



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION III
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October 1, 2013

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

**SUBJECT: CLINTON POWER STATION PROBLEM IDENTIFICATION AND RESOLUTION
INSPECTION REPORT 05000461/2013007**

Dear Mr. Pacilio:

On August 30, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed a Problem Identification and Resolution (PI&R) inspection at Clinton Power Station. The enclosed report documents the inspection results, which were discussed on August 30, 2013, with Mr. B. Taber and other members of the licensee staff.

The inspection was an examination of activities conducted under your license as they relate to problem identification and resolution and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel.

Based on the inspection sample, the inspection team concluded that the implementation of the corrective action program and overall performance related to identifying, evaluating, and resolving problems at Clinton Power Station was effective. Licensee identified problems were entered into the corrective action program at a low threshold. Problems were effectively prioritized and evaluated commensurate with the safety significance of the problems and corrective actions were generally implemented in a timely manner commensurate with their importance to safety and addressed the identified causes of problems. Lessons learned from industry operating experience were generally reviewed and applied when appropriate. Audits and self-assessments were effectively used to identify problems and appropriate actions.

One NRC-identified finding of very low safety significance (Green) was identified during this inspection. This finding was determined to involve a violation of NRC requirements. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

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 III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Clinton Power Station.

If you disagree with the cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III and the NRC Resident Inspector at Clinton Power Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made 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/

Christine Lipa, Chief
Branch 1
Division of Reactor Projects

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

Enclosure: Inspection Report 05000461/2013007
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000461/2013007

Licensee: Exelon Generation Company, LLC

Facility: Clinton Power Station

Location: Clinton, IL

Dates: August 12 - 30, 2013

Inspectors: L. Haeg, Senior Resident Inspector,
Duane Arnold, Team Lead
R. Langstaff, Senior Reactor Inspector
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Approved by: Christine Lipa, Chief
Branch 1
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

Inspection Report (IR) 05000461/2013007, 08/12/13 – 08/30/13; Clinton Power Station; Biennial Baseline Inspection of the Identification and Resolution of Problems.

This team inspection was performed by the Duane Arnold Senior Resident Inspector, the Clinton Resident Inspector, two Region III inspectors, and the Clinton Illinois Emergency Management Agency Resident Inspector. One Green finding was identified by the inspectors. The finding was considered a non-cited violation (NCV) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

Identification and Resolution of Problems

Overall, the Clinton Power Station Corrective Action Program (CAP) was appropriately identifying, evaluating, and correcting issues. Issues were generally being identified at a low threshold, evaluated appropriately, and corrected in the CAP. Overall performance in prioritization and evaluation of issues was acceptable. Issues were appropriately screened by both the Station Ownership Committee and the Management Review Committee and the inspectors had no concerns with those items assigned an apparent cause evaluation or root cause evaluation. Corrective actions were generally appropriate for the identified issues. Those corrective actions addressing selected NRC documented violations were also generally effective and timely. The inspectors' review going back five years of the licensee's efforts to address issues with Service Water (SX) system did not identify any negative trends or inability by the licensee to address long term issues. However, the inspectors determined that corrective actions for some issues had not been effective.

In general, operating experience (OE) was effectively utilized at the station. The inspectors observed that OE was discussed as part of the daily station and pre-job briefings. Industry OE was effectively disseminated across the various plant departments and no significant issues were identified during the inspectors' review of licensee OE evaluations.

The inspectors concluded that self-assessments and audits were typically accurate, thorough, and effective at identifying issues and enhancement opportunities at an appropriate threshold level. The inspectors observed that CAP items had been initiated for issues identified through Nuclear Oversight department audits and self-assessments. The inspectors reviewed the most recent self-assessment performed on the CAP; found no issues, and generally agreed with the overall results and conclusions drawn.

The inspectors determined that plant staff were aware of the importance of having a strong safety-conscious work environment and expressed a willingness to raise safety issues. No one interviewed had experienced retaliation for raising safety issues or knew of anyone who had failed to raise issues. All plant staff interviewed had an adequate knowledge of the CAP process. Based on these limited interviews, the inspectors concluded that there was no evidence of an unacceptable safety-conscience work environment.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding of very low safety significance associated with the licensee's failure to appropriately evaluate the functionality of the 'B' Diesel Fire Pump (DFP) after identifying a degraded/non-conforming crankcase pressure condition while performing testing on June 13, 2011, and on numerous occasions thereafter, that could have affected the ability of the system to perform a function important to safety. An associated NCV of Clinton Power Station License Condition 2.F was identified. The License Condition required the licensee to implement and maintain in effect all provisions of the approved Fire Protection program as described in the Updated Final Safety Analysis Report (UFSAR). Appendix E, Section 4.0.C.8 of the UFSAR stated that the Clinton Power Station Quality Assurance Program establishes measures for corrective action on conditions adverse to fire protection. Quality Assurance Topical Report (QATR), Chapter 16, Section 2.4 stated that personnel performing the evaluation function of conditions adverse to quality are responsible for considering the cause and the feasibility of corrective action to assure that the necessary quality of an item is not deteriorated. The licensee entered the issues into the CAP and initiated corrective actions to evaluate the functionality of the 'B' DFP.

The failure to correctly evaluate a degraded/non-conforming condition potentially affecting the functionality of structures, systems, and components (SSCs) important to safety would become a more significant safety concern if left uncorrected because it could reasonably result in an unrecognized condition of an SSC failing to fulfill a function important to safety. In addition, the finding was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the degraded condition of high crankcase pressure resulted in repeat operational equipment challenges and extended periods of unavailability of the 'B' DFP. Therefore the finding was of more than minor significance. The finding was a licensee performance deficiency of very low safety significance (Green) because it involved only a low degradation of the protection against external factors function due to a redundant train that could supply water. The inspectors concluded that this finding affected the cross-cutting area of problem identification and resolution. Specifically, the licensee failed to thoroughly evaluate problems such that the resolutions addressed causes and extent of condition as necessary for an SSC important to safety when a degraded/non-conforming condition was identified. [P.1(c)] (Section 4OA2.1.b.(2))

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution (71152B)

The activities documented in Sections .1 through .4 constituted one biennial sample of Problem Identification and Resolution (PI&R) as defined in Inspection Procedure (IP) 71152.

.1 Assessment of the Corrective Action Program Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's CAP implementing procedure LS-AA-125, "Corrective Action Program (CAP) Procedure," Revision 17, and other implementing procedures for compliance with the requirements of Title 10 Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action," were met. The inspectors observed meetings related to the CAP, such as the Station Oversight Committee (SOC) and Management Review Committee (MRC) meetings, to obtain insights into the licensee's oversight of the CAP. Additionally, several licensee personnel were interviewed to assess their understanding of and their involvement in the CAP at Clinton Power Station (CPS).

The inspectors reviewed selected condition reports (CRs) across all seven Reactor Oversight Process cornerstones to determine if problems were being properly identified and entered into the licensee's CAP. The inspectors used issues identified through NRC generic communications, department self-assessments, licensee audits, OE reports, and NRC-documented findings as sources to select items to review. Additionally, the inspectors reviewed CAP items generated as a result of facility personnel performance in daily plant activities, and reviewed a selection of completed investigations from the licensee's various investigation methods, including root, apparent, and common cause evaluations. The majority of risk-informed samples of CRs reviewed were issued after the last NRC biennial PI&R inspection completed in early June of 2011.

The inspectors performed a more extensive review of the safety-related service water (SX) system. This review consisted of a five year search of related issues identified in the CAP and discussions with appropriate licensee staff to assess the licensee's efforts in addressing identified concerns.

