

July 27, 2007

Mr. Christopher M. Crane
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 05000461/2007003

Dear Mr. Crane:

On June 30, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Clinton Power Station. The enclosed report documents the inspection results, which were discussed on July 12, 2007, with Mr. Bryan Hanson 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, no findings of significance were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (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 by Richard A. Skokowski Acting for/

Mark A. Ring, Chief
Branch 1
Division of Reactor Projects

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

Enclosure: Inspection Report No. 05000461/2007003
w/Attachment: Supplemental Information

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Letter to C. Crane from M. Ring dated July 27, 2007

SUBJECT: CLINTON POWER STATION
NRC INTEGRATED INSPECTION REPORT 05000461/2007003

cc w/encl: Site Vice President - Clinton Power Station
Plant Manager - Clinton Power Station
Regulatory Assurance Manager - Clinton Power Station
Chief Operating Officer
Senior Vice President - Nuclear Services
Vice President - Operations Support
Vice President - Licensing and Regulatory Affairs
Manager Licensing - Clinton Power Station
Senior Counsel, Nuclear, Mid-West Regional Operating Group
Document Control Desk - Licensing
Assistant Attorney General
Illinois Emergency Management Agency
State Liaison Officer, State of Illinois
Chairman, Illinois Commerce Commission

Letter to C. Crane from M. Ring dated July 27, 2007

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000461/2007003

Licensee: AmerGen Energy Company, LLC

Facility: Clinton Power Station

Location: Route 54 West
Clinton, IL 61727

Dates: April 1 through June 30, 2007

Inspectors: B. C. Dickson, Senior Resident Inspector
D. Tharp, Resident Inspector
J. McGee, Reactor Engineer
M. Mitchell, Health Physicist
S. Mischke, Resident Engineer, IEMA

Approved by: Mark Ring, Chief
Branch 1
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000461/2007003, AmerGen Energy Company LLC, 04/01/2007 - 06/30/2007 Clinton Power Station.

This report covers a 3-month period of baseline resident inspection and announced baseline inspections on radiation protection and security. The inspection was conducted by Region III inspectors and the resident inspectors. No findings were 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 safe 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**

None

B. **Licensee-Identified Violations**

One violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and the licensee's corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

The plant was operated at approximately 96 to 97 percent rated thermal power (maintaining 100 percent electrical output) throughout the inspection period with two exceptions. On May 20, 2007, operators lowered reactor power to approximately 58 percent for scheduled control rod pattern adjustments and performed quarterly surveillances. Additionally, during the downpower the operators performed repairs to the reactor water cleanup filter/demineralizer flow control valve. The unit was returned to full power operation on the same day. On June 18, 2007, operators commenced a downpower in response to an increasing trend in unidentified drywell leakage. Prior to the complete shutdown of the reactor, the licensee identified the source of the increasing unidentified drywell leakage as reactor coolant system pressure boundary leakage. On June 20, 2007, following repair of the reactor coolant system pressure boundary leakage the operators commenced reactor startup activities. The plant was returned to 96 percent rated thermal power on June 21, 2007, and remained there through the close 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 conducted inspections of the following equipment and systems:

- Division 3 diesel generator ventilation; and
- Division 3 diesel generator skid & support systems.

The inspectors selected the inspection samples listed above to ensure the equipment could perform design functions during summer conditions. The inspection reviewed the licensee's operating experience, corrective action program, projected work schedule, summer readiness procedures, and Updated Safety Analysis Report (USAR) to verify facility readiness for summer high temperatures and high winds generated by summer storms. In addition to system walkdowns, a site walkdown was performed to evaluate potential vulnerabilities for missile generation during high winds or tornados. Communications protocol between the control room and the transmission system operator was also reviewed during the inspection and examples of the quality of communications were observed due to severe weather conditions during the inspection period. Weather related issues identified during the hot months of 2007 were verified to have been appropriately addressed through the corrective action program.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Complete Semi-Annual Walkdown

a. Inspection Scope

The inspectors conducted a complete system alignment inspection of the standby liquid control system. This system was selected based on its high risk significance and mitigating systems function. The inspectors reviewed plant procedures, drawings, and the USAR to identify proper system alignment and visually inspected system valves, instrumentation, and electrical supplies to verify proper alignment, component accessibility, availability, and current material condition. The inspectors also completed a review of corrective action documents, work orders, and operator work around and challenges to ensure there were no current operability concerns with the system. Documents reviewed during this inspection are listed in the Attachment. These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

