February 22, 2001

Mr. Michael Heffley
Vice President
Clinton Power Station
AmerGen Energy Company, LLC
RR 3
P. O. Box 228
Clinton, IL 61727

SUBJECT: CLINTON POWER STATION - NRC INSPECTION REPORT NO. 50-461/01-02(DRP)

Dear Mr. Heffley:

On January 26, 2001, the NRC completed a team inspection at the Clinton Power Station. The enclosed report documents the inspection findings which were discussed on January 26, 2001, with you and other members of your staff.

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

On the basis of the sample selected for review, the team concluded that problems were generally identified, evaluated, and corrected effectively. There were two Green findings identified during this inspection. One finding involved the failure to follow condition report process procedures during the evaluation and resolution of pipe wall thinning in the shutdown service water system. The second finding involved the failure to take effective corrective actions for a longstanding degraded reactor core isolation cooling system valve. Both of these findings were determined to be violations of NRC requirements. However, because of their very low safety significance and because the findings have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these Non-Cited Violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, 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 the Clinton facility.

In addition, several minor issues associated with the implementation of the corrective action program were identified including: conditions adverse to quality were not always entered into the corrective action program; corrective actions for certain issues were either untimely or not fully effective; and some evaluations for issues were weak or were conducted outside of the corrective action process. Also, the trending program was recently changed but was not yet fully effective to identify declining performance trends. Finally, the corrective action effectiveness review program did not always identify ineffective corrective actions. The corrective action program issues that were identified by the team were similar to those recently identified during your self-assessments and correction action program audits. While corrective actions have yet to be taken to address all of these issues, the team was informed that an overall improvement plan was under development and scheduled to be completed soon.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available **electronically** for public inspection in the NRC Public Document Room **or** from the *Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from* the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Thomas J. Kozak, Chief
Reactor Projects Branch 4

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

Enclosure: Inspection Report No. 50-461/01-02(DRP)

cc w/encl: M. Pacilio, Plant Manager
M. Reandeau, Director - Licensing
E. Wrigley, Manager-Quality Assurance
M. Aguilar, Assistant Attorney General
G. Stramback, Regulatory Licensing
Services Project Manager
General Electric Company
Chairman, DeWitt County Board
State Liaison Officer
Chairman, Illinois Commerce Commission

DOCUMENT NAME: G:\clin\cli0102 drp.wpd

To receive a copy of this document, indicate in the box:"C" = Copy without enclosure "**E**"= Copy with enclosure"**N**"= No copy

OFFICE	RIII		RIII					
NAME	Collins:dtp		Kozak					
DATE	02/ /01		02/ /01					

OFFICIAL RECORD COPY

ADAMS Distribution:
DFT
JBH1 (Project Mgr.)
J. Caldwell
G. Grant
B. Clayton
SRI Clinton
C. Ariano (hard copy)
DRP
DRSIII
PLB1
JRK1
BAH3

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-461
License No:	NPF-62
Report No:	50-461/01-02(DRP)
Licensee:	AmerGen Energy Company, LLC
Facility:	Clinton Power Station
Location:	Route 54 West Clinton, IL 61727
Dates:	January 16 - 26, 2001
Inspectors:	L. L. Collins, Lead Inspector P. L. Louden, Senior Resident Inspector S. N. Sheldon, Reactor Engineer
Approved by:	Thomas J. Kozak, Chief Reactor Projects Branch 4 Division of Reactor Projects

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	**Radiation Safety**	**Safeguards**
•Initiating Events	•Occupational	•Physical Protection
•Mitigating Systems	•Public	
•Barrier Integrity		
•Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margins.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent a performance level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margins and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margins but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

SUMMARY OF FINDINGS

Clinton Power Station
NRC Inspection Report 50-461/01-02(DRP)

IR 05000461-01-02, on 01/16 - 01/26/2001, AmerGen Energy Company LLC, Clinton Power Station; identification and resolution of problems. Two findings were identified in the areas of prioritization and evaluation of issues and effectiveness of corrective action.

The inspection was conducted by two region-based inspectors and one senior resident inspector. This inspection identified two green findings, both of which were Non-Cited Violations. The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process.

Identification and Resolution of Problems

The team identified that the licensee appropriately entered significant plant issues into the corrective action process by initiating condition reports. Some less significant conditions adverse to quality were evaluated and corrected outside the established process. The trending program was not fully effective as a problem identification tool. Quality Assurance audits and self-assessments reviewed varied in quality. Identified issues were generally evaluated properly, although in several cases the corrective action process did not work effectively to either evaluate or prioritize issues. Current station performance issues including human performance, corrective action program, surveillance testing, and labeling indicate that long term corrective actions previously taken in these areas as restart and post-restart initiatives have not been fully effective to support sustained improvement. Corrective actions were not always fully effective or timely for some individual equipment issues and the effectiveness review process (CARE) did not always identify ineffective corrective actions. The licensee had recently recognized similar deficiencies in corrective action program implementation but had not yet fully developed or completed the corrective actions to improve these areas. The inspectors did not find any reluctance by the station employees to raise safety issues.

Cornerstone: Mitigating Systems

- Green. Corrective actions were not implemented to replace a portion of the shutdown service water (SX) system piping after pipe wall thinning was identified. The failure to take the specified corrective actions by the committed due date or to properly reevaluate the degraded condition was determined to be a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, “Procedures.”

