

April 28, 2005

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 05000461/2005003

Dear Mr. Crane:

On March 31, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Clinton Power Station. The enclosed report documents the inspection findings which were discussed on April 6, 2005, 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, one NRC-identified and two self-revealed findings of very low safety significance (Green) were identified. All three were determined to involve violations of NRC requirements; however, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violation, 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, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, US Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at Clinton Power Station facility.

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Sincerely,

*/RA/*

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

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

Enclosure: Inspection Report No. 05000461/2005003  
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Clinton Power Station  
Plant Manager - Clinton Power Station  
Regulatory Assurance Manager - Clinton Power Station  
Chief Operating Officer  
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000461/2005003

Licensee: AmerGen Energy Company, LLC

Facility: Clinton Power Station

Location: Route 54 West  
Clinton, IL 61727

Dates: January 01 through March 31, 2005

Inspectors: B. Dickson, Senior Resident Inspector  
C. Brown, Resident Inspector  
D. Tharp, Resident Inspector  
R. Alexander, Radiation Protection Specialist  
D. Zemel, Illinois Emergency Management Agency  
Inspector

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000461/2005003, AmerGen Energy Company LLC, on 01/01/2005 - 03/31/05 Clinton Power Station. Fire Protection, Surveillance Testing, and Event Follow-up.

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 a Region III inspector and the resident inspectors. Three Green findings were identified during the inspection; all were Non-Cited Violations. 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-Revealed Findings

#### Cornerstone: Initiating Events

- Green. A finding of very low safety significance was identified by the inspectors on March 17, 2005, for a violation of license-required fire protection program requirements. The licensee failed to establish adequate hourly fire watches for a failed ionization detector as required by the approved fire protection program procedure. Following the inspectors' identification of this issue, the licensee established an hourly fire watch that met the requirements and recommendations of the licensee's approved fire protection program procedures.

This finding was more than minor because if left uncorrected, it could become a more significant safety concern. The licensee's ability to quickly detect a fire in the area was impaired due to an insufficient number of smoke detectors. The issue was of very low safety significance because the fire protection element impacted by the finding was still expected to provide some defense-in-depth benefit due to a second fire detector located in the room. Additionally, there were two nearby hose stations which could be used for fire suppression activities. The issue was a Non-Cited Violation of the facility operating license section 2.F which required the implementation of the fire protection program. (Section 1R05)

#### Cornerstone: Barrier Integrity

(Green) Through a self-revealing event (unexpected de-energized relay found during maintenance) the inspectors identified a Non-Cited Violation (NCV) of very low safety significance. This finding resulted from licensee personnel incorrectly designating procedural steps as not applicable during the performance of a calibration procedure, Clinton Power Station (CPS) 9432.60, "Channel Functional Test for Containment Building Exhaust Radiation Monitor," required by Technical Specifications. In Issue Report (IR) 289643, the licensee documented that with the relay de-energized the affected primary containment isolation valve cannot be opened without taking the corresponding Division 2 LOCA BYPASS switch to the BYPASS position (an action administratively controlled by Operations).

The inspectors determined that the finding was greater than minor because this issue could be reasonably viewed as a precursor to a more significant event. Additionally, this finding was associated with the Barrier Integrity Cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radioactive releases caused by accidents or events. The finding was of very low safety significance because this issue did not cause an actual open pathway in the physical integrity of reactor containment. The licensee documented the issue in IR 289643 and generated corrective actions as the result of a human performance investigation report being performed. These corrective actions included revising CPS 9432.60 to clearly identify the reason for placing the switch to BYPASS. (Section 1R22)

**Cornerstone: Public Radiation Safety (PS)**

- Green. A finding of very low safety significance and an associated Non-Cited Violation were identified through a self-revealing event on October 7, 2004, when licensee personnel discovered that three nuclear instrument detectors (containing a very small amount of radioactive material) were not adequately controlled. Licensee personnel believed that the material was contained in a small container which was sealed in 1991 as part of a disposition plan for the defective instruments. The licensee's search of other material containers and documentation failed to identify the final disposition of the radioactive material.

The issue was more than minor because it was associated with the Human Performance and Programs/Process attributes of the Public Radiation Safety Cornerstone and affected the cornerstone objective of ensuring adequate protection of public health and safety from exposure to radioactive materials potentially released into the public domain. Based on various dose calculation scenarios, the very small amount of missing radioactive material would contribute a negligible radiological dose if a member of the public were to be exposed to the material. Additionally, the inspectors determined that the licensee did not have any prior radioactive material control occurrences in the previous 8 quarters. Therefore, the finding was of very low safety significance. The licensee's corrective actions for this issue included the development of procedural guidance which prohibits removing nuclear instrument detectors from the cabling as part of a disposition plan for defective units. One Non-Cited Violation for the failure to control licensed radioactive material in accordance with 10 CFR 20, Subpart I, was identified. (Section 4OA3.1)

**B. Licensee-Identified Violations**

None

## REPORT DETAILS

### Summary of Plant Status

The plant began the inspection period at approximately 94.5 percent rated thermal power (maintaining 103 percent electrical output). On January 7, 2005, plant power was reduced to approximately 91.5 percent rated thermal power (maintaining 100 percent rated electrical output). On January 18, 2005, plant power was reduced to approximately 26 percent power to repair leaking tubes in the main condenser. The plant was returned to 91.5 percent rated thermal power on January 20, 2005. On February 21, 2005, plant was reduced to 30 percent rated thermal power to perform main condenser tube repair. Following repair of the main condenser tubes, the reactor was shutdown to investigate the cause of the 4B low pressure feedwater heater trip which occurred on February 17, 2005. Following an entry into the main condenser, the licensee identified a catastrophic failure of the thermal expansion bellows for the extraction steam line for the 4B low pressure feedwater heater. After repairs were complete inside the condenser, the reactor was restarted on March 2, 2005. During power ascension activities the licensee noted continued issues related to 4B feedwater heater operations. Reactor power was held at 85 percent of rated thermal until March 12, 2005. On March 12, 2005, the reactor was shutdown to investigate the cause of the 4B low pressure feedwater heater issues. The licensee discovered that the 4B low pressure feedwater heater extraction steam check valve had failed (disc separation from the valve stem). Following repair of the extraction steam check valve, the licensee restarted the plant on March 13, 2005. The licensee synchronized the turbine to the grid and completed raising reactor power to 92 percent thermal (about 100 percent rated electrical power) on March 14, 2005. The plant was operated at this power through the remainder of the period.

