

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-461/92004(DRSS)

Docket No. 50-461

License No. NPF-62

Licensee: Illinois Power Company  
500 South 27th Street  
Decatur, IL 62525

Facility Name: Clinton Power Station

Inspector At: Clinton Site, Clinton, Illinois

Inspection Conducted: March 9 - 13, 1992

Inspector: *A. W. Markley*  
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4-10-92  
Date

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4-10-92  
Date

Inspection Summary

Inspection on March 9 through 13, 1992 (Report No. 50-461/92004(DRSS))  
Areas Inspected: Routine unannounced inspection of the radiation protection, radwaste and transportation programs, including: organization, management controls and training, audits and appraisals, external exposure control, internal exposure control, control of radioactive materials, contamination, and surveys, and maintaining occupational exposures ALARA (IP 83750, 83729). The inspection also included solid waste and transportation. (IP 84750, 86750).

Results: A violation was identified for working excessive amounts of overtime (Section 3). A non-cited violation was identified for failing to properly categorize procedures for the onsite dosimetry program (Section 7).

Areas that appear to merit improvement include verification of contract radiation protection experience (Section 3), housekeeping (Section 11), and the scope and range of quality assurance audits (Section 5).

Strengths were identified in the areas of contract radiation protection technician training (Section 3), the implementation of area based planning of outage activities (Section 8), the quality of shielding installation in the drywell (Section 11), and the transportation program (Section 10).

## DETAILS

### 1. Persons Contacted

- R. Campbell, Radiation Protection Shift Supervisor
- \* J. Cook, Manager, Clinton Power Station
- \* M. Dodds, Supervisor, Radiological Operations
- \* L. Everman, Director, Radiation Protection
- \* J. Hill, Radiation Protection Shift Supervisor
- \* E. Juteau, Radiological Project Specialist
- \* G. Kephart, Supervisor, Radiological Support
- \* R. Langley, Director, Design and Analysis
- \* J. Lewis, Principle Assistant to Vice President
- \* P. McCampbell, Supervisor, Radiation Protection
- \* S. Meierotto, Lead Instructor, Technical
- \* K. Moore, Director, Plant Technical
- \* R. Morgenstern, Director, Nuclear Training
- \* J. Niswander, Supervisor, Radiological Environmental
- \* J. Palchak, Manager, Nuclear Planning and Support
- \* S. Perry, Vice President
- \* R. Phares, Director, Licensing
- \* M. Reandeau, Licensing Specialist
- \* J. Sipek, Supervisor, Regional Regulatory Interface
- \* F. Spangenberg, Manager, Licensing and Safety
- \* R. Weedon, Assistant Director, Radiation Protection
- J. Withrow, Supervisor, Audits
- \* R. Wyatt, Manager, Quality Assurance
  
- \* P. Brockman, Senior Resident Inspector

The inspectors also interviewed other licensee and contractor personnel during the course of the inspection.

\* Denotes those present at the exit meeting on March 13, 1992.

### 2. General

This inspection was conducted to review aspects of the licensee's radiation protection, radwaste/radioactive material shipping and transportation programs. The inspection included tours of radiation controlled areas, drywell, auxiliary, turbine and radwaste buildings, observations of licensee activities, review of representative records and discussions with licensee personnel.

### 3. Organizational and Management Controls (IP 83750, 83729)

#### a. Staffing and Qualifications

The inspectors reviewed the licensee's organization and management controls for the radiation protection (RP) program including: organizational structure, staffing, delineation of authority and management techniques used to implement the program

and experience concerning self-identification and correction of program implementation weaknesses.

During the inspection, the Director of Plant Radiation Protection was replaced by the Assistant Director of Plant Radiation Protection. The Assistant Director's position was filled by the former Radiological Assessor. Due to concerns regarding the new Director's ability to meet the Technical Specifications training and experience requirements, the new Assistant Director, an experienced Health Physicist, will serve as the Radiation Protection Manager. Both individuals will have direct access to plant management.

