April 26, 2000

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

SUBJECT: CLINTON RADIATION SAFETY INSPECTION REPORT 50-461/2000010(DRS)

Dear Mr. Coyle:

On April 7, 2000, the NRC completed a routine inspection at your Clinton Power Station. The results were discussed on April 7, 2000, with Mr. Hinnenkamp and other members of your staff. The enclosed report presents the results of that inspection.

The inspection was an examination of activities conducted under your license as they relate to radiation safety and to compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel. Specifically, this inspection focused on occupational radiation safety and on the radiological controls implemented for access to radiologically significant areas. In addition, we reviewed aspects of your source term reduction and fetal protection programs, and verified your performance indicator for the occupational radiation safety cornerstone.

Based on the results of this inspection, the NRC did not identify any issues which were categorized as being of risk significance.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Electronic Reading Room (PERR) link at the NRC homepage, http://www.nrc.gov/NRC/ADAMS/index.html.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/RA/

Steven A. Reynolds, Deputy Director
Division of Reactor Safety

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

Enclosure: Inspection Report 50-461/2000010(DRS)

cc w/encl: P. Hinnenkamp, Plant Manager
M. Reandeau, Director - Licensing
G. Rainey, Chief Executive Officer
R. Moore, Manager-Quality Assurance
M. Aguilar, Assistant Attorney General
G. Stramback, Regulatory Licensing
Services Project Manager
General Electric Company
Chairman, DeWitt County Board
State Liaison Officer
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-461
License No:	NPF-62
Report No:	50-461/2000010(DRS)
Licensee:	AmerGen Energy Company, LLC
Facility:	Clinton Power Station
Location:	Route 54 West Clinton, IL 61727
Dates:	April 3 - 7, 2000
Inspector:	Steven K. Orth, Senior Radiation Specialist
Approved by:	Wayne Slawinski, Acting Chief, Plant Support Branch Division of Reactor Safety

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) 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 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 little effect on safety. WHITE findings indicate issues with some increased importance to safety, which may require additional NRC inspections. YELLOW findings are more serious issues with an even higher potential to effect safety and would require the NRC to take additional actions. RED findings represent an unacceptable loss of safety margin and would result in the NRC taking significant actions that could include ordering the plant to shut down.

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 incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. The color for an indicator corresponds to levels of performance that may result in increased NRC oversight (WHITE), performance that results in definitive, required action by the NRC (YELLOW), and performance that is unacceptable but still provides adequate protection to public health and safety (RED). GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections.

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. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, as described in the matrix. 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.

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

SUMMARY OF FINDINGS

Clinton Power Station
NRC Inspection Report 50-461/2000010(DRS)

The report covers a one-week period of announced inspection by a regional senior radiation specialist. This inspection focused on occupational radiation safety and included a review of high radiation area and very high radiation area access controls, radiological boundaries and postings, dose controls for declared pregnant workers, source term reduction, and problem identification and resolution. The inspection also included a review of licensee's performance indicator for the occupational radiation safety cornerstone.

RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

- There were no inspection findings identified or documented.

Performance Indicator Verification

- Occupational Radiation Safety Performance Indicator (PI). The inspector verified that the licensee had accurately reported the PI for this cornerstone in January 2000, which was in the green band (Section 4OA2).

Report Details

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety (OS)

2OS1 Access Controls for Radiologically Significant Areas

.1 Plant Walkdowns and Radiological Boundary Verifications

a. Inspection Scope

The inspector performed walkdowns of the radiologically controlled area (RCA) to verify the adequacy of radiological boundaries and postings. Specifically, the inspector performed confirmatory radiation measurements in the Containment, Auxiliary, Turbine, and Radwaste Buildings to verify that radiologically significant work areas (high radiation areas (HRAs), radiation areas, and airborne radioactivity areas) were properly posted and controlled in accordance with 10 CFR Part 20 and the licensee's procedures.

b. Observations and Findings

There were no findings identified and documented during this inspection.

