

August 10, 2000

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

SUBJECT: CLINTON - NRC INSPECTION REPORT 50-461/2000014(DRS)

Dear Mr. Coyle:

On July 28, 2000, the NRC completed a routine inspection at your Clinton Power Station. The results of this inspection were discussed on July 28, 2000, with Mr. R. Mark Moore and other members of your staff. The enclosed report presents the results of that inspection.

This 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 selected examination of procedures and representative records, observations of activities, and interviews with personnel. Specifically, the inspection reviewed aspects of occupational radiation safety.

Based on the results of this inspection, there were no findings identified.

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/**

Gary L. Shear, Chief  
Plant Support Branch  
Division of Reactor Safety

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

Enclosure: Inspection Report No. 50-461/2000014(DRS)

See Attached Distribution

M. Coyle

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cc w/encl: P. Hinnenkamp, Plant Manager  
M. Reandeau, Director - Licensing  
G. Rainey, Chief Nuclear Officer  
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Services Project Manager  
General Electric Company  
Chairman, DeWitt County Board  
State Liaison Officer  
Chairman, Illinois Commerce Commission

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 50-461/2000014(DRS)

Licensee: AmerGen Energy Company, LLC

Facility: Clinton Power Station

Location: Route 54 West  
Clinton, IL 61727

Dates: July 25–28, 2000

Inspector: Steven K. Orth  
Senior Radiation Specialist

Approved by: Gary L. Shear, Chief  
Plant Support Branch  
Division of Reactor Safety

# 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

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

## Radiation Safety

- Occupational
- Public

## Safeguards

- Physical Protection

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 safety 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 50-461/2000014(DRS), on 07/25-07/28/2000; AmerGen Energy Company; Clinton Power Station; Unit 1; Radiation safety specialist report.

The inspection was conducted by a regional senior radiation specialist. There were no findings identified during this inspection.

## Report Details

### Summary of Plant Status

The plant was operating at essentially 100 percent power throughout the inspection period.

## **2. RADIATION SAFETY**

Cornerstone: Occupational Radiation Safety (OS)

### 2OS3 Radiation Monitoring Instrumentation

#### .1 Source Tests and Calibrations of Radiation Monitoring Instrumentation

##### a. Inspection Scope

The inspector reviewed the calibrations and source tests of radiation monitoring instrumentation to ensure that instruments that are used for the protection of occupational workers were calibrated and tested in accordance with licensee procedures. Specifically, the inspector reviewed calendar year 2000 calibration records for the following portable radiation monitoring instruments:

- Geiger-Mueller Detectors;
- Ion Chambers; and
- Portal Contamination Monitors.

The inspector also reviewed the most recent calibrations for the following area radiation monitors (ARMs) and continuous airborne monitors (CAMs) to ensure that the monitors were calibrated in accordance with the licensee's Technical Specifications and procedures:

- 0RE-AR003, Radwaste Building 737' Elevation ARM;
- 1RE-AR003, Transversing Incore Probe Drive Mechanism Area ARM;
- 1RE-AR024, Fuel Building Fuel Handling Platform ARM;
- 1RE-AR025, Containment Polar Crane ARM;
- 1RE-AR035, Control Room ARM;
- 1PR16S, Radwaste Building CAM No. 3;
- 1PR17S, Radwaste Building CAM No. 4; and
- 1PR23S, Containment Building CAM No. 3.

The inspector reviewed the licensee's alarm setpoints for selected ARMs and CAMs and verified that the setpoints were consistent with the licensee's Updated Final Safety Analysis Report, Technical Specifications, procedures, and plant conditions. The inspector also verified that selected alarm setpoints displayed by the control room console were consistent with the above documents.

The inspector observed in-field source tests of portal contamination monitors and ion chambers and observed a calibration of a portable survey instrument to ensure that the radiation protection staff adequately tested and calibrated the instruments. The inspector also reviewed instruments stored in the licensee's calibration facility and



verified that those “ready for use” had current calibrations. In addition, the inspector reviewed quality control records for the post accident sampling system (PASS), which included the comparison of liquid sample results with routinely collected samples, to ensure that the PASS was capable of obtaining representative samples of the reactor coolant system.

b. Findings

There were no findings identified.

.2 Respiratory Protection

a. Inspection Scope

The inspector reviewed the licensee’s respiratory protection program to ensure that self-contained breathing apparatus (SCBAs) were properly maintained and stored and to ensure that personnel required to don SCBAs were qualified. Specifically, the inspector reviewed the monthly testing records (January 2000 through July 2000) for SCBA located in various areas within the site. The inspector also performed walkdowns of the SCBA storage locations and inspected a sample of the units to assess the material condition of the equipment. In addition, the inspector reviewed the licensee’s current training and qualification records and verified that applicable emergency response, fire brigade, and control room personnel were currently trained and qualified for SCBA use, as required by the Updated Final Safety Analysis Report and plant procedures.