#### 1. **REACTOR SAFETY**

##### **Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R04 Equipment Alignments (71111.04Q)

##### 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 Updated Safety Analysis Report (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 four samples by verifying the alignment of the following divisions:

- Division 2 control room ventilation.
- Division 1 standby gas treatment alignment following system outage window.
- Division 2 residual heat removal system during unavailability of Division 1 residual heat removal "A" system due to scheduled surveillance test activities.
- Division 2 automatic depressurization system during a Division 1 system outage window.

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 cause a plant transient, or their impact on the licensee's ability to respond to a security event. The inspectors used the documents listed at the end of 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 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 (FPER) and the USAR to verify consistency in the documented analysis with installed fire protection equipment at the station.

The inspectors completed 11 samples by inspection of the following areas:

- Fire Zone FB-13a, Division 2 cable separating room.
- Fire Zone D-4a, Division 3 diesel generator room and CO2 system test overview.
- Fire Zone T-1m, turbine building.
- Fire Zone A-1b, general access area.
- Fire Zone CB-1g, halon bottle bank.
- Fire Zones A-2a, reactor core isolation cooling room; A-2h, residual heat removal A pump room; and A-2c, low pressure core spray pump room.
- Fire Zone M-1 and M-2, Divisions 1, 2, and 3 shutdown service water pump rooms.
- Fire Zone F-1b, high pressure core spray pump room.



- Fire Zones A-2n, Division 1 switchgear; A-2o, containment electrical penetration area;
- Fire Zone A-3a, residual heat removal B pump and heat exchanger rooms.
- Fire Zones D-6a, Division 2 emergency diesel generator room; D-6b, Division 2 emergency diesel generator oil day tank room; and D-3, Division 2 fuel oil storage tank room.
- Follow-up activities related to Calloway and Wolfcreek sites- 24 Hour Condition of Licensee Report Regarding Halon System Actuator Port Connection Error.

b. Findings

Introduction: The inspectors identified a Non-Cited Violation (NCV) of the licensee's operating license NPF-62, Section 2.F relating to the fire protection program. Specifically, the violation was for failing to establish adequate compensatory actions (hourly fire watch) according to fire protection program procedures.

Description: On February 23, 2005, the licensee identified that the hourly fire watch for an inoperable ionization detector (64-15) in the residual heat removal (RHR) B pump room (Fire Zone A-3a, auxiliary building level 707', Room A1-8) had been improperly canceled due to radiological concerns. As a corrective action the licensee placed a portable camera in Room A4-2 (RHR B heat exchanger extension area auxiliary building level 762'). The hourly walkdowns recommenced and entailed viewing room A4-2 via a remote monitor. Room A4-2 is also in Fire Zone A-3a. The ionization detector was originally declared inoperable on June 9, 2004, during performance of a fire protection surveillance test.

On March 17, 2005, during a tour of auxiliary building, the inspectors noted that the licensee's placement of the camera only allowed viewing of Room A4-2 and Room A2-2 (737' RHR B heat exchanger extension). According to the licensee, Clinton Power Station (CPS) 1983.01, "Fire Protection Impairment Reporting," Appendix A, required the establishment of an hourly fire watch if the fire detection instrumentation was below the minimum required for that area as shown in Appendix D. Appendix D of CPS 1983.01, required a minimum of two detectors in Room A1-8 707' RHR B pump room.

Section 8.1 of CPS 1983.01, "Determination of Operability of Fire Protection Systems," stated that fire watches shall be conducted per OP-MW-201-007, "Fire Protection System Impairment Control." Procedure OP-MW-201-007, states that the hourly fire watches are to identify any conditions likely to cause a fire or affect the severity of a fire, such as leaks, spills, accumulation of combustibles, equipment storage, or faulty equipment. The procedure also directs the fire watch to report any discovery of smoke to the control room. Attachment 3 of OP-MW-01-07, "Guidance for Prescribing Fire Watches," provides clarification for prescribing fire watches and determining whether a fire watch should be performed for a specific location, or throughout the room/fire zone/fire area applicable to the impaired fire protection safety systems and components. Regarding impaired detection systems, the procedure states that for area wide detection systems such as that provided in most plant areas, the scope of the watch is the entire room, zone or elevation protected with the impaired detection capability. However, for localized detection systems, the scope of the watch is that portion of the room, zone or elevation that is protected with the impaired detection capability (i.e., not the entire room, zone or elevation).

As stated above, the inoperable smoke detector was located in Room A1-8 (707' RHR B room). Despite being in the same fire zone, Room A1-8, which is approximately 900 square feet in size, is partitioned from the RHR heat exchanger rooms (Room A1-9, Room A2-2, and Room A4-2), with a wall that extends past the Room A1-8 ceiling. The inspectors concluded the ceiling mounted smoke detectors in Room A1-8 ceiling were localized smoke detectors. Therefore the inspectors concluded that the licensee failed to establish appropriate compensatory actions (hourly fire watch) in accordance with established fire protection program procedures.

Analysis: The inspectors determined that failing to provide adequate fire protection compensatory measures for the B RHR pump area was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was greater than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," issued on June 20, 2003. The inspectors determined that the finding was more than minor because if left uncorrected, it could become a more significant safety concern because it could affect the licensee's ability to detect a fire. In addition, the finding involved the attribute of protection against external factors (fire) and could have affected the mitigating systems objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. The licensee's ability to quickly detect a fire in the area was impaired due to an insufficient number of smoke detectors.