During their reviews, the inspectors evaluated whether the licensee's actions were in compliance with the facility's CAP and Title 10 CFR Part 50, Appendix B requirements. Specifically, the inspectors evaluated if licensee personnel were identifying plant issues at the proper threshold, entering the plant issues into the station's CAP in a timely manner, and assigning the appropriate prioritization for resolution of the issues. The inspectors also assessed whether licensee staff had assigned appropriate investigation methods to ensure the proper determination of root, apparent, and contributing causes. The inspectors also reviewed the timeliness and effectiveness of corrective actions for selected CRs, completed investigations, and NRC findings, including NCVs.

b. Assessment

(1) Identification of Issues

Based on the results of the inspection, the inspectors concluded that, in general, the licensee was effective in identifying issues at a low threshold and entering them into the CAP. The inspectors determined that problems were generally identified and captured in a complete and accurate manner in the CAP. The licensee appropriately screened issues from both NRC generic communications and industry OE at an appropriate level and entered them into the CAP when applicable. The inspectors also noted that deficiencies that were identified by external organizations (including the NRC) that had not been previously identified by licensee personnel were entered into the CAP for resolution.

Workers were familiar with the CAP and felt comfortable raising concerns. This was evident by the large number of CAP items generated annually; which were reasonably distributed across the various departments. Based on the interviews of licensee personnel, some individuals expressed confusion regarding station CAP engagement indicators. The confusion related to the perception from some individuals that intermittent declining CR generation rates per person or per department had led to management expecting higher CAP engagement. For example, some individuals stated that they were expected to document at least one issue in the CAP per month. License management informed the inspectors that there was no specific expectation for individuals to document a certain number of issues in the CAP. Although the inspectors recognized the importance of reinforcing engagement in the CAP by all station personnel, they noted that management expectations were not consistent, clear, or well understood. The licensee captured this inspector observation in CR 01555073.

The inspectors determined that the licensee was generally effective at trending low level issues to prevent larger issues from developing. The licensee also used the CAP to document instances where previous corrective actions were ineffective or were inappropriately closed.

The inspectors performed a five year extensive review of the SX system. As part of this review, the inspectors interviewed the system engineer, reviewed a sample of SX system CRs, operating experience, and causal evaluations. The inspectors reviewed the CAP procedures that provided trending guidance and walked down various portions of the SX system area to visually inspect equipment condition. The inspectors concluded that SX system-related concerns were identified and entered into the CAP at a low threshold, and concerns were resolved in a timely manner commensurate with their safety significance. An observation related to the adequacy of documenting the decision making regarding a declining discharge pressure trend on the Division 3 SX pump is documented in Section 4OA2.1.b.(2) below.

Findings

No findings were identified.

(2) Effectiveness of Prioritization and Evaluation of Issues

Based on the results of the inspection, the inspectors concluded that, overall, the licensee was effective in prioritizing and evaluating issues commensurate with the safety significance of the identified issue, including an appropriate consideration of risk. The inspectors determined that issues were being appropriately screened by both the SOC and MRC, and issues identified of higher significance were assigned root or apparent cause evaluations. Notably, the inspectors concluded that the licensee's prioritization and evaluation of issues had improved since the prior biennial PI&R inspection considering the documented observations of a declining trend in this area in June of 2011.

The inspectors performed a detailed review of issues entered into the Maintenance Rule (a)(1) category over the last two years. The review included the main control room ventilation (VC) system which had experienced a repeat maintenance preventive functional failure. The inspectors reviewed action plans approved by the maintenance rule expert panel, associated causal evaluations, Maintenance Rule evaluations, and other associated CRs. The inspectors noted that the licensee generally showed no reluctance in placing SSCs into Maintenance Rule (a)(1) status if appropriate. Corrective actions to address the deficiencies were prescribed and in progress. Additionally, detailed reviews of the SSCs generally occurred before returning SSCs to Maintenance Rule (a)(2) status.

The inspectors determined that the licensee usually evaluated equipment operability and functionality requirements adequately after a degraded or non-conforming condition was identified. In general, appropriate actions were assigned to correct degraded or non-conforming conditions.

However, the inspectors noted vulnerabilities and deficiencies in the licensee's evaluations of operability, functionality, and reportability for some conditions. These vulnerabilities and deficiencies led to several NRC findings and NCVs over the prior two years.

Observations

Common Cause Analyses

The inspectors reviewed licensee procedure LS-AA-125-1002, "Common Cause Analysis Manual," Revision 7, to determine what criteria were being used to initiate a Common Cause Analysis (CCA). The inspectors noted that the procedure did not contain prescriptive criteria to determine when a CCA was warranted, but rather cognitive trending and/or SOC or MRC requests. Although the inspectors did not identify any significant quantitative trends that warranted a CCA, they were concerned that the lack of more prescriptive criteria could allow for an adverse trend to not be analyzed. The licensee documented this observation in CR 01555046. For the CCAs that were reviewed by the inspectors, the bases for performing the analyses appeared appropriate as well as the evaluation thoroughness and actions taken.

Division 3 SX Pump Discharge Pressure Trend

The inspectors reviewed CR 01049920 regarding a declining discharge pressure trend of the Division 3 SX pump and noted that an Operational Decision Making (ODM) item was created to track the issue; however, the ODM was closed without documenting the basis for closure. After further review, the inspectors verified that the ODM closure was acceptable since actions were completed to obtain a spare pump for eventual replacement, but were concerned that the bases were not documented by the licensee. The licensee documented the inspector's concern in CR 01550820.

Investigation Class Criteria and Trend Coding Issue

The inspectors reviewed NCV 05000461/2011009-01 associated with an unsecured fire door. Following the NRC exit meeting for the preliminary NCV in March of 2011, the licensee documented the potential NCV in the CAP and classified the investigation class as level 'D'. Per LS-AA-120, "Issue Identification and Screening Process," Revision 14, a level D investigation class is described as requiring "no formal causal evaluation to determine causes or corrective actions." The inspectors noted that NRC Enforcement Policy states, in part, that the NRC will normally issue an NCV following placement of the violation into the CAP to restore compliance and address recurrence. The inspectors were concerned that labeling a preliminary NCV as investigation class 'D' could result in not performing an evaluation to determine causes or corrective actions, as stated in LS-AA-120. The inspectors performed additional reviews of how the licensee dispositioned the violation following receipt of the inspection report documenting the NCV. The inspectors noted that the cause and corrective actions were straightforward for the violation in this case and subsequent evaluations performed by the licensee addressed recurrence. However, the subjective criteria for determining investigation class per LS-AA-120 had the potential to result in not evaluating violations that NRC inspectors were considering as non-cited. The licensee documented the inspector's observation in CR 01551297.

The inspectors also questioned whether the licensee was appropriately applying trend codes to fire door issues when the inability of fire doors to automatically close and/or latch was identified in the CAP. The licensee documented the inspector's question in CR 01550099 to evaluate whether CAP trend coding for fire door issues could be improved to better identify developing adverse trends in human performance aspects versus equipment aspects related to fire door deficiencies.

Operability and Functionality Determinations and OE Assessment Weaknesses

The inspectors noted an adverse performance trend for the past five years related to NRC findings involving the licensee's evaluation of degraded/non-conforming plant conditions for operability, functionality and/or reportability. While corrective actions were performed to address the adverse trend in accordance with the CAP, the trend appeared to be ongoing. The inspectors reviewed Operations department weaknesses in the areas of Operations' ownership of the operability determination process, review and use of OE, and technical oversight.

The inspectors noted Operations ownership weaknesses involving the inadequate operability evaluation for hub cracking of VC return fan 0VC04CB in 2011. This failure, which resulted in NRC-identified NCV 05000461/2011004-04, was evaluated by the licensee to have an apparent cause of "Lack of Engineering Judgment" and a contributing cause of "Lack of Management Rigor" for not requiring further equipment inspections. The inspectors noted that the Operations department, the "owner" of the operability process, was not identified to be a significant part of these corrective actions. The inspectors also noted that eventual hub failure of VC return fan 0VC04CB (and the subsequent incorrect operability evaluation) was avoidable if OE had been more fully utilized. Specifically, similar failures had occurred at Brunswick as noted in OE in March of 2004; in a root cause evaluation from Three Mile Island in March of 2005; and again at Clinton in October of 2006. Although these OE examples did not specifically identify fan blade replacement as the appropriate preventive maintenance (PM) approach, replacement was ultimately found to be needed after numerous attempts to monitor degradation via vibration monitoring were proved to be ineffective (this was documented in ACE 1225739 as being a "Latent Organizational Weakness" and corrected by implementing the replacement PM) after the 2011 failure.