Since the last inspection, the radiation protection staff has changed slightly. The supervisory staff has remained essentially as described in the previous report. The operational technical staff consists of 25 rad protection technicians assigned to radiological operations and 8 "senior" technicians assigned to other sections within the department. Of the 33 technicians, 14 are now certified by the National Registry of Radiation Protection Technology (NRRPT). One position, Supervisor of Radiological Engineering, has remained open since November 1991. The plant is currently recruiting to fill this position. In addition, the plant hired approximately 50 contract technicians to augment their staff for the outage.

The inspectors reviewed the licensee's methods for verifying experience and evaluating resumes of the contract radiation protection technicians (CRPTs) that were staffed for the refueling outage. The licensee did not have a formal method for evaluating CRPT experience or for verifying the accuracy of the information in the CRPT resumes. The inspectors reviewed the CRPT resumes and raised concerns with several resumes regarding ANS 3.1-1978 qualification requirements. Additional information provided by the licensee resolved most of the concerns; however, one of the individuals was subsequently reduced to junior CRPT status.

b. Use of Overtime

The inspectors reviewed the use of overtime for radiation protection technicians during a forced outage in January 1992, a forced outage during October 1991, and during normal operations during the period from July through September of 1991. During the period from July through September 1991 and the forced outage during October 1991, overtime remained within reasonable levels. Throughout these periods some CRPT support was maintained. Then, during the latter part of 1991, and acting on a recommendation, licensee management released most of the CRPTs and hired additional radiation protection technicians. Subsequent to this decision, the licensee entered a forced outage during January 1992. During this period, numerous licensee radiation protection technicians worked in excess of the technical specification guidance limit of 72 hours in a seven day period. The inspectors could find no evidence of the required

approval by station management and the documented basis for working overtime in excess of technical specification guidance. This is a violation (Violation No. 461/92004-01). Several factors contributed to the development of this situation. First, the licensee ended up with a temporary net reduction in staff of about three people as a result of its efforts to hire additional personnel. Second, the licensee's time keeping system utilized a calendar week as opposed to the rolling seven day period defined in the technical specifications. Using the calendar week, it appeared the licensee did not exceed the 72 hour limit except for one individual who minimally exceeded the limit. However, with the rolling seven day period, numerous individuals exceeded the limit, the most by as much as 24 hours. Finally, the radiation protection department had received an interpretation from its licensing staff regarding turnover time. The interpretation indicated that turnover time encompassed all activities that the individual performed once the individual was relieved from performance of duties in the field. As applied to the radiation protection department, in addition to communicating ongoing and upcoming activities to the oncoming individual, routine duties such as smear counting, air sample counting, and survey documentation could also be performed and considered part of the turnover. However, the NRC's position is that turnover time is a period for communication of ongoing and upcoming activities, problems encountered, and management instructions. Turnover time is not for the performance of routine duties and functions.

One violation was identified.

4. Training (IP 83750, 83729)

The inspectors reviewed the licensee's training program for contract radiation protection technicians (CRPTs). The licensee has a well established training program for CRPTs. This training program encompasses a review of fundamental radiation protection theory and technology, plant specifics and administrative controls, and evaluation of task performance for those activities the CRPTs will perform during their job assignment.

The knowledge level of the CRPTs is evaluated by two examinations. The first exam is a screening exam. The questions on this exam were extremely basic both in terms of the type and level. The licensee indicated that screening exam failure would most likely result in termination of employment. Reportedly, three individuals failed this exam. Two of these individuals' employment were terminated and the third was retained for additional training upon subsequent evaluation. The second examination evaluated the CRPT's knowledge of radiation protection fundamentals and technology, plant specifics and administrative controls. The questions on this examination were of suitable range and difficulty and were reasonably comprehensive.

The inspectors observed on-the-job training of CRPTs for detection and retrieval of hot particles. This class was professionally given and appropriately utilized training aids. This class discussed practical

problems encountered in the survey and retrieval of hot particles. Each CRPT was then required to select suitable instrumentation and demonstrate suitable survey techniques to locate and retrieve a hot particle.

No violations or deviations were identified.

5. Audits, Surveillances and Self-Assessments (IP 83750, 84750)

The inspectors reviewed the results of Quality Assurance audits and surveillances conducted by the licensee since the last inspection. Also reviewed was the extent and thoroughness of the audits and surveillances.