The inspectors completed a significance determination of this issue using IMC 0609, Appendix F, "Fire Protection Significance Determination Process," dated February 28, 2004. The inspectors assigned a degradation rating of moderate because the failure to provide adequate compensatory measures for the inoperable smoke detector in the "B" RHR pump area would impact performance of the fire detection system in this location. However, the fire protection element impacted by the finding was still expected to provide some substantial defense-in-depth benefit due to the second fire detector located in the room. Considering the duration factor (DF) of greater than 3 days and less than 30 days ( $DF = 0.1$ ) and generic fire area fire frequencies in the BWR reactor building ( $F_{Area} = 9E-2$ ), the inspectors determined that a Phase 2 evaluation was necessary to determine the significance of this issue. The inspectors reviewed the applicable SDP Worksheet and determined that based on the availability of safety functions (i.e HPCS, LPI, one train of RHR, one train of RCIC...), which would not be impacted by a fire in this area, the core damage frequency value was very low. Therefore, this finding was considered to be of very low safety significance (Green).

Enforcement: Clinton Facility Operating License NPF-62, Section 2.F, stated, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report. Clinton Updated Safety Analysis Report, Section 9.5.1, "Fire Protection System," stated, in part, that the Fire Protection Evaluation Report (FPER) constituted the bases for the fire protection program at Clinton Power Station. Fire Protection Evaluation Report, Section 4, "Compliance with BTP APCSB 9.5-1 Appendix A, Plants Under Construction and Operating Plants," stated, in part, that inspections, tests, administrative controls, fire drills, and training that govern the fire protection program should be prescribed by documented instructions, procedures or drawings and should be accomplished in accordance with these procedures. Licensee procedure OP-MW-201-007, "Fire Protection System Impairment Control," stated that fire watches were to identify any

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conditions likely to cause a fire or affect the severity of a fire, such as a leaks, spills, accumulation of combustibles, equipment storage, or faulty equipment. Additionally, this procedure states, "that for localized detection systems, the scope of the watch is that portion of the room, zone or elevation that is protected with the impaired detection capability" (i.e., not the entire room, zone or elevation). Contrary to the above, on March 17, 2005, the inspectors identified that the licensee failed to follow this procedure, in that the portable camera that was in Fire Zone A3-a was not placed in a location where the fire watch could observe conditions in the immediate area of the failed ionization detector (Room A1-8). Once identified, the licensee entered the issue into its corrective action program as IR 00315404. The licensee recommenced tours of Room A1-8. No other deficiencies were identified. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program, this violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy. **(NCV 05000461/2005003-01)**.

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 events and reviewed condition reports and work orders on the following:

- Follow-up of licensee's actions following entry into abnormal operation procedure for external flooding due to high lake level (694' 0").
- Reviewed licensee provisions for internal flooding if the freeze seal on the 18-inch shutdown service water entry pipe gave way, including the possible effects on low pressure core spray, high pressure core spray and Division 1 drywell cooling.

These activities completed two inspection samples.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

The inspectors reviewed licensed-operator requalification training (LORT) 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.

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

- ESG-ILT-24, "Inadvertent Safety Relief Valve Opening, ATWS," Revision 00
- OP-AA-101-111, "Roles and Responsibilities of On-Shift Personnel," Revision 0;
- OP-AA-103-102, "Watchstanding Practices," Revision 2;
- OP-AA-104-101, "Communications," Revision 1; and
- OP-AA-106-101, "Significant Event Reporting," Revision 2.

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

These activities completed one inspection sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

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 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 being in the increased monitoring (MR category (a) (1)) group. In addition, the inspectors interviewed the system engineers and maintenance rule coordinator. The inspectors also reviewed condition reports and associated documents for appropriate identification of problems, entry into the corrective action system, and appropriateness of planned or completed actions. The documents reviewed are listed at the end of the report. The inspectors completed three samples by reviewing the following:

- Primary containment isolation function associated with reactor water cleanup system.
- Pseudosystem 89, secondary containment gas control boundary.
- Hydramotors after a shutdown service water hydramotor and a switchgear heat removal hydramotor failed stroke tests.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment (71111.13)

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 10 samples by assessing the effectiveness of risk management activities for the following work activities or work weeks:

- Planned maintenance activities associated with control room ventilation B (WO 705522).
- Risk assessment for work on the reactor core isolation cooling system (WO 771363).
- Planned maintenance on Division 3 diesel (replacement of lube oil immersion heater) and overspeed trip test.
- Risk assessment of work schedule for Work Week 511 (Non divisional work week)
- Risk assessment for the licensee's schedule for plant shutdown and repairs to the 4B low pressure feedwater heater extraction steam check valve (and other repairs).
- Licensee contingency plans and risk management evaluation for freeze seal on 18-inch shutdown service water pipe inside fuel building.
- Licensee's preparations for startup from C1F45.
- Shutdown of rod control and information system for replacement of probe data processor card (WO 729648).
- Removal of essential switchgear 1A and 1A1 heat removal fan from service for planned maintenance.
- Risk assessment of work activities associated with downpower to repair/plug tubes in maintenance condenser online.

b. Findings

No findings of significance were identified.