.2 Partial Walkdowns

a. Inspection Scope

The inspectors performed partial walkdowns of accessible portions of divisions of risk-significant mitigating systems equipment during times when the divisions were of increased importance due to the redundant divisions or other related equipment being unavailable. The inspectors utilized the valve and electric breaker checklists listed at the end of 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 (CRs) associated with the divisions to verify that those documents did not reveal issues that could affect division function. The inspectors used the information in the appropriate sections of the USAR to determine the functional requirements of the systems. The documents listed at the end of this report were also used by the inspectors to evaluate this area. The inspectors performed three samples by verifying the alignment of the following divisions:

- Division 1 diesel generator during division 2 diesel generator outage;
- Residual heat removal "C" during low pressure core spray outage; and
- High pressure core spray during reactor core isolation cooling outage.

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, and their potential to impact equipment which could cause a plant transient, to verify that fire hoses and extinguishers were in their designated locations and available for immediate use, that fire detectors and sprinklers were not obstructed, 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 reviewed portions of the licensee's fire protection evaluation report and the USAR to verify consistency in the documented analysis with installed fire protection equipment at the station.

The inspectors completed four samples by inspection of the following areas:

- Fire Zones CB-5a, elevation 781' - 0" division 3 switchgear room, CB-5b, elevation 781' - 0" division 3 battery room, and CB-5c , elevation 781' - 0" divisions 1 and 2 cable risers;
- Fire Zones D-7, elevation 762' - 0" division 3 diesel generator heating ventilation and air conditioning room, D-8, elevation 762' - 0" division 1 diesel generator heating ventilation and air conditioning room, D-9, elevation 762' - 0" division 2 diesel generator heating ventilation and air conditioning room, and D-10, elevation 762' - 0" general access and heating ventilation and air conditioning area;
- Fire Zone CB-1e, elevations 737' - 0" and 751' - 0" general access area; and
- Fire Zones A-2a, elevation 707' - 6" reactor core isolation cooling pump room, and A-2b, elevation 707' - 6" residual heat removal "A" equipment room.

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 USAR Section 3.4.1 for internal flooding protection, reviewed the licensee's flooding mitigation procedures, and reviewed issue reports related to possible flood protection issues. Additionally, plant walkdowns were performed in the auxiliary building and the fuel building to verify design barriers were properly maintained. Penetrations between rooms, watertight doors, electrical conduit seals and covers, ceiling plugs, and room sumps were inspected to verify material condition met design assumptions. The inspectors performed a review of the station's maintenance data base to verify preventative maintenance was current and equipment deficiencies were being appropriately reported and resolved. The corrective action program was also reviewed for the past 12 months for issues related to internal flood protection. The inspectors completed one inspection sample by completing the internal flooding review of the following areas:

- Emergency core cooling systems/reactor core isolation cooling pump rooms.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification (71111.11)

a. Inspection Scope

On May 16, 2007, 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. Additionally, simulator physical fidelity and training department actions to incorporate current plant deficiencies and annunciators were evaluated.

Crew performance in these areas was compared to licensee management expectations and guidelines as presented in the following documents:

- ESG-LOR-86, "Stuck open safety relief valve - anticipated transient without scram," Revision 01;
- OP-AA-101-111, "Roles and responsibilities of on-shift personnel," Revision 1;
- OP-AA-103-102, "Watchstanding practices," Revision 6;
- OP-AA-104-101, "Communications," Revision 1; and
- OP-AA-106-101, "Significant event reporting," Revision 7.