Additionally, technical oversight weaknesses were noted for three issues reviewed by the inspectors: hydrogen igniter testing, VC flow oscillations, and reactor coolant system (RCS) pressure isolation valve (PIV) leakage testing. Specifically:

- Hydrogen igniters were to be verified operable every 24 months per Technical Specification (TS) Surveillance Requirement (SR) 3.6.3.2.4. Although the test procedure to perform the SR was not owned by Operations, the results were reviewed by Operations for TS conformance and were found to be incorrect for a period exceeding 10 years. Specifically, several hydrogen igniters specified as "accessible" were not tested as required by the procedure. When the procedural deficiency was finally identified by the NRC in 2011, five hydrogen igniters were considered inoperable due to missed surveillances and required retesting (reference CR 01164658-02 and NCVs 05000461/2011002-02 & -03).
- When presented with VC makeup flow oscillations below the required minimum value per procedure CPS 9070.01, "Control Room HVAC Air Filter Package Operability Test Run," a senior reactor operator (SRO) failed to identify the challenge to VC system operability per TS 3.7.3. In addressing the abnormality, the SRO documented in a CR that there were "Possibly problems with OVC114YA. Investigate and correct issue." When questioned by the NRC in 2011, it was determined that other Operations personnel may have had a similar knowledge deficiency that was ultimately addressed by "Read & Sign" training (reference apparent cause evaluation (ACE) 01239007 and NCV 05000461/2011004-04).
- Contrary to the guidance of SR 3.4.6.1, RCS PIVs were pressurized to a value exceeding the maximum test pressure of 1025 psig during testing. The procedural guidance of CPS 9843.01, "ISI Category A Valve LRT," Revision 35f, had allowed a maximum test pressure of 1025 psig (+25 psig, -0 psig). When the NRC identified this discrepancy in 2011, the licensee found that they had evaluated the procedural error as conservative several years earlier (the error had existed since February of 2002, and was previously evaluated in 2005) (reference NCV 05000461/2011003-02, Clinton Licensee Event Report (LER) 2011-006, and ACE 01212825).

In summary, it was found that while some recent improvements in the operability and functionality determination process were noted, weaknesses in the utilization of OE and technical oversight continued to exist. At the end of this inspection, the inspectors acknowledged that the licensee had improvement initiatives in place to strengthen the operability and functionality determination process and OE assessments, but emphasized continued efforts due to the apparent slow rate of progress.

Effectiveness Review Timeliness

The inspectors reviewed root cause report (RCR) 01506929, "Manual Scram Due to Loss of Electro-Hydraulic Control (EHC) Fluid," and identified that the effectiveness review (EFR) to verify lock washers installed, work orders revised, and bill of materials corrected had a due date of April 1, 2015. However, the inspectors noted that the corrective action to prevent recurrence (CAPR) to revise work order documents had been completed by June 28, 2013. The inspectors questioned why the EFR had such a late due date since the CAPRs were complete and could be reviewed for effectiveness. The licensee determined that an administrative change to the CAPR occurred during development of the RCR that removed some actions from the CAPR, but the EFR due date was not changed accordingly. The licensee documented the excessive EFR due date in CR 01549645 to adjust the EFR due date.

Findings

Failure to Evaluate a Degraded/Non-conforming Condition

Introduction: The inspectors identified a finding of very low safety significance (Green) and associated NCV of License Condition 2.F for the licensee's failure to appropriately evaluate the functionality of the 'B' diesel fire pump (DFP) after identifying a degraded/non-conforming crankcase pressure condition during testing on June 13, 2011, and on numerous occasions thereafter, which could have affected the ability of the system to perform a function important to safety.

Description: On June 13, 2011, during a post-maintenance test run of the 'B' DFP, excessive smoke was observed coming from the engine on the pump end as well as coming from underneath the engine on its east end. These issues were documented in the licensee's CAP as CR 01228254 that stated the smoke was most likely due to a positive crankcase pressure condition. The CR recommended that Engineering and Mechanical Maintenance departments either determine whether the condition was acceptable, or determine the feasibility of an engine teardown and replacement of the piston compression rings. At that time, the post-maintenance test was considered a failure and the pump remained non-functional pending the successful completion of CPS 9071.01, "Diesel Driven Fire Pumps Operability Test," as documented in main control room logs. Subsequently, on June 14, 2011, CPS 9377.04, "Battery Operability Test," and a partial performance of CPS 9072.02, "Fire Pump Capacity Test," were satisfactorily completed and the pump was declared functional. No maintenance was performed after the failed test of June 13, 2011, and there was no documented evaluation of the degraded crankcase pressure condition for the 'B' DFP.

On July 7, 2011, during the next scheduled surveillance test, the 'B' DFP engine oil dipstick unseated and sprayed four to eight ounces of oil. The issue was documented in CR 01237444, and stated in part, that the same event had occurred during that last time the engine was run. A specific question was asked in CR 0123744: "Is there a problem with the 0FP01PB engine that is causing an above normal crankcase pressure?" It was also noted that although the pump subsequently passed its surveillance test, the crankcase pressure was neither an observable parameter nor an acceptance criteria during testing. To answer the question posed in CR 0123744, the following response was provided: "Dipstick was reinstalled and pump surveillance completed SAT; appears to be no problem with crankcase pressure." The inspectors noted that the licensee performed no further evaluation at that time, and that engine crankcase pressure of the 'B' DFP was only first measured on November 12, 2012 (a year and four months later).

On August 3, 2011, during a surveillance test of the 'B' DFP, the engine dipstick again ejected and sprayed one to two quarts of oil onto the engine batteries as documented in CR 01247414. The dipstick was replaced several times and eventually secured in place with a zip-tie. The pump was declared non-functional and the CR stated that the possible blow-by of pistons causing crankcase pressurization was a restraint to declaring the subsystem functional. Subsequently, on August 8, 2011, main control room logs stated that although no work had been completed on the 'B' DFP, the condition identified (ejection of the dipstick) had been resolved and tested satisfactory, and the subsystem was declared functional. No evaluation of crankcase pressure was performed by the licensee, nor was there an explanation why the restraint to declaring the 'B' DFP functional for crankcase pressurization was no longer a concern. The pump subsequently passed 13 surveillance tests. During this time there were numerous documented cases of the degraded condition of high crankcase pressure being masked during these surveillance tests either by repeatedly reinserting the dipstick or using a zip-tie to hold it in place. Crankcase pressure was never observed nor measured during any of these surveillance tests.

On September 3, 2012, the 'B' DFP received an automatic start signal. Upon entering the area, the pump was observed to be spraying oil into the room and onto its batteries. The engine was secured and left in the OFF position due to no oil level registering on the dipstick when it was reinserted into the engine block. The pump was later placed in AUTO and declared functional due to the addition a quart of oil. Later, on September 5th, 2012, CR 01409202 was written to, again, document the concern of the degraded condition of high crankcase pressure due to leak-by past the piston compression rings. Again, similar to CR 01228254 written on June 13, 2011, the recommended action was for engineering to perform an evaluation of crankcase pressure. This time, in response, Engineering documented on September 12, 2012, that the symptoms were indicative of high crankcase pressure and that the diesel engine vendor representative should be brought on site to measure the crankcase pressure. Engineering also stated that if the pressure was found to be greater than 22 inches of water, the engine would require a rebuild. On September 20, 2012, the 'B' DFP received another automatic start signal. Once again, the dipstick was ejected and the engine sprayed a quart of oil onto its batteries and other components as documented in CR 01416249. The engine was immediately shut down for personnel safety reasons and declared functional but degraded. Eventually, when 'B' DFP engine crankcase pressure was measured on November 2, 2012, the instrument gauge pegged high greater than 30 inches of water within less than a minute of operation of the engine.