1R14 Non-routine Evolutions (71111.14)

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 operator responses were in accordance with the required procedures. In particular, the inspectors reviewed personnel performance during the following four plant events:

- Observed and evaluated operator performance during plant down power activities to repair/plug main condenser tubes.
- Observed control room operators placing Division 2 residual heat removal into shutdown cooling operation.
- Observed reactor start-up activities from the main control room following forced maintenance outage (C1F45).
- Loss of 138 kV offsite power and the emergency reserve auxiliary transformer due to failed lightning arrester.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

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

- Operability evaluation for a leak on the letdown line from the reactor water cleanup system to the main condenser.
- B reactor recirculation pump discharge valve failure to close (IR 304605).
- Division 4 diesel generator lube oil temperature out of spec high (IR 306736).
- Standby gas treatment system flow oscillations.
- Operability evaluation (OE 300035) for the emergency diesel generator ventilation systems with currently installed electro-pneumatic relays.
- Operability evaluation (OE 288494-02) pool swell qualification of containment instrument panels.
- Abnormal pump suction pressure alarms following high pressure core spray surveillance test activities (IR 294015).

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (71111.16)

a. Inspection Scope

The inspectors completed a cumulative effect review of all operator work-arounds to identify any potential effect on the functionality of mitigating systems.

- 1CCO1PA component cooling water pump 1A - loss of net positive suction head causes air compressor trip.

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. The inspectors completed seven samples of the post maintenance testing area by reviewing the following:

Testing subsequent to the following activities was observed and evaluated:

- Division 1 standby gas treatment inlet damper, OVG01YA, hydramotor failure and replacement (WO 703237 and WO 706539).
- Division 2 residual heat removal control power fuse replacement for service valves (WO 720962, WO 700800 and WO 727799).
- Reactor core isolation cooling system steam inlet drain trap bypass valve (1E51-F054)
- Relay replacement for containment exhaust high radiation monitor (WO 729961)
- Division 2 shutdown service water system 18-inch inlet pipe replacement.
- Division 2 control room ventilation's 10-hour run following planned outage, and
- Division 2 residual heat removal pump's minimum flow valve relay replacement.

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 plant 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 and reviewed major outage work activities to ensure that correct system lineups were maintained for key mitigating systems.

Between February 21, 2005, and March 3, 2005, the inspectors observed command and control of work activities from the licensee's outage control center and main control room and performed plant walkdowns to observe outage maintenance activities. The inspectors observed the following work activities:

- Repair of the A reactor recirculation pump oil bubbler,
- Replacement of upper seal package on B reactor recirculation pump,
- Replacement of the extraction steam line thermal expansion bellows inside the condenser,
- Repairs to the low-load valve,
- Replacement of the reactor core isolation cooling system steam supply line inlet drain bypass valve (1E12F054), and
- Drywell closeout following maintenance activities.

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 T.S., the Operational Requirements Manual (ORM), 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 seven surveillance tests:

- Main steam line tunnel temperature instrumentation channel calibration.
- High pressure core spray pump operability run.
- Reactor core isolation cooling operability run.
- Division 1 shutdown service water pump operability run.
- Division 1 emergency diesel generator (EDG) operability run.
- Standby liquid control operability test.
- Division 2 EDG monthly operability run.

### b. Findings

Introduction: Through a self-revealing event (de-energized relay found during maintenance) the inspectors identified a Non-Cited Violation (NCV) of very low safety significance (Green). This finding resulted from licensee personnel incorrectly designating procedural steps as not applicable during the performance of calibration procedures required by TSs.

Description: On January 11, 2005, during maintenance activities to replace relay 1UAYPS516A, the licensee noted that the relay was unexpectedly de-energized. Relay 1UAYPS516A, is a relay used to support primary containment isolation logic (Group 12). The isolation valves affected by the issue are used to isolate the post accident sampling system. With the relay de-energized, Group 12 isolation logic was in a tripped condition.

A licensee investigation determined that on December 21, 2004, during the performance of Clinton Power Station (CPS) 9432.60, "Channel Functional Test for Containment Building Exhaust Radiation Monitor," maintenance personnel inappropriately designated steps 8.6.13 and 8.6.14 as not applicable (N/A) prior to performance of the channel function test. Steps 8.6.13 and 8.6.14, were necessary to reset the conditions that de-energized the relay during the Technical Specification required channel functional test. Operators in the control room were unaware of the Group 12 logic condition because the system design does not provide indication of trip status.



Administrative procedure HU-AA-104-101, "Procedure Use and Adherence," allows the use of not applicable when very specific conditions are met. In Section 4.7, HU-AA-104-101 states that if a portion of a procedure is used in lieu of performing the procedure in its entirety then the supervisor of the individual performing the procedure will determine the steps that are adequate and appropriate to accomplish the desired task. The procedure also states, "the supervisor is also required to ensure the component/system is returned to a condition ready to perform the next evolution or returned to a condition normal/expected for plant conditions at that time."

Following the performance of CPS 9432.60, the supervisor failed to ensure that N/A'ed portions would not prevent the relay from being returned to the expected condition following performance of the functional test. This resulted in this relay being returned to service in a condition that was not expected for a total of 21 days.

Analysis: The inspectors concluded that the failure to ensure the appropriate use of not applicable during the performance of CPS 9432.60, was a performance deficiency warranting a significance evaluation. The inspectors determined that the finding was greater than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, " Issue Disposition Screening" issued January 14, 2004. The finding was associated with the Barrier Integrity Cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radioactive releases caused by accidents or events. The finding was of very low safety significance because this issue did not cause an actual open pathway in the physical integrity of reactor containment. The licensee documented in IR 289643 that with the relay de-energized, the affected primary containment isolation valve cannot be opened without taking the corresponding Division 2 LOCA BYPASS switch to the BYPASS position (an action administratively controlled by the operations department).

