UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

July 25, 2013

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION
COMPONENT DESIGN BASES INSPECTION (CDBI) 05000461/20013008

Dear Mr. Pacilio:

On June 21, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed a Component Design Bases Inspection (CDBI) inspection at your Clinton Power Station. The enclosed report documents the results of this inspection, which were discussed on June 21, 2013, with Mr. W. Noll, and other members of your staff.

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.

No findings were identified during this inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Benny Jose, Acting Chief
Engineering Branch 2
Division of Reactor Safety

Docket No. 50-461
License No. NPF-62

Enclosure: Inspection Report 05000461/20013008;
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ™

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-461
License No:	NPF-62
Report No:	05000461/20013008
Licensee:	Exelon Generation Company, LLC
Facility:	Clinton Power Station
Location:	Clinton, IL
Dates:	May 20 – 24, 2013 June 3 – 7, 2013 June 17 – 21, 2013
Inspectors:	A. Dunlop, Senior Engineering Inspector, Lead C. Brown, Engineering Inspector, Electrical G. O'Dwyer, Engineering Inspector, Mechanical R. Baker, Operations Inspector N. D. Greca, Electrical Contractor T. Tinkel, Mechanical Contractor
Observer:	David Oliver, Engineering Inspector, Electrical
Approved by:	Benny Jose, Acting Chief Engineering Branch 2 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000461/20013008; 05/20/2013 – 06/21/2013; Clinton Power Station; Component Design Bases Inspection (CDBI).

The inspection was a 3-week onsite baseline inspection that focused on the design of components. The inspection was conducted by regional engineering inspectors and two consultants. No findings were identified by the inspectors. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using IMC 0609, “Significance Determination Process” dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, “Components Within the Cross-Cutting Areas” dated October 28, 2011. All violations of NRC requirements are dispositioned, in accordance with the NRC’s Enforcement Policy dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, “Reactor Oversight Process” Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

No findings were identified.

B. Licensee-Identified Violations

No violations were identified.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R21 Component Design Bases Inspection (71111.21)

.1 Introduction

The objective of the component design bases inspection is to verify that design bases have been correctly implemented for the selected risk significant components and that operating procedures and operator actions are consistent with design and licensing bases. As plants age, their design bases may be difficult to determine and an important design feature may be altered or disabled during a modification. The Probabilistic Risk Assessment (PRA) model assumes the capability of safety systems and components to perform their intended safety function successfully. This inspectable area verifies aspects of the Initiating Events, Mitigating Systems, and Barrier Integrity cornerstones for which there are no indicators to measure performance.

Specific documents reviewed during the inspection are listed in the Attachment to the report.

.2 Inspection Sample Selection Process

The inspectors selected risk significant components and operator actions for review using information contained in the licensee's PRA and the Clinton Power Station Standardized Plant Analysis Risk Model. The inspectors selected the Division III systems for review, including the high pressure core spray system, shutdown service water system, and the associated power supplies for these systems. Based on this selection, a number of the systems' risk significant components were selected for the inspection. In general, the selection was based upon the components and operator actions having a risk achievement worth of greater than 1.3 and/or a risk-reduction worth greater than 1.005. The operator actions or operating procedures selected for review included actions taken by operators both inside and outside of the control room during postulated accident scenarios that were associated with the selected system/components. In addition, the inspectors selected operating experience issues and modifications associated with the selected components.

The inspectors also used additional component information such as a margin assessment in the selection process. This design margin assessment considered original design reductions caused by design modification, power uprates, or reductions due to degraded material condition. Equipment reliability issues were also considered in the selection of components. These included items such as performance test results, significant corrective actions, repeated maintenance activities, Maintenance Rule (a)(1) status, components requiring an operability evaluation, NRC resident inspector input of problem areas/equipment, and system health reports. Consideration was also given to the uniqueness and complexity of the design, operating experience, and the available defense in depth margins. A summary of the reviews performed and the specific inspection findings identified are included in the following sections of the report.

This inspection constituted 22 samples as defined in Inspection Procedure 71111.21-05.

.3 Component Design

a. Inspection Scope

The inspectors reviewed the Updated Safety Analysis Report (USAR), Technical Specifications (TS), design basis documents, drawings, calculations, and other available design basis information, to determine the performance requirements of the selected components. The inspectors used applicable industry standards, such as the American Society of Mechanical Engineers (ASME) Code, Institute of Electrical and Electronics Engineers (IEEE) Standards and the National Electric Code, to evaluate acceptability of the systems' design. The NRC also evaluated licensee actions, if any, taken in response to NRC issued operating experience, such as Bulletins, Generic Letters (GLs), Regulatory Issue Summaries (RISs), and Information Notices (INs). The review was to verify that the selected components would function as designed when required and support proper operation of the associated systems. The attributes that were needed for a component to perform its required function included process medium, energy sources, control systems, operator actions, and heat removal. The attributes to verify that the component condition and tested capability was consistent with the design bases and was appropriate may include installed configuration, system operation, detailed design, system testing, equipment and environmental qualification, equipment protection, component inputs and outputs, operating experience, and component degradation.

For each of the components selected, the inspectors reviewed the maintenance history, preventive maintenance activities including specified frequencies were consistent with vendor requirements, system health reports, operating experience-related information, vendor manuals, electrical and mechanical drawings, and licensee corrective action program documents. Field walkdowns were conducted for all accessible components to assess material condition and to verify that the as-built condition was consistent with the design. Other specific attributes reviewed are included as part of the scope for each individual component.

The following 16 components were reviewed:

- Shutdown Service Water (SX) Pump 1C (1SX01PC): The inspectors reviewed performance data for the original pump and post modification test data for the 1995 repaired/modified pump to verify performance assumptions reflected in the SX Division III system flow balance calculation and subsequent surveillance test acceptance criteria. Calculations for normal and design basis accident (DBA) conditions were reviewed to verify that sufficient SX system flow and net positive suction head (NPSH) were available for worst case conditions including minimum lake level and maximum lake water temperature. Design procurement specifications and calculations were reviewed to verify the pump had adequate submergence to prevent vortices for operation at minimum lake level. A hazards analysis and screenhouse drawings were reviewed to assess the safety impact of having non-safety-related traveling water screens or sluice gate in the direct flow path connecting the safety-related ultimate heat sink to the SX pump suction. System operating procedures were reviewed to determine whether design basis conditions were reflected in procedures. Inservice test (IST) procedures were reviewed to verify that specified acceptance limits for pump differential pressure (d/p) were consistent with SX system design requirements and pump performance total developed head/flow capability. Test results were reviewed to ensure pump

performance was consistent with the IST acceptance criteria and results were monitored for signs of pump degradation. The inspectors reviewed control schematic diagrams to confirm that the operation of pump conformed to the design requirements and operating procedures. The inspectors also reviewed the instrumentation used for the automatic operation of the pump, including instrument loop diagram, power supply, and setpoint calculations. The review also verified that the circuit was adequately protected and that adequate control voltage was available for the operation of the starting contactor. The inspectors reviewed voltage drop calculations to determine whether the motors had adequate voltage for running and starting under degraded voltage conditions and that the circuits had adequate ampacity for all operating conditions.

- SX Pump 1C Strainer (1SX01FC): The inspectors reviewed performance data provided in the design procurement specifications and vendor documents for this full-flow automatic backwash strainer to verify performance assumptions reflected in the SX Division III system flow balance calculation. Calculations for normal and DBA conditions were reviewed to verify that sufficient SX system flow was available with and without backflush operation for worst case pressure drop associated with strainer plugging. System drawings and operating procedures were reviewed to determine whether design basis conditions were reflected and that a bypass option was available in the event of unacceptable plugging. The SX system surveillance procedures were reviewed to verify that strainer full-flow capability was determined during SX pump IST by establishing required system flow and achieving required pump performance. The inspectors reviewed control schematic diagrams and power requirements for the strainer and backwash valves to confirm that the operation of the automatic backwashing strainer conformed to design requirements and operating procedures. The inspectors also verified that the circuit was adequately protected and that adequate control voltage was available for the operation of the starting contactor. The d/p setpoints for the strainer motor, backflush valve, and high d/p alarm were evaluated to determine consistency with calculated results for strainer plugging.