.2 Reviews of Radiation Work Permits

a. Inspection Scope

The inspector reviewed radiation work permits (RWPs) and electronic dosimeter alarm setpoints for both a dose rate and accumulated dose to ensure that the controls were consistent with the licensee's Technical Specifications and to verify that adequate work controls were in place to maintain worker exposures ALARA (as-low-as-is-reasonably-achievable). Specifically, the inspector reviewed the controls contained in the following RWPs:

- No. 20001014.000, "RT [reactor water cleanup systems] and CT [containment] HRA/RHRA [high radiation area/restricted high radiation area] Area Generic," approved January 31, 2000;
- No. 20001015, "TB [Turbine Building] HRA/RHRA Area Generic," approved April 4, 2000;
- No. 20001021.000, "RW [radioactive waste] HRA/RHRA Area Generic," approved January 31, 2000;
- No. 20001051.003, "F07453 -- Remove and Replace WE "C" Vessel Filters," Job Step 2;
- No. 20001073.000, "Processing Fuel Pool Sludge to Road Ready Shipping Condition," approved February 5, 2000;

- No. 20001083.000, “F13760 -- Disassemble/Reassemble “C” RT Pump, Leaking Seal,” approved February 27, 2000; and

- No. 20001085.000, “Various PMs [preventive maintenance] - c/o Charcoal Filter Media Above Various RW Tanks,” approved February 27, 2000.

b. Observations and Findings

There were no findings identified and documented during this inspection.

.3 Reviews of Radiologically Significant Work

a. Inspection Scope

The inspector observed work activities in the RCA that were being performed in radiation areas or high radiation areas (< 1 rem per hour). Specifically, the inspector verified the adequacy of radiological controls (e.g., radiation work permits and ALARA reviews), surveys, radiation protection technician performance, and pre-job briefings for the following work activities:

- Modification to Condensate Polishers;

- Transfer of Waste Filters for Shipment; and

- Inspections within the Turbine Building Bioshield Areas.

b. Observations and Findings

There were no findings identified and documented during this inspection.

.4 High Risk Significant, High Dose Rate High Radiation Area (HRA) and Very High Radiation Area (VHRA) Controls

a. Inspection Scope

The inspector reviewed the licensee’s controls for access to high risk significant HRAs and VHRAs to ensure that the licensee’s controls were consistent with the requirements contained in 10 CFR Part 20 and contained within its Technical Specifications. Specifically, the inspector discussed the controls with members of the radiation protection staff and reviewed the following procedures:

- CPS No. 7000.21 (Revision 0), “Radiological Key Control and Area Access Requirements;” and

- CPS No. 7100.01 (Revision 2a), “Radiological Surveys and Posting.”

The inspector also performed walkdowns of the RCA to ensure adequate posting and locking of all entrances to high dose rate (>25 rem in one hour at 30 centimeters) HRAs and VHRAs.

b. Observations and Findings

The inspector observed that the licensee's procedures and RWPs did not specify radiological controls for the storage of highly radioactive objects in the spent fuel pools. The licensee's procedures provided foreign material exclusion guidance (i.e., prohibited the use of containers or suspension materials that were susceptible to radiation damage and disintegration) and required that the radiation protection staff be notified prior to the removal of objects/materials from the pools; however, the procedures did not specify controls over the manner in which the radioactive materials/objects were allowed to be suspended or stored in the spent fuel pools. Industry experience has shown these objects to have the potential to create high and very high radiation areas (e.g., NRC Information Notice No. 90-33, "Sources of Unexpected Occupational Radiation Exposures at Spent Fuel Storage Pools"). For example, highly radioactive objects have been lifted, unexpectedly, to the surface of the spent fuel pools or have inadvertently floated to the surface. In addition, Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants," also provides a discussion of highly radioactive materials stored in spent fuel pools. Within this discussion, emphasis is placed on the control measures implemented "to ensure that activated materials are not inadvertently raised above or brought near the surface of the pool water." Although the inspector did not identify any current problem with the storage of material within the spent fuel pools, the licensee acknowledged the observation and planned to evaluate its procedure guidance in this area.

