April 11, 2002

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

SUBJECT: CLINTON POWER STATION
NRC INSPECTION REPORT 50-461/02-05

Dear Mr. Skolds:

On March 31, 2002, the NRC completed a safety inspection at your Clinton Power Station. The enclosed report documents the inspection findings which were discussed on April 1, 2002, with Mr. J. M. Heffley and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and 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, the inspectors identified one issue of very low safety significance (Green) which was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it was entered into your corrective action program, the NRC is treating this issue as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this Non-Cited Violation, you should provide a response with a basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Clinton Power Station.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, and its enclosure will be available electronically for public inspection in the NRC Public

Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

***/RA/***

Christine A. Lipa, Chief
Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report No. 50-461/02-05

cc w/encl: Site Vice President - Clinton Power Station
Clinton Power Station Plant Manager
Regulatory Assurance Manager - Clinton
Chief Operating Officer
Senior Vice President - Nuclear Services
Senior Vice President - Mid-West Regional Operating Group
Vice President - Mid-West Operations Support
Vice President - Licensing and Regulatory Affairs
Director Licensing - Mid-West Regional Operating Group
Manager Licensing - Clinton and LaSalle
Senior Counsel, Nuclear, Mid-West Regional Operating Group
Document Control Desk - Licensing

DOCUMENT NAME: G:\CLIN\ML021020588.wpd
**To receive a copy of this document, indicate in the box** "C" = Copy w/o att/encl "E" = Copy w/att/encl "N" = No copy

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **OFFICE** | RIII | | RIII | | | | |
| **NAME** | LCollins:dtp | | CLipa | | | | |
| **DATE** | April 11, 2002 | | 04/11/2002 | | | | |

**OFFICIAL RECORD COPY**

ADAMS Distribution:
AJM
DFT
JBH1
RidsNrrDipmIipb
GEG
HBC
PLL
C. Ariano (hard copy)
DRPIII
DRSIII
PLB1
JRK1

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

| | |
|---|---|
| Docket No: | 50-461 |
| License No: | NPF-62 |
| Report No: | 50-461/02-05 |
| Licensee: | AmerGen Energy Company, LLC |
| Facility: | Clinton Power Station |
| Location: | Route 54 West<br>Clinton, IL 61727 |
| Dates: | February 18 through March 31, 2002 |
| Inspectors: | P. L. Louden, Senior Resident Inspector<br>C. E. Brown, Resident Inspector<br>J. L. Belanger, Senior Physical Security Inspector<br>D. E. Zemel, Illinois Department of Nuclear Safety |
| Approved by: | Christine A. Lipa, Chief<br>Branch 4<br>Division of Reactor Projects |

## SUMMARY OF FINDINGS

IR 05000461-02-05, on 02/18-03/31/2002, AmerGen Energy Company LLC, Clinton Power Station; Personnel Performance During Non-Routine Plant Evolutions.

This report covers a 6-week routine inspection, conducted by resident and regional specialist inspectors. The inspection identified one Green finding which was a Non-Cited Violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

A. Inspection Findings

**Cornerstone: Initiating Events**

Green. A Non-Cited Violation of Technical Specification 5.4.1 was identified for an inadequate operating procedure which contributed to an inadvertent emergency reserve auxiliary transformer static-VAR [Volts-Ampere-reactive]-compensator circuit breaker trip. The result of this circuit breaker trip rendered one of the two qualified offsite power sources the transformer inoperable.

The finding was of very low safety significance because it could increase the likelihood of an initiating event (reactor trip or a partial loss of offsite power) but did not increase the likelihood that any mitigation equipment would be unavailable.

B. Licensee Identified Findings

No findings of significance were identified.

## Report Details

### Summary of Plant Status

The plant was operated at essentially 100 percent power until starting a power coast-down for the cycle 8 refueling outage, scheduled to commence on April 2, 2002.