  This finding was determined to have very low safety significance because the SX system remained operable and capable of performing its’ safety function. (Section 4OA2.2)

- Green. Corrective actions for a longstanding deficiency with the Reactor Core Isolation Cooling (RCIC) system steam bypass valve were not effective in stopping the leakage past the valve. This finding was determined to be a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action.”

  This finding was determined to have very low risk significance because the degraded condition of the valve did not affect the operability of the RCIC system. (Section 4OA2.3)

Report Details

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution

.1 Effectiveness of Problem Identification

a. Inspection Scope

The inspectors reviewed inspection reports issued over the last year, selected plant modifications and maintenance work orders for three high risk systems (emergency core cooling system ventilation, reactor core isolation cooling, and shutdown service water), various Condition Reports (CRs) and corrective action documents, industry operating experience documents, audits, and self-assessments, in order to determine if problems were being identified at the proper threshold and entered into the corrective action process. The documents listed in Attachment 1 were used during the review.

b. Issues and Findings

The licensee appropriately entered significant plant issues into the corrective action process by initiating CRs. Some less significant conditions adverse to quality were evaluated and corrected outside the established process. The trending program was not fully effective as a problem identification tool. Quality Assurance audits and self-assessments reviewed varied in quality. Some were thorough and critical evaluations but a few were narrowly focused. The licensee had recently recognized similar deficiencies in problem identification, trending, and self-assessment and had entered the issues into the corrective action process but had not yet fully developed or completed the corrective actions to improve these areas.

The inspectors' detailed issues in the areas of CR initiation, trending, audits and self-assessments are described in the following sections.

CR Initiation

The process for identifying, resolving, and trending conditions adverse to quality was defined by CPS 1016.01, "Condition Reports." Condition reports were initiated for conditions adverse to quality (CAQ) and were evaluated for operability, reportability, and significance. Each CR was assigned both a significance (1,2, or 3) and investigation (A, B, or C) level with 1A being the highest level of significance and most extensive investigation level. In addition, the procedural guidance for initiating CRs stated that if any doubt existed about whether a CR should be written, then one should be written. Although the inspectors found that CRs were routinely written for significant plant issues, some conditions adverse to quality which were less significant were not always entered into the corrective action process. For these issues, actions were taken outside of the CR process to evaluate and resolve the issue even though the guidance for initiating a CR was met.

Specific examples of the teams' issues regarding the CR initiation threshold are listed below:

- Operational issues identified at another boiling water reactor and described in NRC Information Notice (IN) 2000-01 dated February 11, 2000, were not entered into the CR process despite the operating experience review process guidance to initiate a CR after the issue was determined to be applicable to CPS. The licensee generated CR 2-01-01-121 to document this deficiency.

- In October 2000, operators heard a loud noise while running the Division 1 EDG. At that time, the licensee evaluated the condition for operability and long term corrective actions with the assistance of a contractor; however, no CR was initiated to document the condition, the operability assessment, or the proposed corrective actions. The licensee subsequently initiated CR 2-01-01-217.

In addition to these two examples, during previous inspections throughout the year, other similar issues were identified in which conditions adverse to quality were not initially entered into the CR process. The following issues are examples:

- CR 1-99-12-014 RCIC [Reactor Core Isolation Cooling] tank flange connection near valve 1E51-F317 not in accordance with design and improper thread engagement

- CR 2-00-01-023 CR to address timely calibrations of process monitors

- CR 2-00-11-148 Operator work-around not tracked in accordance with procedures

- CR 2-01-01-037 Requirements for maintaining system cleanliness were not met

- CR 2-01-01-190 Discrepant main control board indication identified for the "B" RHR [Residual Heat Removal] heat exchanger outlet conductivity meter

The licensee had also identified instances when CRs were not generated as expected. On May 17, 2000, during the performance of 4.16KV Bus 1B reserve feed breaker functional testing, the bus tripped resulting in a reactor scram. It was determined during the subsequent root cause investigation that a test switch was mislabeled, which lead the technicians to perform work on the wrong test switch. A contributing cause to this event was that the incorrect nomenclature on the label had been previously identified during preventive maintenance but no CR was initiated and the labeling deficiency was not corrected.

The inspectors' observations of problems in the use of the CR process to identify all conditions adverse to quality were consistent with recent licensee evaluations of the problem identification process. The external review group, the Nuclear Safety Review

Board (NSRB), concluded during a November 29 and 30, 2000, meeting that CRs were not always being initiated as expected. The licensee entered this and other recently identified problems with the corrective action process in the CR system as CR 2-01-01-028. In addition, plant management reiterated their expectation that all CAQs be entered into the CR process to ensure proper reviews were completed and to ensure plant issues were trended.

Trending Program

The stations' trending program had recently undergone significant changes but was not yet fully effective as a problem identification tool. Trending program improvements were initiated as part of the re-start readiness evaluation prior to plant re-start from an extended outage in 1999. The initiative was focused on improving the adequacy of the trending program to provide plant management with data and trends necessary to implement effective corrective actions.