Enforcement: Technical Specifications, Section 5.4, "Procedures," states, in part, that written procedures shall be established, implemented, and maintained covering the activities as recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Administrative Procedure HU-AA-104-101, "Procedure Use and Adherence," a procedure recommended by Regulatory Guide 1.33, allows the use of not applicable when very specific conditions are met. In Section 4.7, HU-AA-104-101 states that, "if a portion of a procedure is used in lieu of performing the procedure in its entirety then the supervisor of the individual performing the procedure will determine the steps that are adequate and appropriate to accomplish the desire task." The procedure also states that, "the supervisor is also required to ensure the component/system is returned to a condition ready to perform the next evolution or returned to a condition normal/expected for plant conditions at that time." Contrary to the above, on December 21, 2004, the licensee failed to adequately review steps annotated as not applicable (N/A). This issue resulted in the relay being in an unexpected, de-energized state for a period of 19 days. The licensee documented the issue in IR 289643 and generated corrective actions as the result of a human performance investigation report being performed. These corrective actions included revising CPS 9432.60 to clearly identify the reason for placing the switch to BYPASS. Because of the very low safety significance of this finding and because the issue was entered into the licensee's corrective action program, the finding is being treated as a Non-Cited Violation consistent with Section VI.A.1 of the NRC Enforcement Policy **(NCV 05000461/2005003-02)**.

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### 3. RADIATION SAFETY

#### PUBLIC RADIATION SAFETY (PS)

##### 2OS1 Access Control to Radiologically Significant Areas (71121.01)

###### .1 Plant Walkdowns and Radiation Work Permit Reviews

###### a. Inspection Scope

The inspectors reviewed licensee controls and surveys for selected radiation areas, high radiation areas, and airborne radioactivity areas, and reviewed work packages including associated licensee controls and surveys to determine if radiological controls (including surveys, postings, and barricades) were acceptable for the following three radiologically significant work areas within the plant:

- Containment Building;
- Fuel Building; and
- Turbine Building.

The inspectors reviewed the radiation work permits (RWP) and work packages used to control work in these three areas to identify the work control instructions and control barriers that had been specified. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. Workers were interviewed to verify that they were aware of the actions required when their electronic dosimeters noticeably malfunctioned or alarmed.

The inspectors observed work activities (e.g., the spent fuel pool clean out project and the reactor water cleanup system orifice replacement in the containment building) in these three areas to verify that the prescribed RWPs, procedures, and engineering controls were in place; that licensee surveys and postings were complete and accurate; and that air samplers (if necessary) were properly located.

Concurrent with the ongoing spent fuel pool clean out project, the inspectors reviewed the licensee's physical and programmatic controls employed for highly activated and/or contaminated materials (non-fuel) stored temporarily within spent fuel and cask pools.

These reviews represented four inspection samples.

###### b. Findings

No findings of significance were identified.

###### .2 Job-In-Progress Reviews

###### a. Inspection Scope

The inspectors observed the following two work activities that were being performed in radiation areas, airborne radioactivity areas, or high radiation areas for observation of work activities that presented the greatest radiological risk to workers:

- Spent Fuel Pool Cleanup Project [RWP No. 10004910], and
- Repair of the 1G33-D001 Gasket (reactor water cleanup system orifice repair) [RWP No. 10005014].

The inspectors reviewed radiological job requirements for these two activities, including RWP and work procedure requirements, and attended radiological pre-job briefings.

Job performance was observed with respect to these requirements to verify that radiological conditions in the work areas were adequately communicated to workers through pre-job briefings and postings. The inspectors also verified the adequacy of radiological controls (including required radiation, contamination, and airborne surveys), radiation protection job coverage (including audio/visual surveillance for remote job coverage), and contamination controls.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.3 Radiation Worker Performance

a. Inspection Scope

During job performance observations (see Section 2OS1.2), the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements and evaluated whether workers were aware of the significant radiological conditions in their workplace, the RWP controls and limits in place, and that their performance accounted for the level of radiological hazards present.

The inspectors also reviewed the corrective action program database to identify issues where the cause was attributed to radiation worker errors to determine if there was an observable pattern traceable to a similar cause and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems. These problems, along with planned and implemented corrective actions, were discussed with Radiation Protection supervision.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.4 Radiation Protection Technician Proficiency

a. Inspection Scope

During job performance observations (see Section 2OS1.2), the inspectors evaluated radiation protection technician performance with respect to radiation protection work requirements and evaluated whether they were aware of the radiological conditions in

their workplace, the RWP controls and limits in place, and if their performance was consistent with their training and qualifications with respect to the radiological hazards and work activities.

The inspectors also reviewed the corrective action program database to identify issues where the cause was attributed to radiation protection technician errors, to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable Planning And Controls (ALARA) (71121.02)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed plant collective exposure history, current exposure trends, and ongoing and planned activities in order to assess current performance and exposure challenges. This included determining the plant's current 3-year rolling average for collective exposure in order to help establish resource allocations and to provide a perspective of significance for any resulting inspection finding assessment. Using the best available data for CY 2001 - 2003, the station's 3-year rolling average for collective exposure was determined to be 100 person-rem.

Additionally, the inspectors evaluated site specific trends in online and outage-related collective exposures and source term measurements. Specifically, the inspectors evaluated the CY 2004 online dose expenditures following the Spring 2004 refueling outage and the potential changes in general area dose rates due station source term changes realized during the Spring 2004 refueling outage.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.2 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the assumptions and bases for the CY 2005 collective annual and monthly exposure estimates including procedures, in order to evaluate the licensee's methodology for estimating work activity-specific exposures and the intended

dose outcome. Dose rate and person-hour estimates were evaluated for reasonable accuracy based on station-specific historical data.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Declared Pregnant Workers

a. Inspection Scope

The inspectors reviewed licensee procedures and policies and dose records of declared pregnant workers for the current assessment period to verify that the exposure results and monitoring controls employed by the licensee complied with the requirements of 10 CFR 20.1208.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

The inspectors reviewed the licensee's self-assessments, audits, and Special Reports related to the ALARA program since the last inspection to determine if the licensee's overall audit program's scope and frequency for all applicable areas under the Occupational Cornerstone met the requirements of 10 CFR 20.1101.