- SX 1C Header Isolation Valve (1SX014C): The inspectors reviewed the motor operated valve (MOV) actuator sizing calculations for valve stem torque, MOV actuator characteristics, and weak link analysis to verify the butterfly valve was capable of performing its safety function of closing and isolating the SX header from the non-safety related service water system under worst-case line pressure and d/p conditions. Control schematic diagrams were reviewed to confirm that the operation of valve conformed to design requirements and operating procedures. The inspectors also reviewed the circuit protection and the thermal overload application to confirm that the circuit was adequately protected. Voltage drop and degraded voltage calculations were reviewed to ensure that the valve was capable of performing its intended safety function during a DBA. System operating procedures were reviewed to identify steps for opening the valve with the actuator under normal conditions and with manual operator assistance in case of elevated d/p. The test procedure and test results for determining boundary leakage for this valve were reviewed to verify leak rates were within established limits. The diagnostic test results were reviewed to ensure valve degradation and stroke time performance were monitored. A Fisher Valve 10 CFR Part 21 Notification was reviewed to verify that the subject minimum wall condition did not affect the safety function of the valve.

- SX Pump 1C Discharge Check Valve (1SX01PC): System drawings and operating procedures for this tilting disc check valve were reviewed to determine whether design basis conditions were appropriately reflected. The IST procedure and test results were reviewed to verify valve disc freedom of motion; and to ensure the valve allows required flow in the open position and limits backflow in the closed position. Requirements for non-intrusive testing were reviewed to verify implementation of a condition monitoring program for this check valve.

- High Pressure Core Spray (HPCS) Pump (1E22-C001): The inspectors reviewed the design basis hydraulic analysis/calculations to verify that required total developed head, required NPSH, and potential for vortex formation had been properly considered under all DBA/event conditions. The HPCS pump IST procedures, test results, and test data trends were reviewed to verify that component performance remained consistent with design basis requirements. The IST reference values were also reviewed to verify appropriate correlation to accident analyses conditions, taking into account setpoint tolerances and instrument inaccuracies. The inspectors reviewed the control logic and control schematic diagrams to confirm that the operation of pump conformed to design requirements and operating procedures. The review included an evaluation of the control voltage to verify that adequate voltage was available for the operation of the circuit breaker under limiting conditions. The inspectors also reviewed voltage drop calculations to determine whether the motors had adequate voltage for running and starting under degraded voltage conditions. Protective relaying calculations were reviewed to determine whether the motors were adequately protected and immune to spurious tripping. The inspectors reviewed the instrumentation associated with the operation of the pump, including setpoints, power supplies, and environmental qualification of transmitters.

- HPCS Injection Valve (1E22-F004): The inspectors reviewed MOV calculations and analyses to ensure the valve was capable of functioning under design conditions. These included calculations for required thrust, maximum d/p, and valve weak link analysis. Diagnostic testing and IST surveillance results, including stroke time and available thrust, were reviewed to verify acceptance criteria were met and performance degradation could be identified. The inspectors reviewed control logic and schematic diagrams to confirm that the operation of valve conformed to design requirements and operating procedures. This included the procedures used to override the actuator's seal-in circuit such that the valve could be throttled to control reactor vessel level to ensure the valve would continue to be able to perform its design functions in this mode of operation. The inspectors also reviewed the circuit protection, the thermal overload application, and the environmental qualification of the Limitorque motor operator to confirm that the circuit was adequately protected and that the valve was capable of performing its intended safety function during a design basis accident. Voltage drop calculations were reviewed to determine whether the motor and its associated control circuits had adequate voltage under degraded voltage conditions.

- HPCS Minimum Flow Valve (1E22-F012): The inspectors reviewed MOV calculations and analysis to ensure the valve was capable of functioning under design conditions. These included calculations for required thrust, maximum d/p, and valve weak link analysis. Diagnostic testing and IST surveillance results,

including stroke time and available thrust, were reviewed to verify acceptance criteria were met and performance degradation could be identified. The instrumentation setpoint calculation and opening time tests were reviewed to ensure the valve would open with the required time and allow sufficient flow to protect the pump from inadequate flow. The inspectors reviewed control logic and schematic diagrams to confirm that the operation of valve conformed to design requirements and operating procedures. The inspectors also reviewed the instrumentation associated with the automatic operation of the valve, including power supply and setpoint calculations. The inspectors reviewed the circuit protection, the thermal overload application, and the environmental qualification of the Limitorque motor operator to confirm that the circuit was adequately protected and that the valve was capable of performing its intended safety function during a design basis accident. Voltage drop calculations were reviewed to determine whether the motor and its associated control circuits had adequate voltage under degraded voltage conditions.

- HPCS Suppression Pool Suction Valve (1E22-F015): The inspectors reviewed MOV calculations and analyses to ensure the valve was capable of functioning under design conditions. These included calculations for required thrust, maximum differential pressure, pressure locking, seismic qualification, and valve weak link analysis. Diagnostic testing and IST surveillance results, including stroke time testing, were reviewed to verify acceptance criteria were met and performance degradation could be identified. The inspectors also reviewed the issue reports in which the licensee identified that the valve's seismic qualification calculations had errors, the operability evaluation that determined the valve was operable but non-conforming, and the new calculations that restored the valve's full seismic qualification. Control logic and schematic diagrams were reviewed to confirm that the operation of valve conformed to design requirements and operating procedures. The inspectors also reviewed the instrumentation associated with the automatic operation of the valve, including power supply and setpoint calculations. The inspectors reviewed the circuit protection, the thermal overload application, and the environmental qualification of the Limitorque motor operator to confirm that the circuit was adequately protected and that the valve was capable of performing its intended safety function during a design basis accident. Voltage drop calculations were reviewed to determine whether the motor and its associated control circuits had adequate voltage under degraded voltage conditions.

- Division III Battery (1E22-S001D): The inspectors reviewed the battery sizing calculation to verify the capability of the battery to support momentary and continuous loading for the duration of the duty cycle. The voltage drop calculation was also reviewed to confirm the capability of the battery to supply adequate voltage to the loads under limiting conditions for the duration of the duty cycle. The inspectors reviewed battery testing procedures to verify that periodic tests conformed to the TS requirements and industry standards; and to confirm the inter-cell resistance was maintained sufficiently low to have minimal impact on the voltage drop calculations. The inspectors reviewed the battery charger sizing calculation to confirm its capability to maintain the battery in a charged state and to recharge the battery in a timely manner following a loss of offsite power event. The battery charger testing procedures were also reviewed to confirm they conformed to the TS requirements and that test results supported operability.

- 125Vdc Bus (1E22-S001C): The inspectors reviewed the Division III DC system loading and short circuit calculation to determine system loading and available short circuit current under faulted conditions. The inspectors also reviewed the bus, breaker, and cable ratings to confirm their capability to carry maximum loading and interrupt maximum faulted conditions. The cable separation design was reviewed to confirm compliance with single failure and Appendix R criteria. The inspectors reviewed voltage drop calculations to determine whether adequate control voltage was available for the 4160Vac and 480Vac circuit breakers. Breaker coordination was reviewed to ensure that overloads and faulted conditions were properly interrupted.