In January 2000, the NRC conducted an inspection pursuant to Inspection Procedure 40500, "Effectiveness of Licensee Process to Identify, Resolve, and Prevent Problems," during which the licensee's trending program implementation was reviewed. It was concluded during the inspection that the trending program had only recently been implemented as an integral part of the corrective action program.

In June 2000, a Quality Assurance (QA) assessment of trending concluded that the process was ineffective. A root cause evaluation was performed and corrective actions implemented to improve the process. The inspectors reviewed several recent departmental and site-wide trend performance reports during this inspection that had been completed after the process improvements were implemented. The inspectors noted that the content and format of the trend reports varied between departments, and that the use of CR content as a trending tool to identify departmental adverse performance trends was also inconsistent.

The inspectors reviewed a recently issued (December 2000) site wide trend analysis report and concluded that the report contained an effective analysis of performance trends identified in condition reports. This was the only example the inspectors reviewed that was considered to be a substantive improvement in the site's trending program. Therefore, the inspectors determined that the site had not yet effectively demonstrated substantial progress in improving its trending program.

Audits and Self Assessments

The quality of audits and self assessments reviewed varied. For example, a QA assessment conducted in December 2000 resulted in the initiation of three CRs which documented examples of ineffective corrective action program implementation in the Operations, Engineering and Maintenance departments. Additionally, a recent NSRB review of the corrective action process in November 2000 identified implementation problems. However, a self-assessment of the corrective action program (2000-014) conducted in February 2000 and a June 2000 QA assessment concluded that the corrective action program was functioning effectively. Based on the widely varying

conclusions of the assessments of the program early in the year with assessments conducted later in the year, the inspectors determined that the assessments were inconsistent and that there may have been earlier opportunities for the licensee to identify the current issues with the corrective action program implementation.

Although most self assessments were considered thorough and critical, others were narrowly focused. For example, two self assessments conducted to evaluate the effectiveness of corrective actions focused on whether or not the corrective actions were completed rather than if they were effective. Recently completed self assessments adequately covered the subject area and the associated findings were appropriately captured in CRs and task assignment tracking items. Issues identified in the self assessments reviewed were consistent with the issues identified by the team. A recent Nuclear Oversight review of CPS self assessments was critical of the program as evidenced by CR 2-01-01-184 "Inadequate Implementation of the Operations' Self Assessment Program."

.2 Prioritization and Evaluation of Issues

a. Inspection Scope

The inspectors conducted an independent assessment of the prioritization and evaluation of a selected sample of CRs. The assessment included a review of the category assigned, operability and reportability determinations, extent of condition evaluations, cause investigations, and the appropriateness of the assigned corrective actions. The documents listed in Attachment 1 were used during the review.

The inspectors attended daily management meetings to observe the assignment of CR categories for current issues and the review of root cause analyses and corrective actions.

b. Issues and Findings

Identified issues were generally evaluated and prioritized properly although in several cases the corrective action process did not work effectively to either evaluate or prioritize issues. One inspection finding was identified which was determined to be a Non-Cited Violation and involved the failure to follow the procedure for implementing specified corrective actions for a condition adverse to quality.

Examples of the inspectors' issues and findings in the area of prioritization and evaluation are described in the following sections.

Shutdown Service Water (SX) System Pipe Wall Thinning

In July 1999, ultrasonic testing of a portion of the shutdown service water system piping revealed that the pipe wall thickness was less than the manufactured tolerance. The licensee initiated CR 1-99-07-145, "1SX20AB 8" Piping Below Minimum Wall Thickness" to document and evaluate the issue. An engineering evaluation determined a design basis minimum wall thickness and predicted that the wall thickness would be adequate

through the end of the year 2000. A corrective action to this CR was established to "install new 1SX20AB 8" piping under AR F05699" with a due date of 12/01/2000. It was noted that this would be done during RF-7 beginning in October 2000. The corrective action and the CR were closed to the initiation of the action request (AR).

During a review of the work scope for RF-7, this work was removed from the outage and rescheduled for May 2001. However, the engineering evaluation which supported continued operability of the piping was not revised at that time. After the inspectors identified that the evaluation provided in the CR was no longer valid, the licensee initiated CR 2-01-01-191, "Piping Not Replaced as Required by CR 1-99-07-145." Immediate corrective actions were taken to reevaluate the trending data which predicted that the design basis minimum wall thickness would now be exceeded in March 2001. The licensee also initiated an AR to conduct further ultrasonic testing to determine the current condition of the piping and to reevaluate when repairs will be needed.

The failure to take the corrective action specified in the CR or to properly reevaluate the degraded condition for continued operability was determined to be a violation of the station's procedure for the CR Process. Clinton Power Station Procedure No. 1016.01, Rev 33, "CPS Condition Reports", paragraph 8.13.1, required corrective actions to be implemented by the committed due date, or the due date extended in accordance with established procedures. 10 CFR 50, Appendix B, Criterion V, requires activities affecting quality to be accomplished in accordance with established procedures. The failure of the licensee to take specified corrective actions or to properly reevaluate the degraded condition of the shutdown service water system as required by CPS 1016.01 is a violation of 10 CFR 50, Appendix B, Criterion V. The operability determination for CR 1-99-07-145 stated that the potential rupture of this pipe could result in the loss of "B" Main Control Room Air Conditioning (VC) chiller, and a loss of water to the Ultimate Heat Sink. This condition, if left uncorrected, would become a more significant safety concern and could credibly affect the function of several mitigating systems. However, because there was no actual loss of function of a mitigating system, this issue has been determined to have a very low risk significance (Green) in accordance with the NRC's Reactor Safety SDP. Therefore this violation is being treated as a **Non-Cited Violation (NCV 50-461/2001002-01)**.