Additionally, the inspectors reviewed the status and effectiveness of corrective actions for identified problems related to the work and dose planning issues realized during the Spring 2004 refueling outage. In particular, the inspectors reviewed various process and procedure changes and the effectiveness of those changes with respect to CY 2004 online work and dose planning.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

#### 4 OTHER ACTIVITIES (OA)

##### 4OA2 Identification and Resolution of Problems (71152)

###### 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 system 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 system as a result of inspectors' observations are generally denoted in the report. In addition, the inspectors reviewed the following issue:

- Work order and clearance order inadequate impact statement review.

###### b. Findings

##### .2 Work Order and Clearance Impact Statement Preparation and Review (Annual Sample)

###### Introduction

In August 2004, the running Division 3 Switchgear heat removal supply fan tripped when the supply breaker for the opposite Division 3 Switchgear heat removal supply fan was removed for planned replacement. This resulted in the Division 3 switchgear heat removal system being unavailable. The licensee declared the high pressure core spray system inoperable and entered a 72-hour limiting condition for operation (LCO). The root cause for this condition was determined to be the lack of a formal process for preparing, reviewing and approving work order impact statements. The inspectors were aware of other similar instances where incorrect impact statements resulted in unexpected loss of equipment availability or work delays to review the personnel safety and expected equipment response for a clearance order. The inspection included a search of the licensee's corrective action documents initiated between January 1, 2005 and March 25, 2005 where work order or clearance order impact statements were incorrect or inadequate. The search resulted in the review of 11 issued reports (IR) and three quick human performance investigations (QHPI). The inspectors were particularly concerned with the licensee's corrective actions for each incident and how the licensee addressed the extent of condition related to inadequate impact statements.

###### a. Inspection Scope

The inspectors reviewed IRs and QHPIs resulting from inadequate impact statements for planned work or clearance orders. The inspectors assessed the corrective actions for each to determine if they were appropriately focused to correct the problem. Finally the inspectors evaluated the adequacy of the licensee's extent of condition review for these same issues. The IRs and QHPIs reviewed were:

- IR 246788, 1VX04CC, Switchgear 1C heat removal supply fan tripped, dated August 24, 2005

- IR 287054, Clearance VL-15A not hung due to issue with fuse removal, dated January 3, 2005
- IR 287103, Clearance requirement not listed in work orders dated January 3, 2005
- IR 287322, Impact statement not fully adequate, dated January 3, 2005
- IR 287617, Clearance section had incomplete impact, dated January 4, 2005
- QHPI 287617, Clearance section had incomplete impact, dated January 12, 2005
- IR 287924, Review latest 8 -10 planning weaknesses, dated January 5, 2005
- IR 297374, CPS3514.01C061 Lighting impact incorrect, dated February 3, 2005
- IR 300137, Clearance improper for work order requirements, dated February 10, 2005
- QHPI 300137, Clearance improper for work order requirements, dated February 18, 2005
- IR 304875, Poor impact statement for clearance section 04-03-MP-05, dated February 24, 2005
- IR 309281, MSIV Inbd B solenoids found de-energized, dated March 6, 2005
- QHPI 309281, MSIV Inbd B solenoids found de-energized, dated March 24, 2005
- IR 310609, Work package quality FASA (focused area self-assessment) deficiencies and recommendations, dated March 9, 2005

b. Issues

For the issues reviewed the licensee reported, in most cases, the causes to be lack of attention to detail, assumptions, self imposed time pressures, and inadequate peer checks. The inspectors reviewed the corrective actions taken in each case and considered them to be adequate. Because each of these issues was related to human performance, the corrective actions taken, in most cases, included training or coaching/counseling. Some actions related to job planner training are being implemented over a period of time and are expected to be fully completed by the fourth quarter of 2005.

The inspectors reviewed these same issues to evaluate the licensee's extent of condition determination for each issue. On one issue, IR 287617, the extent of condition was determined to apply only to clearances worked on by the individuals involved with this issue. On three others, IRs 287924, 300137, and 304875, the licensee determined the extent of condition in each case to apply only to the specific clearance, incident, or

procedure, stating that the issues were human performance errors. The inspectors concluded that this evaluation was too narrowly focused. It appeared the licensee did not consider the same error made by more than one individual, or on different systems, to be considered a possible trend in performance. From the extent of condition statements in these three IRs, it appeared that the licensee based their determination on the fact that these were human performance errors and did not look beyond the individuals involved for a possible common cause. The inspectors also evaluated this group of IRs to identify any possible trends. Of the 11 issues reviewed, 9 were related to poor or inadequate impact statements, determined to be caused by poor human performance in making assumptions or lack of attention to detail, and all occurred in a 3 month period of time. Also, the inspectors noted that the three issues discussed previously, each very similar in cause and each evaluated to have no extent of condition outside of the specific issue, occurred within a 21-day period from February 3, 2005 to February 24, 2005. The inspectors concluded that the evaluation of extent of condition was limited and the licensee may have missed an opportunity to more broadly address this area.

#### 4OA3 Event Follow-up (71153)

##### .1 (Closed) LER 50-461/2004006-00: Small Amount of Special Nuclear Material in Unirradiated Nuclear Instrumentation Detectors Unaccounted For.

###### a. Inspection Scope

The inspectors reviewed the LER and IR 261339, which documented this event in the corrective action program, to verify that the cause of the event was identified, to assess the potential radiological consequences, and to verify that corrective actions were reasonable.

###### b. Findings

Introduction: A self-revealed Green finding and an associated Non-Cited Violation (NCV), were identified when the licensee could not account for the final disposition of three of four nuclear instrument detectors which were supposed to be controlled in a small container which was sealed in 1991.

Description: In early 1991, the licensee found that four non-activated nuclear instruments (including the detectors, cables, and connectors) were damaged (bent connector ends) resulting in bad detector signals. To disposition the nuclear instruments, the licensee decided to cut the detectors from the cables and connectors, to place the detector ends in a small container closed with a tamper indicating seal, and dispose of the cables and connectors as trash. In accordance with the licensee's material inventory procedure, the contents of the container were periodically inventoried from 1991 through July 2004 by verifying that the tamper indicating seal was intact.

