July 25, 2003

Mr. John L. Skolds, President
and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION
NRC INTEGRATED INSPECTION REPORT 05000461/2003004

Dear Mr. Skolds:

On June 30, 2003, the US Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Clinton Power Station. The enclosed reports documents the inspection findings which were discussed on July 2, 2003, with Mr. R. Bement and other members of your staff.

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

Based on the results of this inspection, there was one NRC-identified finding of very low safety significance (Green). This finding was also determined to involve a violation of NRC requirements. However, because of the violation was non-willful and non-repetitive and because the issue was entered into your corrective action program, the NRC is treating this issue as a Non-Cited Violation in accordance with Section VI.A of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the US Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, US Nuclear Regulatory Commission - Region III, 801 Warrenville Road, Lisle, IL 60532-4351; the Director, Office of Enforcement, US Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at Clinton Power Station facility.

Since the terrorist attacks on September 11, 2001, NRC has issued five Orders and several threat advisories to licensees of commercial power reactors to strengthen the licensee capabilities, improve security force readiness, and enhance controls over access authorization. In addition to applicable baseline inspections, the NRC issued Temporary Instruction (TI) 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures," and its subsequent revision, to audit and inspect the licensee's implementation of the interim compensatory measures required by the Orders. Phase 1 of TI 2515/148 was

completed at all commercial power nuclear power plants during calender year 2002 and the remaining inspection activities for the Clinton Station will be completed later this year. The NRC will continue to monitor overall safeguards and security controls at the Clinton Station.

In accordance with 10 CFR 2.790 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 (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Ann Marie Stone, Chief
Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000461/2003004
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Clinton Power Station
Clinton Power Station Plant Manager
Regulatory Assurance Manager - Clinton
Chief Operating Officer
Senior Vice President - Nuclear Services
Senior Vice President - Mid-West Regional Operating Group
Vice President - Mid-West Operations Support
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-461
License No:	NPF-62
Report No:	05000461/2003004
Licensee:	AmerGen Energy Company, LLC
Facility:	Clinton Power Station
Location:	Route 54 West Clinton, IL 61727
Dates:	April 1 through June 30, 2003
Inspectors:	B. Dickson, Senior Resident Inspector C. Brown, Resident Inspector G. O'Dwyer, Reactor Engineer S. Ray, Senior Resident Inspector, Braidwood J. Rutkowski, Resident Inspector, Davis Besse K. Stoedter, Senior Resident Inspector, Quad Cities D. Zemel, Illinois Department of Nuclear Safety
Observers:	J. Bond, NRC Intern D. Tharp, Reactor Engineer
Approved by:	Ann Marie Stone, Chief Branch 3 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000461/2003004; on 04/01/03 - 06/30/03; Clinton Power Station; Operability Evaluations.

This report covers a 3-month period of baseline resident inspection and announced baseline inspections on the ultimate heat sink and heat exchangers. The inspection was completed by Region III inspectors and the resident inspectors. One Green finding with an associated Non-Cited Violation (NCV) was identified. 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 sate operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self Revealing Findings

Cornerstone: Mitigation Systems

Green. A finding of very low safety significance was identified by the inspectors for failure to follow procedures as required by technical specification. This failure to following procedure resulted in an inadequate operability evaluation being performed by the licensee. This issue also resulted in the licensee failing to declare the affected service water system inoperable as required per NRC regulatory guidance documents and licensee procedures.

This issue was more than minor because an inadequate operability evaluation could affect the mitigating system cornerstone objective as it relates to the availability of the Division I service water system and emergency diesel generator. This issue was of very low safety significance because this qualification deficiency did not result in loss of function per GL 91-18. This issue was a non-cited violation of Technical Specification 5.4 which required the implementation of written procedures in NRC Regulatory Guide 1.33, Appendix A.

B. Licensee-Identified Violations

No findings of significance were identified.