Division III Emergency Diesel Generator (EDG) Damaging Event

On February 28, 2000, the Division III EDG was damaged during routine monthly surveillance testing. The licensee reported this event pursuant to 10 CFR 50.72 as a potential condition outside the design basis for the offsite power supplies and the static Volt-Ampere-reactive (VAR) compensators (SVCs). The Licensee Event Report submitted on March 29, 2000, for the event stated that the root cause was still under investigation but that two separate conditions resulted in the damage to the Division III EDG. The EDG was paralleled with the Emergency Reserve Auxiliary Transformer (ERAT) out of phase, and the ERAT/SVC did not freeze instantaneously when the Division III EDG output breaker was closed during the out-of-phase condition with the ERAT output breaker closed. The LER further stated that the cause of these conditions would be provided in a supplement to the original LER.

The licensee's root cause evaluation for the event dated March 29, 2000 identified two root causes. The first root cause was synchronization process inaccuracies which allowed the Division III EDG to be paralleled to the distribution system out-of-phase. The second root cause was determined to be inadequate design of the SVC freeze function which allowed the interaction between the SVC and the EDG. A corrective action to prevent recurrence was established to manually freeze the SVC prior to paralleling any of the three EDGs with the offsite power distribution system.

Throughout the course of the next several months the engineering organization continued to investigate the root cause of the Division III EDG damage. The SVC vendor provided an analysis of the event in May 2000, which concluded that the SVC had no role in the damage to the generator. Over the next several months, engineering management had the report independently reviewed by two other engineering firms both of which agreed with the conclusions of the SVC vendor. However, this conclusion was contrary to the licensee's documented and approved root cause evaluation.

Despite the fact that the root cause evaluation, corrective actions, and the LER documenting this event stated that the SVC interaction had contributed to the EDG damage, the licensee was preparing to conduct a special test procedure in December 2000 which would remove the SVC freeze during EDG operation. This test would allow the SVC to maintain stable electrical bus voltage with the Division I EDG paralleled with the ERAT and was developed to substantiate the conclusion by the SVC vendor that the SVC had no influence in the damage to the EDG. The test was not conducted as planned after licensee management determined that further review was required.

The inspectors determined that the licensee did not fully evaluate this problem within the context of the corrective action program. At the time of the inspection, the root cause report had not been revised to state that the SVC did not contribute to the EDG damage. The corrective actions that required the SVC to be in freeze when running the EDGs were also not changed and the management review process was not conducted to reconcile the different conclusions in the separate evaluations. While the additional technical reviews were appropriate for the significance of the event, they were conducted outside the framework of the corrective action program and the differing results were not reconciled before planning the performance of the special test.

Labeling

The licensee had identified long term problems with labeling of components in the plant but had not fully evaluated or prioritized the labeling problems. Despite a large backlog of label requests, there was no mechanism in place to prevent an operator or technician from unknowingly encountering a mislabeled component between the time the mislabeling was identified and a proper label created. In response to questions from the inspectors, the licensee initiated CR 2-01-01-125, "Vulnerability for Configuration Control Errors When Component Deficiencies are Found," to address this issue.

Lack of Rigor in Engineering Evaluations

The inspectors identified that engineering evaluations performed for CR 2-00-02-101, "(CLB) - SX System Piping Interties Not in Accordance with USAR," lacked rigor. These evaluations concerned the structural integrity of non-seismically qualified equipment connected to the SX system. Two of the engineering evaluations noted that predicted loads exceeded the allowable values. These values were dismissed based upon perceived conservatism in the calculations. After this lack of rigor was identified by the inspectors, the licensee initiated a CR 2-01-01-186, "Failure to complete calculation revisions based on engineering evaluations," and revised the calculations. The revised calculations concluded that the system remained operable.

.3 Effectiveness of Corrective Action

a. Inspection Scope

The inspectors reviewed selected CRs and associated corrective actions to evaluate the effectiveness of corrective actions. Additionally, the inspectors evaluated the current status of corrective actions to improve previously identified weaknesses in the areas of human performance, surveillance testing, corrective action program deficiencies, and labeling. The documents listed in Attachment 1 were used during the review.

b. Issues and Findings

Corrective actions taken for significant conditions adverse to quality have generally been effective. However, some actions taken to address conditions adverse to quality have not been effective. For example, current station performance issues in human performance, corrective action program implementation, surveillance testing, and labeling indicate that long term corrective actions previously specified in these areas as restart and post-restart initiatives have not been fully effective to support sustained improvement. Corrective actions were not always fully effective or timely for some individual equipment issues. The corrective action review for effectiveness (CARE) process did not always identify ineffective corrective actions. One inspection finding in this area involved the failure to effectively correct the longstanding degraded condition of the RCIC steam bypass valve and was determined to be a Non-Cited Violation.

Examples of issues and findings regarding the effectiveness of corrective actions are described in the following sections.