## 1. REACTOR SAFETY

**Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity**

### 1R04 Equipment Alignments (71111.04Q)

a. Inspection Scope

The inspectors reviewed piping and instrument diagrams, system procedures, training manuals, previously identified equipment deficiencies, condition reports, and vendor information as part of a partial system walkdown of high risk-importance, safety systems during scheduled system maintenance outages on the opposite division or complementing system. Walkdown were conducted for the following systems:

- Reactor Core Isolation Cooling (RCIC)
- Standby Liquid Control (SLC)
- High Pressure Core Spray (HPCS) during a RCIC outage.

b. Findings

No findings of significance were identified.

### 1R05 Fire Protection (71111.05A)

a. Inspection Scope

The inspectors observed the conduct of a fire brigade drill to evaluate the readiness of the licensee’s personnel to prevent and fight fires. Specific aspects of the fire brigade's performance that were evaluated included: proper use of protective clothing, proper donning of self-contained breathing apparatus equipment, proper layout and use of fire hoses, proper command and control of the fire brigade members for simulated fire area entry, effective use of verbal and radio communications, proper use of fire fighting strategies, proper scenario control, and effective conduct of drill critiques. The fire drill scenario observed was:

- Fire Drill Scenario U2002-06, “Div 1 Cable Spreading Room Fire,” involving a welding machine beside the reserve shutdown panel.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule (10 CFR 50.65) Implementation (71111.12Q)

a. Inspection Scope

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

- Communications system (CQ)
- Main Steam system
- Main Control Room Ventilation (VC)
- Control Rod Drives (RD)

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors observed the licensee's risk assessment processes and considerations used to plan and schedule maintenance activities on safety-related structures, systems, and components particularly to ensure that maintenance risk and emergent work contingencies had been identified and resolved. The inspectors assessed the effectiveness of risk management activities and risk evaluation for special test procedure CPS 2085.01, "Emergency Diesel Generator-Static-VAR [Volts Ampere-Reactive]-Compensator Freeze Removal," Revision 0c.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

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

- February 13, 2002, unanticipated emergency reserve auxiliary transformer (ERAT) static-VAR-compensator (SVC) breaker trip.

- March 15, 2002, unanticipated trip of the ERAT-SVC and personnel shock during on-line maintenance activities to remove and check the calibration of an ERAT protective relay.

- March 29, 2002, personnel performance during an infrequently performed test to remove the SVC freeze signal from the ERAT-SVC and conduct Division I EDG testing.

b. Findings

Green. A Non-Cited Violation of Technical Specification (TS) 5.4.1 was identified for an inadequate operating procedure which contributed to an inadvertent ERAT-SVC circuit breaker trip. The result of this circuit breaker trip rendered one of the two qualified offsite power sources for the ERAT inoperable. As part of a planned work activity on the ERAT-SVC on February 13, 2002, an operator was controlling ERAT-SVC circuit breaker configuration via procedure CPS 3505.03, "RAT and ERAT Static VAR Compensator (SVC)." While performing steps to shutdown the ERAT-SVC Battery Charger 1DC31EA, control room operators received an alarm indicating that the ERAT-SVC isolation circuit breaker (52-2) had tripped. The local area operator verified this occurrence and manually opened the other ERAT-SVC isolation circuit breaker (52-1) which completely isolated the SVC from the ERAT. The operators then declared the ERAT inoperable in accordance with TS 3.8.1.

Later in the day, maintenance personnel identified that drawing discrepancies existed for the circuit breaker schematics which were determined to be the cause of the inadequate procedural instructions in CPS 3505.03. Corrections were made to the procedure and operators restored the ERAT back to operable status at about 3:00 p.m. the same day.

The performance deficiency associated with this event was caused by an inadequate procedure based on inaccurate system-wiring drawings for the ERAT-SVC. Wiring diagram and general drawing errors have been a noted deficiency in the past and corrective actions are still being implemented to correct the broader drawing accuracy issue. The licensee initiated a root cause team, comprised of maintenance and engineering personnel, to investigate the operation and configuration of the SVCs.