REPORT DETAILS

Summary of Plant Status

At the beginning of the inspection period, the plant operated at approximately 91 percent rated thermal power (maintaining 100 percent rated electrical output). On April 11, 2003, during a plant down power for a planned maintenance outage, control room operators scrammed the plant in response to high main turbine vibration indication. On April 13, 2003, the reactor was restarted and the generator was placed on-line. The plant was returned to 100 percent rated electrical power on April 14, 2003. On May 23, 2003, the licensee raised plant power to about 102 percent rated electrical output (about 93.6 percent reactor power) to slightly open the No. 4 turbine control valve. The plant remained there until the end of the inspection period.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather (71111.01)

a. Inspection Scope

The inspectors verified that the licensee had completed its seasonal preparations for hot weather before the hot weather presented a challenge. The licensee used Section 8.3, Restoration from Cold Weather of CPS 1860.01, "Cold Weather Operation," Revision 4c, to prepare for hot weather. The inspectors reviewed the licensee's completed surveillance and verified that it adequately covered risk-significant equipment and ensured that the equipment was in a condition to meet the requirements of the licensee's technical specifications, the Clinton Operational Requirements Manual, and the Updated Final Safety Analysis Report with respect to protection from hot temperatures. The inspectors verified that minor issues identified during the inspection were entered into the licensee's corrective action system by reviewing the associated condition reports. Based on their importance for availability of mitigating systems, the inspectors conducted more detailed system reviews and walkdowns of selected systems.

The inspectors completed three samples by verifying preparations for hot weather and walking down selected plant areas before predicted high winds and thunderstorms as follows:

- Walked site down for possible wind-driven missiles and readiness for heavy weather with temporary diesel fuel oil tanks staged for Division II emergency diesel generator system outage week;
- Walked down new reserve auxiliary transformer and emergency reserve auxiliary transformer foundation excavations and area surrounding main power transformers for missile hazards after tornado warning issued; and
- Hot weather preparations.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04Q and .04S)

.1 Partial Walkdown

a. Inspection Scope

The inspectors performed partial walkdowns of accessible portions of trains of risk-significant mitigating systems equipment during times when the trains were of increased importance due to the redundant trains or other related equipment being unavailable. The inspectors utilized the valve and electric breaker checklists listed in the Attachment to this report to verify that the components were properly positioned and that support systems were lined up as needed. The inspectors also examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors reviewed outstanding work orders and condition reports associated with the trains to verify that those documents did not reveal issues that could affect train function. The inspectors used the information in the appropriate sections of the Updated Final Safety Analysis Report to determine the functional requirements of the systems. Additional documents listed in the Attachment to this report were also used by the inspectors to evaluate this area.

The inspectors completed samples and verified the alignment of the following divisions:

- Division II residual heat removal and
- Division I shutdown service water

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

The inspectors performed a complete system alignment inspection of the low pressure core spray system. The inspection consisted of the following activities:

- a review of plant procedures, drawings, and the Updated Final Safety Analysis Report to identify proper system alignment;
- a walkdown of the system valves, instrumentation, and electrical supplies to verify proper alignment, component accessibility, availability, and current condition;

- a review of outstanding work orders to identify equipment problems and to ensure that problems identified during the walkdown had been placed in the work control program; and

- a review of condition reports associated with the system for the last 2 years to verify that issues had been properly identified, prioritized, and resolved.

Significant documents reviewed as part of this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of fire fighting equipment, the control of transient combustibles and ignition sources, and on the condition and operating status of installed fire barriers. The inspectors selected fire areas for inspection based on their overall contribution to internal fire risk, as documented in the Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate a plant transient, or their impact on the plant's ability to respond to a security event. The inspectors used the documents listed in the Attachment to this report to verify that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and that fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors verified that minor issues identified during the inspection were entered into the licensee's corrective action program.

The inspectors completed nine samples. The following areas were inspected by walkdowns:

- Diesel generator fuel oil tank rooms (Fire Zones D-1, -2, and -3);
- Shutdown service water pump rooms (Fire Zones M-1, -2a, and -2b);
- Auxiliary building, 781-foot level east (Fire Zones A-2a and -2o);
- Auxiliary building, 781-foot level west (Fire Zones A-3f and -3g);
- Control building, 781-foot level cable spreading rooms (Fire Zones CB-1g, -2, and -4);
- Division III switchgear room (Fire Zones CB-5 and -5b);
- Division 1,2, and 4 reactor protection system power supplies (Fire Zones CB-3b, -3e, and -3f);
- Control building 800-foot level including main control room, computer room, technical support center, and operations staff area (Fire Zones CB-6a, -6b, -6c, and -6d); and
- Auxiliary building 707-foot level low pressure core spray room (Fire Zone A-2c).