Actions Taken to Address Human Performance Deficiencies

Human performance deficiencies at the station were highlighted during the extended shutdown from September 1996 through May 1999. The station implemented re-start action items to address site-wide human performance deficiencies and detailed focused improvement initiatives for the Operations Department.

In Inspection Report 50-461/2000-015 (Section 4OA4), the inspectors identified several findings of low risk significance (Green) which involved maintenance human

performance errors. A No Color finding in the Cross-Cutting Issue area of human performance was identified. In response to the performance deficiencies, station management conducted a work stoppage and maintenance supervisors held a human performance workshop.

In Inspection Report 50-461/2000-020, the inspectors identified three findings of low risk significance (Green) which involved human performance deficiencies in the area of Operations. A No Color finding in the Cross-Cutting Issue area of human performance was identified relating to operator performance.

The licensee generated CR 2-00-09-055 in September 2000, to document a site wide human performance concern. As part of the response to this CR, management began a more aggressive evaluation of human performance at the station. A site wide human performance improvement program plan was approved in January 2001. At the time of this inspection, the improvement plan was in the early stages of implementation and other human performance initiatives were being implemented on a departmental basis. These efforts were too new to be effectively evaluated during this inspection. The recent human performance deficiencies indicate that the actions taken prior to plant re-start to address this issue have not been fully effective in sustaining improved performance.

Actions Taken to Address Overdue Surveillance Testing Activities

The implementation of the licensee's surveillance testing program was also the subject of a plant re-start item closed in May 1999. The licensee took actions to establish an effective surveillance testing program to ensure all Technical Specification and Updated Safety Analysis Report (USAR) requirements were adequately contained in surveillance procedures and that the surveillance tests were conducted as scheduled.

Following startup in May 1999, the licensee monitored surveillance testing schedules and those tests that were overdue and in the 25 percent "grace" period allowed in the Technical Specifications. However, from September 2000 through the time of the inspection, the number of surveillance tests in the grace period had steadily risen. At the beginning of the inspection, 41 surveillance tests were in the grace period. Once plant management recognized this issue, a plan was generated to complete all surveillances in the grace period by the end of February and to minimize the number of surveillances which enter the grace period. The recent failure to adhere to the surveillance test schedule indicates that the actions taken prior to plant re-start to address this issue have not been fully effective in sustaining improved performance.

Actions Taken to Address Plant Labeling Deficiencies

Plant labeling had been a near term focus issue in the stations' 1998/1999 Plan for Excellence which contained restart and post-restart action items. Despite these actions, the station continued to experience problems associated with plant labeling. For example, the CR initiated as a result of the May 2000 scram, CR 2-00-05-076 "1AP08EG Protective Relay Functional Testing Causes Unit 1 Trip," referenced 26 labeling CRs which had been identified over the previous 2-year period. The inspectors

concluded that previous corrective actions had not been sufficiently comprehensive to address incorrect equipment labeling concerns.

Degraded RCIC Steam Bypass Valve 1E51-F095

The RCIC turbine steam bypass valve 1E51-F095 has experienced repetitive failures. This valve is a 1" Double-Disc gate valve and has a long history of leakage documented in CRs dating back to 1993. Additionally, industry operating experience had shown that repetitive problems with this valve had been eliminated at other plants by implementing a design change. The steam leakage past the valve condenses and results in excessive moisture in the RCIC turbine which is removed by an auto-drain system. This leakage has affected RCIC system availability by impacting the lube oil system and the governor valve and has also been a nuisance to operators because of frequent control room alarms when the auto drain system activates. In 1993, corrective actions were proposed to modify the valve after an evaluation determined that it was not reliable. This design change was canceled. A second design change was proposed in 1999 and was also canceled. The licensee took actions to limit further unavailability of the system due to leakage from this valve by replacing the governor valve stem, monitoring the governor valve and lube oil system closely, and modifying the control room alarm to limit the operator distraction. However, the licensee has not effectively corrected the repetitive valve leakage problem. 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” requires, in part, that conditions adverse to quality, such as failures, malfunctions, deficiencies, defective material and equipment, and nonconformances are identified and corrected. Contrary to this, the licensee failed to correct a longstanding, repetitive deficiency with the RCIC 1E51-F095 valve which has resulted in unnecessary unavailability time of the RCIC system. This is considered to be a violation of 10 CFR 50 Appendix B, Criterion XVI, “Corrective Action.” If left uncorrected, the valve leakage could become a more significant safety concern and could credibly affect the availability of the RCIC system. This finding was determined to have very low safety significance (Green) using the SDP because the current degraded condition of the valve does not result in loss of the safety function of the RCIC system. Therefore, this violation is being treated as a **Non-Cited Violation (NCV 50-461/2001002-02)**.

Corrective Action Review For Effectiveness

The CARE program was not always effective in identifying ineffective corrective actions. The inspectors reviewed approximately 13 recently completed CAREs. Twelve of the CAREs reviewed concluded that the corrective actions were effective and one CARE concluded that the corrective actions were marginally effective. Upon further review, the inspectors determined that, in several cases, clear criteria had been set under the CARE action plan to measure effectiveness of corrective actions but that when the criteria were not met the conclusion was that corrective actions were effective. As an example, an effectiveness review was performed for actions taken after maintenance rule plant level performance criteria were exceeded. The CARE criteria included a goal on the number of scrams in the operating cycle. This specific criterion was not met, yet the corrective actions were determined to be effective and the CARE was closed.

