October 25, 2000

Mr. Michael T. Coyle
Vice President
Clinton Power Station
AmerGen Energy Company, LLC
Mail Code V-275
P. O. Box 678
Clinton, IL 61727

SUBJECT: CLINTON POWER STATION - NRC INSPECTION REPORT 50-461/00-15(DRP)

Dear Mr. Coyle:

On September 30, 2000, the NRC completed a safety inspection at your Clinton Power Station. The enclosed report presents the results of that inspection. The results of this inspection were discussed on October 2 with Mr. P. Hinnenkamp and other members of your staff.

This inspection was an examination of 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. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the inspectors identified one issue involving several human performance problems for which no risk significance or color was assigned. Additionally, the inspectors identified two issues of very low safety significance (Green). One of these issues was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it has been 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 the Non-Cited Violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Clinton facility.

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

Sincerely,

/RA/

Thomas J. Kozak, Chief
Reactor Projects Branch 4

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

Enclosure: Inspection Report 50-461/00-15(DRP)

cc w/encl: P. Hinnenkamp, Plant Manager
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REGION III

Docket No:	50-461
License No:	NPF-62
Report No:	50-461/00-15(DRP)
Licensee:	AmerGen Energy Company, LLC
Facility:	Clinton Power Station
Location:	Route 54 West Clinton, IL 61727
Dates:	August 20 - September 30, 2000
Inspectors:	P. L. Louden, Senior Resident Inspector C. E. Brown, Resident Inspector D. E. Zemel, Illinois Department of Nuclear Safety
Approved by:	Thomas J. Kozak, Chief Reactor Projects Branch 4 Division of Reactor Projects

NRC's REVISED REACTOR OVERSIGHT PROCESS

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

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

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

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

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

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

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

SUMMARY OF FINDINGS

IR 05000461-00-15, on 08/20-09/30/2000, Amergen Energy Company, LLC, Clinton Power Station. Surveillance testing, Event follow-up.

The inspection was conducted by resident inspectors. The inspection identified two green findings, one of which was a Non-Cited Violation, and one no color finding. The significance of most/all findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "no color" or by the severity level of the applicable violation.

Cornerstone: Initiating Events

- GREEN. Human performance errors and the failure to develop an adequate procedure for the emergency reserve auxiliary transformer static VAR (Volt Ampere Reactive) compensator (ERAT-SVC) surveillance test resulted in several delays during the test. These delays caused the work to not be completed within the allowed outage time. Therefore, a request for Enforcement Discretion was presented to the NRC which was formally granted on September 20, 2000 (NOED 00-6-011).

  The safety significance of this finding was very low because all other emergency core cooling system trains (automatic depressurization system, low pressure core spray, and low pressure core injection), emergency diesel generators, and the reactor core isolation cooling system were operable.

Cornerstone: Mitigating Systems

- GREEN. Maintenance personnel failed to appropriately follow procedure instructions during testing of the Division III emergency diesel generator room fire detection system. These actions led to the emergency diesel generator being rendered inoperable. The procedure violation was treated as a Non-Cited Violation.

  This issue was of very low safety significance since the other divisional emergency diesel generators and all emergency core cooling systems were operable at the time of discovery (Section 4OA3).

Cornerstone: Cross-Cutting Issues - Human Performance

- NO COLOR. The inspectors noted that several recent events which have affected plant operations and the operability of safety-related components or other components important to safety contained elements of human performance deficiencies. The human performance aspects, while not always being the root cause of the problem, were significant contributors leading to the events.

  While the risk of the individual events was very low, the number of maintenance-related incidents indicated a problem exists with the control, review, and performance of maintenance activities (Section 4OA4).

Report Details

Summary of Plant Status

The plant was operated essentially at 100 percent power during the inspection period with brief power reductions conducted to complete control rod sequence exchanges and turbine valve testing.

1. Reactor Safety

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors reviewed piping and instrumentation drawings (P&IDs) and conducted a full system walkdown of all three emergency diesel generator systems to verify equipment alignment and identify any discrepancies that could impact the function of the systems. The emergency diesel systems were selected because of their high risk importance ranking.

b. Findings

There were no findings identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors reviewed portions of the licensee's Fire Protection Evaluation Report (FPER) and the Updated Safety Analysis Report (USAR) to verify consistency in the documented analysis with installed fire protection equipment at the station. To assess the control of transient combustibles and ignition sources, the material and operational condition of fire-protection systems and equipment, and the status of fire barriers, the inspectors conducted walk downs of the following risk significant areas:

- Emergency Core Cooling System Rooms
- Spent Fuel Pool Area
- Auxiliary Building Vital Switchgear Rooms
- Condensate/Condensate Booster Pump Rooms
- Reactor Feed Pump Rooms

b. Findings

There were no findings identified.