- Division III Emergency Diesel Generator (EDG) (1DG01KC) and Associated Output Breaker (1E22S004103): The inspectors reviewed selected electrical components for the Division III EDG. The design basis documentation, USAR, and TS surveillance tests were reviewed to ensure design and licensing bases were met. The inspectors reviewed the ability of the EDG to start at the end of a station blackout using starting air and to close the output breaker at the lowest battery voltage. The voltage drop, degraded voltage, and short-circuit calculations were reviewed to ensure the EDG would perform during a design-basis event.

- EDG 1C Heat Exchanger (1DG13A): The inspectors reviewed the design requirements from procurement specifications and vendor documents, operating procedures, and calculations to determine whether the shell and tube heat exchanger was capable of transferring the DBA heat load under worst case temperatures and flow conditions. Performance test procedures, test results, and calculations were reviewed to verify normally expected heat exchanger fouling was consistent with design heat transfer fouling factors. Additionally, calculations were reviewed that determined heat transfer margin available based on tube plugging. Work history was reviewed including a modification to install zinc anodes in the heat exchanger and an operability determination for a pinhole leak in the SX piping. The inspectors reviewed procedures for eddy current inspection and criteria for plugging tubes. The licensee GL 89-13 program was reviewed with respect to implementation for this safety-related heat exchanger.

- 4160Vac Bus (1E22-S004) including the HPCS Transformer (1E22-S003): The inspectors reviewed bus loading calculations to determine whether the 4160Vac system had sufficient capacity to support its required loads under worst case accident loading and grid voltage conditions. The inspectors reviewed the degraded voltage protection design scheme to determine whether it afforded adequate voltage to safety-related devices at all voltage distribution levels. This included review of degraded voltage relay setpoint calculations and voltage calculations for downstream equipment such as MOVs. The inspectors reviewed the overcurrent protection scheme for the 4160Vac buses including drawings and calculations to determine whether loads were adequately protected and immune from spurious tripping. The inspectors also reviewed maintenance schedules and procedures for the 4160Vac bus, its associated circuit breakers, and the system transformer to determine whether the equipment was being properly maintained. This included reviewing acceptance criteria in procedures for consistency with vendor recommendations and design calculations.

- 480Vac Motor Control Center (MCC) 1C (1E22-S002): The inspectors reviewed bus and control circuit loading calculations to determine whether MCC 1C had sufficient capacity to support its required loads under worst case accident loading and grid voltage conditions. The inspectors reviewed the overcurrent protection scheme for the MCC including drawings and calculations to determine whether loads were adequately protected and immune from spurious tripping. The inspectors reviewed maintenance schedules and procedures for the 480Vac bus and its associated circuit breakers to determine whether the equipment was being properly maintained. This included reviewing acceptance criteria in procedures for consistency with vendor recommendations and design calculations.

- Shutdown Service Water 480Vac MCC 1C (1AP31E): The inspectors reviewed bus and control circuit loading calculations to determine whether MCC 1C had sufficient capacity to support its required loads under worst case accident loading and grid voltage conditions. The inspectors reviewed the overcurrent protection scheme for the MCC including drawings and calculations to determine whether loads were adequately protected and immune from spurious tripping. The inspectors reviewed maintenance schedules and procedures for the MCC and its associated circuit breakers to determine whether the equipment was being properly maintained.

- 120Vac Power Distribution Panel C Bus (1C71-P001C): The inspectors reviewed the bus design capabilities and bus loading calculation to confirm that the bus rating was not exceeded. The review included circuit breaker protection to confirm that the equipment was adequately protected and that the load breakers were adequately sized and properly coordinated to prevent spurious tripping. The inspectors also reviewed the inverter vendor manual for design, maintenance, and testing requirements to verify capability of the source to provide quality power to the instrument bus. The inspectors reviewed bus maintenance and breaker testing procedures to confirm that they were conducted in accordance with industry standards and manufacturer recommendations.

b. Findings

No findings of significance were identified.

.4 Operating Experience

a. Inspection Scope

The inspectors reviewed six operating experience issues to ensure that NRC generic concerns had been adequately evaluated and addressed by the licensee. The operating experience issues listed below were reviewed as part of this inspection:

- GL 89-13, “Service Water System Problems Affecting Safety-Related Equipment”;

- IN 1984-20, “Service Life of Relays in Safety-Related System”;

- IN 1992-27, Supplement 1, “Thermally Induced Accelerated Aging and Failure of ITE/Gould A.C. Relays Used in Safety-Related Applications”;

- IN 2006-29; “Potential Common Cause Failure of Motor-Operated Valves as a Result of Stem Nut Wear”;
- IN 2010-25, “Inadequate Electrical Connections”; and
- 10 CFR Part 21, 2012-07; “Potential Minimum Wall Violation on Seismic Plate Valve Bodies.”

b. Findings

No findings of significance were identified.

.5 Modifications

a. Inspection Scope

The inspectors reviewed three permanent plant modifications related to selected risk significant components to verify that the design bases, licensing bases, and performance capability of the components had not been degraded through modifications. The modifications listed below were reviewed as part of this inspection effort:

- D22869, Rebuild the SX Pump C;
- EC 369611, Address Concern with Location of Division 3 EDG Grounding Resistor; and
- EC 364556, Install Anodes in Channel Covers for EDG Heat Exchangers.

b. Findings

No findings of significance were identified.

.6 Operating Procedure Accident Scenario Reviews

a. Inspection Scope

The inspectors performed a detailed review of the procedures listed below associated with operation of the HPCS system. The procedures were compared to the USAR, design assumptions, and training materials to ensure consistency. For identified time critical operator actions and other significant operator actions, the inspectors performed a detailed review and walk through of associated procedures, including observing the performance of some actions in the station’s simulator and in the plant for other actions, with an appropriate plant operator to assess operator knowledge level, adequacy of procedures, and availability of special equipment where required. In addition, the inspectors also reviewed selected operator actions performed during the portions of selected simulator scenarios, which could require use of the HPCS system to control reactor pressure vessel level. Specifically, the inspectors reviewed the following events: the loss of coolant accident, station blackout, and anticipated transient without scram.

The following operating procedures were reviewed in detail:

- Clinton Power Station (CPS) 4001.01, “Reactor Coolant Leakage”;
- CPS 4200.01, “Loss of AC Power”;
- CPS 4401.01, “EOP-1, RPV Control”;
- CPS 4404.01, “EOP-1A, ATWS RPV Control”;
- CPS 4411.02, “Terminating and Preventing Injection”; and
- CPS-4411.04, “Throttling ECCS Flow.”

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

.1 Review of Items Entered Into the Corrective Action Program

a. Inspection Scope

The inspectors reviewed a sample of the selected component problems that were identified by the licensee and entered into the Corrective Action Program. The inspectors reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions related to design issues. In addition, corrective action documents written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problem into the Corrective Action Program. The specific corrective action documents that were sampled and reviewed by the inspectors are listed in the Attachment to this report.

The inspectors also selected five issues that were identified during previous CDBIs to verify that the concern was adequately evaluated and corrective actions were identified and implemented to resolve the concern, as necessary. The following issues were reviewed:

- Action Request (AR) 1088124; J10 Environmental Qualification Program Enhancement Opportunities;
- Non-Cited Violation (NCV) 05000461/2007008-01; Continuously Submerged Cables Design Deficiency;
- NCV 05000461/2007008-02; Division 3 Emergency Diesel Generator Neutral Ground Resistor Design Inadequacy;
- NCV 05000461/2007008-05; Inappropriate SX Pump Test Acceptance Criteria; and

- NCV 05000461/2010006-02; Inadequate Test Control of Residual Heat Removal Heat Exchangers.

b. Findings

No findings of significance were identified.

