September 5, 2000

Mr. R. P. Powers
Senior Vice President
Nuclear Generation Group
American Electric Power Company
500 Circle Drive
Buchanan, MI 49107-1395

SUBJECT: D. C. COOK - NRC INSPECTION REPORT 50-315/2000018(DRS); 50-316/2000018(DRS)

Dear Mr. Powers:

On August 18, 2000, the NRC completed a safety inspection at your D. C. Cook, Units 1 and 2 reactor facilities. The results of this inspection were discussed on August 18, 2000, with you 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 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. Specifically, the inspection reviewed aspects of occupational and public radiation safety.

Based on the results of this inspection, three issues were identified. These issues concerned the radiological evaluation for a filter loading activity, the administrative controls for high radiation area keys, and the unconditional release of materials from the restricted area. These issues were evaluated under the risk significance determination process and were determined to be of very low safety significance (Green). The issues have been entered into your corrective action program and are discussed in the summary of findings and in the body of the attached inspection report. The issues were determined to be violations of NRC requirements, but because of their very low safety significance, the violations were not cited. If you contest the Non-Cited Violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, 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 D.C. Cook 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/

John A. Grobe, Director
Division of Reactor Safety

Docket Nos. 50-315; 50-316
License Nos. DPR-58; DPR-74

Enclosure: Inspection Report Nos. 50-315/2000018(DRS);
50-316/2000018(DRS)

cc w/encl: A. C. Bakken III, Site Vice President
J. Pollock, Plant Manager
M. Rencheck, Vice President, Nuclear Engineering
R. Whale, Michigan Public Service Commission
Michigan Department of Environmental Quality
Emergency Management Division
MI Department of State Police
D. Lochbaum, Union of Concerned Scientists

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-315; 50-316
License Nos:	DPR-58; DPR-74
Report No:	50-315/2000018(DRS); 50-316/2000018(DRS)
Licensee:	American Electric Power Company
Facility:	Donald C. Cook Nuclear Generating Plant
Location:	1 Cook Place Bridgman, MI 49106
Dates:	August 14 - 18, 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	**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 a 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 a safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in a 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 05000315-00-18, IR 05000316-00-18, on 08/14-08/18/2000; American Electric Power Company, D. C. Cook Nuclear Generating Plant, Units 1 & 2. Access Control to Radiologically Significant Areas and Radioactive Material Control Program.

The inspection was conducted by a regional senior radiation specialist. This inspection identified three green issues, which were Non-Cited Violations. The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process.

Cornerstone: Occupational Radiation Safety

- Green. The licensee failed to evaluate the potential for airborne radiological hazards associated with the loading of highly contaminated filters into a high integrity container, which resulted in the unplanned intakes of radioactive materials. The inspector identified a Non-Cited Violation for the failure to perform an adequate radiological survey as required by 10 CFR 20.1501.

  The issue was of very low safety significance because the actual exposures to the workers were below the 10 CFR Part 20 limits and the radiological source term present and the work activities performed would not have constituted a significant potential for an overexposure (Section 2OS1.3).

- Green. The inspector identified that on four occasions in July and August of 2000, the licensee had not performed or had not documented inventories of high radiation area (HRA) keys, which resulted in a Non-Cited Violation for the failure to follow procedures.

  The issue was of very low safety significance because no problems with inventories were noted prior to and after the identified omissions, which indicated that HRA keys were not lost or misused during the stated period of times. In addition, personnel entering the radiologically controlled area were required to have electronic dosimetry. The electronic dosimeters would have provided an indication of an increased exposure had an individual improperly entered such an area and would have reduced the potential for an overexposure (Section 2OS1.4).

Cornerstone: Public Radiation Safety

- Green. On three occasions during calendar year 2000, individuals removed potentially contaminated material from restricted areas before procedurally required radiological surveys were performed. The failure to adhere to the licensee's procedure for unconditional release of materials resulted in a Non-Cited Violation.