The inspectors also assessed the performance of the training staff evaluations involved in the requalification process. For any weaknesses identified during the session, the inspectors observed that the licensee evaluators also noted the issues and discussed them in the critique at the end of the session. Minor discrepancies were reviewed with the training staff. The inspectors verified that all issues were captured in the training program and licensee corrective action program.

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee's maintenance efforts in implementing 10 CFR 50.65 (the maintenance rule (MR)) requirements, including a review of scoping, goal-setting, performance monitoring, short and long-term corrective actions, and current equipment performance problems. These systems were selected based on their designation as risk-significant under the maintenance rule. The inspectors also reviewed issue reports and associated documents for appropriate identification of problems, entry into the corrective action system, and appropriateness of planned or completed actions. The inspectors completed three samples by reviewing the following:

- Maintenance rule system 90: flooding mitigation functions (CPS 4304.01);
- Reactor core isolation cooling system; and
- Division 3 diesel generator ventilation system.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Control (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 seven samples by assessing the effectiveness of risk management activities for the following work activities or work weeks:

- Work week 0714 including reactor water clean-up high temperature channel functional testing and channel calibration of average power range monitor "D";
- Division 2 diesel generator system outage window;

- Work week 0718 including division 1 diesel generator integrated testing and residual heat removal pump and valve testing;
- Risk assessment for the reactor core isolation cooling system outage window;
- Revised assessment of load capability with the reserve auxiliary transformer out of service;
- Work week 0722 activities; and
- Division 1 essential switchgear cooling system outage window.

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 two samples of operability determinations and evaluations by reviewing the following:

- Diesel generator day tank level reportability issues; and
- Residual heat removal “B” & “C” water leg pump inconclusive inservice inspection data.

b. Findings

No findings of significance were identified.

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 Technical Specifications (TS) and USAR, as well as the documents listed at the end of this report, to evaluate this area.

Testing subsequent to the following activities was observed and evaluated to complete six inspection samples:

- CPS 9069.01, division 2 shutdown service water pump room cooler, for work order 786547;
- CPS 9080.30, overspeed test, and CPS 9080.19, overcrank test of division 2 diesel generator, for work order 867419;
- 9080.02, quick start of division 2 diesel generator, for work orders 763106, 1000005, and 802881;
- CPS 9433.26, shutdown service water low pressure calibration and channel functional under work orders 861832 and 959919;
- CPS 3310.01 and CPS 9381.01, reactor core isolation cooling vac breaker testing, and local leak rate testing; and
- CPS 8503.01, division 3 nuclear system protection system inverter under work order 1036758.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

b. Inspection Scope

The inspectors evaluated the licensee's conduct of outage activities during a forced outage, C1F49, to repair a steam leak identified in a flexible hose off of the "C" main steam line. The inspectors assessed the licensee's control of plant configuration and management of shutdown risk. The inspectors monitored shutdown activities and licensee control of other outage activities to verify that the licensee maintained defense-in-depth commensurate with the shutdown risk plan; and reviewed major outage work activities to ensure that correct system lineups were maintained for key mitigating systems. Other major outage activities evaluated included the licensee's control of shutdown cooling suction valve 1E12-F009 and drywell steam leak repairs.

These activities represented one inspection sample.

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 TS, the Technical Requirements Manual (TRM), the USAR, 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 at the end of 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 evaluated the following surveillance tests for reactor coolant system leakage to complete two inspection samples:

- CPS 9443.10, drywell floor drain sump level channel calibration; and
- CPS 9443.03, leak detection system drywell air particulate radiation monitor calibration.

The inspectors evaluated the following in-service testing surveillances to complete two inspection samples:

- CPS 9080.03 diesel generator 1 "C," semi annual quick start; and
- CPS 9015.01, standby liquid control pump operability.