4OA6 Meeting(s)

.1 Exit Meeting Summary

On June 21, 2013, the inspectors presented the inspection results to Mr. W. Noll, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. Several documents reviewed by the inspectors were considered proprietary information and were either returned to the licensee or handled in accordance with NRC policy on proprietary information.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

W. Noll, Site Vice President
B. Taber, Plant Manager
P. Bulpitt, Mechanical Design Engineering
J. Coombs, MOV Engineer
C. Culp, GL 89-13 Engineer
J. Cunningham, Operations Director
C. Dunn, Training Director
R. Frantz, Regulatory Assurance
M. Gandi, Design Engineer
M. Heger, Mechanical/Structural Design Engineering Manager
D. Kemper, Site Engineering Director
S. Kowalski, Senior Manager Design Engineering
B. Kuhn, Electrical Design Engineering
S. Lakebrink, Design Engineering
A. Lane, Plant Engineering
S. Mohundro, Engineering Programs Manager
J. Peterson, Regulatory Assurance
R. Schenck, Work Management Director
D. Smith, Electrical Design Engineering

Nuclear Regulatory Commission

B. Kemker, Senior Resident Inspector
D. Lords, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened, Closed, and Discussed

None.

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

CALCULATIONS

Number	Description or Title	Revision
01DG11	Calculation for Diesel Generator Heat Exchanger Tube Plugging	5
01HP08	HPCS Pump Switchover NPSH	1/B
01HP09	HPCS Pump TS Surveillance Requirements at Rated Flow	7
01HP11	HPCS Pump DP and Flow Measurement Criteria for Surveillance Test and Inservice Test	2
01HP15	Development of HPCS Pump Curves (1E22C001) and Comparison with System Resistance Curves for Operating Modes A, B, C, E, F, G and H	3A
19-AI-62	Coordination of Breakers in Distribution Panels with Breakers for Distribution Panels	0
19-AJ-03	Short Circuit Currents on 120/208V ESF buses	1
19-AJ-16	Overload Heater Sizing for AC Motor Operated Valves	1-H
19-AN-04	480V ESF SWGR Breakers and Associated Upstream Relay Settings	00
19-AX-04	Internal Voltage Drop for NSPS Inverters Through Bypass Transformers	000C
19-D-26	Estimating Load for 125 Vdc System MCC 1C	5
19-D-27	Review of Division 3 Direct Current (DC) System 1C	10E
19-D-42	Station Blackout Analysis – 4 Hour Battery Capacity	4J
19-D-47	Calculation for Short-Circuit Analysis for Division 3 (HPCS) 125 VDC Bus	2
1E22-F004	MIDACALC for 1E22-F004, HPCS Injection Valve	7
1E22-F012	MIDACALC for 1E22-F012, HPCS Pump Minimum Flow Valve	4
1E22-F015	MIDACALC for 1E22-F015, HPCS Suppression Pool Suction Valve	5
1SX014C	MIDACALC for 1SX014C, SX 1C Header Isolation Valve	2
700713-02	SX Pump A and B IST Testing Rebaselining and Degraded Flow	0
CC-AA-309-1001	Shutdown Service Water System Hydraulic Network Analysis Model & Flow Balance Acceptance Criteria	6
EC 390871	1E22F015 Seismic Qualification Deficiency	1
EC 392411	Piping Analysis and Seismic Qualification of 1E22F015 to Close Open OpEval EC 390871	0
IPC-010	Seismic Qualification of MOV 1SX014C	4
IP-C-061	Setpoint Calculation for RCIC Storage Tank Low Level Transmitters 1E22N054C, G, and 1E51N035A,E	1
IP-C-087	Setpoint Calculation for Suppression Pool High – HPCS; Transmitters 1E22N055C & G	01
IP-C-097	Setpoint Calculation for High Pressure Core Spray (HPCS) Pump Discharge Pressure – High Bypass 1E21N051	0b
IP-C-100	Setpoint Calculation: High Pressure Core Spray (HPCS) Minimum Flow Bypass for 1E22N056	0-B
IP-C-121	Setpoint Calculation for SX Low Header Pressure (Instruments 1PY-SX028 / 1PY-SX030 / 1PY-SX032)	0
IP-M-0001	Bounding Differential Pressure Calculations for Selected HP System MOVs	001A
IP-M-0076	Bounding Differential Pressure for Selected SX MOVs	4B
IP-M-0233	System Response Time Evaluation for LPCS, HPCS and LPCI Injection	2
IP-M-0242	Updated Sizing Calculations for MOVs for GL 89-10 SX MOVs	2
IP-M-0381	Pressure Locking of HPCS and RCIC Suppression Pool Suction Valves	0-A

CALCULATIONS

Number	Description or Title	Revision
IP-M-0479	Hazards and Operability Analysis (HAZOP) for the Cooling Water Screen House and Associated Systems, Structures and Components	0
IP-M-0486	Shutdown Service Water (SX) System Hydraulic Network Analysis Model and Flow Balance Acceptance Criteria	6,6-K,6-N
IP-M-0570	1E22F015 Worst Case Pressure Locking Scenario	1
IP-M-0605	Flow Velocities in Unit 1 SX Pump Bay	0A
IP-M-0610	Design Basis Parameters for AOVs 1S027C	0
IP-M-0761	Evaluation of Vortex in the RCIC Storage Tank for HPCS and RCIC Suction Lines	1A
IP-M-0803	Synthetic Time Histories for the Enveloped Service Level B Response Spectra Supporting Valve 1E22F015 Acceleration Evaluation	0
IP-M-0804	Service Level B Accelerations for Valve 1E22F015 of Subsystem 1HP-04	0
IP-O-0123	Tech Spec Indicator Loop Uncertainty for Battery Capacity, Float/Cell Voltage and Current, and Charger Amps, SR 3.8.4.1.2, SR 3.8.6.1.2, 5, 6, and TS PR 5.5.14A	1
IP-Q-0508	Seismic Qualification of HPCS MOV 1E22F015	0
IP-S-0132	Acceptance Criteria for Allowable Sediment Depth (Siltation) in the CW Screenhouse	0
Report Log R89.018	Anchor/Darling Seismic Analysis Report: Clinton Power Station, 20-Inch Class 150 Carbon Steel Flex Wedge Gate Valve with SB-1-40 Limitorque Motor Actuator	A

CORRECTIVE ACTION DOCUMENTS GENERATED DUE TO THE INSPECTION

Number	Description or Title	Date
01515804	Tech Spec Surveillance WO Unavailable	05/20/13
01516778	Typographical Error in Calculation 19-D-27	05/22/13
01516819	Corrosion on 1SX01FC Strainer Operator Bonnet Area- Packing Gland & Shaft	05/22/13
01517046	Training Lesson Plan Inconsistent with Plant Procedure	05/23/13
01517079	Correct Minor Errors for SX System Drawings M05-1052, Sh. 2 and 3	05/23/13
01517613	Correction for 9069.01 to Change Wording in 2.2.5 from Suction to Discharge	05/24/13
01519986	Station Action Item Closed Before Fleet Action	05/31/13
01520851	SX Pump C Calculation Discrepancies	06/03/13
01521620	CPS 9433.36 Procedure Enhancement	06/05/13
01521778	Enhance the Precautions and Limitations of 4411.04	06/05/13
01521825	Incorrect Responses Identified to IR 1088124	06/05/13
01522042	Correct Errors in Identification of Safety Position for 1SX014C	06/06/13
01522208	J10 Relay Strategic Plan	06/06/13
01523271	Service Req. for ITE Gould J10 Relay Replacement EQPMS	06/10/13
01523792	USAR Typo in Section 9.2	06/19/13
01525666	NRC Concern Regarding Lake Temp Monitoring	06/17/13
01526347	Correct Value of Suction Pressure for SX C Pump Rebaseline Test Acceptance	06/18/13
01526350	DC System Voltage Requirement Description in UFSAR	06/18/13
01526767	R89.018 Report was not Adequately Notated as Partially Superceded	06/19/13
01526976	Update IP-M-0486 to Include DBA Minimum Flow Scenario with Backflush Flow	06/20/13
01527331	Questions Regarding Division 3 Battery Charger	06/21/13
01531186	Procedure Changes for EC 394281: UHS Temperature	07/01/13