  Since the potential public doses from each of the three events was concluded to be much less than 1 millirem total effective dose equivalent (TEDE) and since less than five occurrences were identified, the issue was determined to be of very low safety significance (Section 3PS1.1).

Report Details

Summary of Plant Status

Unit 1 was in an extended outage, and Unit 2 was operating at essentially 100 percent power throughout the inspection period.

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 Unit 1 Containment Building and the Auxiliary Building 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. Findings

During plant walkdowns, the inspector found that radiological areas were posted and controlled as required by NRC requirements and the licensee's procedures. Therefore, no inspection findings were identified.

.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 (TS) 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:

- 001010 (Revision 6), "U-1 Aux Building EHRA [extreme HRA] Tours, Inspections, and Maintenance;"
- 001011 (Revision 3), "U-1 Aux Building RP EHRA Activities;"
- 002013 (Revision 1), "U-2 RCF/SWRF Extreme High Radiation Area Entries;" and
- 002015 (Revision 0), "U-2 SWIF Extreme High Radiation Area Entries."

b. Findings

The inspector reviewed the licensee's RWPs which provided access to HRAs and found that the RWPs provided the radiological controls required by TS 6.12. Specifically, each RWP required continuous radiation protection coverage for entry into an extreme (locked) HRA. Based on area radiological conditions, the inspector did not identify any problems with the electronic dosimetry alarm setpoints. Therefore, no inspection findings were identified.

The inspector observed some problems in terms of the information contained in the RWPs. For example, the licensee's procedure (12 PMP 6010 RPP.003 (Revision 9), "High, Extreme High and Very High Radiation Area Access") indicates that personnel entering HRAs shall have exposure rate monitoring instrumentation or dosimetry as specified by their RWP. In reviewing the above RWPs, the inspector could not identify a clear statement of these requirements in the RWPs. For example, the RWPs contained alarm settings and indirectly communicated that electronic dosimetry usage was required; however, the RWPs did not clearly state that each worker was to wear an electronic dosimeter. The radiation protection manager stated that electronic dosimeters were required for all entries in the RCA and that this requirement was expressed to the workers during general employee training. In addition, the inspector observed that the RWPs were not always unique to a job location or type of work, as was suggested in the above procedure. For example, the licensee maintained two RWPs (001010 and 001011) for RP personnel which provided access to a variety of areas for inspections and maintenance. Finally, the inspector observed some problems concerning the radiological information for the areas covered by the RWPs. The licensee acknowledged the inspector's observations and indicated that a project was planned to review and to revise RWPs to provide better information to the occupational workers.

.3 Reviews of Radiologically Significant Work

a. Inspection Scope

The inspector observed and reviewed work activities in the RCA that were being performed in radiation areas or HRAs ($\leq$ 1 rem per hour). Specifically, the inspector verified the adequacy of radiological controls, surveys, radiation protection technician performance, and pre-job briefings for the following work activities:

- repair of the Unit 1 east centrifugal charging pump; and
- transfer of highly contaminated filters into a high integrity container (HIC).

b. Findings

On August 15 - 18, 2000, the licensee was grinding certain sections of piping and was reassembling the Unit 1 east centrifugal charging pump, which was located in a posted radiation area and contaminated area. During these activities, the inspector observed effective radiation worker practices and radiation protection technician coverage. The inspector reviewed the RWP and observed that workers and technicians were properly

implementing the RWP requirements. For example, the inspector observed proper contamination control practices and good coordination between the workers and the radiation protection technician. The inspector also observed that the radiation protection technicians were providing effective work coverage and surveys of materials removed from the area. Since the licensee had identified alpha contamination in the early stages of the activity, the radiation protection technicians were performing augmented surveys to identify any alpha emitting radioactivity in air samples and in contamination surveys. The licensee also implemented effective engineering controls to prevent the spread of contamination and limit the potential for the release of airborne contamination.