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors verified that flooding mitigation plans and equipment were consistent with the design requirements and risk analysis assumptions. The inspectors reviewed the Updated Final Safety Analysis Report, Section 3.4.1 for internal flooding events and reviewed condition reports and work orders on the following:

- Annual external flooding inspection including the dam, screen house, screen house roof, auxiliary building roof, fuel building roof, diesel building roof, and surrounding external areas.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

.1 Biennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed documents associated with inspection, cleaning, and performance trending of heat exchangers primarily focusing on the Division II Residual Heat Removal (RHR) pump seal cooler and the Division II RHR heat exchanger. These heat exchangers were chosen based upon their importance in supporting required safety functions as well as relatively high risk achievement worths in the plant specific risk assessment. The Division II RHR heat exchanger was also selected to evaluate the licensee's thermal performance testing methods. During the inspection, the inspectors reviewed calculations and performed independent calculations to verify that these activities adequately ensured proper heat transfer. The inspectors reviewed the documentation to confirm that the inspection methodology was consistent with accepted industry and scientific practices, based on review of heat transfer texts and electrical power research institute standards (EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, December 1991, and EPRI TR-107397, Service Water Heat Exchanger Testing Guidelines, March 1998) and Mark's Engineering Handbook.

The inspectors reviewed condition reports concerning heat exchanger and ultimate heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and entering them in the corrective action program. The inspectors also evaluated the effectiveness of the corrective actions for identified issues, including the engineering justification for operability, if applicable.

b. Findings

Introduction: The inspectors identified two unresolved items associated with the licensee's evaluation and conclusions regarding RHR heat exchanger tube degradation

identified by the licensee during eddy current inspection and related licensee actions. These unresolved items are open pending further inspector review of the model the licensee used in heat exchanger capacity calculations and the licensee's rationale for concluding there was no current heat exchanger tube leakage.

Description: The inspectors noted that the licensee had recently opened, inspected, and cleaned the "B" RHR heat exchanger including the performance of eddy current inspection. This was the first time the licensee had opened and inspected either RHR heat exchanger, in that, they previously relied only upon performance testing of the RHR heat exchangers to verify continued cooling capability. As a result of the eddy current inspection, the licensee noted a large number of heat exchanger tubes with indications of possible through-wall pin hole leaks and subsequently plugged those tubes. The licensee believed this tube degradation to be historical in nature due to microbiological induced corrosion (MIC) caused by past lay-up practices, valve leakage, and water chemistry which had been previously addressed and was not indicative of an ongoing phenomenon.

As a result of a detailed calculational analysis, the licensee concluded that the heat exchanger possessed sufficient cooling capability to meet its design function despite the number of plugged tubes. Due to their location in the heat exchanger, the licensee could not perform eddy current testing on a small percentage of the tubes. However, the licensee did not believe these tubes to have through-wall leakage because:

- The licensee believed the eddy current inspection practices employed resulted in conservative indications and that it was unlikely through-wall leakage occurred even on the tubes that they plugged. The licensee contented that they plugged the tubes as a conservative action.

- With the heat exchanger open and before the tubes were plugged, licensee staff did not notice any leakage from the tubes even with the tubes pressurized on the inside.

- The licensee specifically pressure tested six tubes which they believed to be representative of the tubes with greatest degradation and did not identify any leakage.

The licensee planned to remove one of the tubes to send off for more detailed inspection and analysis during the next refuel outage to further confirm their conclusion about the conservative nature of the eddy current inspection and that there was not actual tube leakage. They believed that positive results would justify possible recovery (unplugging) of the tubes. The licensee also did not believe that any further consequential degradation would occur before the next refuel outage because:

- While the heat exchanger was open, the licensee believed they had thoroughly cleaned the tubes and performed subsequent boroscope examinations to verify the cleanliness. This cleanliness should help to prevent MIC.

- They had previously corrected the causes that led to conditions conducive to MIC. In addition, the licensee indicated that they had installed electrochemical

potential probes to monitor for conditions that could cause further tube degradation and would take action if necessary.

Despite the indications found on the "B" RHR heat exchanger tubes, the licensee did not plan to inspect the "A" RHR heat exchanger until the next refuel outage. The licensee believed there was no actual leakage from the "B" RHR heat exchanger tubes for the reasons noted above, and hence, the situation did not warrant the increased on-line risk associated with removing the "A" RHR heat exchanger from service to open the heat exchanger and perform the inspection. While the "B" RHR heat exchanger work had been performed on-line, the licensee indicated that at the time they felt it necessary because neither heat exchanger had ever been inspected internally and therefore they had no baseline data on possible condition.