CORRECTIVE ACTION DOCUMENTS REVIEWED DURING THE INSPECTION

Number	Description or Title	Date
1-98-03-271	Inadequate Design Basis Information for SX Sluice Gate and SX Strainer Bypass Valves	03/17/98
1-98-03-201	USAR does not Address Impact of Traveling Water Screen Malfunction on SX Operation	03/12/98
1-98-11-053	Operating Experience Impact Assessment for EIN 92-27S1	11/05//98
1-83-12-057	Concern with Agastat Relays as Noted on Grand Gulf Nuclear Station	12/11/83
2-88-09-024	Agastat Relays Series 7014 and 7024	09/19/88
00401275-11	Inspect or Test SX Heat Exchangers	12/10/09
00429366	HPCS Pump Surveillance had Non-conservative Acceptance Criteria	03/06/06
00495197	MOV Stem Nut Wear	05/31/06
00586165	IN 06-29 Potential MOV Common Cause Failure Stem Nut Wear	02/01/07
00692997	Submerged Cable Long Term Asset Management Strategy	10/30/07
00697048	CDBI – Div 3 DG Grounding Resistor Housing is not Ventilated	11/09/07
00700622	NRC NCV for Underground Power Cables	11/16/07
00700713	SX Pump A and B IST Testing Rebaselining	07/31/08
00706104	SX Pump Methodology	05/21/09
00724625	1E22S001D: Div. 3 125VDC Battery Capacity Lower Than Expected	01/19/08
01018611	1E22S001D: Div. 3 125VDC Battery Capacity Test Results	01/20/10
01047812	Backflow Through 1SX001C Noted During SX Pump C Surveillance	06/16/10
01049920	Declining Performance Trend for Div. 3 SX Pump – 1SX01PC	03/30/10
01056715	NER NC-10-008 Yellow Buried Cable	04/14/10
01059764	1E22F004: Valve Stem Grease Grade Evaluated As a 4	04/21/10
01059766	1E22F012: Valve Stem Grease Grade Evaluated As a 4	04/21/10
01083290	Revise 2700.20 to Ensure Repeatable Test Results	07/30/11
01088124	J10 EQ Program Enhancement Opportunities	07/06/10
01092477	HPCS Flow Spikes Outside Prescribed Band During 9051.01	07/20/10
01141625	1E22S001D: Div. 3 125VDC Battery Capacity Investigation	11/17/10
01166000	IN2010-25 Inadequate Electrical Connections	01/24/11
01166492	IN 2010-26 Submerged Electrical Cables	01/25/11
01189137	MCC Bucket 74 Relays Show Evidence of Overheating	03/16/11
01239520	1E22S001D: Div. 3 125VDC Battery Manufacturer Testing Results	07/13/11
01270673	1E22F004: Parts Not Available At Time Of Execution	09/30/11
01285559	Incorrect Actuator Weight in Seismic Qualification of MOV 1E22F004	01/01/99
01290646	Incorrect Actuator Weight in Seismic Qualification of MOV 1E22F012	01/01/99
01291378	Incorrect Actuator Weight in Seismic Qualification of MOV 1E22F0015	01/01/99
01297601	1E22F012 Broken Declutch Shaft Found During Rebuild	12/03/11
01321645	1E22AS00: 1E22F004 Green Light Indication In MCR broken	02/02/12
01334687	CPS Review of Part 21 Applicable to 8 Inch Butterfly Valves(Event 47706)	03/31/12
01343645	Incorrect Usage of Motor Performance Curves to Derive Values	03/21/12
01347306	(Three Mile Island) CDBI-Jogging MOVs	03/29/12
01385956	Evaluate HPCS valve stroke testing improvement	07/06/12
01403682	Received Unexpected Annunciator 5050-5H, Trouble SGTS Elect	08/22/12
01411802	OPEX ECCS Injection Throttling Procedure May Need Evaluated	09/12/12
01424449	1E22F015 MOV Analysis Error Identified	10/09/12
01474360	CDBI FASA 2013: J10 Relay-Need ATI for Non-EQ Relays	02/12/13
01502038	CLI CDBI FASA J-10 Relay Replacement	04/15/13
01515728	Station Battery Surveillance Load Testing Profile Alignment	05/20/13

DRAWINGS

Number	Description or Title	Revision
16204-17	8” Class 150 Wafer Model A11 Valve Actuator	D
2423F-03	8” Class 150 Wafer Model A11 Valve Ass’y	0
2994-3	Anchor/Darling Valve: 20”-150# Gate Valve, Cast Carbon Steel, SB-1 Motor Operator	D
35961	Pump Curve for 8 x 14 A VCM 2 Stg Pump	1
40097	8” VWS-7 NS 200# Strainer- 8” Nozzles	6
5-046-17-084-003	17084 CPK Exchanger	3
762E298AC, Sh. 1	One Line Diagram High Pressure Core Spray Sys	12
762E298AC, Sh. 2	One Line Diagram High Pressure Core Spray Sys	11
762E298AC, Sh. 3	One Line Diagram High Pressure Core Spray Sys	10
B-35705X	Shutdown Service Water Pump Bingham Type VCM (S/NIA278)	0
E02-1AP01, Sh. 001	Single Line Diagram Part 1	AA
E02-1AP01, Sh. 004	Single Line Diagram Part 4	H
E02-1AP01, Sh. 005	Single Line Diagram Part 5	G
E02-1AP03, Sh. 001	Electric Loading Diagram	AB
E02-1AP12, Sh. 015	Relay & Metering Diagram 4160V Bus 1C1, Part 1	X
E02-1AP12, Sh. 016	Relay & Metering Diagram 4160V Bus 1C1, Part 2	R
E02-1AP72, Sh. 001	Key Diagram Shutdown Service Water MCC 1C (1AP31E)	K
E02-1DC06, Sh. 001	125V DC & Uninterruptible Power Supply Systems	AC
E02-1HP01	Key Diagram ESF Div. 3 HPCS MCC 1C	S
E02-1HP99, Sh. 002	Schematic Diagram High Pressure Core Spray System (HP) High Pressure Core Spray System (NSPS) (1E22-1050)	E
E02-1HP99, Sh. 004	Schematic Diagram High Pressure Core Spray System (HP) High Pressure Core Spray System (NSPS) (1E22-1050)	J
E02-1HP99, Sh. 005	High Pressure Core Spray System (HP) High Pressure Core Spray System (NSPS) (1E22-1050)	G
E02-1HP99, Sh. 006	Schematic Diagram High Pressure Core Spray System (HP) High Pressure Core Spray System (NSPS) (1E22-1050)	D
E02-1HP99, Sh. 007	Schematic Diagram High Pressure Core Spray System (HP) High Pressure Core Spray System (NSPS) (1E22-1050)	L
E02-1HP99, Sh. 101	Schematic Diagram High Pressure Core Spray System (HP) HPCS Power Supply System (1E22-1070)	G
E02-1HP99, Sh. 103	High Pressure Core Spray System (HP) HPCS Power Supply System (1E22-1070)	N
E02-1HP99, Sh. 104	High Pressure Core Spray System (HP) HPCS Power Supply System (1E22-1070)	Q
E02-1HP99, Sh. 110	Schematic Diagram High Pressure Core Spray System (HP) HPCS Power Supply System (1E22-1070)	H
E02-1HP99, Sh. 202	High Pressure Core Spray System (HP) Div. 3 Diesel Generator (1E22-S001A)	N
E02-1HP99, Sh. 203	Schematic Diagram High Pressure Core Spray System (HP) Div. 3 Diesel Generator (1E22-S001A)	G
E02-1HP99, Sh. 209	High Pressure Core Spray System (HP) Div. 3 Diesel Gen. CT/PT Cubicle (1E22-S001C)	K
E02-1HP99, Sh. 501	Schematic Diagram High Pressure Core Spray System (HP) HPCS Suction Valve (1E22-F001) & HPCS Pump Disch. Valve (1E22-F004)	J
E02-1HP99, Sh. 503	Schematic Diagram High Pressure Core Spray System (HP) HPCS Min Flow Valve (1E22-F012) & HPCS Suct. Valve (1E22-F015)	H
E02-1NR99, Sh. 002	Schematic Diagram Neutron Monitoring System (NR) Start-up Range Neutron Monitoring System (1C51-1070)	K