The inspector also reviewed the transfer of highly contaminated filter media into a HIC, which resulted in unplanned intakes of radioactive materials. On August 15, 2000, three environmental technicians (qualified radiation protection technicians) were loading highly contaminated filters (700 milliRoentgen to 50 Roentgen per hour at contact with the filters) into the HIC. During the loading of the last two filters, one of the filters became stuck and would not drop into the HIC. The technicians evaluated the radiation levels at the top of the cask and determined that a long mop handle and mirror would be used to move and to guide the filters into the cask, as discussed during the pre-job briefing. The individuals completed this successfully and placed the lid onto the HIC. Upon exiting the RCA, the individuals alarmed the exit contamination monitors. The radiation protection staff performed surveys in the area and identified the spread of contamination throughout the area and a positive air sample result (about 0.3 derived air concentration). Following the surveys, the area was posted and controlled as a contaminated area and airborne radioactivity area, and the radiation protection staff initiated an investigation.

Of the three persons involved in the filter transfer, two individuals were found to have internal depositions of radioactive material. The licensee performed *in vivo* bioassay measurements (whole body counts) of the two individuals and initially measured intakes of cobalt-60 (about 50 and 700 nanocuries). Based on a pure inhalation pathway, the bioassay results corresponded to doses of about 10 and 100 millirem committed effective dose equivalent (CEDE), respectively. The licensee continued to perform additional bioassays to better define the intake pathway. Preliminary results indicated that the internal exposures to both workers would result in doses less than 100 millirem CEDE.

The inspector reviewed the licensee's condition report (CR) documenting the event and discussed the event with members of the radiation protection staff. Based on its initial evaluation, the licensee concluded that the most probable cause of the event was inadequate planning. Specifically, the initial evaluation did not consider the potential for airborne contamination. The licensee also identified issues with radiological and supervisory oversight, the failure to consider operating experience, and overconfidence due to familiarity with the task. The inspector found the initial evaluation to provide a good assessment of the issues. In particular, the inspector also found that the RWP and briefing was concentrated on external dose hazards and did not adequately evaluate the potential for internal (airborne) radiological hazards, especially considering the stuck filter and the additional manipulations of the filters that were performed.

10 CFR 20.1501 requires that each licensee make or cause to be made surveys that may be necessary for the licensee to comply with the regulations in Part 20 and that are reasonable under the circumstances to evaluate the extent of radiation levels, concentrations or quantities of radioactive materials, and the potential radiological hazards that could be present. Pursuant to 10 CFR 20.1003, *survey* means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of radioactive material or other sources of radiation. As described above, the licensee failed to adequately evaluate the airborne radiological hazards associated with loading the highly contaminated filters into the HIC to ensure that adequate engineering controls were in place to control the concentration of radioactive material in air (10 CFR 20.1701) and to ensure that the dose to the workers from inhaled radioactive materials was less than the requirements of 20.1201(a)(1). The failure to perform this evaluation (i.e., survey) is a violation of 10 CFR 20.1501. However, this violation is considered a Non-Cited Violation (NCV) (50-315/2000018-01; 50-316/2000018-01), consistent with Section VI.A of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CR No. P-00-11381.

The inspector evaluated the risk significance of this issue using the Occupational Radiation Safety Significance Determination Process (SDP) (Appendix C to NRC Manual Chapter 0609, "Significance Determination Process"). The failure to adequately evaluate the potential for airborne radioactive contamination resulted in a reduction of radiological barriers and did result in an unintended exposure to the workers. As described above, the licensee had not planned for or anticipated any internal dose from this evolution. Based on the actual doses to the workers, the radioactive source term present, and the work activities performed, the inspector concluded that the event did not constitute a significant potential for an overexposure. Therefore, the inadequate radiological survey was determined to be of very low safety significance (Green).

