71-LS-N323B
DPIS-E11-N505	PS-E11-N017D	P41-DPS-N521	2N71-LS-N323C
FT-E11-NOO7B	X41-N002A	2N71-LS-N322A	2N71-LS-N323D
FT-E11-N071	X41-N002B	2N71-LS-N322B	1P41-N200B
FI-E11-R602A/B	X41-N002C	2N71-LS-N322C	1P41-N574
FI-E11-R071	1P41-N575	2P41-R611	2P41-R612
1P41-N512	1P41-F208A	1P41-F208B	1P41-F208D
1N71-N026	1N71-N027	1N71-N028	1N71-N029
1N71-N030	1N71-N031	1N71-N031	1N71-N032
1N71-N033	1P41-N001A	1P41-N001B	1P41-N001C
1P41-N001D			