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 drills conducted on May 11 and May 17, 2007. 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 drills in the simulated control room and the technical support center. These activities represent two inspection samples.

- CPS 2007 full scale PI drill for emergency response team "C"; and
- CPS 2007 full scale PI drill for emergency response team "B".

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the Clinton Power Station Updated Safety Analysis Report (USAR) to identify applicable radiation monitors associated with measuring transient high and very high radiation areas including those used in remote emergency assessment. The inspectors identified the types of portable radiation detection instrumentation used for job coverage of high radiation area work, including fixed area radiation monitors used to provide radiological information in various plant areas, and continuous air monitors (CAMs) used to assess airborne radiological conditions and work areas with the potential for workers to receive a 50 millirem or greater committed effective dose equivalent (CEDE). Contamination monitors, whole body counters and those radiation detection instruments utilized for the release of personnel and equipment from the radiologically restricted area were also identified.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.2 Walkdowns of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors conducted walkdowns of selected area radiation monitors (ARMs) in the main control room, reactor and auxiliary buildings to verify they were located as described in the USAR and were optimally positioned relative to the potential source(s) of radiation they were intended to monitor and to verify that control room instrument readout and high alarm setpoints for those ARMs were consistent with USAR information and actual field conditions. Walkdowns were also conducted of those areas where portable survey instruments were calibrated/repaired and maintained for radiation protection (RP) staff use to determine if those instruments designated "ready for use" were sufficient in number to support the radiation protection program, had current calibration stickers, were operable, and were in good physical condition. Additionally, the inspectors observed the licensee's instrument calibration units and the radiation sources used for instrument checks to assess their material condition and discussed their use with RP staff to determine if they were used in accordance with established procedures. Licensee personnel were also observed performing source checks of selected instruments as they were logged-out for use.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Calibration and Testing of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors selectively reviewed radiological instrumentation associated with monitoring transient high and/or very high radiation areas, instruments used for remote emergency assessment and radiation monitors used to identify personnel contamination and for assessment of internal exposures to verify that the instruments had been calibrated as required by the licensee's procedures, consistent with industry and regulatory standards. The inspectors also reviewed alarm setpoints for selected area radiation monitors to verify that they were established consistent with the USAR and TSs, as applicable. Specifically, the inspectors reviewed calibration procedures and the most recent calibration records for the following radiation monitoring instrumentation and instrument calibration equipment:

- Containment high range area radiation monitors;
- Main control room area radiation monitors;
- Refuel floor area radiation monitors;
- New fuel storage vault;
- Selected portable survey instruments; and
- Whole body counter.

The inspectors determined what actions were taken when, during calibration or source checks, an instrument was found significantly out of calibration or exceeded as-found acceptance criteria. The inspectors verified that the licensee's actions would include a determination of the instrument's previous usages and the possible consequences of that use, since the prior calibration. The inspectors also reviewed the licensee's 10 CFR Part 61 source term information to determine if the calibration sources used were representative of the plant source term and that difficult to detect nuclides were scaled into whole body count dose determinations.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed licensee corrective action program (CAP) documents and any special reports that involved personnel contamination monitor alarms due to personnel

internal exposures to verify that identified problems were entered into the corrective action program. Licensee audits and CAP documents were also reviewed to verify that deficiencies and problems with radiological instrumentation, the radiation monitoring system, or self-contained breathing apparatus (SCBA) were identified, characterized, prioritized, and resolved effectively using the corrective action program.

The inspectors reviewed corrective action program reports related to exposure significant radiological incidents that involved radiation monitoring instrument deficiencies since the last inspection in this area, as applicable. Members of the radiation protection staff were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes; and
- Identification and implementation of effective corrective actions.