On October 7, 2004, in preparation for a site radioactive waste clean up campaign, licensee personnel opened the container, sealed in 1991, and discovered that it held only one of the four nuclear instrument detectors along with three connector ends. The licensee's search of other containers of material failed to find the three missing nuclear



instrument detectors. Additionally, the licensee's search of station records also failed to determine the final disposition of the three missing detectors.

The three missing detectors contained a very small amount of radioactive material which, based on various dose calculation scenarios, would contribute a negligible radiological dose if a member of the public were to be exposed to the material. Though the final disposition of the material was not determined, the licensee initiated corrective actions to preclude reoccurrence of the event by developing procedural guidance for disposing of defective unirradiated nuclear instrument detectors where the detector, cable, and connector will remain intact as a unit (i.e., cutting of the instrument assembly will not be allowed).

Analysis: The inspectors determined that the licensee failed to meet the requirements of 10 CFR 20, Subpart I, "Storage and Control of Licensed Material," when three of the four nuclear instrument detectors were separated from their cables and connectors in 1991 and were not stored in the container as planned. This performance deficiency is associated with the Human Performance and Programs/Process attributes of the Public Radiation Safety Cornerstone and affects the cornerstone objective of ensuring adequate protection of public health and safety from exposure to radioactive materials potentially released into the public domain. Therefore, the issue was more than minor and represents a finding which was evaluated using the significance determination process (SDP) for the Public Radiation Safety Cornerstone.

Utilizing Manual Chapter 0609, Appendix D, "Public Radiation Safety SDP," the inspectors determined that the finding involved radioactive material control, but did not involve radioactive material packaging and transportation. Additionally, public radiological exposure from the material was not greater than 5 millirem, and the licensee did not have any prior radioactive material control occurrences in the previous 8 quarters. Consequently, the inspectors concluded that the SDP assessment for this finding was of very low safety significance (Green). This finding was determined not to be a cross-cutting issue in human performance because the performance deficiency occurred over 10 years ago.

Enforcement: Title 10 of the Code of Federal Regulations, Part 20, Subpart I, requires, in part, that the licensee shall control and maintain constant surveillance over licensed material. Contrary to the above, on October 7, 2004, it was self-revealed that the licensee failed to maintain control of radioactive material contained in three nuclear instrument detectors which were originally thought to be stored in a sealed container in early 1991. However, because the licensee documented this issue in its corrective action program (IR 261339), took corrective actions to preclude reoccurrence, and the violation is of very low safety significance, it is being treated as a Non-Cited Violation (**NCV 05000461/2005003-03**). 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 April 6, 2005. The

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inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meeting

An Interim exit was conducted for:

- Occupational Radiation Safety ALARA and Access Control programs inspection with Mr. R. Bement on February 11, 2005.

**ATTACHMENT: SUPPLEMENTAL INFORMATION**

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee

R. Bement, Site Vice President  
M. McDowell, Plant Manager  
J. Cunningham, Work Management Director  
R. Davis, Radiation Protection Director  
R. Frantz, Regulatory Assurance Representative  
M. Hiter, Access Control Supervisor  
N. Hightower, Radiation Protection - ALARA  
W. Iliff, Regulatory Assurance Director  
R. Coon, Nuclear Oversight Manager  
J. Domitrovich, Maintenance Director  
D. Schavey, Operations Director  
J. Madden, Chemistry Manager  
T. Shortell, Training Manager  
C. Williamson, Security Manager  
R. Peak, Site Engineering Director  
W. Carsky, Shift Operations Superintendent

### LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

#### Opened and Closed

05000461/2005003-01	NCV	Failure to establish adequate compensatory actions (hourly fire watch) according to fire protection program procedures.
05000461/2005003-02	NCV	Failure to follow procedure and appropriately annotate portions as not applicable during the performance of required calibration procedure in accordance with TS 5.4.1.
05000461/2005003-03	NCV	Failure to maintain control of licensed radioactive material in accordance with 10 CFR 20, Subpart 1.

#### Closed

05000461/2004006-00	LER	Small Amount of Special Nuclear Material in Unirradiated Nuclear Instrumentation Detectors Unaccounted For.
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## LIST OF DOCUMENTS REVIEWED

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

### 1R04 Equipment Alignments

CPS 3312.01E001; Residual Heat Removal Electrical Lineup  
CPS 3312.01V001; Residual Heat Removal Valve Lineup  
CPS 3312.01V002; Residual Heat Removal Instrument Valve Lineup

### 1R05 Fire Protection

CPS 1893.01; Fire Protection Impairment Reporting  
OP-AA-201; Fire Protection Program  
OP-MW-201-007, Fire Protection System Impairment Control  
NFPA 72E; Standard on Automatic Fire Detectors, 1990 Edition  
NFPA Code Conformance Evaluation, Clinton Power Station, Revision 18

### 1R06 Flood Protection

CPS 4303.02; Abnormal Lake Level  
USAR 2.4; Hydraulic Engineering  
EP-AA-1003; CPS Emergency Plan Annex  
CPS Main Dam; Emergency Action Plan

### 1R13 Maintenance Risk Assessment

WO# 705522; Deluge Valve Operability  
WO# 771363; Fill and Vent of Reactor Core Isolation Cooling per 9054.06