There were no findings identified and documented during this inspection.

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

.1 Radiation Dose Controls and Trending

a. Inspection Scope

The inspector reviewed the licensee's annual dose goals and dose trending for calendar year 2000.

b. Observations and Findings

The licensee established a goal of 245 person-rem for calendar year 2000. The licensee had allocated 186 person-rem for the Fall 2000 refueling outage, 21 person-rem for forced/maintenance outages, and 38 person-rem for routine operations. As of the date of this inspection, the licensee was within its projected exposure estimate and was planning to reevaluate its annual exposure goal based on the deferment of its Spring 2000 maintenance outage.

There were no findings identified and documented during this inspection.

.2 Source Term Reduction

a. Inspection Scope

The inspector reviewed the status of the licensee's source term reduction program, which included reference point and system surveys, system flushing/hydrolazing, and chemistry controls (i.e., ongoing condensate polisher modification and plans for depleted zinc injection and noble metal chemistry addition). The inspector also performed surveys within the radiologically controlled area to verify the accuracy of the licensee's records/surveys and to identify any other significant, unidentified sources of radiation exposure.

b. Observations and Findings

The inspector observed that the licensee did not have an up-to-date source term reduction plan. The licensee's latest source term reduction plan was drafted in 1992, and the most recent update to the plan was approved in February of 1996. The inspector noted that certain source term reduction actions (e.g., shielding, chemistry modifications, and system flushing) were identified in the licensee's business plan. Conversely, the licensee's current plans did not include hot spot reduction or cobalt reduction strategies, which had been previously identified in the 1992 plan. In summary, the licensee continued to pursue the above source term reduction activities; however, the licensee did not have an up-to-date focus on source term reduction strategies.

There were no findings identified and documented during this inspection.

.3 Declared Pregnant Workers

a. Inspection Scope

The inspector reviewed the controls implemented by the licensee for the two individuals who voluntarily declared their pregnancies within the last 24 months. Specifically, the inspector reviewed the licensee's adherence to the requirements contained in 10 CFR 20.1208 and reviewed the licensee's evaluation of the dose to the individuals' embryos/fetuses.

b. Observations and Findings

In accordance with the licensee's program, the declared pregnant workers chose to continue working inside of the RCA under a specific RWP, which provided an additional level of exposure control. For both individuals, the doses assigned to the embryos/fetuses were 0 millirem for the gestation periods.

There were no findings identified and documented during this inspection.

2OS4 Radiation Worker Performance

a. Inspection Scope

The inspector observed radiation workers performing the activities described in Section 2OS1.3 and evaluated their awareness of radiological conditions and their implementation of applicable radiological controls.

b. Observations and Findings

There were no inspection findings identified and documented during this inspection.

4. OTHER ACTIVITIES (OA)

4OA1 Identification and Resolution of Problems

a. Inspection Scope

The inspector reviewed the licensee's self assessments, audits, and problem identification forms concerning HRAs, radiation worker practices, and radiation protection technician performance errors.

b. Observations and Findings

There were no findings identified and documented during this inspection.

4OA2 Performance Indicator Verification

a. Inspection Scope

The inspector verified the licensee's assessment of its performance indicator (PI) for the occupational radiation safety cornerstone that the licensee reported to the NRC in January of 2000. Specifically, the inspector reviewed selected RCA transaction records (i.e., exposure reports) and condition reports for 1997 - 1999.

b. Observations and Findings

The licensee reported a green PI in the occupational radiation safety cornerstone. Based on the licensee's evaluation, no occurrences were identified in this PI. The inspector independently reviewed the licensee's records and did not identify any occurrences applicable to the PI. Consequently, the inspector found no problems with the accuracy or completeness of the licensee's PI data submission.