The inspectors determined if the licensee's self-assessment and/or audit activities were identifying and addressing repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.5 Radiation Protection Technician Instrument Use

a. Inspection Scope

The inspectors selectively verified that calibrations for those instruments recently used and for those designated for use had not lapsed. The inspectors reviewed instrument logs to verify that response checks of portable survey instruments were completed prior to instrument use and upon return of the instrument to the storage area after use, as required by the licensee's procedure. The inspectors also discussed instrument calibration methods and source response check practices with radiation protection staff and observed staff complete instrument operability checks prior to use.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.6 Self-Contained Breathing Apparatus (SCBA) Maintenance/Inspection and User Training

a. Inspection Scope

The inspectors reviewed aspects of the licensee's respiratory protection program for compliance with the requirements of Subpart H of 10 CFR Part 20 and to determine if SCBA was properly maintained and ready for emergency use. The inspectors reviewed the status, maintenance, and surveillance records of SCBAs staged and ready-for-emergency use in various areas of the plant and assessed the licensee's capability for refilling and transporting SCBA air bottles to and from the control room and operations support center during emergency conditions. The inspectors verified that selected control room staff designated for the active on-shift duty roster, including those individuals on the station's fire brigade, were trained and certified to use SCBAs. Additionally, the inspectors reviewed SCBA qualifications for the emergency response organization's radiological emergency team and radiation protection personnel to determine if these staff were qualified in the use of SCBA and specific individuals qualified to refill SCBA bottles and the control room breathing air cascade system.

The inspectors walked down the bottled air supply rack and cascade stations located outside the main control room and inspected SCBA equipment maintained in the control room and SCBA equipment staged for emergency use in various areas of the plant. During the walkdowns, the inspectors examined several SCBA units to assess their material condition, to verify that air bottle hydrostatic tests were current, and to verify that bottles were pressurized to meet procedural requirements. The inspectors reviewed records of SCBA equipment inspection and functional testing and observed selected operations personnel inspect, don, doff, and use SCBA air packs to determine if these activities were performed consistent with procedure and the equipment manufacturer's recommendations. The inspectors inspected selected SCBA bottles to ensure periodic air cylinder hydrostatic testing was documented and up-to-date, and that the Department of Transportation required retest air cylinder markings were in place. Additionally, the inspectors reviewed vendor training certificates for those individuals involved in the repair of SCBA pressure regulators to determine if those personnel that performed maintenance on components vital to equipment function were qualified.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors sampled the licensee's submittals for performance indicators for the period of April 2006 through March 2007. The inspectors used performance indicator definitions and guidance contained in revision 5 of Nuclear Energy Institute (NEI) document 99-02, "Regulatory Assessment Performance Indicator Guidelines," to verify the accuracy of the performance indicator data. The inspectors performed three samples by reviewing the following:

- Safety system functional failures;
- Mitigating systems performance index for the high pressure core spray system; and
- Mitigating systems performance index for the reactor core isolation cooling system.

b. Issues and Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review and Identification of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Minor issues entered into the licensee's corrective action program as a result of inspectors' observations are generally denoted in the report.

b. Findings

No findings fo significance were identified.

.2 Review of Quick Human Performance Investigations (Semi-annual trend review)

a. Inspection Scope

The inspectors conducted a review of licensee Quick Human Performance Investigations (QHPI) completed between September 2006 and April 2007 to identify any trends in licensee identified error precursors, flawed defenses, or latent organizational weaknesses for plant issues that were caused by human performance errors.

b. Observations

The inspectors reviewed 29 QHPs completed in the time period covered by the inspection. For each issue, the inspector reviewed the licensee identified error precursors, flawed defenses, latent organizational weaknesses, and corrective actions. The inspectors analyzed and graphed the data to look for any trends in performance. The most prevalent error precursors identified were assumptions and complacency/overconfidence, with 12 and 10 occurrences, respectively. The overwhelming flawed defense identified by the licensee was questioning attitude. The licensee identified questioning attitude as a flawed defense in nearly 52 percent of the issues that warranted a QHPI. No new issues or trends were identified in this analysis, however, the analysis re-enforced the idea that human errors are more likely when workers are overconfident, make assumptions, and lack the necessary questioning attitude to ensure work is completed error free. The inspectors' other observations included the fact that the licensee identified latent organizational weaknesses when human error is the cause of an issue only about on a third of the time, and the majority of corrective actions taken for issues resulting from human error involved coaching/counseling and some type of communication.