Analysis: During their review of the licensee's calculational analysis, evaluation, and actions, the inspectors identified the following unresolved items:

- The inspectors questioned the appropriateness of the heat exchanger model the licensee used in their calculational analysis of the heat exchanger capacity. Specifically, based on the internal arrangement of components in the heat exchanger, it was not clear to the inspectors whether the model chosen conservatively estimated cooling capability. Although the licensee indicated that they had actual data from previous performance testing that validated the model, the inspectors questioned whether that correlation would hold true during different accident conditions. This is considered an unresolved item (URI 05000461/2003004-01) pending additional inspector review of the licensee's analysis to determine whether an appropriately model had been used.

- At the conclusion of the inspection, the inspectors were still evaluating the licensee's rational that there was very likely no current tube leakage in either the "A" or "B" RHR heat exchangers nor would there be any consequential progression of degradation before the next refuel outage. Aspects being reviewed included the licensee's belief that the eddy current testing results were conservative, testing and observations that indicated to the licensee that there was no current leakage, the licensee's determination of the cause of the degradation and related corrective actions, and the reasonableness of planned future actions to address the issue. This is considered an unresolved item (URI 05000461/2003004-02) pending completion of this evaluation by the inspectors. Depending on the results of this evaluation, this unresolved item also could encompass the evaluation of the significance of any actual tube leakage.

1R11 Licensed Operator Requalification(71111.11Q)

a. Inspection Scope

The inspectors reviewed licensed operator requalification training to evaluate operator performance in mitigating the consequences of a simulated event, particularly in the areas of human performance. The inspectors evaluated operator performance

attributes which included communication clarity and formality, timely performance of appropriate operator actions, appropriate alarm response, proper procedure use and adherence, and senior reactor operator oversight and command and control. The inspectors also assessed the performance of the training staff evaluators involved in the requalification process. The inspectors completed one sample of licensed operator requalification training as follows:

- Licensed operator requalification training class on June 4, 2003, involving safety relief valve opening and anticipated transient without scram event.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12Q)

a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee's maintenance efforts in implementing the maintenance rule (MR) requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, and current equipment performance problems. These systems were selected based on their designation as risk significant under the MR, or their being in the increased monitoring (MR category (a)(1)) group. The systems were:

- Hydrogen-Oxygen (H2O2) system to (a)(1) status including supporting equipment apparent cause evaluations plus goals and

- Riley Temperature Modules - Group 1 Isolation to (a)(1) status.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluation (71111.13)

a. Inspection Scope

The inspectors observed the licensee's risk assessment processes and considerations used to plan and schedule maintenance activities on safety-related structures, systems, and components particularly to ensure that maintenance risk and emergent work contingencies had been identified and resolved. The inspectors completed four samples by assessing the effectiveness of risk management activities for the following work activities or work weeks:

- Verified risk assessments and preparation for Division I engineered core cooling systems system outage week;

- Risk review during reactor core isolation cooling outage with emergent work on the “B” electro-hydraulic control system, “A” reactor water cleanup system, “D” condensate booster pump work, and a loss of one supply line to the 138kV off-site power source;

- Risk review for high pressure core spray system outage week; and

- Risk review of plan to recover Number 4 main turbine control valve to service.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions (71111.14)

a. Inspection Scope

The inspectors reviewed personnel performance during planned and unplanned plant evolutions and selected licensee event reports focusing on those involving personnel response to non-routine conditions. The review was performed to ascertain that operators’ responses were in accordance with the required procedures. In particular, the inspectors reviewed personnel performance during the following two plant events:

- Monitored licensee performance on loss of 138kV line and

- Monitored licensee performance in recovering No. 4 main turbine control valve to service and raising reactor power to 92.7 percent and generator output to about 102 percent rated electrical power.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following operability determinations and evaluations affecting mitigating systems to determine whether operability was properly justified and the component or system remained available such that no unrecognized risk increase had occurred.

The inspectors completed five samples of the operability determinations and evaluations.