The inspector reviewed the results of two audit reports and four surveillances. The surveillances included assessment of the timeliness of Condition Reports corrective actions, compliance with the plants radiological posting procedures, new fuel transfers, and verification of plant procedure implementation for a spent resin shipment. The surveillances were found to be thorough, timely and informative.

The licensee has a three tiered system for reporting deficiencies in the radiological control program. Radiological Improvement Reports (RIR) are used to identify infractions of the radiological procedures and other minor radiological control problems. Radiological Occurrence Reports (ROR) are used to report deficiencies and violations that are significant and do not require a Condition Report (CR). Condition Reports are used to report, process and correct conditions adverse to quality and/or nuclear safety. CRs may also be used to report deficiencies found during QA audits or surveillances. RIRs can be initiated by any individual in the plant. The RIR is reviewed by the Radiation Protection Shift Supervisor and forwarded to the Supervisor of Radiological Operations. After review, the Supervisor may decide to upgrade the RIR to a ROR or a CR. Each report is tracked by the plant and corrective action must be taken within proscribed time limits.

Surveillance report, Q-15168, reviewed 48 Condition Reports that were open and at least 12 months old as of January 1, 1992. The CRs were reviewed to assess whether required actions for the CRs were progressing at a reasonable rate and, if not, whether the delays were justified. Of the 48 Condition Reports, 69% were determined to be untimely for corrective actions. Delays in revising and approving procedures was determined to be the principle cause for delays in corrective action. The report made four recommendations to expedite the process including: revising the plant's process for writing, reviewing, and implementing procedures, increasing the priority of work required for a CR and identifying CR responsibilities by due date for management review. Because CRs are an integral part of the licensee's program for reporting, processing and correcting conditions adverse to quality and/or nuclear safety, progress in implementing the recommendations will be reviewed during subsequent inspections.

Two audits were reviewed including an examination of the whole body counting program and the evaluation of activities performed by the radiation protection department. The audit of the Whole Body Counting Program (Q38-91-20) appeared to be thorough and technically accurate. The audit made four recommendations that should improve the program. The audit of the Radiation Protection Program (Q38-91-12) examined field performance of several protection activities, the temporary shielding program, radiological material control, ALARA implementation, the "Personnel Radiation Exposure Monitoring" system and Dosimetry. The audit was performance based and procedurally orientated. The declared purpose for performing the audit was to "evaluate the overall departmental effectiveness in performance of Radiation Protection activities". Systemic issues regarding allocation of resources, interdepartmental communication and management effectiveness were not audited.

No violations or deviations were identified

6. Maintaining Occupational Exposure ALARA (IP 83750)

The inspector reviewed the licensee's program for maintaining occupational exposures ALARA, including: ALARA group staffing and qualification; changes in ALARA policy and procedures, and their implementation; ALARA considerations for planned, maintenance and refueling outages; worker awareness and involvement in the ALARA program; establishment of goals and objectives, and effectiveness in meeting them. The inspector also reviewed management techniques, program experience and correction of self identified program weaknesses.

The ALARA group is currently staffed with one coordinator, one staff technician and one technician on loan from radiological operations. For the outage, the group has added 2 contract technicians and 3 contract engineers. Two of the three contractors are returnees from previous outages. There is one staff vacancy and that position will be filled following the outage.

Several improvements in the program have been made since the last inspection. Procedures for reviewing job requests and implementing the ALARA job review process have been revised and streamlined. Flow charts detailing each step in the process were developed and distributed to the appropriate personnel and departments. Currently, ALARA meets twice a day with supervisors from each of the crafts and the plant work coordinator. The work schedule for each shift is reviewed to assure that each job has undergone an ALARA review and workers are aware of conditions within the plant that may affect conditions at the work site. These meetings were scheduled to end with the outage; however, they were so well received that the ALARA group has recommended that they remain on the schedule.

Based on data from previous outages and a review of the planned work schedule, the licensee set a goal of 350 Man-Rem for the current scheduled outage (RF-3). The outage started on February 27, 1992 and

as of March 9, 1992 the total dose was 56 Man-Rem. This dose corresponds closely with the plant's projected dose for that date and unless a major change occurs in the outage agenda the goal would appear to be achievable.