The diesel engine vendor (Cummins) field engineer stated that if the engine crankcase pressure was found to be higher than 22 inches of water, an engine rebuild was required. High diesel engine crankcase pressure was also a concern for a number of other reasons. Notably, CR 01408355 documented an injury suffered by a licensee operator due to a slip while walking around the engine after it sprayed oil which had covered the floor, and CR 01432868 documented on October 29, 2012, that the 'B' DFP engine had to be secured and disabled due to concerns related to the fire hazard created by oil on the exhaust manifold after the dipstick had dislodged and deposited oil from the dipstick tube. The inspectors also noted that high diesel engine crankcase pressures indicated a potentially explosive condition within the engine. Specifically, the possibility for overheated bearings to ignite hot oil vapors if air was allowed to enter a pressurized crankcase with degraded engine piston compression rings.

Analysis: The inspectors determined that the licensee's failure to appropriately evaluate the functionality of the 'B' DFP was contrary to the licensee's quality assurance program as described in NO-AA-10, "Quality Assurance Topical Report," Appendix A, and was a performance deficiency. Specifically, after first identifying a degraded condition of high crankcase pressure on June 13, 2011, and on numerous occurrences thereafter where identical symptoms existed, the licensee failed to evaluate the functionality of the 'B' DFP with respect to the underlying degraded condition and instead focused on symptoms (i.e. dipstick ejection and possible operator error). The finding was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of Protection Against External Factors (Fire) and affected the cornerstone objective of ensuring the reliability of systems that respond to initiating events (i.e., fire) to prevent undesirable consequences (i.e., core damage). Specifically, although incidents involving dipstick ejections had not resulted in the failure of the 'B' DFP, the inspectors could not rule out the possibility of an engine failure due to either accelerated oil loss or potential ignition of oil with associated fire damage.

In accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," Table 2, the inspectors determined the finding degraded fire protection defense-in-depth strategies. The inspectors also determined, using Table 3, that it could be evaluated using Appendix F, "Fire Protection Significance Determination Process." The inspectors determined that this finding constituted a "Low Degradation" in accordance with the criteria established in IMC 0609 Appendix F, Attachment 2. Therefore in answering 'yes' to question 'B' of Step 1.4 of IMC 0609 Appendix F, Attachment 1, the inspectors determined that the finding was of very low safety significance (i.e., Green) with no further analysis required.

This finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because the licensee did not thoroughly evaluate problems such that the resolutions addressed causes and extent of conditions, as necessary. This included properly classifying, prioritizing, and evaluating for operability (or functionality) conditions adverse to quality. Specifically, the licensee failed to appropriately evaluate the cause of the 'B' DFP dipstick ejections after identifying a degraded/non-conforming crankcase pressure condition while performing testing on June 13, 2011, and on numerous occasions thereafter, which could have affected the ability of the system to perform a function important to safety. [P.1(c)]

Enforcement: Clinton Power Station License Condition 2.F requires the licensee to implement and maintain in effect all provisions of the approved Fire Protection program as described in the UFSAR as amended and as approved through Safety Evaluation Report (NUREG-0853) dated February of 1982 and Supplement Nos. 1 thru 8. Appendix E, Section 4.0.C of the UFSAR as amended states that portions of the Quality Assurance Program, as delineated in Appendix A of the QATR, apply to fire protection. Appendix A, Section 2.4 of the QATR, states, in part, that the Quality Assurance Program established for fire protection SSCs that protect SSCs important to safety ensures that corrective actions meet the applicable Quality Assurance guidelines as described in the applicable edition of Branch Technical Position 9.5-1 for each Exelon site. The diesel engines for the fire pumps are fire protection SSCs that protect SSCs important to safety. Appendix E, Section 4.0 of the UFSAR provides the applicable edition of Branch Technical Position 9.5-1 for Clinton Power Station. Appendix E, Section 4.0.C.8, states that the Clinton Power Station Quality Assurance Program establishes measures for corrective action of conditions adverse to fire protection. Chapter 16 of the QATR describes the Company program to identify and correct conditions adverse to quality. Specifically, QATR Chapter 16, Corrective Action, Section 2.4, "Evaluation and Qualification," states, "Personnel performing the evaluation function are responsible for considering the cause and the feasibility of corrective action to assure that the necessary quality of an item is not deteriorated."

Contrary to the above, on June 13, 2011, and on numerous occasions thereafter, the licensee failed to implement and maintain in effect all provisions of the approved Fire Protection program as described in the UFSAR as amended. Specifically, the licensee failed to appropriately evaluate the functionality of the 'B' DFP after identifying a degraded/non-conforming crankcase pressure condition. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy because it was of very low safety significance and was entered into the licensee's CAP as CR 01552494. The licensee replaced the 'B' DFP engine in December of 2012 under work order 1448046. **(NCV 05000461/2013007-01, Failure to Evaluate a Degraded/ Non-conforming Condition on Diesel Fire Pump)**

(3) Effectiveness of Corrective Action

Based on the results of the inspection, the inspectors concluded that the licensee was generally effective in addressing identified issues, and the assigned corrective actions were generally appropriate. The licensee implemented corrective actions in a timely manner, commensurate with their safety significance, including an appropriate consideration of risk. Problems identified using root or apparent cause methodologies were resolved in accordance with CAP procedures and regulatory requirements. Corrective actions designed to preclude repetition were generally comprehensive, thorough, and timely. For example, at the time of this inspection, only three open operator workarounds/burdens were in place; a particularly low number considering that the station was late in the operating cycle. The inspectors sampled corrective action assignments for selected NRC documented violations and determined that actions assigned were generally effective and timely. The inspectors' review going back five years of the licensee's efforts to address issues with SX system did not identify any negative trends or the inability by the licensee to address long term issues.

Based on the finding and NCV discussed above associated with the failure to evaluate the functionality of the 'B' DFP, the inspectors noted that interim corrective actions taken by the licensee to address the high crankcase pressure condition since 2011 were generally ineffective to eliminate the cause. The inspectors noted that the performance of testing to measure crankcase pressures of the 'B' DFP engine were not timely to properly assess ongoing degradation of the engine that ultimately led to engine replacement.

Failure to Take Appropriate Corrective Action for a Condition Adverse to Quality

During the review of RCR 01307531, "Chemistry Parameters Exceeded Action Level 1 Limits," the inspectors identified that the licensee's corrective action to resolve Contributing Cause #2, "Reactor Coolant cleanup was not maximized during startup," was to code work order 1498918, "Rebuild/Rework reactor water cleanup (RT) filter demineralizer 'B' actuator for 1G36-F006B" as a corrective action. This work order for the RT actuator was completed on December 18, 2011. The action level 1 limits for chemistry parameters were exceeded on December 21, 2011. Therefore the corrective action for the contributing cause of not maximizing RT during startup was to repair a valve actuator which was actually repaired prior to the occurrence of the condition adverse to quality. Inspectors observed that repair of the 1G36-F006B did not in fact prevent chemistry parameters from exceeding limits.

Licensee procedure LS-AA-125, "Corrective Action Program (CAP) Procedure," Revision 17, defines a corrective action as "an action taken or planned that restores a condition adverse to quality to an acceptable condition or capability." In this case, the condition adverse to quality was that reactor coolant cleanup was not maximized during startup. The action assigned to correct this condition (coding the work order to repair the 1G36-F006B valve actuator as a corrective action), did not restore the condition adverse to quality to an acceptable condition. In fact, changing the coding of the work order had no actual plant impact. The work itself was completed long before the coding change occurred, and, completing the work did not prevent chemistry parameters from exceeding limits four days later.

The inspectors determined that the licensee's failure to have an appropriate corrective action for a licensee-identified condition adverse to quality is a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," which requires, in part, that measures shall be established to assure that conditions adverse to quality and non-conformances are promptly identified and corrected. Licensee procedure LS-AA-125 states that corrective action assignments are the method by which the licensee restores a condition adverse to quality. Contrary to the above requirements, the corrective action assigned to re-code the work order to rebuild/rework 1G36-F006B did not restore the condition adverse to quality of failing to maximize use of the reactor water cleanup system during startup.