c. Conclusions

The inspectors did not identify any findings or violations of regulatory requirements related to this review. However, the inspectors concluded that the licensee approached human performance issues at the individual level and may benefit from looking at these types of issues from a more holistic perspective. Communication following a human performance error had been relatively ineffective at preventing further errors, and the workforce continued to approach routine tasks with confidence and frequently lacked the necessary questioning attitude to ensure error free performance. These observations were discussed with station management on April 26, 2007.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. Hanson and other members of licensee management at the conclusion of the inspection on July 12, 2007. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

An interim exit meeting was conducted for:

- Occupational radiation safety program for radiation monitoring instrumentation and protective equipment with Mr. B. Hanson, Site Vice- President, and Mr. R. Kearney, Plant Manager, on April 20, 2007.

4OA7 Licensee-Identified Violations

The following violation of very low significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

Cornerstone: Reactor Safety

Section F of Clinton Power Station's operating license NPF-62, states that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the USAR. The USAR required that the fire protection program follow the requirements of Branch Technical Position APCSB 9.5-1, Appendix A, "Plants Under Construction and Operating Plants." Branch Technical Position APCSB 9.5-1, Appendix A, requires that floors, walls and ceilings enclosing separate fire areas be sealed or closed to provide a fire resistance rating at least equal to the fire barrier itself. On November 2, 2006, the licensee identified two open, unsealed, 12" x 12" penetrations in the floor of the Division 3 switchgear room. The penetrations were under the main feed and reserve feed breakers to the 4kV switchgear for Division 3 .

The inspectors determined that the failure to seal two penetrations between separate fire zones was a performance deficiency warranting a significance determination. The inspectors performed a Phase 2 evaluation using IMC 0609, Appendix F, "Fire Protection Significance Determination Process." The inspectors determined that a credible fire scenario existed in that an energetic fault in the 4 kV Division 3 switchgear located directly above the open penetrations could ignite a non-safety related cable tray located directly below the open penetrations. A fire could then propagate horizontally along the non-safety related cable tray and then involve a Division 1 cable tray. The inspectors conservatively assumed that only Division 2 equipment would be available in such a scenario. Based on four vertical cabinet sections as being potential ignition sources, a 30 minute fire propagation time to reach the Division 1 cable tray, and remaining mitigating Division 2 equipment available, the inspectors determined that the issue was of very low safety significance.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

B. Hanson, Site Vice President
R. Kearney, Plant Manager
R. Schenck, Work Management Director
G. Vickers, Radiation Protection Director
R. Frantz, Regulatory Assurance Representative
M. Hiter, Access Control Supervisor
M. Friedmann, Acting Regulatory Assurance Director
C. VanDerburgh, Nuclear Oversight Manager
J. Domitrovich, Maintenance Director
D. Schavey, Operations Director
J. Rappeport, Acting Chemistry Manager
J. Lindsay, Training Manager
C. Williamson, Security Manager
R. Peak, Site Engineering Director
T. Chalmers, Shift Operations Superintendent

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

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

1R04 Equipment Alignments

CPS 3312.01V001, Residual heat removal valve lineup; Rev 16a
CPS 3312.01E001, Residual heat removal electrical lineup; Rev 14
CPS 3506.01E001, Diesel generator and support systems electrical lineup; Rev 18a
CPS 3506.01V001, Diesel generator and support systems valve lineup; Rev 13a
CPS 3506.01P001, Division 1 diesel generator operations; Rev 1
CPS 3309.01E001, High pressure core spray electrical lineup; Rev 7
CPS 3309.01V001, High pressure core spray valve lineup; Rev 11
IR 567141, 1E22S004101 Trip fuse housing cracked; December 8, 2006
IR 609563, 1E22F010, Loose connection on variable resistor; March 27, 2007
IR 609749, 1E22F039 Possibly leaking, results in invalid local leak rate test; March 28, 2007
IR 00632802; NRC concern about repeated SRV acoustic monitor alarms.
IR 00641009; Several Deficiencies reported by the NRC representative.