This self-revealing finding was more than minor because, if left uncorrected, the problem could become a more significant safety concern due to the problem rendering an offsite power source inoperable. Since the finding resulted in an inoperable SVC, which controls the voltage on the buses connected to the ERAT, it could increase the likelihood of a reactor trip or a partial loss of offsite power but did not increase the likelihood that any mitigation equipment would be unavailable. As a result, the finding was determined to be of very low safety significance (Green) using the Phase 1 At-Power Operations Significance Determination Process (SDP).

Technical Specification 5.4.1 requires that written procedures be established, implemented, and maintained covering the activities specified in Regulatory Guide 1.33, Appendix A. Regulatory Guide 1.33, Appendix A, Item 4w(1) requires procedures for energizing, startup, shutdown, and changing modes of operation of the

electrical system offsite sources. Contrary to TS 5.4.1 and Regulatory Guide 1.33, Clinton Station Procedure 3505.03 was not maintained accurate and was a violation. However, because of the very low safety significance and because the issue is in the licensee's corrective action program, it is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the Enforcement Policy **(NCV 50-461/2002-005-01)**. This violation is in the licensee's corrective action program as CR 95040.

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.

- Operability evaluation for CR 97392, "Higher than expected direct-read ferrography lube oil result."
- Operability evaluation for CR 100246, "RCIC valve 1E1F095 stroked too fast."

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (71111.16)

a. Inspection Scope

The inspectors conducted a cumulative review of all operator workarounds and challenges to identify any potential effect on the functionality of mitigating systems; and to assess the cumulative impact that the workarounds and challenges may have on the operators' ability to effectively control the plant during abnormal and emergency operations.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed and observed portions of the following post-maintenance testing (PMT) activities involving risk significant equipment to determine whether the activities were adequate to verify system operability and functional capability:

- PMT conducted to return HPCS to service
- Reviewed PMT for EDG-SVC Freeze removal.
- PMT for RCIC following a scheduled system outage window

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors reviewed the licensee's refueling outage plans for the upcoming cycle 8 refueling outage (C1RF08) to verify that the licensee had developed an outage risk control plan which took into account industry experience, previous site specific problems, and contained mitigation/response strategies for losses of key safety functions.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed portions of the following surveillance tests to determine whether risk significant systems and equipment were capable of performing their intended safety functions. The inspectors also assessed the operational readiness of the systems.

- RCIC quarterly operability surveillance
- Residual Heat Removal System "C" Valve Operability Check

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the following temporary modification to determine whether the safety functions of important safety systems were affected.

- Reviewed special test for removing the temporary modification placed to induce an SVC freeze signal.

b. Findings

No findings of significance were identified.

## 2. SAFEGUARDS

2PP4 Security Plan Changes (71130.04)

a. Inspection Scope

The inspector reviewed Revision 32 and 33 to the Clinton Power Station Physical Security Plan to verify that the changes did not decrease the effectiveness of the submitted document. The referenced revisions were submitted in accordance with regulatory requirements of 10 CFR 50.54(p) by licensee letters dated July 30, 2001, and September 6, 2001, respectively.

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

To perform a periodic review of performance indicator (PI) data to determine its accuracy and completeness.

**Cornerstone: Initiating Events**

.1 Unplanned SCRAMS per 7000 Critical Hours

a. Inspection Scope

The inspectors verified that the unplanned scrams per 7000 critical hours PI data reported by the licensee from September 2001 to March 2002 was accurate. This was accomplished, in part, through a review of plant operating report data and discussions with licensee personnel.

b. Findings

No findings of significance were identified.

.2 SCRAMS with Loss of Normal Heat Sink

a. Inspection Scope

The inspectors verified that the scrams with the loss of normal heat sink PI data reported by the licensee from September 2001 to March 2002 was accurate. This was

accomplished, in part, through a review of plant operating report data and discussions with licensee personnel.

b. Findings

No findings of significance were identified.

.3 Unplanned Power Changes per 7000 Critical Hours

The inspectors verified that the unplanned power changes per 7000 critical hours PI data reported by the licensee from September 2001 to March 2002 was accurate. This was accomplished, in part, through a review of plant operating report data and discussions with licensee personnel.

b. Findings

No findings of significance were identified.