In a second example, in December 2000 a CARE was performed for programmatic problems in 1999 with the control of radioactive material (RAM). The CARE concluded that the corrective actions were marginally adequate. However, the CARE stated that another CR, CR 2-00-09-020 "Potential Adverse Trend in RAM Control for Clean Areas Inside RCA," had been initiated in September 2000 and that a CARE for that CR was to be completed in February 2001. Given the potential adverse trend in RAM control identified in September 2000, the inspectors could not conclude that corrective actions from 1999 RAM control problems had been effective. The inspectors determined that in this case, the licensee took appropriate follow-up corrective actions but that the CARE process had not been a useful tool in identifying the ineffectiveness of previous corrective actions. Several other examples of similar deficiencies in the implementation of the CARE process were noted during the inspection.

.4 Assessment of Safety-Conscious Work Environment

a. Inspection Scope

The inspectors conducted interviews with plant staff to assess whether there were impediments to the establishment of a safety conscious work environment. During these interviews, the inspectors used Appendix 1 to Inspection Procedure 71152, "Suggested Questions for Use in Discussions with Licensee Individuals Concerning PI&R Issues," as a guide to gather information and develop insights. The inspectors also discussed the implementation of the Employee Concerns Program conducted per procedure QAP 601.02 with the plant's Ombudsman and reviewed a recent Safety Conscious Work Environment survey.

b. Issues and Findings

The inspectors did not find any reluctance by the station employees to raise safety issues. The results of a recent employee survey performed by the licensee also concluded the employees felt a safety responsibility to raise issues, were familiar with the various processes to raise issues, and felt that management was supportive in identifying and correcting safety problems.

4OA6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. J. M. Heffley and other members of licensee management in an exit meeting on January 26, 2001. Licensee management acknowledged the findings presented and indicated that no proprietary information was provided to the inspectors.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Heffley, Site Vice President
S. Clary, Director - Plant Engineering
W. Iliff, Director - Experience Assessment and Corrective Actions
R. Svaleson, Director - Operations
J. Heckenberger, Manager - Work Management
C. Sutherland, Manager - Radiation Protection
M. Reandeau, Director - Licensing
F. Tskares, Manager - Maintenance
E. Wrigley, Manager - Quality Assurance

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-461/01-02-01	Failure to follow CR procedure for SX wall thinning problem
50-461/01-02-02	Failure to correct longstanding RCIC valve degradation

Closed

50-461/01-02-01	Failure to follow CR procedure for SX wall thinning problem
50-461/01-02-02	Failure to correct longstanding RCIC valve degradation

LIST OF ACRONYMS

AR	Action Request
CARE	Corrective Action Review for Effectiveness
CPS	Clinton Power Station
CR	Condition Report
EDG	Emergency Diesel Generator
ERAT	Emergency Reserve Auxilary Transformer
LER	Licensee Event Report
NSRB	Nuclear Safety Review Board
PMER	Preventive Maintenance Evaluation Request
QA	Quality Assurance
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
SDP	Significance Determination Process
SVC	Static VAR Compensator
SX	Shutdown Service Water
VAR	Volts-Ampere-Reactive

Attachment: As Stated

ATTACHMENT 1

LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion of a document on this list does not imply that NRC inspectors reviewed the entire documents, but, rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. In addition, inclusion of a document on this list does not imply NRC acceptance of the document, unless specifically stated in the body of the inspection report.

Procedures

QAP 601.02 Employee Concerns
CPS 1005.16 Self-Assessment, Rev 2c
CPS 1016.01 CPS CRs, Rev 33
CPS 1016.01 CPS CRs, Rev 34

Condition Reports

CR 1-96-04-010	Incorrect Actuator and Assembly weights for MOVs
CR 1-97-12-221	Inadequate Channel Calibration of DG Room Temperature Control Loop
CR 1-98-03-150	Supply Air Temperature Switch Malfunction
CR 1-98-04-018	Trip of Leak Detection Reilly Monitor E31-N611B
CR 1-98-07-214	Remote Shutdown Indication Circuit Design Flaw
CR 1-98-10-232	SX Pipe Wall Thinning
CR 1-98-12-140	As Found Flow Measurements Below Minimum or Above Maximum Values Specified in Procedure
CR 1-99-02-179	Failure of Technical Specification Alarm/Indication of RWCU HX Room East Temperature (1E31-N626B)
CR 1-99-02-376	Non-conservative Assumption in Calculation IP-M-0423, R/O
CR 1-99-03-223	Reserve Auxiliary Transformer Trip on Differential Current During SVC Testing
CR 1-99-03-371	USAR Discrepancy Regarding the Automatic Interlocks for HPCS Room Cooling Fans
CR 1-99-03-380	Industry Operating Experience Review of Information Notice 99-07
CR 1-99-04-348	Shutdown Service Water Pump Motor 1SX01PB Oil Sample Indicates Foreign Material in Oil
CR 1-99-07-145	1SX20AB 8" Piping Below Minimum Wall Thickness
QCR-99-08-141	NSED Personnel Failed to Perform to Expected Standards and/or Comply with Associated Procedures
CR 1-99-08-187	Higher Than Allowable Hydraulic Resistance
CR 1-99-09-091	Discrepancies Between DC-ME-09-CP and USAR Section 3.11
CR 1-99-10-054	Many Plant Component Labels are Incorrect or Missing (OP.5-1)
CR 1-99-10-083	Found Torque on Actuator Capscrews to Be less than Specified by PS8551.04