- Supporting operability documentation (SOD) for CR 118743, “1E12F068A Failed to Fully Close With SX/WS Flow through RHR HX”;

- SOD for CR 154293, “RI Test Return Valve 1E51F022 Operated in the Wrong Direction;”

- SOD for CR 154474, “Cracked backplane connector on average power range meter (APRM) D”;

- SOD for CR 155327, “APRM backplane connectors in nuclear monitoring system panels damaged”; and

- SOD for CR 160302, “Small leak in piping 1SX04AA, discharge from Division 1 Emergency Diesel Generator heat exchanger.”

b. Findings

Introduction: The inspectors identified that the licensee’s failure to follow procedure resulted in an inadequate operability evaluation and the failure to enter and execute actions required by plant technical specifications. The finding was of very low safety significance (Green) and was dispositioned as a NCV.

Description: On May 23, 2003, during a flush of the shutdown service water (SX) system, the licensee identified a leak in pipe 1SX04AA-8" which was downstream of the Division 1 emergency diesel generator (EDG) heat exchanger. The licensee removed the insulation and determined the source of leakage was a through-wall pipe leak at a weld to an orifice pipe flange. This piping was classified as safety-related, American Society Mechanical Engineers (ASME) Section XI Class III piping.

The licensee generated a condition report (CR 160302) to document this issue and to evaluate the operability of the pipe. The licensee concluded that there was no danger of catastrophic failure of this line but that the line would degrade over time. Engineering personnel believed that the piping would continue to perform its safety function for quite some time and that it could be reworked as a planned evolution without risk of a function failure. The licensee based this conclusion on ASME Code Case N-597, Requirement for Analytical Evaluation of Pipe Wall Thinning, Section XI, Division 1.”

Using this information, the operators declared the pipe system operable but degraded. However, the operations staff deemed that the issue warranted a more rigorous evaluation by engineering as described in licensee procedure LS-AA-105, Operability Determinations, Revision 1.

On May 28, 2003, the licensee performed zero angle beam ultrasonic examinations on this pipe. On May 29, 2003, the licensee approved the operability evaluation for this issue. The operability evaluation determined that the pipe was operable, despite code qualification not being fully maintained. In the evaluation, the licensee stated that the ratio of measured wall thickness to the nominal wall thickness is 52 percent, which is a 48 percent reduction in wall thickness. The licensee determined that available margin was 75 percent; therefore, the as-found condition was within code. Again, the licensee stated that ASME code case N-597 supported this evaluation.

On June 3, 2003, the inspectors reviewed the operability evaluation and noted significant concerns. Specifically, Inspection Manual Chapter (IMC) Technical Guidance (TG) 9900 "Operability Evaluation," Section 6.15, stated that if there was pressure boundary leakage through an ASME Section XI Code class 1, 2, or 3 component, that component shall be declared inoperable. To restore operability the licensee must perform a code repair in accordance with ASME Section XI or request and receive relief from the NRC for a temporary non-code repair. However, there were a few exceptions listed. First, for moderate energy (less than 275 psig and less 200^{o}F code case 3 piping only), the licensee could perform a flaw evaluation in accordance with Generic Letter (GL) 90-05. Section C.3. for GL 90-05 "Flaw Evaluation" stated that the structural integrity of the flawed piping be assessed by a flaw evaluation. Two specific flaw evaluation approaches as discussed below should be considered, namely, the "through-wall flaw" and the "wall thinning" approaches. The inspectors agreed that the moderate energy exception could apply; however, noted that the licensee chose neither approach. In addition, the inspectors noted that the licensee could use ASME Code Case N513 or code Case N523-1 as described in 10 CFR 50.55a, to evaluate the pipe condition.

Further guidance in Technical Guidance 9900, Section 6.14, also stated that for Class 3 moderate energy piping, the licensee may treat the system containing the flaw(s), evaluated and found to meet the acceptance criteria in GL 90-05, as operable until relief is obtained from the NRC. Alternative evaluation procedures and/or acceptance criteria may also be used for flaws exceeding IWB-3600 or GL 90-05. When alternative evaluation procedures and/or acceptance criteria are used as a basis for acceptable continued service, the licensee must treat the system containing the flaw(s) as inoperable until NRC approval of procedures and criteria is obtained.

The inspectors noted that the operability evaluation generated by the licensee did not use the evaluation approaches contained in GL 90-05 nor did it use the NRC recognized evaluation techniques described in ASME Code Case N513 or N-523-1. The licensee used an alternative method. Therefore, the inspectors concluded that the licensee should have declared this section of SX piping inoperable.