.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 TS. Specifically, the inspector:

- discussed the controls with members of the radiation protection staff;
- reviewed procedure 12 PMP 6010 RPP.003 (Revision 9), "High, Extreme High and Very High Radiation Area Access," to ensure that the procedure was consistent with the licensee's TS and 10 CFR Part 20 requirements;
- performed walkdowns of the RCA to ensure adequate posting and locking of all entrances to HRAs (> 1000 millirem per hour at 30 centimeters) and VHRAs; and
- reviewed HRA key inventories (July and August of 2000) to ensure that the licensee maintained the administrative controls required by its TS and procedures.

b. Findings

The inspector found that the licensee's procedures were consistent with its TS and with NRC guidance and generic communications. For example, the procedures specified requirements for HRA barriers, HRA key controls, HRA access control requirements, and RWPs. However, 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); 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 that these highly irradiated objects 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 pool, the licensee acknowledged the observation and planned to evaluate its procedure guidance in this area.

In reviewing the radiation protection logs (July 1, 2000 through August 16, 2000), the inspector identified six omissions in the licensee's record of HRA key inventories. The inspector noted that HRA key inventories were not recorded for the following shifts:

- Day shift on July 15, 2000;
- Day shift on July 25, 2000;
- Night shift on July 31, 2000;
- Day shift on August 2, 2000;
- Night shift on August 4, 2000; and
- Night shift on August 9, 2000.

After reviewing additional records, the licensee located informal, uncontrolled radiation protection shift turnover forms which indicated that the inventories had been performed successfully on July 25, 2000 (day shift), and August 9, 2000 (night shift). The radiation protection manager stated that he personally reviewed the shift turnover forms (on a daily basis) to ensure that the inventories were completed. However, the licensee could not locate any record to verify that the inventories had been performed for the four additional shifts noted in the above listing. Consequently, the licensee initiated a condition report (CR No. P-00-11627) to document the issue.

Technical Specification 6.12.2 states, in part, that keys to HRA (> 1000 millirem per hour at 30 centimeters) entrances shall be maintained under the administrative control of the shift supervisor on duty and/or the plant health physicist. Procedure 12 PMP 6010 RPP.03 (Revision 9), "High, Extreme High and Very High Radiation Area Access," implements the requirements stated in TS 6.12.2 and requires, in part, that a physical inventory of high, extreme high, and very high radiation area keys be performed at least once per shift and be documented. As identified above, the failure to perform or to document physical inventories of HRA keys is a violation of TS 6.12.2. However, this violation is considered a Non-Cited Violation (50-315/2000018-02; 50-316/2000018-02), consistent with Section VI.A of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CR No. P-00-11627.

The inspector evaluated the risk significance of this issue using the Occupational Radiation Safety SDP. The failure to properly perform and document the physical inventory of HRA keys resulted in a reduction in the barriers to prevent an unintended exposure and in a reduction in the controls for access to HRAs. However, the inspector noted that no problems with inventories were noted prior to and after the identified omissions, which indicated that HRA keys were not lost or misused during the stated period of times. In addition, personnel entering the RCA were required by radiation work permits to have electronic dosimetry, which would have provided an indication of an increased exposure had an individual improperly entered such an area. Therefore, the lapses in HRA key inventories were determined to be of very low safety significance (Green).

.5 Problem Identification and Resolution

a. Inspection Scope

The inspector reviewed the licensee's self assessments, audits, and CRs (February 1999 - August 2000) concerning the access to radiological areas, radiation protection technician performance, and radiation worker performance. The inspector reviewed these documents to assess the licensee's ability to identify repetitive problems, contributing causes, and corrective actions which will achieve lasting results.

b. Findings

The inspector found that the staff was properly using the corrective action program to identify problems and adverse trends in performance. In particular, the inspector noted that self-assessment findings were entered into the licensee's corrective action program. In addition, the licensee had recently documented an adverse trend in radiation worker performance, which was also noted by the inspector. In general, the inspector noted that the licensee's corrective actions were adequately focused to the root causes and contributing causes identified by the licensee. However, the inspector noted that some CRs did not fully document the actions taken by the licensee to prevent further occurrences. Based on discussions with the radiation protection staff, the inspector obtained this information. Therefore, no inspection findings were identified.