The inspectors observed the transfer of the steam separator from the reactor vessel to its storage space in the containment pool. Poor work practices that may have been the result of poor pre-job ALARA planning were identified. Once the vessel and containment pool are flooded, the separator must be completely lifted out of the pool to clear the weir wall, moved approximately 30 feet and lowered into an adjacent storage pool. The licensee knew from previous transfers that contact dose rates of 40 - 50 R/hr were possible and general area dose rates from 500 mRem to 1 R/hr were likely. As a result of the ALARA review, only essential personnel (crane operators, radiation protection technicians, manipulators and spotters) would be allowed in the area during the transfer. The inspectors noted, however, that shielding had not been provided for personnel (radiation protection technicians, manipulators and spotters) standing adjacent to the pool, dose saving devices such as mirrors, lead aprons and gloves, etc. were not used and there were more than the required number of essential personnel present. These issues may have been discussed at the pre-job ALARA meetings. The inspectors, however, were unable to obtain copies of the pre-job or post-job documents during the inspection. During the next inspection, the inspector will review these documents to see if corrective actions had been taken as result of the post-job ALARA review. This matter is considered an open item and was discussed at the exit interview. (Open Item 461/92004-02).

No violations or deviations were identified. One open item was identified.

7. External and Internal Exposure Control (IP 83750, 83729)

The inspectors reviewed the licensee's external and internal exposure control programs, including: changes in the program, use of dosimetry to determine whether requirements were met, planning and preparation for maintenance and refueling outage tasks including ALARA considerations and required records, reports and notifications.

The inspector selectively reviewed the results of the licensee's whole body counting efforts since the last inspection. No significant uptakes of radioactive materials were identified. The licensee uses a Canterra Fastscan for incoming, termination, and screening wholebody counts. The inspector also reviewed the results of recent calibrations of the Fastscan whole body counter. Some minor problems were identified with the calibration acceptance criteria. The licensee was informed and initiated corrective actions.

The licensee completed its National Voluntary Laboratory Accreditation Program (NVLAP) for its new Panasonic dosimetry system prior to the start of the refueling outage. The inspector reviewed the licensee's procedures, calibration records, and administrative controls for the use of this system. The licensee appears to have performed well with



the NVLAP process. The total project to implement a licensee personnel dosimetry system with requisite equipment and procedures and obtain NVLAP accreditation encompassed a two-year effort by the licensee.

A procedure problem associated with this effort was identified by the licensee's quality assurance organization. The procedures were developed as Dosimetry Work Practices instead of Clinton Station Procedures as specified in licensee procedure CPS 1005.01. This matter had been identified early in the transition from contractor to onsite licensee dosimetry, but changes had not been effected by the time the onsite dosimetry program was implemented. This is now tentatively scheduled to be completed by the end of July 1992. This licensee-identified violation is not being cited because the criteria specified in Section V.G. of the Enforcement Policy were satisfied.

One non-cited violation was identified.

#### 8. Planning and Scheduling

The inspectors reviewed the management controls utilized to schedule and coordinate work activities for the ongoing refueling outage. As noted in previous inspections, the licensee did not effectively plan work activities in radiological areas, in particular, the drywell. During this inspection, the inspector noted that the licensee had made impressive progress in addressing previously identified concerns and performance problems. The licensee is to be commended for taking the area based planning concept and developing it into an extremely workable and useful part of their program.

The licensee divided the drywell into quarters and elevations. Each planned job in the area was then plotted on the area map. All activities were included. Support needs such as scaffolding work were identified. As unplanned, emergent work was identified, these activities were also factored into work plans for the affected areas. Major systems and components were color coded to match the scale model of the drywell and containment as much as possible. This model was also located at the drywell checkpoint. Finally, these maps were color copied onto 11x17 paper and provided to cognizant work groups and the drywell coordinator. In addition, the licensee expanded this planning approach to work activities in the steam tunnel areas in containment and the auxiliary building. During the next outage, the licensee plans to expand this type of planning to the RHR and LPCS rooms in the auxiliary building.