The licensee generated CR 01550123, "PI&R – Challenge to Actions from Root Cause #1307531-06," to revise RCR 01307531 to reference ACE 01313140 corrective actions #18, #20 and #27, as well as action items #19 and #34 that clearly address the condition adverse to quality of failing to maximize the use of the reactor water cleanup system during startup. The inspectors determined that the performance deficiency was minor because it was administrative in nature and did not represent a safety concern.

This failure to comply with the requirements of Title 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," constitutes a violation of minor significance that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

Findings

No findings were identified.

.2 Assessment of the Use of Operating Experience

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the facility's OE program. Specifically, the inspectors reviewed implementing OE program procedures, observed daily meetings for the use of OE information, and reviewed completed evaluations of OE issues and events. The intent was to determine if the licensee was effectively integrating OE experience into the performance of daily activities, whether evaluations of issues were proper and conducted by qualified personnel, whether the licensee's program was sufficient to prevent future occurrences of previous industry events, and whether the licensee effectively used the information in developing departmental assessments and facility audits. The inspectors also assessed if corrective actions, as a result of OE experience, were identified and implemented effectively and in a timely manner.

b. Assessment

Based on the results of the inspection, the inspectors concluded that, in general, OE was effectively utilized at the station. The inspectors observed that OE was discussed as part of the daily station and pre-job briefings. Industry OE was effectively disseminated across the various plant departments and no issues were identified during the inspectors' review of licensee OE evaluations. During interviews, several licensee personnel commented favorably on the use of OE in their daily activities.

The inspectors identified several examples where OE was identified and documented as part of apparent and root cause evaluations, determined to not apply to the condition being evaluated, but minimal to no discussion was documented as to why the OE was not applicable. For example, RCR 01295617, "Automatic Scram on High Pressure During Approach to Unit Shutdown," RCR 01408282, "Emergency Reserve Auxiliary Transformer and Emergency Reserve Auxiliary Transformer Static Var Compensator Tripped," and ACE 01258926, "NRC Identified Weakness in 0VC04CB Operability Evaluation," each documented OE that was identified as part of a search during the evaluations; however, there was no documentation as to why it did not apply. The inspectors were concerned that the lack of the documented justification for why OE did/did not apply could result in minimizing the importance of reviewing OE when evaluating a condition or event at the station that could have been prevented if OE was considered. The licensee documented the inspectors' observation as CR 01555051.

Findings

No findings were identified.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed selected Nuclear Oversight comparative and departmental audits, “check-in” assessments, and focused area self-assessments. The inspectors evaluated whether these audits and self-assessments were effectively managed, adequately covered the subject areas, and properly captured identified issues in the CAP. In addition, the inspectors interviewed licensee personnel regarding the implementation of the audit and self-assessment programs.

b. Assessment

Based on the results of the inspection, the inspectors concluded that self-assessments and audits were typically accurate, thorough, and effective at identifying issues and enhancement opportunities at an appropriate threshold level. The audits and self-assessments were completed by personnel knowledgeable in the subject area. In many cases, these audits and self-assessments had identified numerous issues that were not previously recognized by the licensee. These issues were entered into condition reports as required by CAP procedures.

The inspectors reviewed the focused area self-assessment that the licensee had performed for the 2013 biennial PI&R inspection. They noted that the self-assessment, while thorough, may not have reviewed all items intended since it did not consider issues that occurred prior to, or during, the 2011 biennial PI&R inspection. For example, the aforementioned NCV 05000461/2011009-01 was not within the scope of the self-assessment. If it had been reviewed, the licensee may have had the opportunity to identify the investigation class concern. The licensee acknowledged this observation as a potential enhancement to their focused self-assessment process.

Findings

No findings were identified.

.4 Assessment of Safety-Conscious Work Environment (SCWE)

a. Inspection Scope

The inspectors interviewed selected Clinton Power Station personnel to determine if there were any indications that individuals were reluctant to raise safety concerns to either their management, supervision, the employee concerns program (ECP), or the NRC due to the fear of retaliation. The inspectors reviewed selected ECP activities to identify any emergent issues or potential trends. The inspectors also assessed the SCWE through a review of ECP implementing procedures, discussions with the ECP representative, interviews with personnel from various departments, and reviews of CRs. The licensee’s programs to publicize the CAP and ECP were also reviewed. The inspectors reviewed licensee self-assessments and assessments by external organizations of safety culture to determine if there were any organizational issues or trends that could impact the licensee’s safety performance.

b. Assessment

The inspectors did not identify any issues that suggested conditions were not conducive to the establishment and existence of a SCWE. Licensee personnel were aware of and generally familiar with the CAP and other processes, including the ECP, through which concerns could be raised. In addition, a review of the types of issues in the ECP database indicated that personnel were appropriately using the CAP and ECP to identify issues. The staff also indicated that management had been supportive of the CAP by providing time and resources for employees to generate their own condition reports.

The staff also expressed a willingness to challenge actions or decisions that they believed were unsafe. All employees interviewed noted that any safety issue could be freely communicated to supervision and safety significant issues were being corrected. Some employees indicated a number of low level items were not being corrected in a timely manner. The inspectors determined that the timeliness of the planned corrective actions for the examples given were commensurate with their safety significance.

Various safety culture assessments had been performed by contractors, the licensee's staff, and a nuclear plant owner/operators organization. The results indicated that there were no impediments to the identification of nuclear safety issues.

During inspector interviews of station personnel, the inspectors received feedback from several individuals that they had not received feedback emails in the instances where their supervisor (initiator) had submitted a condition report for issues they (originator) had identified. The inspectors questioned whether CAP feedback was provided to the initiators and originators in order for the personnel to review the actions being taken for issues they were involved with. The licensee's CAP program was automated such that CAP feedback was emailed to the initiator only and not the originator as well. The inspectors questioned whether the licensee had considered this potential deficiency in the CAP feedback process since the originating individual of a CR would not necessarily receive feedback. The licensee documented this question in CR 01555048.

Findings

No findings were identified.

40A6 Management Meetings

.1 Exit Meeting Summary

On August 30, 2013, the inspectors presented the inspection results to Mr. B. Taber and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

- B. Taber, Site Vice President
- T. Stoner, Plant Manager
- D. Kemper, Site Engineering Director
- J. Stovall, Maintenance Director
- J. Cunningham, Operations Director
- K. Baker, Regulatory Assurance Manager
- R. Frantz, Regulatory Compliance
- K. Brown, Regulatory Compliance
- F. Perryman, Nuclear Oversight Audit Team Lead
- J. Tocco, Engineering Balance of Plant Manager
- W. Padgett, Work Management On-Line Manager
- J. Peterson, Regulatory Programs
- R. Chickering, Corrective Action Process
- D. Shelton, Operations Services Manager
- E. Rodriguez-Ramos, Engineering Balance of Plant Support

Nuclear Regulatory Commission

- C. Lipa, Chief, Branch 1, Division of Reactor Projects
- W. Schaup, Senior Resident Inspector, Clinton Power Station

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened/Closed

05000461/2013007-01	NCV	Failure to Evaluate a Degraded/Non-conforming Condition on Diesel Fire Pump (Section 40A2.1.b.(2))
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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 or 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.