1R12 Maintenance Rule Implementation (71111.12)

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 evaluated were:

- Review of component monitoring, particularly hydramotors which were re-classified as 10 CFR 50.65 a(2) from a(1).
- Emergency diesel generator (EDG) ventilation system
- Condensate and Feedwater system reliability

b. Findings

There were no findings 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 for the following work activities or work weeks:

- Emergency Reserve Auxiliary Transformer and Static VAR (Volt Ampere reactive) Compensator (ERAT-SVC) work

b. Findings

There were no findings identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following condition reports (CRs) and operability determinations (ODs) which affected mitigating systems and barrier integrity to ensure that operability was properly justified and the component or system remained available such that no unrecognized risk increase had occurred:

- CR/OD 1-99-12-062, “High tin levels in Division I Shutdown Service Water (SX) motor oil samples.”

- CR/OD 2-00-08-021, “Evaluation of excessive check valve flow for containment isolation integrity.”

b. Findings

There were no findings identified.

1R16 Operator Work-Arounds (71111.16)

a. Inspection Scope

The inspectors reviewed operator work-arounds and operator challenges to assess the cumulative impact that the work arounds and challenges may have on the operators’ ability to effectively control the plant during abnormal and emergency operations.

b. Findings

There were no findings 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 ensure that the activities were adequate to verify system operability and functional capability:

- Motor Driven Reactor Feed Pump

- Division II SX system flow balance

- Division I hydrogen/oxygen (H_2/O_2) monitor calibration and testing

- Condensate Pump “A” repair work

b. Findings

There were no findings identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed portions of the following surveillance tests to verify that risk significant systems and equipment were capable of performing their intended safety functions and assessed their operational readiness:

- CPS 9080.01, Revision 45b, "Diesel Generator 1A(B) Operability - Manual and Quick Start Operability"

- CPS 9384.01, Revision 0a, "ERAT- SVC Protection Relay Functional Test"

b. Findings

During ERAT-SVC functional testing, maintenance personnel encountered several unexpected system responses. Maintenance personnel were unable to successfully complete relay response time testing and were unable to reset the total harmonic distortion relay in the "A" protection system. The licensee requested assistance from the SVC vendor to resolve this problem; however, during restoration from the partially completed surveillance, additional unexpected alarms were received which prevented returning the ERAT-SVC to service within the 72-hour allowed outage time (AOT).

Given this condition, the licensee requested Enforcement Discretion to allow returning the ERAT-SVC to service with one of the redundant protection systems inoperable (the "A" protection system). The request was granted by the Office of Nuclear Reactor Regulation and the licensee subsequently declared the ERAT-SVC operable.

Several human performance and programmatic issues were identified during the licensee's root cause evaluation of the event. During the performance of the surveillance testing, maintenance personnel, while attempting to implement the requirements of the surveillance procedure, encountered several conditions that were not adequately addressed by the procedure. The procedure was revised several times; however, it remained inadequate to support completion of the surveillance testing. Although the surveillance test procedure was inadequate, no violation of NRC requirements occurred because the ERAT-SVC is not safety-related. The licensee is tracking the issues involved with this event through CR 2-00-09-048.

The inspectors and an NRC senior reactor analyst used the significance determination process to assess the risk significance of not adequately completing the test surveillance and extend the allowed outage time. A phase 2 screening of this issue was conducted to evaluate the affect on initiating events and the availability of mitigation equipment. The safety significance of this finding was determined to be very low (GREEN) because all ECCS trains (automatic depressurization system, low pressure core spray, and low pressure core injection), EDGs, and the reactor core isolation cooling system were operable.

4. Other Activities

4OA1 Performance Indicator Verification

.1 SCRAMS with Loss of Normal Heat Sink (71151)

a. Inspection Scope

The inspectors verified that the plant had experienced only one SCRAM with a loss of the normal heat sink over the past two years. The plant SCRAM on May 17, 2000, which involved the closing of the main steam isolation valves and the loss of the main condenser has been the only occurrence within this category.

b. Findings

There were no findings identified.