1R05 Fire Protection

CPS 1893.04M353, 781 Control: Division 3 switchgear and battery room pre-fire plan; Rev 5
USAR Appendix E, Section 3.5.7, Fire area D-7, elevation 762' 0" division 3 diesel generator HVAC room; Rev 11
USAR Appendix E, Section 3.5.8, Fire area D-8, elevation 762' 0" division 1 diesel generator HVAC room; Rev 11
USAR Appendix E, Section 3.5.9, Fire area D-9, elevation 762' 0" division 2 diesel generator HVAC room; Rev 11
USAR Appendix E, Section 3.5.10, elevation 762' 0" general access and HVAC area; Rev 11
USAR figure FP-12a, Fire zone boundaries control and diesel generator building mezzanine floor plan elevation 762' 0"; Rev 10
USAR figure FP-12b, Fire protection features control and diesel generator building mezzanine floor plan elevation 762' 0"; Rev 10
IR 625420, Combustible material found in combustible free area; May 4, 2007
IR 628515, Combustible fire load in firezone D-10 questioned; May 11, 2007
IR 00552556, Unsealed penetrations found under 1E22S004

1R15 Operability Evaluation

WO 1013085, CPS 9053.07 Residual heat removal operability test (RHR B/C water leg pump); June 24, 2007
IR 643412, 1E12C003 Inconclusive in-service inspection data for water leg pump surveillance; June 22, 2007
Technical Specification surveillance requirement 3.5.1.1 bases; Rev 3-4
IR 00531322; NRC question: NRC administrative letter 98-10 not addressed by IR.

1R19 Post Maintenance Testing

WO 763106, Replace governor booster servo check valve 1DG-675; March 29, 2007
WO 997835, PI&R Focused area self assessment: diesel generator walkdown, Division 2 fuel oil accumulator; February 8, 2007
Apparent cause report 379980, Division 3 diesel generator exhibited slow starting times and poor load stability following maintenance; April 18, 2007
WO 786547, Operations restore and post maintenance test 1SX010B using CPS 9069.01; April 17, 2007
WO 1036758, Troubleshoot and repair division 3 inverter, 1C71S001C; June 11, 2007
IR 638917, Unexpected alarms division 3 nuclear systems protection system inverter; June 10, 2007
IR 129655, Division 3 inverter 1C71-S001C supply fuse blown; October 21, 2002
CPS 8503.03, Nuclear systems protection system inverter calibration; Rev 12

1R 20 Refueling and Outage Activities

IR 00643224; Tools / debris found during DW closeout in C1F049.
IR 00643315; Review applicability of ITS 3.4.6.

1R22 Surveillance Testing

USAR section 5.2.5.1.1, Detection of leakage within the drywell; Rev 12
USAR section 5.2.5.2, Leak detection instrumentation and monitoring; Rev 11
USAR section 5.2.5.5, Unidentified leakage inside the drywell; Rev 11
Regulatory Guide 1.45, Reactor coolant pressure boundary leakage detection systems; May 1973
IR 525038, Low flow locked in at 5067-1G for fission product monitor; August 29, 2006
WO 916169, 1E31N503: Troubleshoot and repair pressure switch; June 11, 2007
WO 803622, 9443.03A20, Leak detection system drywell air particulate E31-K610 radiation monitor calibration; June 12, 2007
CPS 9443.03, Leak detection system drywell air particulate radiation monitor calibration; Rev 35F
WO 804316, Perform drywell floor drain sump level channel calibration; June 12, 2007
CPS 9443.10, Drywell floor drain sump level 1E31-N764 channel calibration; Rev 33d