DRAWINGS

Number	Description or Title	Revision
E02-1RP99, Sh. 003	Schematic Diagram Reactor Protection System (RP) Reactor Protection System (NSPS) (1C71-1050)	P
E02-1RP99, Sh. 005	Reactor Protection System (RP) Reactor Protection System (NSPS) (C71-1060)	M
E02-1RP99, Sh. 101	Schematic Diagram Reactor Protection System (RP) NSPS Power Distribution (1C71-1060)	R
E02-1SX032	Loop Schematic Diagram Shutdown Service Water System (SX) Div. 3 Cooling Wtr. to ESF	C
E02-1SX99, Sh. 003	Shutdown Service Water System Shutdown Service Water Pump 1C	X
E02-1SX99, Sh. 006	Shutdown Service Water System SSW Strainer 1C Basket Motor 1C	N
E02-1SX99, Sh. 018	Shutdown Service Water System (SX) SSW Sys. 1C Isol. Vlv. 1SH014C	G
E02-1SX99, Sh. 030	Shutdown Service Water System (SX) Div 3 MOV Overload Ind & Bypass Relays Service Not Available Alarm	T
E03-1C71-P001C, Sh. 001	Internal-External Wiring Diagram NSPS 120V AC Bus C (1C71-P001C) & Inverter-Static Bypass Sw. (1C71-S001C)	L
FD-IA278	Bingham Vendor Pump Data for Shutdown Service Water Pump C	8
M01-1116, Sh. 1	Circulating Water Screen House –General Arrangement	F
M05-1035	P&ID Diesel Generator Cooling System (DG) Clinton Power Station	K
M05-1052	Shutdown Service Water (SX) Clinton Power Station Unit 1	AJ
M05-1074-001	P&ID High Pressure Core Spray	AH
M10-1201	Control and Instrumentation Installation Detail Seismic Pipe Stand	U
M10-9052	P&ID/C&I Diagram Shutdown Service Water System (SX)	D
MO5-1052, Sh. 3	Shutdown Service Water (SX)	AJ
PS024	Differential Pressure Switch for SX Strainer 1C	F
S22-1015, Sh. 6	Circulating Water Screen House – Sections and Details	L
W7820011	10”-150 Carbon Steel Tilting Disc Check Valve	A

MISCELLANEOUS

Number	Description or Title	Date or Revision
	Clinton EOP Technical Bases	6
	CPS Safety Evaluation of the Upgraded EOP Program	12/90
	FASA (EN) CDBI Pre-NRC 71111.21 Inspection	03/19/13
	Limitorque Motor Jogging Capabilities	09/30/94
	Sulzer Memorandum – Shutdown Service Water Pump – NPSHR and Minimum Submergence	06/05/13
	Surveillance Frequency Control Program	3
	SX Pump C D/P Trend Data	03/21/13
	System Health Report - Battery& DC Distribution	04/24/13
	System Health Report DG –Diesel Generators	04/24/13
	System Health Report – HPCS	03/31/13
	System Health Report – SX	03/31/13
	System Notebook – Battery and DC Distribution System	04/30/13
03040D	UG Dial Governor	D
1SX01PC	Rebaseline Pump Acceptance Criteria for SX Pump C	8
201303270436	SX Pump C Motor Bearing Oil Analysis Report	03/21/13
21A9236	Specification for Div III Diesel Generator	5
33-51752-QS	Environmental Qualification Report Secondary Unit Substation Switchgear	5
359078	Evaluation of DB Testing vs Routine Inspection	0

MISCELLANEOUS

Number	Description or Title	Date or Revision
CC-74-24	Qualification and Test Summary Report for Class 1E Motor Control Center	7
CPS ORM	Attachment 4 – Containment Isolation Valves	75
CPS PSA-005.008	High Pressure Core Spray System (HP)	2
CPS PSA-005.12	Shutdown Service Water System (SX)	2
CPS-15071	Failure Analysis of Gould Type J-10 Relay	12/10/10
EC 385398	Comprehensive Pump Acceptance Criteria for SX Pump C	0
EPU-T0404	Extended Power Uprate Task High Pressure Core Spray System	0
EPU-T0407	Extended Power Uprate Task ECCS-LOCA SAFER/GESTR	0A
EPU-T0613	Extended Power Uprate Task Shutdown Service Water System	0
EQ-CL014	Environmental Qualification of ITE Gould 5600 Series Motor Control Centers and ATM fuses/NFT-F1 Fuse Holders (Safety Related)	17
EQ-CL023	Environmental Qualification of 480V Indoor Unit Substation (Switchgear/Breaker) EIN 1AP11E and 1AP12E	15
EQ-CL027	Environmental Qualification of Limitorque Operators Model No. SMB-0, SMB-00, SMB-000, SMB-1, SMB-2, SB-0, SB-00, SB-1 (Safety-Related)	36
Group CMP-11	Shutdown Service Water Pump 1C Discharge Check Valve	0
IST-CPS-BDOC-V-31	Clinton – Inservice Testing Document	05/19/11
JPM 055	Job Performance Measure – Throttling ECCS Injection Flow-HPCS	3
K-10040	Specification for Purchase of Replacement Diesel Generator HXs	1
K-2801	ITT Standard Heat Transfer Technology Specification Sheet for Type CPS, DP & CPK Exchangers	08/01/72
K-2801-0025A	HPCS Pump Vendor Manual	06/18/13
K-2801-0076A	C&D Batteries Instruction Manual for 1E22-S001E Battery Charger	3/31/85
K-2801-0076-C	Division III Diesel Generator	129
K-2828B	Design Specification for Shutdown Service Water CPS – Unit 1	06/29/77
K-2866A	Design Specification for 1SX001C	04/12/76
K-2868	Specification for SX and WS System Cross Valve (Div. 3) 1SX014C	10/06/76
K-2880	Shutdown Service Water Strainers Clinton Power Station – Units 1 and 2	12/21/76
K2899-0001	MOV Vendor Manual	06/17/13
K2987-0001	Three Pase SCR Battery Charger Vendor Technical Manual	11
K2988-0001	C&D Power Systems Stationary Battery Installation & Operating Instruction	02/26/86
LP 87552	ILT/NLO/LORT Lesson Plan – RPV Control (EOP-1)	10
LP 87553	ILT/LORT Lesson Plan – EOP-1A, Failure to Scram	10
N80-84(04-09)-6	IE Information Notice 84-20 Investigation & Disposition Plan and Schedule	04/09/84
N80-84(04-09)-L	IE Information Notice 84-20 Service Life of Relays in SR Applications	05/09/84
N-CL-OPS-209002	ILT/NLO/LORT Lesson Plan – HPCS System	2
N-CL-OPS-400002	Shutdown Service Water System Operator Training Lesson Plan	3
NER NC-10-008-Y	Peach Bottom NCV Related to Cable Condition Monitoring Program	12/30/09
QDC-263-E-0037	Design Life of Safety-Related Agastat EGP/FGP/ETR/FTR Series Power and Control Relays in Mild Environment	06/30/95
S250-000009	Ametek Solid State Controls Instruction & Operating Manual for 7.5 KVA Inverter	B
SE-LOR-47	CPS Licensed Operator Training Simulator Exercise Guide – ATWS with Bypass Valves	1
SE-LOR-51	CPS Licensed Operator Training Simulator Exercise Guide – Coolant Leak with Drywell Failure	2
T-37076-02	Byron Jackson HPCS Pump Test Curves	0
TSTF-360-A	Technical Specification Task Force Improved Standard Technical Specifications Change Traveler	1