During a meeting on June 3, 2003, the inspectors questioned the operability of the pipe and informed the on-shift shift manager of these concerns and conclusions. The shift manager informed the inspectors that he understood the concerns, but needed to consult with the appropriate technical staff.

On June 5, 2003, the licensee informed the inspectors that an inappropriate flaw evaluation had been used to determine the operability of the leaking piping. The licensee stated that the engineering staff had failed to follow Step 4.5.10.5 of Procedure LS-AA-105 "Operability Determinations," in that, the flaw was not evaluated using Code Case N513. The licensee revised the operability evaluation and replaced the pipe section on June 6, 2003.

During a review of the licensee's corrective actions and control room logs on June 23, 2003, the inspectors identified that the licensee did not declare the diesel generator and service water subsystem inoperable when the licensee determined that the operability evaluation was not technically supported. On July 1, 2003, the licensee

stated that they agreed that operations should have declared the subject piping inoperable, and entered the appropriate LCO action statements.

Analysis: The inspectors used IMC 0612, Appendix B, to disposition this issue and determined that it was more than minor because the finding was associated with the Mitigating System crosscutting attribute of Equipment Performance and affected the Mitigating System objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, continued degradation or catastrophic failure of this pipe could have caused flooding in the diesel generator oil tank room and rendered the fuel-oil transfer pump inoperable. Additionally, a catastrophic failure would have resulted in a loss of inventory from the ultimate heat sink and upset the SX system flow balance.

On June 24, 2003, the licensee informed the inspectors that an operability evaluation using N513 had been completed and based on that evaluation the system would have been considered operable. Using this information, the inspectors evaluated this issue using IMC 0609,"Significance Determination Process." The inspectors conducted a Phase 1 screening and determined that this issue was of low safety significance, because this qualification deficiency did not result in loss of function per GL 91-18. Therefore, this issue was Green.

Enforcement: Section 5.4 Procedures, of Clinton's Technical Specifications, required that written procedures shall be established, implemented, and maintained covering applicable procedure recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Procedures covering operability evaluations are recommended in this regulatory guide. Step 4.5.10.5 of licensee procedure LS-AA-105 directed the licensee to declare the component inoperable upon discovery of leakage from a Class 1, 2, or 3 component pressure boundary. It also stated that for Class 3 moderate energy piping, the licensee could consider the system operable if the through-wall flaw was evaluated and found to meet the acceptance criteria in Code Case N513. Contrary to the above, between May 23 and June 6, 2003, Clinton engineering staff failed to follow LS-AA-105, Section 4.5.10.5, in that the flaw was not initially evaluated using Code Case N513 and the licensee failed to recognize the need to declare the system inoperable. This is violation of TS 5.4. However, because of its very low safety significance and because it was entered into the corrective action program as CR 162300 and CR 165982, the NRC is treating this issue as a Non-Cited Violation (**NCV 05000461/2003004-03**), consistent with Section VI.A.1 of the NRC's Enforcement Policy.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the post maintenance testing activities associated with maintenance or modification of important mitigating, barrier integrity, and support systems that were identified as risk significant in the licensee's risk analysis. The inspectors reviewed these activities to verify that the post maintenance testing was performed adequately, demonstrated that the maintenance was successful, and that

operability was restored. During this inspection activity, the inspectors interviewed maintenance and engineering department personnel and reviewed the completed post maintenance testing documentation. The inspectors used the appropriate sections of the licensee's technical specifications and Updated Final Safety Analysis Report, as well as the documents listed in the Attachment to this report, to evaluate this area.

The inspectors completed six samples pertaining to post maintenance activities. Testing subsequent to the following activities was observed and evaluated:

- Residual heat removal A operability surveillance;
- Reactor core isolation cooling pump and valve operability;
- Division II shutdown service water pump running megger checks;
- Motor-operated valve operational testing on 1E51F031;
- Containment combustible gas control system outage week; and
- Shutdown service water discharge piping from Division 1 emergency diesel generator heat exchangers.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (7111.20)

Inspection Scope

The inspectors evaluated the licensee's conduct of outage activities to assess the licensee's control of plant configuration and management of shutdown risk. The inspectors reviewed configuration management to verify that the licensee maintained defense-in-depth commensurate with the shutdown risk plan; reviewed major outage work activities to ensure that correct system lineups were maintained for key mitigating systems; and observed maintenance activities to verify that operations were performed in accordance with the licensee's technical specifications and approved procedures.