Procedures

<u>Number</u>	<u>Description or Title</u>	<u>Revision</u>
OP-AA-106-101-1006	Operational Decision Making Process	12
LS-AA-125-1004	Effectiveness Review Manual	5
LS-AA-125-1001	Root Cause Analysis Manual	10
LS-AA-125	Corrective Action Program (CAP) Procedure	17
N-CL-OPS-DB-OP-AA-108-115	Document Based Instruction Guide (DBGI) - Operability Determinations	0
OP-AA-108-115	Operability Determinations	11
CPS 9070.01	Control Room HVAC Air Filter Package Operability Test Run	27
CPS 9070.01D001	Control Room HVAC Air Filter Package Operability Test Run Data Sheet	25d
CPS 9070.02	Control Room HVAC High Rad, Initiation Functional	32e
CPS 9070.02D001	Control Room HVAC High Rad, Initiation Functional Data Sheet	29b
CPS 9070.06	Main Control Room Tracer Gas Test	0b
CPS 9867.05	Hydrogen Igniter Temperature Test	25
CPS 9867.05D001	Hydrogen Igniter Temperature Test Data Sheet	5
OP-AA-108-105	Equipment Deficiency Identification and Documentation	9
LS-AA-125-1003	Apparent Cause Evaluation Manual	10
CPS 9843.01	ISI Category A Valve LRT	35f
CPS 1019.07	Leakage Reduction and Monitoring Program	5a
CPS 1019.07D001	Leakage Reduction Data Sheet	3a
LS-AA-120	Issue Identification and Screening Process	14
LS-AA-125-1005	Coding and Analysis Manual	8
CPS 9071.01	Diesel Driven Fire Pumps Operability Test	40
CPS 1893.01	Fire Protection Impairment Reporting	20
CPS 1893.06	Fire Protection Maintenance and Testing Program	12

Condition Reports

<u>Number</u>	<u>Description or Title</u>
00824836	1SX025A: Valve Body Interior is Degrading
00827639	NOS ID Lack of Detail in Issue Report Review
00847646	NRC NCV 2008004-03: Inadequate PM of 1SX014A
00906758	Piping Below 85.7% Nominal Wall
01019560	1SX010B: Found Upper Guide Bearing 180 Degrees Out
01037486	2010 CDBI FASA Identifies Flow Balance Procedure Weakness
01115550	1SX169A: HX Relief Valve Failure
01116033	1SX169A: Relief Valves Fail Testing
01150345	Perform Thrust Verification Test on MOV 1SX016A
01266148	Failure to Perform ASME Required Evals for EDG RV Failures
01381498	Perform Analysis of Air Compressors
01422558	Evaluate Long-Term SX Issues for Procedure Changes
01256194	Loss of Power at Valve 1E12F064B
01297512	Division 1 EDG Failed to Start due to A3 Speed Pick-up Amphenol Found Disconnected
01380555	Apparent Cause Evaluation for Pipe Guide Support 1HP06003G on the High Pressure Core Spray Test Return Line
01395861	No Flow Passing Through 1SX024A
01444355	Division 1 Diesel Generator MCR Handswitch Failed To Shutdown the DG
01164658	Hydrogen Igniters SR 3.6.3.2.4 Op Evaluation
01202456	RCS PIV Surveillance NRC Questions
01396723	NRC Questions EC 387323 for Relief Valve 1E12-F025C
01258926	ACE for 0VC04CB Inoperability (NCV 2011-004) Vibration
01289407	NCV VC Fails TS 3.7.3
01289410	VC Operability Evaluation
01239007	ACE for VC Operability – Make-up Flow
01196342	0VC114YA Make-up Flow Low
01237988	0VC04CB PORC Action Does Not Meet Intent
01225739	0VC04CB As-Found Inspection Results and ACE (Assignment 2)
01395971	1E12F005: NRC ID: EC Evaluated Wrong Problem Statement
01460158	Ineffective Corrective Actions for IR 1450495
01160746	NRC Inspector Questioned ITS Bases For Surveillance
01163043	NRC Senior Resident's Questions of H2 Igniter Test
01162250	Did Not Directly View 3 DIV 2 Igniters
01191200	Potential NRC Finding For H2 Igniter Test Control
01409390	1SA029 Found Shut During Walkdown
01540518	Turbine Control Valve Oscillations During Power Ascension
01495906	1E51F031 – Past Operability Review
01509735	NRC FIN 2013-002-02, Inadequate Past Operability Evaluation
00282084	Discrepancy Between T.S. SR 3.4.6 and CPS 9843.01

01246826	NRC NCV 2011003-02; Surveillance Testing for RCS PIVs
01305725	Assess 1E12-F042C LLRT Failure for Operability
01132555	5 GPM ECCS Leakage Limit Not Tracked
01212387	NRC GL 2008-01 Lack of Gas Management RHR Discharge Piping Void
01219600	0VC04CB Vibration Increased Operability Evaluation
00306220	0VC04CB ACE – Cracked Hub
01207896	SRI Question Documentation for VC Make-up Flow
00547528	Root Cause Report Mechanical Failure of 0VC03CB
01132231	VC Operability Determination
01235674	CCA for Operations Crew Performance Gaps
01212825	RCS PIV Leakage Surveillance Test (ACE/NCV 2011003-02)
01275199	CCA on Operability, Reportability, or Functionality Issues by Operations Licensed Individuals
01342208	CCA on Declining Trend in Ventilation System Reliability
01390016	CCA on Reactivity Management Performance
01465044	CCA on CPS Configuration Control Events and Precursors
01490640	CCA on Adherence and Enforcement to Place keeping
01335348	ACE: CCA Identified Need to Perform ACE
01223806	NRC PI&R EFRs Not Identified as Required
01221616	ERO Drill Performance Issues
01221661	NRC PI&R: Root Cause 979700 Does Not Have EFR as Required
01114981	1E22-F035 Small Leak
01166610	FASA Gas – New Calculation For Air Pockets Not Prepared
01348127	TRNG – Historical Info Found in Simulator PPC
01264339	Possible Virus Found On 1F15 Refuel Bridge Computer
01406049	Unexpected Entry Into 4005.01 Loss of FW HTG
01418618	Request Assistance Developing SPDS Strategy
01540522	Operations 4.0 Crew Critique For Downpower
01509213	Fuel Conditioning Limit Violation
01475884	Root Cause Report Changing Plant Condition Outage Issues
01132205	NOS ID: 1F12-F075B Operability & ACPS Procedure
01132211	NOS ID: 1G33F101 Operability / Functionality Not Documented
01025236	1G33-F101 Failed To Shut
01123852	1VC04001V: VC Piping Floor Support is Deteriorated
01325494	EACE: VC B Operability Run 9070.01 Flow Unsatisfactory
01476647	LER: DIV 4 NSPS BUS TRANSFERRED TO RESERVE FEED
01326252	NRC Questions Regarding As-Found IST LRT for 1E12-F041A
01300655	NRC Identified Question of LLRT of 1E51-F040
01163088	Old Relief Valve Did Not Pass Bench Test
01183403	1DG006B: Removed Relief Valve Failed As Found
01223745	1DO005B: Remove Relief Valve Failed Lift Test
01242552	Relief Valve Failure Concerns
01247941	Lack of Relief Valve Failure Evaluation

01228580	IR 01223745: RV Failed Lift Test – Additional IST Testing
01223723	NRC PI&R: Inaccuracies in Reproduced Document
01017724	Shaw Employee Contaminated in Drywell
01197314	NRC GL 2008-01 Inspection Findings at Byron/Braidwood
01242250	The ERAT Static VAR Compensator Tripped – ECC
01300701	Clearance and Tagging Error Causes the Inappropriate Removal of Shared Tags
01305290	Main Turbine Would Not Reset
01348186	Transient Combustible Material in Vital Area Storage Areas
01376425	APRM 'A' Regulator Monitor Circuit Card Failure
01432993	Grade 4 Grease Found on Stem of 1E51F031
01428316	Reactor Recirculation Hydraulic Power Unit Filter Inlet Valve Discovered Out-of-Position
01187906	NRC Triennial Fire Protection Inspection: Division 2 Diesel Generator Fire Door Found Unlatched
01211215	NRC NCV 2011009-01: Failure to Ensure Fire Door Close/Latch
01232770	Clinton Power Station Dissatisfied with CAP Performance
01226340	Maximum Steady State Voltage for TS 3.8.1 Non-Conservative
01224313	TS 3.8.1 Design Basis/Licensing Basis Inconsistency
01221661	NRC PI&R: Root Cause 979700 Does Not Have EFR As Required
01223806	NRC PI&R EFRs Not Identified as Required
01224057	(NRC Identified) Issue Identified with PMRQ
01427242	Missed Reporting of 1VD01YA Damper Failure
01228453	MRC Rejected EACE 1214578
01262969	Lesson Learned CP Filter 'A' & 'D' Unknowingly in Bypass
01307692	0AP16E: Adjacent Breaker Bumped During Restoration
01318277	SPC 1289549-02 Rejected by MRC
01422357	Equipment Apparent Cause Evaluation Rejected by MRC
01336705	Effectiveness Reviews Found Ineffective Corrective Action
01282395	NRC: Potential Issue with PA Boundary
01261166	Effectiveness Review Indicates the CA was Ineffective
01529196	ACE for 1CP005B Installation Deficiencies
01234386	ECC Failure of 0TICCV033 Moore 535 Controller
01476647	Division 4 NSPS Bus Transferred to Reserve Feed
01305725	NRC ID Assess 1E12-F042C LLRT Failure for Operability/Reportability
01223512	(NRC Identified) Issue Identified with WO Documentation
01299460	1DC01E: DC Ammeter Circuit Deficiency – Appendix R Issue
01223508	1AP09EH227X1 NRC PI&R Issue – Computation Error in IR 919673
01550123	PI&R – Challenge to Actions from Root Cause #1307531-06
01307531	Action Level 1 Limits Exceeded for Chemistry
01215101	Storage of Licensed Operator Respirator Spectacle Kits
01335298	NRC Inspection Results in a URI
01454976	NRC Review of Extremity Dose Evaluation