CR 1-99-10-185	Apparent Discrepancies Between Pump Down Thrust and Motor Thrust Bearing Rated Thrust for SX Pumps
CR 1-99-12-047	Adverse Trend in the Seating Torque for 1SX014B
CR 1-99-12-062	Oil Analysis Results for 1SX01PA Upper Motor Bearing Indicate Bearing Degradation
CR1-99-12-064	Incorrect Plant Labeling
CR 2-00-01-003	Wiring Discrepancy on EO3-1PL61JA Sheet 1
CR 2-00-01-009	Maintenance Rule Critical Component Failure
CR 2-00-01-012	Failure of Battery Cell on 0FP01PA (Fire Pump A)
CR 2-00-01-035	Inadvertent Opening of MCC Breaker for 1SX013D
CR 2-00-01-061	Review of PM Out of Tolerance as Found Data is Not Adequate
CR 2-00-01-068	B" SLC Pump Started During "A" Pump Surveillance
CR 2-00-01-114	Out of Calibration Trending Condition on a Maintenance Rule Critical Component
CR 2-00-01-158	Breakdown in Work Package Pre-Approval Process Challenges PMT Requirements
CR 2-00-01-160	GL89-13 Heat Exchanger Performance Test Failure on 1VH07SC
CR 2-00-02-101	(CLB) SX System Piping Interties not in Accordance with USAR
CR 2-00-02-014	Unexpected Increase in Reactor Power
CR 2-00-02-172	Unplanned Inoperability and Unavailability of Div III DG Due to Overvoltage Condition
CR 2-00-03-051	Design Requirements for RAT and ERAT SVCs are not met.
CR 2-00-03-071	Equipment Failure Trend 99-10-016 of Various Instrument Controllers
CR 2-00-04-085	Maintenance Rule Critical Component Failure of Differential Pressure Switch
CR 2-00-05-076	1AP08EG Protective Relay Functional Testing Causes Unit 1 Trip
CR 2-00-05-083	Shutdown Cooling Suction Valve 1E12F009 Failed to Open with Control Switch
CR 2-00-05-087	Component/Procedure/E03 Drawing Labeling/Identification Discrepancies
CR 2-00-06-067	Industry Operating Experience Review of Information Notice 00-08
CR 2-00-06-123	Design Change Not Provided to ISI for Detailed Impact Assessment
CR 2-00-07-103	Station Self-Assessment 2000-063: OP.5-1, Operations Facilities and Equipment
CR 2-00-08-089	Buildup of Bryozoa on Sluice Gate Fixed Screens
CR 2-00-08-146	Division III DG Ventilation Tripped During Performance of DG Fire Protection Surveillance 9337.81C009
CR 2-00-09-014	Maintenance Rule Functional Failure - Riley Temperature Module (F10353)
CR 2-00-09-076	As Found Flow Measurements Below Minimum Values Specified in CPS 2700.13 Calc Attachment
CR 2-00-09-077	Classification of the Component Group 'Riley Temperature Modules' as Maintenance Rule Category (a)(1)
CR 2-00-10-019	1E51-F064 Failed to Stroke Open During 9054.02
CR 2-00-10-111	Need to Evaluate Impact on past Operability Due to Check Valves Found Corroded and Incapable of Moving
CR 2-00-10-172	Secondary Containment Boundary Breach, RCIC Interlock Doors Defeated
CR 2-00-10-197	Entering a High Radiation Area on an Improper RWP

CR 2-00-10-201	Adverse Trend in High Radiation Area Events by Radworkers During RF-7
CR 2-00-10-208	Repetitive failure of 1E51F095 Valve
CR 2-00-10-217	Secondary Containment Boundary Breach
CR 2-00-10-238	Core Alterations in Progress with Secondary Containment Inoperable
CR 2-00-10-243	Two Bodine Supervisors Attempted to Enter a HRA Without an RP Briefing
CR 2-00-11-023	Entry into a Posted High Radiation Area (HRA) on an RWP That Does Not Permit HRA Entry
CR 2-00-11-091	MSDT "A" Hi-Hi Level Causes Main Turbine Trip
CR 2-00-11-147	Diesel Generator B generator bearing vibration
CR 2-00-12-073	Work Not Performed as Scheduled
CR 2-00-12-106	RHR Seal Water Cooler Valve Failed Stroke Time (1SX029)
CR 2-00-12-155	Industry Operating Experience Review of Information Notice 00-20
CR 2-01-01-001	Division 2 Diesel Generator bearing vibrations took a step change
CR 2-01-01-049	Area for Improvement (OP.5-1) (Related to OP.5-1, 1999)
CR 2-01-01-076	Division 2 DG exceeded established vibration limits during 24-hr run
CR 2-01-01-184	Inadequate Implementation of the Operation Self Assessment Program