The inspectors completed two samples including:

- Maintenance outage coverage including unplanned manual scram from 33 percent reactor power and
- Turbine startup and main generator synchronization to the electrical grid after high vibration caused a manual scram on shutdown.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors witnessed selected surveillance testing and/or reviewed test data to verify that the equipment tested using the surveillance procedures met the licensee's technical specification, the Clinton Operational Requirement Manual, the Updated Final Safety Analysis Report, and licensee procedural requirements, and demonstrated that the equipment was capable of performing its intended safety functions. The activities were selected based on their importance in verifying mitigating systems capability and barrier integrity. The inspectors used the documents listed in the Attachment to this report to verify that the testing met the frequency requirements; that the tests were conducted in accordance with the procedures, including establishing the proper plant conditions and prerequisites; that the test acceptance criteria were met; and that the results of the tests were properly reviewed and recorded. In addition, the inspectors interviewed operations, maintenance and engineering department personnel regarding the tests and test results.

The inspectors completed eight samples of surveillance testing procedures. The inspectors evaluated the following surveillance tests:

- Division I emergency diesel generator monthly surveillance test;
- Division II emergency diesel generator overspeed trip test;
- High pressure core spray pump and valve surveillance test;
- Division II shutdown service water full flow test;
- Containment airlock local leak rate test;
- Main steam isolation valves flow isolation operability surveillance test;
- Standby gas treatment system train flow / heater operability test; and
- 'B' residual heat removal pump running surveillance test.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed the emergency response activities associated with the drill conducted on May 13, 2003. Specifically, the inspectors verified that the emergency classification and simulated notifications were properly completed, and that the licensee adequately critiqued the training. Additionally, the inspectors observed licensee activities during the drill in the Technical Support Center.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

Cornerstones: Mitigating Systems and Barrier Integrity

.1 Reactor Safety Strategic Area

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicators (PIs) listed below for the period from January 2002 to March 2003. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in Revision 1 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline" were used. The following PIs were reviewed:

- Safety System Unavailability, High Pressure Core Spray System;
- Safety System Unavailability, Reactor Core Isolation Cooling System; and
- Reactor Coolant System Leakage.

The inspectors also interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Closed) Licensee Event Report (LER) 05000461/2003-001-00: "Human Performance Errors Result in Inoperable Containment Isolation Valve and Failure to Isolate Penetration within 4 Hours".

On February 20, 2003, the licensee failed to close the valve as discussed in the NRC Integrated Inspection Report 50-461/03-03. This finding was treated as a non-cited violation. This LER is closed.

.2 (Closed) LER 05000461/2003-002-00: "Manual Reactor SCRAM due to Main Turbine Vibration caused by Deficient Procedure Guidance".

On April 11, 2003, the licensee was lowering reactor power in preparation for maintenance outage C1M13 when turbine vibrations began to increase. The operators scrammed the reactor from 33 percent power when turbine vibrations approached the automatic trip point. The low-pressure turbine vibrations were the result of a minor rub

developing when the temperature changed rapidly due to removing the moisture separator reheaters from service. The licensee determined the root cause to be deficient operating procedures that did not provide sufficient operating restrictions for the new monoblock turbine rotor due to inadequate vendor guidance. Corrective actions included revisions to the plant operating procedures and the vendor manuals. Additional corrective actions were to provide expectations in the design modification process to require independent operating experience reviews during the design phase. The inspectors concluded that the deficient procedure was not a violation of NRC requirements. The licensee documented the event in CR 153458. This LER is closed.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. R. Bement and other members of licensee management at the conclusion of the inspection on July 2, 2003. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meeting

The following interim exit meeting was conducted:

- Heat Sink Inspection with K. Polson, Plant Manager on July 21, 2003.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

R. Bement, Site Vice President
K. Polson, Plant Manager
J. Cunningham, Work Management Director
A. Daniels, Chemistry Manager
R. Davis, Radiation Protection Director
C. Dieckmann, Shift Operations Superintendent
R. Frantz, Regulatory Assurance Representative
W. Iliff, Regulatory Assurance Director
J. Madden, Nuclear Oversight Manager
R. Schmidt, Maintenance Manager
R. Svaleson, Operations Director
C. Williamson, Security Manager
J. Williams, Site Engineering Director

LIST OF ITEMS OPENED AND CLOSED

Opened

05000461/2003004-01	URI	Appropriateness of RHR Heat Exchanger Capacity Calculation Model
05000461/2003004-02	URI	Licensee's Rationale For Concluding No RHR Heat Exchanger Tube Leakage
05000461/2003004-03	NCV	Failure to follow operability evaluation procedure for a through-wall leak in ASME Class III piping.