2OS3 Radiation Monitoring Instrumentation

.1 Source Tests of Radiation Monitoring Instrumentation

a. Inspection Scope

The inspector observed source tests of radiological instrumentation to ensure the accuracy of the instruments which were used to measure dose rates and contamination levels in areas occupied by occupational workers and used to ensure that radioactive material was not inadvertently released from the site. In particular, the inspector observed source tests of each of the licensee's tool monitors, eight portal contamination monitors, two proportional counters, and a number of ion chambers and pancake probe Geiger-Mueller detectors. The inspector verified that these tests were performed in accordance with the licensee's procedures and that the technicians properly applied the licensee's acceptance criteria.

b. Findings

The inspector observed source tests of radiation monitoring instrumentation and observed that the tests were performed in accordance with the applicable procedures and at the defined frequencies. The radiation protection technicians demonstrated proper radiological controls while handling radioactive sources, and the instrumentation responded properly when the tests were performed. In addition, the inspector observed that the procedures specified criteria that were adequate to ensure the proper operation of the instrumentation. Therefore, there were no findings identified.

2PS3 Radiological Environmental Monitoring Program

.1 Unrestricted Release of Material from the Radiologically Controlled Area

a. Inspection Scope

The inspector reviewed the licensee's criteria for the survey and release of potentially radioactive material from the restricted area. In particular, the inspector reviewed procedure PMP-6010.RPP.301 (Revision 13a), "Control of Material in a Restricted Area," and verified that the procedure was consistent with the requirements of 10 CFR Part 20 and NRC generic communications. The inspector also reviewed: (1) the most recent calibrations of the licensee's small articles monitors, which were performed in calendar year 2000, to ensure that instrumentation that was used for release surveys was adequately calibrated and controlled; (2) records of granular and liquid materials that had been unconditionally released from the restricted area to ensure that the licensee had adhered to its procedure requirements; and (3) condition reports for the previous 18 months, which concerned the unconditional release program. In addition, the inspector observed radiation protection technicians performing surveys of materials for unrestricted release to ensure that personnel understood and adhered to the licensee's program.

b. Findings

The inspector found that the licensee's procedure for the unconditional release of materials from restricted areas was consistent with the requirements of 10 CFR Part 20 and NRC generic communications. Specifically, the procedure required that all materials removed from a restricted area be surveyed and that only materials which are found to have no detectable contamination above background could be unconditionally released. In the cases of granular solids and liquids, the procedure contained detection limits which were consistent with the minimum detectable activities specified for its environmental monitoring program. The inspector also observed individuals properly performing unconditional release surveys and reviewed records of granular solid and liquid release surveys, which were performed and evaluated in accordance with the licensee's procedure.

Based on a review of CRs and discussions with the licensee, the inspector noted that the licensee had identified three occasions in calendar year 2000 when materials were inappropriately removed from the RCA:

- During the inspection (August 17, 2000), the licensee identified that 18 pieces of lumber (16 foot lengths of 4-inch-by-4-inch lumber) were removed from a restricted area without the required radiological surveys and without authorization of site management. The lumber had been originally used in a restricted area for a structure associated with the steam generator replacement project. Recently, the licensee had moved the lumber to another restricted area on the owner controlled property but outside of the protected area and unlocked. Prior to the move, the licensee had performed surveys for removable contamination and had not identified any removable contamination. The licensee had planned to perform direct radiation surveys and release the lumber in the near future. Based on release surveys of other similar building materials, the licensee had a high level of confidence that the missing lumber was not radioactively contaminated. Nonetheless, the licensee identified that the lumber had been removed from the area before the required radiological surveys were performed. The licensee documented the event in CR No. P-00-11486 and planned to perform additional investigations.