b. Findings

There were no findings identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspector reviewed the licensee’s self-assessments, audits, and condition reports (CRs) (April 1999–June 2000) concerning radiation monitoring instrumentation, internal exposures, and the respiratory protection program. The inspector also reviewed internal dose investigations/evaluations that resulted from individuals alarming portal contamination alarms (Calendar Year 2000). The inspector reviewed these documents to assess the licensee’s ability to identify repetitive problems, contributing causes, the extent of conditions, and corrective actions which will achieve lasting results.

b. Findings

The inspector observed a problem concerning the licensee’s review of a condition affecting the ARMs. On September 8, 1999, and June 21, 2000, the licensee identified a problem concerning the calibration constant stored in the Radwaste Building 762' Elevation ARM (0RE-PR012) (CRs Nos. 1-99-09-035 and 2-00-06-066, respectively). Specifically, the monitor’s calibration constant did not agree with the licensee’s data sheets in the main control room. As a result of the licensee’s review, the staff identified weaknesses in its calibration process concerning the control of the calibration data

forms. In this case, the monitor parameters agreed with the most recent calibration data (with a minor transcription error); however, the most recent calibration data form had not been properly filed in the control room. After reviewing the licensee's corrective action record, the inspector did not identify any problems concerning the licensee's apparent cause evaluation or corrective actions, but the inspector identified that the licensee had not performed a thorough extent of condition evaluation. Specifically, the licensee had not determined if any additional conflicts existed between existing monitor calibration factors and the calculated calibration factors from the most recent inspection.

While reviewing calibration data for ARMs (Section 2OS3.1), the inspector identified an additional disagreement for the Radwaste Building ARM (ORE-AR003) that had not been identified by the licensee. The inspector reviewed the March 20, 2000, calibration record for the monitor and identified that the monitor's as found calibration constant did not agree with the value calculated during the previous calibration (December 17, 1998). Based on the licensee's records, the as found calibration constant appeared to be the value that had been stored in the monitor on April 30, 1997, and had not been updated during the December 1998 calibration. The inspector verified that the difference between the calibration constants would not have greatly effected the monitors displayed radiation levels (i.e., the as found value was about 15 percent lower than the correct calibration constant) and was within the licensee's allowable error band for the monitor. However, the inspector noted that the licensee failed to identify this condition in September of 1999, when the weaknesses in the process were originally identified.

A member of the engineering staff acknowledged the above problem with the Radwaste Building ARM (ORE-AR003) calibration constants but indicated that a CR to document the problem was not necessary. The engineer stated that the corrective actions for CRs 1-99-09-035 and 2-00-06-066 would also apply to the condition identified by the inspector. However, after additional discussions with the individual and a member of the licensing staff, the licensee initiated a CR to document the problem identified by the inspector and to ensure that the extent of the condition was adequately assessed.

#### **4. OTHER ACTIVITIES (OA)**

##### 4OA1 Performance Indicator Verification

###### a. Inspection Scope

The inspector verified that the licensee had accurately reported the reactor coolant system (RCS) activity performance indicator for the reactor safety cornerstone. Specifically, the inspector reviewed the licensee's sample analyses results for maximum dose equivalent iodine-131 (January 2000 through July 2000) and procedure CPS No. 6721.01, "Reactor Water Radioisotopic Analysis." The inspector also observed a chemistry technician obtain and analyze an RCS sample.

###### b. Findings

There were no findings identified.

#### 4OA5 Temporary Instruction 2515/144

##### a. Inspection Scope

The inspector reviewed the data collection and reporting process for the occupational exposure control effectiveness performance indicator. Specifically, the inspector reviewed the licensee's definition of terms, procedures and instructions, and clarifying notes used by the licensee to ensure consistency with industry guidance document NEI [Nuclear Energy Institute] 99-02, Revision 0.

##### b. Findings

There were no findings identified during this inspection.

#### 4OA6 Management Meetings

##### .1 Exit Meeting Summary

The inspector presented the inspection results to Mr. R. Mark Moore and other members of licensee management on July 28, 2000. The licensee acknowledged the findings presented. The inspector 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

L. Baker, Plant Engineer  
R. Croxton, Radiation Protection Engineer  
R. Denney, Quality Assurance  
J. Forman, Licensing Engineer  
W. Green, Radiation Protection Specialist  
W. Illif, Quality Assurance  
R. LeGrand, Assistant to the Vice President  
W. Maguire, Director - Operations  
R. Moore, Manager - Outage Management  
A. Plater, Radiation Protection Manager  
J. Ramanuja, Radiation Protection Support Supervisor  
M. Reandeau, Director - Licensing  
P. Sawyer, Assistant to the Radiation Protection Manager  
C. Sayre, Chemistry Supervisor

### NRC

P. Loudon, Senior Resident Inspector

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

None

### Discussed

None

## LIST OF ACRONYMS

ARM	Area Radiation Monitor
CAM	Continuous Airborne Monitor
CR	Condition Report
DRS	Division of Reactor Safety
OS	Occupational Radiation Safety
NEI	Nuclear Energy Institute
PASS	Post Accident Sampling System
PERR	Public Electronic Reading Room
RCS	Reactor Coolant System
SCBA	Self Contained Breathing Apparatus

## LIST OF DOCUMENTS REVIEWED

### Audits and Assessments

CPS Chemistry Post-Accident Sampling System Self-Assessment Report, Report No. 2000-071, dated June 30, 2000.