01250873	Type A Shipping Container Not Torqued Properly
01266430	Work Management Expectations Document Contains Informal Requirements
01017724	Shaw Employee Contaminated in Drywell
01295617	Reactor Scram During Turbine Trip
01297713	Four PCEs from Insulation Removal in the Drywell
01289405	NCV 201104-02, Failure to Implement Package Design Specs
01289414	NCV 201104-06, Missing Respirator Spectacle Kits
01289406	FIN 2011004-03, Failure to Correct Condition Adverse to Quality
00093755	Complete Evaluation to Extend 0FP01PA/B 9071.01 to Monthly
01228254	0FP01PB Fire Pump 'B' Issues During W/O 01348858
01237444	B Fire Pump Engine Dip Stick Unseated During Engine Run
01408355	E OID – 0FP01PB Oil Leak and Shutdown
01408354	Personal Injury SA-AA-123
01409202	E OID – 0FP01PB Firepump 'B' Dipstick Additional Info
01432868	'B' Fire Pump (0FP01PB) Oil Dipstick Not Staying in Engine
01435245	Fire Pump B Crankcase Pressure is High Above 30 Inches H2O
01512139	E OID 0FP01PB 'B' Diesel Fire Pump Oil Dipstick Ejected
01531576	E OID Dipstick Popping Out of Fire Pump 'B' While in Standby
01247414	0FP01PB Fire Pump 'B' Oil Dipstick Will Not Stay In
01416249	Fire Pump B Oil Dipstick Was Found Not Secured When Pump On
01554219	0FP01PA Oil and Coolant Leak From Fire Pump A
01557244	Fire Pump 'A' Alternator Drive Belt Broken
01557081	Observations From 0FP01PA Cummins Vendor Visit
01445750	0FP01PB Diesel Fire Pump Horsepower Discrepancy
01455627	E OID: 0FP01PB Has a Minor Fuel Oil Leak
01487701	0FP01PB: Diesel Fire Pump B Engine Speed High Out of Spec
01382543	E OID: Fire Pump B 0FP01PB Has 20 DPM Oil Leak
01421707	E OID: 0FP01PB Fire Pump B Oil Leak Rate Doubled
01461962	Informal Benchmarking Gap – Actions for Inoperable Fire Pump
01554292	Inadvertent ERAT Deluge on ERAT DC Power Restoration
01554326	ERAT SPR and FPR Seal In Relay Actuation
01409119	NRC Questions Fire Pumps Meeting Single Failure Criterion
01552732	0FP01PB: E OID Fire Pump 'B' Oil Dipstick Popping Out

Root Cause Reports

<u>Number</u>	<u>Description or Title</u>
01408282	Emergency Reserve Auxiliary Transformer and Emergency Reserve Auxiliary Transformer Static VAR Compensator Tripped
01278691	Digital Feedwater Project was Deferred from C1R13
01231845	Digital Feedwater Modification SWIL [Software-In-Loop] Test Failure
01243080	CPS Simulator FAT [Factory Acceptance Test] Complete with Large Number of Open Issues
01268638	DFW Simulator SAT [Site Acceptance Test] Milestone Missed 9/23

01193900	CPS Personnel Have Inadequate Fire Protection Behaviors
01304323	RPV Level 3 SCRAM Signal Actuation During Refueling Outage C1R13
01506929	Manual Scram Due to Loss of EHC Fluid
01353418	Maintenance and Technical Refresher Training Frequencies Not Fully Met
01307531	Chemistry Parameters Exceeded Action Level 1 Limits
01247512	CPS Mwe Gross Condenser Vacuum Lower than in Past as a Result of Main Condenser Fouling

Apparent Cause Evaluations

<u>Number</u>	<u>Description or Title</u>
01238704	Potential Non-Safety Oil in a Safety System
01258683	DG Air Compressor Relief Valve 1DG005B Lifting Early
01276380	Organizational Issues Around Not Stopping DG Air Start Relief Valves From Lifting
01281296	PM Deferrals and Retirements Lack Adequate Technical Justification
01256194	Loss of Power at Valve 1E12F064B
01297512	Division 1 EDG Failed to Start due to A3 Speed Pick-up Amphenol Found Disconnected
01380555	Apparent Cause Evaluation for Pipe Guide Support 1HP06003G on the High Pressure Core Spray Test Return Line
01395861	No Flow Passing Through 1SX024A
01444355	Division 1 Diesel Generator MCR Handswitch Failed To Shutdown the DG
01355132	NRC NCV for Unnecessary Preconditioning of 1E12-F-41A During LRT
01310612	Unacceptable Preconditioning Identified for 1E51-F040
01266148	Failure to Perform ASME Required Evaluations for EDG RV Failures
01403682	Received Unexpected Annunciator 5050-5H, Trouble SGTS Elect
01334761	1VD01YA Hydramotor Coupling Disconnected (Div. 1 DG Run)
01301499	NRC Identified Concern on Covered Work
01432993	Inadequate MOV Stem Lubrication Practices
01443700	Failure of ABB K-Line Circuit Breaker 0AP06E4D (VC "B" Chiller Breaker)
01475937	Elevated Reactor Coolant Source Term Response – INPO AFI RP.1
01494203	Employees Unable to Pass Exit Portal Monitors
01250873	Type A Shipping Container Not Torqued Properly
01255604	Sea-Land Outside RCA with Potential Radioactive Material
01309896	Perform ACE for IR 1297713 – 4 Insulators PCEs
01313140	IR to Track ACE for C1R13 Dose Overage
01327016	ITA Cask Contact Dose Rates Above DOT Limit of 200 MR/Hr
01387718	NOS ID Chemistry Procedure Adequacy is an ARMA

Common Cause Assessments

<u>Number</u>	<u>Description or Title</u>
01111691	Digital I&C Upgraded Components and Equipment Responded in a Manner Not Fully Understood by the Station and Vendor
01456116	Security – Perform CCA on Department/Crew Clock Resets
01442591	CPS Security HU Loggable Events
01419244	ERO Drill Performance Deficiencies Requires Common Cause
01406589	NOS ID: Security Personnel Fail to Recognize and Identify Deficiencies
01387478	NOS ID: Emergency Response Inventories Not Accurate and Complete
01332716	CCA on NRC Findings and Violations
01329170	C1R13 Security-Related Events
01316716	NOS ID: A CCA is Needed on Adverse Trend in B.5.B Program
01291740	Security Training – Trend IR on Range Failures
01256687	Maintenance CCA on Security Equipment Trends/Issues
01434042	Chemistry CCA for Human Performance