The inspectors observed the use of these maps and the model of the drywell and containment by various work groups. In addition, the inspectors discussed the use and value of these efforts to control work activities in this manner with various work groups, planning and scheduling personnel, and a drywell coordinator. All groups responded positively regarding the usefulness of the area based planning approach. Planning and scheduling personnel and the drywell coordinators indicated that unlike previous outages there were few problems with work area conflicts and that outage activities appeared to be going much smoother than in previous outages. Performance in this area appears to be excellent.

No violations or deviations were identified.

9. Source Term Reduction (IP 83750)

Since the last inspection, the licensee has created a new position to oversee plant source term reduction efforts, Manager - Source Term Reduction (STR). This position is currently filled by the former Supervisor of Radioactive Waste. The manager is responsible for assigning specific tasks, monitoring the progress of those tasks and ensuring that onsite as well as offsite organizations have a clear understanding of the status of the source term reduction program.

The inspectors met with the STR manager to discuss the status of the program. The manager presented information: chemical decontamination of the reactor recirculation and reactor water cleanup systems is scheduled for the next outage RF-4; a number of control blades will be replaced in RF-4 and future outages; the licensee is setting up a data base collection and trending system to monitor chemistry parameter trending; oxygen injection began February 2, 1992 and will continue on an experimental basis after RF-3; lay-up activities for RF-3 were identified, implemented and monitored for effectiveness; cobalt free part replacement is on hold awaiting the availability of valves and parts; progress is continuing on the feasibility study to determine the effectiveness of condensate filtration; and, work on the Reactor Water Cleanup System pump modifications is continuing. The manager will continue to monitor the status of the program and issue quarterly updates.

10. Transportation of Radwaste and Radioactive Material (IP 86750)

The inspectors reviewed the licensee's transportation of radioactive materials program, including: adequacy and implementation of written procedures, radioactive materials and radwaste shipments for compliance with NRC and DOT regulations and the licensee's quality assurance program, review of transportation incidents involving licensee shipments (if any), adequacy of required records, reports, shipment documents and notifications and experience concerning identification and correction of programmatic weaknesses.

The plant made 28 shipments of radioactive materials between January 1, 1992 and March 13, 1992. Of those, 2 were sent to radwaste processors for supercompaction and 13 sent to one of the radioactive waste burial sites for disposal. The inspector reviewed the records and surveillances for several of the shipments. No problems or incidents were noted.

The inspector found one weakness in the implementation of the requirement for providing an emergency response telephone number and an emergency point of contact. In the event of an emergency involving transportation of radioactive material Clinton Power Station procedure 7013.12 instructs the driver to immediately notify plant operations that an accident has occurred and await instructions. Plant operations is instructed to immediately transfer the call to a radiation protection shift supervisor who is responsible for instructing the

driver and notifying the appropriate plant personnel. If the supervisor is unavailable, radiation protection personnel are required to hold the call until a supervisor is found and the call transferred. Radiation protection personnel, however, were not trained in the requirements of this procedure and even though radiation protection supervisors are trained, the training is not documented. The licensee has acknowledged this weakness and taken corrective action.

No violations or deviations were identified.

11. Plant Tours (IP 83750, 84750)

During several tours of the plant including the drywell, reactor building and turbine building, the inspectors observed the following: postings, labeling and radiological controls were in accordance with regulatory and licensee procedural requirements, housekeeping at the step-off pads was generally poor, housekeeping in walkways and in the drywell was good, debris was found on the floor in several rooms and material (screwdrivers, tape, towels, etc) left behind in others. During tours of the drywell, it was noted that the craftsmanship and quality of shielding installation was excellent. No other problems were observed.

12. Exit Interview (IP 83750, 84750, 86750)

The inspectors met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on March 13, 1992 to discuss the scope and findings of the inspection.

During the exit interview, the inspectors discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. Licensee representatives did not identify any such documents or processes as proprietary. The following was specifically discussed at the exit meeting.

1. The cited and non-cited violations (Sections 3 and 7)
2. The Open Item concerning poor work practices that may have been the result of weaknesses in the pre-job ALARA briefing process (Section 6).
3. Poor housekeeping practices in the reactor, turbine and auxiliary buildings (Section 11).
4. The scope and range of the Audit program (Section 5).