### 1R15 Operability Evaluations

IR 294015; Abnormal Alarm, 5062.04, during HPCS surveillance.  
IR 288494; Pools Swell Qualification of Containment Instrument Panels;  
January 7, 2005  
DWG S27-1002-03A, Containment Building Mezzanine Floor Framing Plan; Rev AU  
AR 00204692; NRC Question From Operability Evaluation  
AR 00299176; 1G33D001 - Flange Gasket Leak  
AR 00298454; E31-DA001 RT Delta Flow Increase 1 gpm Step Change  
AR 00298453; 1G33B001B Increase Leakage From RWCU B HX  
AR 00299159; 1G33D001 RT Reject Bypass Orifice Small Leak  
AR 00312163; RT Delta Flow A Meter Differs 20 gpm From B  
AR 00298939; Local Position Indication Open When Valve Is Closed  
AR 00270715; CPS 9051.01, HPCS Water Leg Pump Test

1R19 Post Maintenance Testing

WO 7-3237, EQ-CL044-02 EQ Hydramotor PM 0VG01YA Damper; March 8, 2005  
WO 706539, Replace hydramotor 0FZVG004 with new assembly; March 9, 2005  
IR 309676, Stroke Length non-linear and too short/loose converter bolts; March 7, 2005

1R20 Refueling and Outage

CPS 7200.21C005; Mode 4 To Mode 2 (Reactor Startup) Checklist  
CPS 7200.21C006; Mode 2 To Mode 1 (Reactor Operation) Checklist

1R22 Surveillance Testing

CPS 9069.01; Shutdown Service Water Operability Test  
CPS 9015.01; Standby Liquid Control System Operability  
CPS 9054.01; RCIC System Operability Check  
CPS 9080.01; Diesel Generator 1A Operability - Manual and Quick Start Operability  
CPS 3310.01; Reactor Core Isolation Cooling  
CPS 9080.02D001; Diesel Generator 1B Operability - Manual and Quick Start Data Sheet  
CPS 9080.02; Diesel Generator 1B Operability - Manual and Quick Start Operability  
CPS 9051.01; HPCS Pump & HPCS Water Leg Pump Operability

2OS1 Access Control to Radiologically Significant Areas

ALARA Plan 10004910; Spent Fuel Pool Clean Up Project; Revision 0  
ATI 233024-11; NOS Objective Evidence Report: Plant Startup Observations - Operations and Radiation Protection; dated July 19, 2004  
ATI 237275; Common Cause Analysis for Electronic Dosimetry Alarms January 1, 2003 through July 31, 2004; dated August 27, 2004  
ATI 255251-14; NOS Objective Evidence Report: Radiography Activities; dated November 8, 2004  
Electronic Dosimetry Alarm Log for July 1, 2004 through February 9, 2005; dated February 9, 2005  
IR 228748; RCIC Throttle Linkage Potential Movement Restriction; dated June 15, 2004  
IR 284432; Check-In (RP): Access Control/ALARA and PI Verification; dated February 4, 2005  
IR 298939; Local Position Indication Appears Open When Valve is Closed; dated February 8, 2005  
IR 299537; Post-Job Critique Performance of Work Order 00777396 1G33D001; dated February 8, 2005  
Micro ALARA Plan for RWP 10005014; Repair 1G33-D001 Gasket; Revision 0  
NOSPA-CL-04-3Q; NOS Objective Evidence Report: RE5 - Radworker Practices; dated September 20, 2004  
RWP 10004910; Spent Fuel Pool Clean Up Project; Revision 0  
RWP 10005014; 2005 Steam Affected Area Work; Revision 0  
Survey 05-02-1-12; CPS Radiological Survey - Containment Steam Tunnel 755' el.; dated February 1, 2005  
WIP No. 1; Work-In-Progress Review for RWP 10004910; dated January 10, 2005

2OS2 As Low As Is Reasonably Achievable Planning And Controls (ALARA)

ATI 216449-12; Effectiveness Review of the Man-Hour/Dose Estimation Process with Respect to On-Line Activities; dated January 11, 2005  
ATI 233047-04; NOS Objective Evidence Report: RB4 - Planning and Implementing; dated August 27, 2004  
ATI 255251-33; NOS Objective Evidence Report: Station ALARA Committee Meeting Observations; dated January 28, 2005  
Clinton C1R10 RP Outage Preparation Checklist; dated February 10, 2005  
CPS 1005.18; Dose Estimation; Revision 1  
IR 259185; NOS ID'd Issues with the CAPR and EFR for Root Cause 216449; dated October 1, 2004  
Radiation Protection Policy Statement - Drywell Fixed Point Radiation Dose Rate Surveys; dated November 16, 2004  
RP-AA-270; Prenatal Radiation Exposure; Revision 2  
RP-AA-4002; Radiation Protection Refuel Outage Readiness; Revision 1  
Station ALARA Committee Presentations (including CY 2005 Online Dose Projections); dated November 8 and December 14, 2004, and January 10, 2005

4OA3 Event Followup

IR 261339; Unaccounted for Special Nuclear Material; dated October 7, 2004  
LER 2004-006-00; Small Amount of Special Nuclear Material In Unirradiated Nuclear Instrument Detectors Unaccounted For; dated November 3, 2004  
RTE 2004-25 ED; Public Dose Determination - Issue Report 261339; dated October 27, 2004

## LIST OF ACRONYMS USED

ADAMS	Agency wide Documents Access and Management System
ALARA	As Low As Is Reasonably Achievable
CFR	Code of Federal Regulations
CPS	Clinton Power Station
CR	Condition Report
DF	Duration Factor
EDG	Emergency Diesel Generator
EP	Emergency Preparedness
FPER	Fire Protection Evaluation Report
HPCS	High Pressure Core Spray
IMC	Inspection Manual Chapter
IR	Issue Report
LCO	Limiting Condition for Operation
LORT	Licensed Operator Requalification Training
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
MR	Maintenance Rule
ORM	Operations Requirements Manual
PARS	Publicly Available Records
PI	Performance Indicator
PMT	Post Maintenance Testing
QHPI	Quick Human Performance Investigations
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RWP	Radiation Work Permit
SDP	Significance Determination Process
SX	Shutdown Service Water
TS	Technical Specifications
USAR	Updated Safety Analysis Report