.2 Safety System Unavailability; High Pressure Core Spray (71151)

a. Inspection Scope

The inspectors reviewed control room logs, system unavailability logs and maintenance rule documents for the high pressure core spray system for the first two quarters of the year 2000 to verify that performance indicators reported to the NRC were accurate.

b. Findings

There were no findings identified.

.3 Heat Removal System Unavailability; Reactor Core Isolation Cooling (71151)

a. Inspection Scope

The inspectors reviewed control room logs, system unavailability logs and maintenance rule documents for the reactor core isolation cooling system for the first two quarters of the year 2000 to verify that performance indicators reported to the NRC were accurate.

b. Findings

There were no findings identified.

.4 Safety System Unavailability; Residual Heat Removal System (71151)

a. Inspection Scope

The inspectors reviewed control room logs, system unavailability logs and maintenance rule documents for the residual heat removal system for the first two quarters of the year 2000 to verify that performance indicators reported to the NRC were accurate.

b. Findings

There were no findings identified.

.5 Safety System Functional Failures (71151)

a. Inspection Scope

The inspectors reviewed control room logs, system unavailability logs and maintenance rule documents for all safety systems for the first two quarters of the year 2000 to verify that performance indicators reported to the NRC were accurate.

b. Findings

There were no findings identified.

4OA3 Event Follow-up (71153) - Licensee Event Report 2000-003

a. Inspection Scope

The inspectors reviewed License Event Reports and other items using Inspection Procedure 71153. The inspectors reviewed the licensee's root cause determination report and corrective action plan for an event involving the inadvertent rendering of the Division III EDG inoperable due to human error.

b. Findings

(Closed) Licensee Event Report 50-461/2000-003: "Failure to Follow Procedure While Performing Fire Detector Testing Results in Inoperable Division III DG Ventilation System." On August 31, 2000, during restoration from Division III EDG fire detector testing, the EDG room ventilation fans unexpectedly shut down. The cause of the problem was determined to be associated with a relay in the Division III fire protection supervisory circuit. Operators reviewed the condition and determined that the operability of the Division III EDG was affected and declared the Division III EDG inoperable. The fire protection circuit relay was manually reset and the Division III EDG was declared operable later the same day.

The licensee identified the cause of the problem to be a failure of technicians working on the fire protection system to stop work when an unexpected condition occurred. Maintenance supervision also failed to re-enforce this expectation by not performing an adequate pre-job briefing or turn over. During early stages of the fire protection testing, technicians received an alarm condition which could not be reset. Rather than stop the work and notify Shift Operations management, the technicians proceeded with restoring the fire protection system to the as found configuration. It was during this restoration that the Division III EDG ventilation fans shut down and work was suspended. This incident was documented in the licensee's corrective action program as CR 2-00-08-146.

Technical Specification 5.4.1.a requires that written procedures be established, implemented and maintained covering the applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A, dated February 1978. Section 1 of Appendix A to RG 1.33, recommends administrative procedures be implemented for procedural adherence and temporary change method. Procedure CPS 1005.15, "Procedure Use and Adherence," Revision 1c, is an administrative procedure used to implement procedural adherence and temporary change method. Step 8.1.5 states that any unexpected actions or conditions shall be brought to the attention of Supervision. Contrary to the above, technicians working on the EDG fire detection system failed to notify supervision when unexpected conditions were encountered during the testing activity. This violation is being treated as a **Non-Cited Violation (NCV 50-461/2000015-01)**, consistent with Section VI.A.1 of the Enforcement Policy.

Using the significance determination process, this issue was screened out in phase 1 for mitigation systems because a single divisional EDG was out-of-service for a time period less than the T.S. allowed outage time and all other ECCS trains were operable (automatic depressurization system, low pressure core spray, and low pressure core injection) and the reactor core isolation cooling system was operable. Therefore, the safety significance of this event was considered to be very low (GREEN).

4OA4 Cross Cutting Issues - Human Performance

a. Inspection Scope

The inspectors reviewed human performance errors associated with several incidents which resulted in equipment problems, system operability concerns, or system restoration problems. These incidents spanned a time from July to October 2000.

b. Findings

The inspectors found that several recent human performance issues associated with maintenance activities have affected plant operations and the operability of safety-related components or other components important to safety. The human performance deficiencies, while not always being the root cause of the problem, were significant contributors leading to the events. Examples of such events were:

- Procedural compliance deficiencies associated with surveillance testing on the carbon dioxide fire detection system rendered the Division III EDG inoperable (see Section 4OA3).