MODIFICATIONS

Number	Description or Title	Date or Revision
D22869	Rebuild the SX Pump C	10/13/95
EC 364556	Install Anodes in Channel Covers for Div 1,2,&3 DG Heat Exchangers	2
EC 366903	Replacement of SR NSPS Inverters IC71-S001C & IC71-S001D	6
EC 367557	Incorporate Outstanding Revisions into Calculation 19-D-27	0
EC 369611	Address Concern with Location of DIV 3 DG Grounding Resistor	0
EC 376514	Evaluation for PM Extension for J13 Relays in 480V Substations 1AP11E & 1AP12E	0
EC 384804	Maximum Steady State Voltage for TS 3.8.1 Non-conservative	000
EC 385175	Potential Non-Safety Oil in a Safety System	0
EC 386632	Part 21 on GE Magneblast Breakers Installed in Division 3	1
SXF-022	Install Improved Bearings in SX Pump C	08/28/95

OPERABILITY EVALUATIONS

Number	Description or Title	Date
00700713-02	SX Pump A and B IST Testing Rebaselining and Degraded Flow	10/04/95
01166000-03	NRC Information Notice 2010-25, Inadequate Electrical Connections	03/22/11
01273072-02	Pinhole Leak in SX Div. 3 Piping System on Downstream Side of 1DG13A	10/11/11
01424449-02	OpEval : 1E22F015 MOV Analysis Error Identified	10/12/12

PROCEDURES

Number	Description or Title	Revision
2400.01	Circulating Water Screenhouse (CWSH) Intake Structure Inspection	8a
2700.14	Div III SX System Flow Verification and Balance	3a
2700.20	RHR A (B) Heat Exchanger, 1E12B001A (B) Thermal Performance Test Covered By NRC GL 89-13	4a
3211.01	Shutdown Service Water	31,31a
8130.01	Heat Exchanger Maintenance/Repairs	3a
8210.04	Maintenance of 1SX01FC 8 Inch Adams Strainer	11a
8410.03	Motor Overload Relay Testing	11A
9069.01	Shutdown Service Water Operability Test	48
9069.01D001	SX System Operability Data Sheet	46a
9433.36	High Pressure Core Spray System Response Time Test	33e
9861.09D011	SX Boundary Valve Leak Testing (1SX014C)	2b
AD-AA-101	Processing of Procedures and T&RMs	25
CC-AA-102	Design Input and Configuration Change Impact Screening	26
CC-AA-103	Configuration Change Control for Permanent Physical Plant Changes	24
CC-AA-309	Control of Design Analyses	11
CI-01.00	Instrument Setpoint Calculation Methodology	4
CPS 1005.12	EOP/SAG Support Procedure – Verification and Validation Program	1a
CPS 1005.12C001	EOP/SAG Support Procedure – Verification Checklist	2
CPS 1005.12C002	EOP/SAG Support Procedure – Validation Checklist	2
CPS 2700.19	Div III Diesel Generator Jacket Water Cooler Heat Exchanger Performance Tests (Generic Letter 89-13)	3
CPS 3211.01	Shutdown Service Water (SX)	31a
CPS 3309.01	High Pressure Core Spray (HPCS)	17
CPS 3506.01	Diesel Generator and Support Systems (DG)	37

PROCEDURES

Number	Description or Title	Revision
CPS 3506.01P003	Division 3 Diesel Generator Operations	5
CPS 4001.01	Reactor Coolant Leakage	11
CPS 4200.01	Loss of AC Power	23a
CPS 4200.01C002	DC Load Shedding During a SBO	5
CPS 4201.01	Loss of DC Power	7
CPS 4303.01	Extensive Damage Mitigation Guide	6a
CPS 4303.01P022	DC Power Strategies	0a
CPS 4303.01P023	Cross-Connecting Div 3 DG to Div 1(2) ECCS Electrical Busses	1
CPS 4303.01P024	Manual Start of an Emergency DG with Loss of DC Power	0a
CPS 4303.02	Abnormal Lake Level	12a
CPS 4401.01	EOP-1 RPV Control	29
CPS 4403.01	EOP-2 RPV Flooding	29
CPS 4404.01	EOP-1A ATWS RPV Control	29
CPS 4411.02	Terminating and Preventing Injection	9
CPS 4411.04	Throttling ECCS Flow	5, 5a
CPS 5062.02	Alarm Panel 5062 Annunciators – Row 2	28
CPS 5062.04	Alarm Panel 5062 Annunciators – Row 4	27b
CPS 5062.05	Alarm Panel 5062 Annunciators – Row 5	28a
CPS 5062.06	Alarm Panel 5062 Annunciators – Row 6	27c
CPS 5062.07	Alarm Panel 5062 Annunciators – Row 7	29b
CPS 5064.01	Alarm Panel 5064 Annunciators – Row 1	31b
CPS 5064.02	Alarm Panel 5064 Annunciators – Row 2	32
CPS 8410.04	Molded Case Circuit Breaker/Bucket Component Functional Testing and Maintenance	31
CPS 8410.14	Cubicle/MCC Clean and Inspect and Associated Molded Case Circuit Breaker Testing	8
CPS 8433.07	125 VDC Battery Connection Resistance Check	3a
CPS 8503.09	Ametek NSPS Inverter Calibration	3
CPS 9051.01	HPCS Pump and HPCS Water Leg Pump Operability	44b, 46
CPS 9051.02	HPCS Valve Operability Test	41
CPS 9069.01	Shutdown Service Water Operability Test	48a
CPS 9382.01	125VDC Battery Pilot Cell Check	36
CPS 9382.08	Division I 125VDC Battery Charger Load Test	31
CPS 9382.10	Division III 125VDC Battery Charger Load Test	29
CPS 9382.14	Division III Battery Service Test	29
CPS 9382.18	Division III 125VDC Battery Modified Performance Test	31
CPS 9433.36	HPCS System Response Time Test	33d
CPS 4200.01C002	DC Load Shedding During a SBO	5
ER-AA_200	Preventive Maintenance Program	0
ER-AA-321	Administrative Requirements for Inservice Testing	12
ER-AA-335-1006	Heat Exchanger Electromagnetic Testing Methodology	4
ER-AA-340-1001	GL 89-13 Program Implementation Instructional Guide	8
HU-AA-104-101	Procedure Use and Adherence	4A
LS-AA-120	Issue Identification and Screening Process	14
LS-AA-125	Corrective Action Program (CAP) Procedure	17
MA-AA-733-1002	Guidance for Non-Intrusive (Diagnostic) Testing of Check Valves	1
MS-01.00	Equipment Lubrication Standard	40
OP-AA-101-113	Operations Fundamentals	7
OP-AA-102-106	Operator Response Time Program	1