RP Self-Assessment Report, RP Instrument Program, Assessment No. 2000-052.  
“Second Quarter 2000 (April 1–June 30, 2000) Performance Indicator Data.”

### Condition Reports (CRs) Nos.

1-99-06-103, 1-99-09-035, 1-99-10-047, 2-00-01-023, 2-00-01-031, 2-00-02-073, 2-00-02-166, 2-00-03-004, 2-00-06-066, 2-00-07-111, and 2-00-07-119.

### Miscellaneous

CPS Chemistry HPGE [high purity germanium detector] Isotopic Analysis Report, dated July 28, 2000, for Sample No. 3515.

Radiological Technical Evaluation RTE 2000-003-ID, “Internal Dose Calculation,” dated February 8, 2000.

Radiological Technical Evaluation RTE 2000-013-ID, “Internal Dose Calculation,” dated June 8, 2000.

TID-14344, “Calculation of Distance Factors for Power and Test Reactor Sites,” dated March 23, 1962.

### Procedures Nos.

AP-05 (Revision 8), “Emergency Preparedness Training Program;”  
CPS No. 1001.15 (Revision 0), “Collection, Documentation, Verification, and Submittal of the CPS Performance Indicators;”

CPS No. 1890.30 (Revision 12), “Post Accident Sampling Program;”

CPS No. 1911.10 (Revision 11), “Radiological Instrumentation Calibration and Control;”

CPS No. 6005.01 (Revision 16), "Post Accident Sampling (1PS02J/1PS03J);"  
CPS No. 6721.01 (Revision 7), "Reactor Water Radioisotopic Analysis;"  
CPS No. 7211.05 (Revision 9), "Radiation Protection Department Survey Instruments Response Checks;"  
CPS No. 7410.33 (Revision 11), "Operation of the PCM-1 and PCM-2;"  
CPS No. 7600.02 (Revision 3a), "Inspection and Storage of Respiratory Protection Equipment;"  
CPS No. 7911.21 (Revision 6), "Calibration of RM-14 and RM-20 Countrate Meters;" and  
CPS No. 7911.49 (Revision 1b), "Setup/Operational Checks of the Gamma-60/40 Portal Monitors."

#### Surveillance and Testing Records

CPS No. 6005.01D002 (Revision 6), "PASS Operability Checklist Data Sheet," completed on January 6, 1999; June 23, 1999; July 30, 1999; September 26, 1999; December 28, 1999; and January 10, 2000.

CPS No. 7600.02F001 (Revision 1), "Respiratory Protection Monthly Inspection Form," completed on January 21, 2000; February 18, 2000; March 17, 2000; April 19, 2000; May 17, 2000; June 21, 2000; and July 21, 2000.

CPS No. 7911.10D001 (Revision 2), "Teletector (6112B) Calibration Data Sheet," completed on January 12, 2000 (Serial No. 11025).

CPS No. 7911.13D001 (Revision 9), "RO-2/RO-2A/RO-20 Calibration Data Sheet," completed on January 10, 2000 (Serial No. 5938); April 12, 2000 (Serial No. 3307); May 19, 2000 (Serial No. 305); June 26, 2000 (Serial Nos. 543 and 1648); and June 27, 2000 (Serial No. 433).

CPS No. 7911.21D001 (Revision 7), "RM-20 Calibration Data Sheet," completed on July 25, 2000 (Serial No. 882).

CPS No. 7911.44D001 (Revision 1), "W. B. Johnson Model 2000W Extender Calibration Sheet," completed on April 14, 2000 (Serial No. 2653).

CPS No. 8640.01, "Connected Fixed and Portable Digital Area Radiation Monitor Calibration and Channel Functional Test," completed on November 21, 1998, and January 27, 2000, for ARM 1RE-AR003.

CPS No. 8640.02, "Connected Fixed and Portable Continuous Air Monitor Functional/Calibration Test," completed on January 28, 1998, and July 8, 1999, for 1PR023.

CPS No. 8640.04, "Fixed Analog Area Radiation Monitor (ARM) 1RIS-AR024 (025 & 037), Channel Calibration," completed on January 20, 1995, and June 3, 1996, for ARM 1RE-AR024 and completed on November 28, 1994, and May 17, 1996, for ARM 1RE-AR025.

CPS No. 8640.11, "Stand Alone Fixed Digital Area Radiation Monitor Calibration and Channel Functional Test," completed on December 17, 1998, and March 21, 2000, for ARM ORE-AR003.

CPS No. 8640.12, "Stand Alone Fixed Continuous Air Monitor Functional/Calibration Test," completed on February 16, 1999, and February 24, 2000, for CAM 1PR16s and completed on December 8, 1997, and August 11, 1999, for CAM 1PR17s.

CPS No. 9437.67, "Area Radiation Monitors 1RIX-AR016(19, 35, 52) Channel Calibration," completed on September 15, 1998, and December 20, 1999, for ARM 1RE-AR035.