OA1 Performance Indicator Verification

LER 05-461 2006-001-00, Failure to tighten terminal screw causes turbine/generator trip and reactor scram; May 17, 2006
LER 05-461 2006-004-00, Inadequate configuration control risk assessment causes loss of safety function; December 19, 2006
LER 05-461 2006-002-00, Main turbine bypass system safety function lost due to circuit card failure; October 13, 2006
NEI 99-02, Regulatory assessment performance indicator guideline; Rev 4
NEI 99-02, Regulatory assessment performance indicator guideline; Rev 5
Mitigating system performance index derivation report for high pressure core spray and reactor core isolation cooling systems; June 26, 2007
Reactor oversight program mitigating system performance index basis document Clinton Power Station; Rev 2
RIS 2006-07, Changes to the safety system unavailability performance indicators; June 12, 2006

OA2 Identification and Resolution of Problems

IR 610110, Lead shielding shipment work stopped due to carbon monoxide; March 28, 2007
IR 579166, Minor vehicle accident at flume; January 15, 2007
IR 594756, Incorrect carrier gas found installed; February 22, 2007
IR 574966, Regen heater surface high temperature alarm; January 3, 2007
IR 601264, Maintenance mechanic splashed fyrquel on face and suffers eye injury; March 8, 2007
IR 600268, Work performed without proper clearance sign on; March 8, 2007
IR 577084, Field observation identified safety practice deficiencies; January 9, 2007
IR 602852, Operations department did not perform step as required by procedure; March 12, 2007
IR 601273, Near miss high radiation area event; March 8, 2007
IR 574365, Incorrect EDD caused schedule change; January 2, 2007
IR 569335, Poor communication resulted in inadequate clearance request; December 14, 2006
IR 578740, Qualification discrepancy between eSOMS and baseline; January 12, 2007
IR 580386, Wall light contacted by crane hook; January 18, 2007
IR 592578, MOV test data out of spec for MOV 11A013A; February 16, 2007
IR 582402, Process leads to missed fire protection compensatory measures; January 23, 2007
IR 569128, CRS exceeded overtime controls guidelines; December 14, 2006
IR 600585, Holes in mounting plate not located correctly; March 7, 2007
IR 606949, Missed weld inspection on B residual heat removal; March 21, 2007
IR 588284, Clearance did not include ground test device or seal water isolation; February 6, 2007
IR 543869, Valve 1CP006B fails to stroke; October 13, 2006
IR 533682, 1E12-F064C stroked closed during 8801.02 loop calibration; September 20, 2006
IR 552687, Licensed operator annual exam issue; November 2, 2006
IR 594509, Material handler fell on ice on walkway and was injured; February 22, 2007
IR 595452, ILT06-1 Off-Normal written exam consequential exam security event; February 23, 2007
IR 578991, Potential unmonitored release path; January 14, 2007
IR 544881, Valve 1CPMV15D operates backward after maintenance; October 17, 2006
IR 540871, Gaitronics speaker bumped during sealand move on exterior northwest corner of turbine building; October 6, 2006
IR 543838, Electrical maintenance manipulated the incorrect breaker during the performance of work order 633099 task 3; October 13, 2006
IR 587582, Company vehicle accident in parking lot; February 5, 2007

LIST OF ACRONYMS USED

ADAMS	Agency wide Documents Access and Management System
ARM	Area Radiation Monitor
CAMs	Continuous Air Monitors
CAP	Corrective Action Program
CEDE	Committed Effective Dose Equivalent
CRs	Condition Reports
IMC	Inspection Manual Chapter
KV	Kilo Volt
MR	Maintenance Rule
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PI	Performance Indicator
QHPI	Quick Human Performance
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RP	Radiation Protection
RT	Reactor Water Cleanup
SCBA	Self-Contained Breathing Apparatus
SDP	Significant Determination Process
USAR	Updated Safety Analysis Report