PROCEDURES

Number	Description or Title	Revision
OP-AA-103-103	Operation of Plant Equipment	0
OP-AA-103-105	Limitorque Motor-Operated and Chainwheel-Operated Valve Operations	3
OP-AA-108-115	Operability Determinations (CM-1)	11
OP-AA-108-115-1001	Operability Evaluation Passport Engineering Change Desktop Guide	1
OP-AA-108-115-1002	Supplemental Consideration for On-Shift Immediate Operability Determinations (CM-1)	2
OP-CL-108-104-1001	ITS LCO/ORM OR/ODCM OR Evaluations and Guidance for Safety Function Determination	7
PMRQ 00157307	1SX001C Non-Intrusive (Diagnostic) Testing of Check Valves	0

SURVEILLANCES (COMPLETED)

Number	Description or Title	Date
2700.14D001	Div III SX System Flow Balance Testing IAW 2700.14	09/23/10
9069.01C20	9069.01C20 SX Pump/Valve Operability Quarterly Test	12/11/12 03/15/13
9069.01C20	SX Pump/Valve Operability Comprehensive Test	09/13/12
CPS 2700.19	Div III Diesel Generator Jacket Water Cooler Heat Exchanger Performance Tests	11/03/99 10/02/03

WORK DOCUMENTS

Number	Description or Title	Date
00010451	EM EQ-CL023 Replace Gould Aux Relays (J13PA4312) for 1AP11E	01/12/08
00666742	9382.14C21 VER *125V DC Battery Service Test (Div. III)	02/22/06
00865780	Reliability Improvements and Diagnostic Testing 1E22-F015	01/24/08
01054171	EC 366903 to Replace Division 3 Inverter	03/04/08
01104865	Replacement 1SX014C Isolation Valve Due to Excessive Disk Leakage	09/24/08
01162464	Visually Inspect IC Strainer Internals and Clean as Necessary	03/20/12
01164055	Replace Output Filter Caps & Control Boards A & B 1E22S001E	12/27/12
01189897	9382.10C22 VER # 125V DC Charger Load Test (Div III)	09/24/10
01300669	9051.01 HPCS Pump and WLP Operability	04/21/10
01304847	9051.02 1E22F004 HPCS vlv Oper Test (Cold S/D)	12/11/11
01308066	1E22S001D 6 Div 3 125VDC Battery Capacity Test Results	12/19/11
01316276	Aux Bldg MCC 1C Clean and Inspect and Test per 8410.14	12/19/11
01322747	Inspect, Clean HX, Boroscope, Eddy Current 100% IDG13A	08/05/11
01325047	Declining Performance Trend for Div 3 SX Pump-1SX01PC	12/11/12
01339459	PMSR, 1E22F004 Thrust Verification and MOV Clean/Inspect	12/13/11
01350649	9843.01 1E22F004 LRT Cat A vlv	12/02/11
01350675	SX Boundary Valve Leak Testing (1SX014C)	11/27/11
01353526	9433.36 HPCS Response Time Test Completed	12/11/11
01396090	Replace Actuator Grease in MOV E22-F012 and Thrust Verification	12/02/11
01398814	1SX001C Non-Intrusive (Diagnostic) Testing of Check Valves	05/15/12
01401507	8433.07 Battery Connection Resistance Measurements (Division 3)	11/18/11
01424501	9382.10C22 VER # 125V DC Charger Load Test (Div III)	12/20/12
01432242	9051.01R22 OP HPCS Pump & WTR Leg Pump Operability	07/18/11
01494518	8433.07 Battery Connection Resistance Measurements (Division 3)	11/19/12

WORK DOCUMENTS

Number	Description or Title	Date
01560487	9051.01R22 1E22F012 Exercise Test	10/19/12
01575880	9382.02C21 OP Div. III ICV and Charger Chks (1E22S001D)	12/17/12
01587389	9051.02A21 E22-F15 Op HPCS vlv Operability (Stroke Time)	01/15/13
01588481	9051.01R22 1E22F012 Exercise Test	11/06/12
01592998	9051.01R22 1E22F012 Exercise Test	01/17/13
01605017	9382.02C21 OP Div. III ICV and Charger Chks (1E22S001D)	03/21/13
01608557	9051.02A21 E22-F15 Op HPCS vlv Operability (Stroke Time)	04/19/13
01612583	9051.01 HPCS Pump and WLP Operability (RCIC Storage Tank)	04/19/13
01639743	9382.01C21 OP 125V DC Pilot Cell Check (Div. III)	05/09/13
01641671	9382.01C21 OP 125V DC Pilot Cell Check (Div. III)	05/17/13
15521602	Perform Thrust Verification and MOV Clean/Inspect 1E22F004	12/06/11
15521902	Perform Thrust Verif / Clean and Inspect - 1E22F012	12/02/11
15522002	Perform Thrust Verif / Clean and Inspect - 1E22F015	01/24/08
15522702	EQ-CL010 - Sample and Visually Inspect HPCS pump OIL	07/17/12
15523101	1E22F015 MOV Stem Lubrication per CPS 8451.01. 20130418	04/18/13
15523401	MOV Stem Lubrication Per CPS 8451.01 1E22F012	12/02/11
15702501	Visually Inspect HPCS Pump Mount/Foundation Bolts	10/20/08
15900102	1E22F004 MOV Stem Lubrication per CPS 8451.01	12/03/11
9382.10C001	Division III Battery Charger Testing Data Sheet	04/13/95
9382.18D001	Division III 125 VDC Battery Performance Discharge Test Data Sheet	01/16/10

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
AR	Action Request
ASME	American Society of Mechanical Engineers
CDBI	Component Design Bases Inspection
CFR	Code of Federal Regulations
CPS	Clinton Power Station
DBA	Design Basis Accident
d/p	Differential Pressure
DRS	Division of Reactor Safety
EC	Engineering Change
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
EQ	Equipment Qualifications
FASA	Focused Self-Assessment
GL	Generic Letter
HPCS	High Pressure Core Spray
IEEE	Institute of Electrical & Electronic Engineers
IMC	Inspection Manual Chapter
IN	Information Notice
IP	Inspection Procedure
IR	Inspection Report
IST	Inservice Testing
LLC	Limited Liability Corporation
MCC	Motor Control Center
MOV	Motor-Operated Valve
NCV	Non-Cited Violation
NPSH	Net Positive Suction Head
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
P&ID	Piping and Instrumentation Drawing
PRA	Probabilistic Risk Assessment
RHR	Residual Heat Removal
RIS	Regulatory Issue Summary
RPV	Reactor Pressure Vessel
SDP	Significance Determination Process
SX	Emergency Service Water
TS	Technical Specification
USAR	Updated Safety Analysis Report
Vac	Volts Alternating Current
Vdc	Volts Direct Current
WO	Work Order

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION
COMPONENT DESIGN BASES INSPECTION (CDBI) 05000461/20013008

Dear Mr. Pacilio:

On June 21, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed a Component Design Bases Inspection (CDBI) inspection at your Clinton Power Station. The enclosed report documents the results of this inspection, which were discussed on June 21, 2013, with Mr. W. Noll, and other members of your staff.

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.

No findings were identified during this inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Benny Jose, Acting Chief
Engineering Branch 2
Division of Reactor Safety

Docket No. 50-461
License No. NPF-62

Enclosure: Inspection Report 05000461/20013008;
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ™

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Letter to Mr. Michael J. Pacilio from Mr. Benny Jose, dated July 25, 2013.

SUBJECT: CLINTON POWER STATION
COMPONENT DESIGN BASES INSPECTION (CDBI) 05000461/20013008

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