Closed

05000461/2003004-03	NCV	Failure to follow operability evaluation procedure for a through-wall leak in ASME Class III piping.
05000461/2003-001-00	LER	Human Performance Errors Result in Inoperable Containment Isolation Valve and Failure to Isolate Penetration within 4 Hours
05000461/2003-002-00	LER	Manual Reactor SCRAM due to Main Turbine Vibration caused by Deficient Procedure Guidance

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

1R01 Adverse Weather

CPS 4302.01, Tornado/High Winds, Revision 17b
CPS 1860.01; Cold Weather Operation, Rev. 4c

1R04 Equipment Alignments

CPS 3313.01; Low Pressure Core Spray (LPCS); Revision 15a

CPS 3313.01E001; Low Pressure Core Spray Electrical Lineup; Revision 11a

CPS 3313.01V001; Low Pressure Core Spray Valve Lineup; Revision 13

CPS 2213.01V002; Low Pressure Core Spray Instrument Valve Lineup; Revision 8a

WO 00398442 01; Valve Motor is Leaking Grease at Flange

CR 00064607; Non-Conservative Value Used in Calculation 3C10-0976-002; July 24, 2001

CR 00093973; System Failed 8633.01; February 5, 2002

CR 00097008; CPS 9431.02 Incorrectly revised to Incorporate Calculation Results, February 27, 2002

CR 00116675; OE14032 - General Electric Accident Analyses Do Not Account for Residual Heat Removal Pump Minimum Bypass Flow in Three Cases; July 23, 2002

1R05 Fire Protection

Fire Protection Evaluation Report
Fire Protection Safe Shutdown Analysis

1R06 Flood Protection

CPS 4302.01, Tornado/High Winds, Revision 17b
CPS 4303.01, Loss of the Ultimate Heat Sink - Response Strategies, Revision 0a
CPS 4303.02, Abnormal Lake Level, Revision 7
CPS 4304.01, Flooding, Revision 4a

1R15 Operability Evaluations

CR 118743; SOD
CR 154293; SOD
CR 154474; APRM damaged backplane connectors.
CR 155327; APRM damaged backplane connectors.
CF160302; SOD

1R19 Post Maintenance Testing

CPS 9052.01, LPCS/RHR A Pumps & LPCS/RHR A Water Leg Pump Operability, Revision 42a
CPS 9054.01, RCIC System Operability Check, Revision 42a
Procedure MA-AA-723-300, Diagnostic Testing of Motor-Operated Valves, Revision 0
CPS 9068.03, Primary Containment Recombiner and Valve Operability, Revision 32a

1R22 Surveillance Testing

CPS 9080.01, Diesel Generator 1A Operability - Manual and Quick Start Operability, Revision 49a
CPS 9080.31; CPS 9080.31, Diesel Generator Individual Engine Overspeed Trip Test and Adjustment, Revision 2
CPS 9051.01, HPCS Pump & HPCS Water Leg Pump Operability, Revision 40c
CPS 9051.02, HPCS Valve Operability Test, Revision 38a
CPS 2700.13, Division 2 SX System Flow Balance Verification, Revision 5
CPS 9030.01; ATM Channel Functional and Calibration Check, Revision 32a
CPS 9067.01; Standby Gas Treatment System Train Flow / Heater Operability, Revision 30
CPS 9053-07; RHR B/C Pumps & RHR B/C Water Leg Pump Operability, Revision 44a

LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents Access and Management System
ASME	American Society of Mechanical Engineers
CR	Condition Report
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
EPRI	Electrical Power Research Institute
ERO	Emergency Response Organization
GL	Generic Letter
IMC	Inspection Manual Chapter
LCO	Limiting Condition for Operations
LER	Licensee Event Report
MIC	Microbiological Induced Corrosion
MR	Maintenance Rule
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PI	Performance Indicator
RHR	Residual Heat Removal
SDP	Significance Determination Process
SOD	Supporting Operability Documentation
SX	Shutdown Service Water
TG	Technical Guidance
UHS	Ultimate Heat Sink
URI	Unresolved Item