4OA5 Management Meetings

The inspector presented the inspection results to Mr. Hinnenkamp and other members of licensee management at the conclusion of the inspection on April 7, 2000. The licensee acknowledged the findings presented. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Campbell, Radiation Protection
R. Croxton, Radiation Protection
A. Darelius, Quality Assurance
R. Denny, Quality Assurance
T. Donovan, Training
J. Foreman, Licensing
K. Gallogly, Director, Experience Assessment
J. Goldman, Manager, Work Control
W. Green, Radiation Protection
P. Hinnenkamp, Manager, Clinton Power Station
G. Kephart, Radiation Protection
M. Lewis, Radiation Protection
R. Mauer, Chemistry
R. Moore, Manager, Work Management
A. Plater, Director, Radiation Protection
J. Ramanuja, Radiation Protection
M. Reandeau, Director, Licensing
D. Reoch, Radiation Protection
J. Wade, Radiation Protection
E. Wrigley, Manager, Quality Assurance

NRC

P. Louden, Senior Resident Inspector

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ALARA	As-Low-As-Is-Reasonably-Achievable
DRS	Division of Reactor Safety
HRA	High Radiation Area
PERR	Public Electronic Reading Room
PI	Performance Indicator
RCA	Radiologically Controlled Area
RWP	Radiation Work Permit
VHRA	Very High Radiation Area

LIST OF DOCUMENTS REVIEWED

Audits and Assessments:

Quality Assurance Assessment Report, “RHR B/C Outage RP Activities,” approved August 27, 1999.
Quality Assurance Assessment Report, “Routine Radiological Work Activities,” approved September 15, 1999.
Report No. 1999-40-03, “RT ‘C’ Pump Transfer,” dated November 8, 1999.
Report No. 1999-40-04, “RD Pump Area Radiological Posting, dated November 8, 1999.
Report No. 2000-40-005, “Radiation Protection Work Activities & Controls,” dated March 22, 2000.
Self Assessment No. 1999-062, “Radioactive Source Control Program.”
Self Assessment No. 2000-010, “Personnel Contamination Control Program.”

Condition Reports (CRs Nos.):

1-97-01-265, 1-97-02-190, 1-97-06-272, 1-98-01-005, 1-98-03-383, 1-99-05-008, 1-99-05-076, 1-99-06-077, 1-99-08-016, 1-99-08-097, 1-99-08-157,1-99-09-116, 1-99-10-072, 1-99-10-191, 1-99-10-169, 1-99-12-116, 2-00-01-064, 2-00-01-105, 2-00-01-115, 2-00-02-009, 2-00-03-062, 2-00-03-090, and 2-00-03-104.

Miscellaneous:

Nuclear Station Engineering Standard, “Source Term Reduction (STR) and ALARA Review Standard,” dated June 2, 1998.
Radiation Protection Department Strategic Plan, Approved by Andrew Plater.
Source Term Reduction (STR) Annual Report, dated February 16, 1996.
Source Term Reduction (STR) -- Long Range Plan for BRAC Point Reduction, dated June 26, 1992.
2000/2003 Group Business Plan.

Procedures (CPS Nos.):

1001.15 (Revision 0), “Collection, Documentation, Verification, and Submittal of the CPS Performance Indicators;”
1019.04 (Revision 7a), “Foreign Material Exclusion (FME) Program;”
1903.20 (Revision 20a), “External Exposure Monitoring;”
7000.21 (Revision 0), “Radiological Key Control and Area Access Requirements;” and
7100.01 (Revision 2a), “Radiological Surveys and Posting.”

Radiation Work Permits:

20001014.000, “RT [reactor water cleanup systems] and CT [containment] HRA/RHRA [high radiation area/restricted high radiation area] Area Generic,” approved January 31, 2000;
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20001038.001, “RCA Access for Declared Pregnant Workers,” approved February 1,

2000;
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