Operating Experience

<u>Number</u>	<u>Description or Title</u>
AR 1149427	NCV 2010003-02; Defined OPDRV Without Prior NRC Approval
AR 1246826	NCV 2011003-02; Surveillance Testing Requirement for RCS PIVs
OE7945	Degraded Control Room HVAC Declared Inoperable in Redundant Train Outage (Clinton)
CR 547528	Main Control Room B Fan Catastrophic Failure
OE 25945	Errors in Operability Evaluation for ESW Cooling Tower Risers (BY)
OE 17966	Brunswick – Hub Cracks on Buffalo Forge Fan Wheel
AR 1250696	OPEX Evaluation Timeliness
AR 1367068	1VD01CA: Perry OPEX VD Fan Cracking Applicable for CPS
OPXR 1223477-03	NRC CDBI Findings Compilation June 2011

Audits, Assessments, and Self-Assessments

<u>Number</u>	<u>Description or Title</u>
NOSA-CPS-12-05	Engineering Programs and Station Blackout Audit Report
01132598	ISI Program Preparedness for C1R13 NRC
01132711	Check-In (EN) ASME Section XI: In-Service Testing
01220369	Engineering Work Management
01197287	Plan Triennial Permanent Mods/50.59
01314264	Level 3 OPEX Evaluations Check-In Self-Assessment
01132092	OPEX Program Self-Assessment Check-In
01132474	SOER 07-01 Reactivity Management Check-In
01132268	Emergency Plan Performance Check-In
01132484	Reactor Engineering KT and R Check-In

01132278	Operations Configuration Control Check-In
01390203	Operations FP Inappropriate Behaviors Check-In
01489640	Readiness Assessment Prior to NRC's Inspection of Procedures and Processes for Responding to Potential Aircraft Threats (TI 2515/186) Check-In
01348072	Preparation for the NRC PI&R FASA
NOSA-CPS-12-03	Emergency Preparedness
NOSA-CPS-12-06	Training and Staffing
NOSA-COMP-13-03	Emergency Preparedness Comparative
NOSA-CPS-12-09	Document Control and Quality Assurance Records Audit
NOSA-CPS-13-01	Materials Management and Procurements Engineering Audit
01132791	Assessment of Calculation Process
01133000	Measuring and Test Equipment Program
01271545	Radiological Environmental Monitoring Program
01302803	3rd Quarter 2012 Chemical Control Check-In
01314319	2012 INPO Training Warning Flags FASA
01320080	Pre-NRC Underground Piping and Tank Inspections – Phase 1 – Check-In
01390203	Fire Protection Inappropriate Behaviors Check-In for EFR
01448984	Control Room Habitability FASA
01132990	Security FASA Report – Security Drills & Exercises
01056011	Security FASA Report
01132268	CHECK-IN Report & Approval (OP) Emergency Plan Performance
01131089	Security FASA Report
01314257	Check-In Report on Self-Assessment Program
01314202	Check-In Report on Overall Health of CAP Program
01366663	Safety Culture Survey Check-In Assessment
NOSA-CPS-12-01	Maintenance Audit Report
NOSA-CPS-12-02	Security Programs Audit Report
NOSA-COMP-13-02	Security Programs Comparative Audit Report
NOSA-COMP-13-04	2013 Corrective Action Program Comparative Audit Report
NOSA-CPS-13-02	Security Programs Audit Report
NOSA-CPS-13-03	Emergency Preparedness Audit Report
NOSA-CPS-13-04	Corrective Action Program Audit Report
NOSA-CPS-12-04	Chemistry, Radwaste, Effluent, and Environmental Audit Report

NOSA-CPS-12-09	Document Control and Quality Assurance Records Audit
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Condition Reports Generated During the Inspection

<u>Number</u>	<u>Description or Title</u>
01550820	Improvement to ODM Closure Documentation
01551553	NRC PI&R Observations From SX Pipe Tunnel Walkdown
01547724	IR 1408282 RCR Did Not Document EOC for Contributing Causes Correctly
01550123	PI&R – Challenge to Actions From Root Cause #1307531-06
01550943	PI&R: NRC Inspector Comments From Observed Fire Drill
01552494	NRC Identified Potential Violation
01555048	PI&R: NRC CAP Feedback Opportunities
01555051	PI&R: NRC OPEX Comment
01550099	PI&R: Enhancement IR to Drive Fire Door Trend Coding Improvement
01549645	EFR for RCR 1506929 Pulled Up 13 Months for Performance
01551297	NRC PI&R Observation on D Investigation Class
01555046	PI&R: NRC CCA Comment
01555073	PI&R: NRC CAP Engagement Ratio Comment

Miscellaneous

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
Work Order 01772851	1SX025A: Valve Body Interior is Degrading	N/A
EC 387423	Past Operability of 1E12-F025C	1
EC 384077	0VC114YA Make-up Flow Past Operability	0
EC 382927	Hydrogen Igniter Operability	2
EC 387433	Past Operability of 1E12-F005	0
EC 391444	Past Operability of 1E51F031	1 & 2
EC 384575	0VC04CB High Vibration Levels	0
EC 387315	Evaluate Past Operability of 1E51-F040 LLRT Failure	0
N/A	Safety Culture Monitoring Panel Results for 1Q13	N/A
Work Order 01498918	Rebuild/Rework RT Filter Demin B Actuator for 1G36-F006B	December 19, 2011
LER 2012-001	Loss of Secondary Containment Differential Pressure Due to Transformer Trip	0
LER 2011-003	Inadequate Procedure Direction Results in Missed Response Time Testing	0
LER 2011-009	Missed Surveillance due to Preconditioning Valve prior to Leak Rate Test	0

Work Order 01418740-03	OPS PMT Operate Fire Pump B 0FP01PB	October 19, 2011
Work Request 00371390	0FP01PB Fire Pump B Issues During WO 1348858	June 15, 2011
Work Order 00639710-04	OPS/EM PMT Perform Surveillances for 0FP01PB	October 14, 2012
Work Order 01348858-05	OP PMT Run 0FP01PB Fire Pump	June 13, 2011
Work Order 01348858-01	MM Perform Maintenance Checks on 0FP01PB	June 9, 2011
Work Order 01571957-02	Vendor Monitor Fire Pump Performance	November 5, 2012
EC 395009	Fire Pump B Engine With Dipstick Ejected	0
ECN 15161	Diesel Driven Fire Pumps	0
ECN 7249	Diesel Driven Fire Pump Contract	0
Work Order 01459985-01	0FP01PB Fire Pump 'B' Oil Dipstick Will Not Stay In	August 8, 2011
K-2830A	Underwriters Laboratory Listed Vertical Fire Pump	February 2, 1988

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
CAP	Corrective Action Program
CAPR	Corrective Action to Prevent Recurrence
CCA	Common Cause Assessment
CFR	Code of Federal Regulations
CPS	Clinton Power Station
CR	Condition Report
DFP	Diesel Fire Pump
ECP	Employee Concerns Program
EFR	Effectiveness Review
EHC	Electro-Hydraulic Control
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISI	In-service Inspection
LER	Licensee Event Report
LRT	Leak Rate Test
MRC	Management Review Committee
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
ODM	Operational Decision Making
OE	Operating Experience
PARS	Publicly Available Records System
PI&R	Problem Identification and Resolution
PIV	Pressure Isolation Valve
PM	Preventive Maintenance
psig	pounds per square inch gauge
QATR	Quality Assurance Topical Report
RCR	Root Cause Report
SCWE	Safety-Conscious Work Environment
SDP	Significance Determination Process
SOC	Station Oversight Committee
SR	Surveillance Requirement
SRO	Senior Reactor Operator
SSC	Structures, Systems and Components
SX	Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VC	Main Control Room Ventilation

M. Pacilio

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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 III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Clinton Power Station.

If you disagree with the cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III and the NRC Resident Inspector at Clinton Power Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made 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/

Christine Lipa, Chief
Branch 1
Division of Reactor Projects

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Letter to M. Pacilio from C. Lipa dated October 1, 2013

SUBJECT: CLINTON POWER STATION PROBLEM IDENTIFICATION AND RESOLUTION
INSPECTION REPORT 05000461/2013007

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