- Procedure inadequacies and personnel performance issues involving the testing of the ERAT-SVC caused significant delays resulting in the need for Enforcement Discretion when equipment could not be returned to service within the AOT (see Section 1R22).

- Workers failed to recognize a labeling discrepancy existed which contributed to the improper isolation of a protective relay for the 4.16kV Bus 1B Reserve Feed Breaker. As a result, during functional testing, the relay actuated and caused the

bus to be de-energized which ultimately resulted in a manual reactor shut down (See IR 2000-008(DRP)).

While the risk of the individual events was very low, the number of maintenance-related incidents indicated a problem exists with the control, review, and performance of maintenance activities. These problems could not be easily evaluated by present risk analysis methods because failures to follow program guidance such as maintenance procedures or management expectations was not modeled in the Clinton Individual Plant Evaluation. Licensee management acknowledged a declining trend in human performance exists and several CRs have been written to document the concerns. Condition Report 2-00-09-055 documents a site-wide concern regarding human performance. Actions taken by license management to-date include maintenance work stoppages, management meetings with all site work groups to emphasize the need for attention-to-detail and procedural compliance, and vendor training sessions emphasizing error prevention techniques.

4OA5 Performance Indicator Data Collecting and Reporting Process Review Temporary Instruction 2515/144

a. Inspection Scope

The inspectors reviewed selected licensee performance indicator data to ascertain whether the licensee was appropriately implementing the NRC/Industry guidance regarding performance indicator data collecting and reporting. The specific PIs reviewed were Unplanned Power Changes per 7,000 Critical hours, and Safety System Unavailability for the High Pressure Core Spray System.

b. Findings

There were no findings identified.

4OA6 Meetings, including Exit

The inspectors presented the inspection results to Mr. P. Hinnenkamp, Clinton Station Manager, and other members of licensee management at the conclusion of the inspection on October 2, 2000. The licensee acknowledged the findings presented.

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

PARTIAL LIST OF PERSONS CONTACTED

Licensee

S. Clary, Director - Plant Engineering
M. Coyle, Site Vice President
W. Iliff , Director - Experience Assessment and Corrective Actions
P. Hinnenkamp, Plant Manager - Clinton Power Station
W. Maguire, Director - Operations
R. Moore, Manager - Work Management
A. Plater, Radiation Protection Manager
M. Reandeau, Director - Licensing
R. Schenck, Manager - Maintenance
D. Smith, Director - Security and Emergency Planning
P. Walsh, Manager - Nuclear Station Engineering Department
E. Wrigley, Manager - Quality Assurance

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-461/2000015-01	NCV	Technicians failed to stop work when encountering and unexpected equipment response and continue in a different portion of the procedure. Failure to follow procedures.

Closed

50-461/2000015-01	NCV	Technicians failed to stop work when encountering and unexpected equipment response and continue in a different portion of the procedure. Failure to follow procedures.

Discussed

None

LIST OF ACRONYMS

AOT	Allowed Outage Time
CR	Condition Report
EDG	Emergency Diesel Generator
ERAT	Emergency Reserve Auxilary Transformer
FPER	Fire Protection Evaluation Report
LCO	Limiting Condition for Operation
MR	Maintenance Rule
NCVs	Non-Cited Violations
NOED	Notice of Enforcement Discretion
NRC	Nuclear Regulatory Commission
ODs	Operability Determinations
P&IDs	Piping and Instrumentation Drawings
PERR	Public Electronic Reading Room
PI	Performance Indicator
PMT	Post Maintenance Testing
SVC	Static VAR Compensator
SX	Service Water
USAR	Updated Safety Analysis Report
VAR	Volt Ampere Reactive

List of Baseline Inspections Performed

The following inspectable area procedures were used to perform inspections during the report period. Documented findings are contained in the body of the report.

Inspection Procedure Number	Title	Report Section
71111.04	Equipment Alignments	1R04
71111.05	Fire Protection	!R05
71111.12	Maintenance Rule Implementation	1R12
71111.13	Maintenance Risk Assessment and Emergent Work Evaluation	1R13
71111.14	Personnel Performance During Non-routine Plant Evolutions	1R14
71111.15	Operability Evaluations	1R15
71111.16	Operator Work-Arounds	1R16
71111.19	Post Maintenance Testing	1R19
71111.22	Surveillance Testing	1R22
71151	Performance Indicator Verification	4OA1
71153	Event Follow-up	4OA3
TI 2515/144	Performance Indicator Data Collecting and Reporting Process Review	4OA5