4OA6 Meeting(s)

Exit Meeting

The inspectors presented the inspection results to Mr. J. M. Heffley and other members of licensee management at the conclusion of the inspection on April 1, 2002. The licensee acknowledged the findings presented. No proprietary information was identified.

## KEY POINTS OF CONTACT

Licensee

A. Daniels, Chemistry Manager
C. Dieckmann, Shift Operations Superintendent
R. Frantz, Regulatory Assurance Representative
J. Heffley, Site Vice President
W. Iliff, Regulatory Assurance Director
J. Madden, Nuclear Oversight Manager
M. Pacilio, Plant Manager
J. Randich, Work Management Director
R. Schmidt, Maintenance Manager
J. Sears, Radiation Protection Director
R. Svaleson, Operations Director
F. Tsakeres, Training Manager
J. Williams, Site Engineering Director

## LIST OF ITEMS OPENED AND CLOSED

Opened

| | | |
|---|---|---|
| 50-461/02-05-01 | NCV | Non-Cited violation of T.S. 5.4.1 for an inadequate operating procedure, resulting in ERAT-SVC breaker trip. |

Closed

| | | |
|---|---|---|
| 50-461/02-05-01 | NCV | Non-Cited violation of T.S. 5.4.1 for an inadequate operating procedure, resulting in ERAT-SVC breaker trip. |

LIST OF ACRONYMS USED

| | |
|---|---|
| CQ | Communications Systems |
| EDG | Emergency Diesel Generator |
| ERAT | Emergency Reserve Auxiliary Transformer |
| HPCS | High Pressure Core Spray |
| MR | Maintenance Rule |
| PI | Performance Indicator |
| PMT | Post Maintenance Testing |
| RCIC | Reactor Core Isolation Cooling |
| RD | Control Rod Drive |
| SDP | Significance Determination Process |
| SLC | Standby Liquid Control |
| SVC | Static VAR Compensator |
| VAR | Volts Ampere-Reactive |
| VC | Main Control Room Ventilation |

LIST OF DOCUMENTS REVIEWED

1R05 Fire Protection

| | | |
|---|---|---|
| Fire Drill Scenario U2002-06 | Division I Cable Spreading Room Fire | |

1R12 Maintenance Rule Implementation

| | | |
|---|---|---|
| CPS Fourth Quarter | Plant Health Report | |
| BWROG-CRD-00 | Standard for the Selection of CRDMs for PMs During Refueling Outages | Revision 0 |

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

| | | |
|---|---|---|
| CPS 2085.01 | Emergency Diesel Generator-Static-VAR [Volts Ampere-Reactive]-Compensator Freeze Removal | Revision 0c |

1R14 Personnel Performance During Non-Routine Evolutions

| | | |
|---|---|---|
| CPS 3505.03 | RAT & ERAT Static VAR Compensator (SVC) | Revision 3b |
| CPS 2800.25 | Permanent Removal of Automatic RAT/ERAT SVC Freeze Removal During DG Operation | Revision 3c |

1R15 Operability Evaluations

| | | |
|---|---|---|
| CR 97392 | Higher Than Expected Direct Read Ferrography Lube Oil Result | |
| CR 100246 | RCIC Valve 1E51F095 Stroked Too Fast | |

1R16 Operator Work-Arounds

| | | |
|---|---|---|
| | Operator Workarounds, Challenges and Aid Log | |

1R19 Post Maintenance Testing

| | | |
|---|---|---|
| CPS 3310.01 | Reactor Core Isolation Cooling (RI) | Revision 22 |
| CPS 2800.25 | Permanent Removal of Automatic RAT/ERAT SVC Freeze Removal During DG Operation | Revision 3c |

1R20 Refueling and Outage Activities

| | | |
|---|---|---|
| | Risk Analysis for Planned C1RF08 Activities | Revision 0 |

1R22 Surveillance Testing

| | | |
|---|---|---|
| CPS 9054.01 | RCIC Operability Check | Revision 40b |
| CPS 9053.04 | RHR B & C Valve Operability Check | Revision 43a |