CAREs

CR 1-96-08-095	RI system exceeded availability goals due to valve seat leakage
CR 1-97-12-220	Actual "Reactor Water Cleanup System Trip" thermal cycle different than design basis thermal cycle
CR 1-98-01-137	Bent "Spring Bar" in GE press pac clamp assembly in the Div II NSPS inverter
CR 1-98-02-442	Maintenance Rule plant level performance criteria limits exceeded
CR 1-98-03-274	Lack of a corrective action monitoring program dealing with the IP system maintenance rule a(1) class
CR 1-98-03-522	Repetitive maintenance preventable functional failures of watertight doors
CR 1-98-04-030	Feedwater system classified as maintenance rule a(1)
CR 1-98-05-152	ERDS not activated within 1 hour of declaring an alert
CR 1-98-05-246	Maintenance rule - motor driven feedpump exceeds unavailability criteria
CR 1-98-07-310	HPCS pump will not meet the design basis while being fed from the diesel generator
CR 1-99-08-116	Programmatic problems with the control of radioactive material
CRQ-99-09-120	Inadequate air operated valve program management
CR 1-99-12-011	Failure to report an event under 10 CFR 50.73 within required 30 days
CR 2-00-03-121	Technical Specification SR 3.3.6.4.7 expires prior to end of RF-7
CR 2-00-03-124	Adverse trend identified in application of Technical Specification LCO's

Miscellaneous Documents

ECCS Equipment Cooling System Walkdown Checklist dated January 9, 2001
ECCS Equipment Cooling System Walkdown Checklist dated October 31, 2000
ECCS Equipment Cooling System Walkdown Checklist dated June 30, 1999
General Review of Open Maintenance Work Requests for the ECCS Equipment Cooling System

CPS 1016.07 “Industry Operating Experience Document Review Process,” Revision 3a
NRC Information Notice 99-10, “Degradation of Pre-stressing Tendon Systems in Pre-stressed Concrete Containments,” dated October 7, 1999
NRC Information Notice 00-01, “Operational Issues Identified in Boiling Water Reactor Trip and Transient,” dated February 11, 2000
CPS Human Performance Improvement Plan, dated 12/28/00
Nuclear Station Engineering Procedure W.02 “Engineering Work Control,” Revision 2
Clinton Power Station Third Quarter 2000 Trend Report
Industry Operating Experience Review of Information Notice 99-07
Industry Operating Experience Review of Information Notice 99-28
Industry Operating Experience Review of Information Notice 00-08
Industry Operating Experience Review of Information Notice 00-20

Trending Reports

CR Monitoring and Trending Report for the First Quarter 2000, dated May 10, 2000
CR Monitoring and Trending Report for the Second Quarter 2000, dated August 7, 2000
Engineering 1st Quarter 2000 CR Trend Analysis, dated May 3, 2000
Engineering 2nd Quarter 2000 CR Trend Analysis, dated July 27, 2000
Engineering 3rd Quarter 2000 CR Trend Analysis, dated December 13, 2000
Engineering 4th Quarter 1999 CR Trend Analysis, dated February 25, 2000
CR Q-00-06-129, “Ineffective Site Trending Process”
Second Quarter 2000 Chemistry Trend Report, dated August 8, 2000
Third Quarter 2000 Chemistry Trend Report, dated December 18, 2000
Fourth Quarter 1999 Chemistry Trend Report, dated February 16, 2000
Operations Department First Quarter 2000 Trend Report, dated May 31, 2000
Operations Department 4th Quarter 1999 Trend Report, dated February 15, 2000
Operations Department Second Quarter 2000 Trend Report, dated July 18, 2000
Maintenance Department First Quarter 2000 Trend Report, dated May 15, 2000
Maintenance Department Third Quarter 2000 Trend Report, dated January 10, 2001
Work Coordination 1st Quarter 2000 CR Trend Analysis
Nuclear Training Department First Quarter 2000 Trend Report, dated May 12, 2000

Self Assessments

2000-005	Surveillance Testing for the Period of January 1999 to December 1999
2000-010	Personnel Contamination Program
2000-011	Security Safety Program
2000-021	Joint Utility Management Audit (JUMA) Corrective Actions
2000-038	Closure for Corrective Action Review for Effectiveness (CARE) CR Q-99-08-141
2000-045	Operation Work Control
2000-055	Operations Self-Assessment of Plant Configuration Control
2000-056	Engineering Product Quality - May 2000
2000-063	Clinton Power Station (CPS) Station Self-Assessment Report
2000-071	CPS Chemistry Post-Accident Sampling Self Assessment Report

CR's initiated during the NRC inspection

CR 2-01-01-228	Untimely and ineffective correction action on valve 1E51-F095
CR 2-00-01-178	Potential incorrect conclusion in OD/OE for Div 2 EDG
CR 2-00-01-085	Slow closure of completed CR corrective actions
CR 2-00-01-186	Failure to complete calculation revisions based on engineering evaluations
CR 2-01-01-122	Information Notice not processed in a timely manner
CR 2-01-01-217	Div 1 EDG generator bearings exhibiting early signs of degradation
CR 2-01-01-191	Piping not replaced as required by CR 1-99-07-145
CR 2-01-01-125	Vulnerability for Configuration Control Errors When Component Deficiencies are Found