- On February 2, 2000, another NRC licensee identified that a non-radioactive shipment of materials originating from the D. C. Cook plant contained contaminated materials (having up to about 20,000 disintegrations per minute of fixed radioactive contamination). Based on the licensee's investigations, the materials were inadvertently packaged and transferred from the D. C. Cook plant RCA to a non-NRC-licensed vendor without an adequate radiological survey. The licensee documented the condition in CR No. P-00-02073.

- On January 19, 2000, the licensee identified that a sling obtained from the Turbine Building (outside of the RCA) was radioactively contaminated. Upon additional searches and surveys, the licensee found an additional seven slings, one tag line, and one drop line that were also within the Turbine Building and were contaminated. The contamination levels ranged from about 600 to 10,000

disintegrations per minute using a pancake probe Geiger-Mueller detector. The licensee documented this condition in CR No. P-00-00967.

Technical Specification 6.11 states that procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure. Procedure PMP-6010.RPP.301 (Revision13a), "Control of Material in a Restricted Area," implements the 10 CFR Part 20 requirements for the identification and control of NRC-licensed material and requires, in part, that materials to be released from a restricted area be surveyed and found to have no detectable radioactive contamination above background. Contrary to the above, material was removed from restricted areas in the three above incidents which were not surveyed and were not found to have no detectable radioactive contamination above background which is a violation of TS 6.11. However, this violation is considered a Non-Cited Violation (50-315/2000018-03; 50-316/2000018-03), consistent with Section VI.A of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CRs No. P-00-00967, P-00-02073, and P-00-11486. The licensee also planned to initiate a trend CR to review the overall control of radioactive material and identify any generic vulnerabilities in its program.

The inspector evaluated the risk significance of this issue using the Public Radiation Safety SDP. The three incidents described above represent three failures of the licensee's radioactive material control program. However, the resultant public doses from each of the three events was concluded to be much less than 1 millirem total effective dose equivalent (TEDE). Therefore, the three incidents were determined to be of very low safety significance (Green).

4. OTHER ACTIVITIES (OA)

4OA5 Other

.1 Control and Labeling of Radioactive Material Containers

a. Inspection Scope

The inspector reviewed the licensee's control and labeling of radioactive material containers to verify compliance with 10 CFR Part 20 and to ensure that radiological hazards were adequately communicated to the workers. Specifically, the inspector compared the licensee's procedure (PMP 6010.RPP.301 (Revision 13a), "Control of Material in a Restricted Area") to the requirements contained in 10 CFR Part 20 and NRC generic communications. During walkdowns within the RCA (Section 2OS1.1), the inspector also verified that containers of radioactive material were properly labeled.

b. Findings

The inspector reviewed licensee procedure PMP 6010.RPP.301 and identified that the procedure did not accurately interpret the NRC's position on "in-use" containers. Specifically, the procedure stated that "In-Use Containers are containers that are open

(not sealed) and inventory may be added or removed." In terms of labels, the procedure indicated that these containers do not require any information other than a trefoil and the words "Radioactive Material." However, the procedure did contain a time-frame after which the containers become filled or were essentially not being used. For example, the licensee indicated that all containers that do not possess lids were always "in-use" and, therefore, did not require tags which provide radiological information to the worker (e.g., radiation levels, contamination levels, and date surveyed).

Health Physics Position No. 028 describes guidance on labeling requirements: "In general, a container should be labeled when radioactive material is added to it. However we [the NRC] appreciate that certain conditions may exist where the addition of appropriate information to the label may necessitate some delay. For example, dose rate information may not be added until the container is filled, or the final dose rate information may not be added until the container can be moved to a low-background area for measurement."

As Health Physics Position No. 028 states, a container should be labeled when material is added to it. Since it may not be practical to label a container as it is being loaded, the position attempted to allow some flexibility when material is in the process of being added to a container. The position describes a dynamic situation that exists for a finite duration. However, the licensee's interpretation did not consider the time-frame and allows for an indefinite situation. Under the licensee's guidelines, containers could be essentially unused for long periods of time, but since they were not closed and sealed, the licensee would consider them to be "in-use." Based on the licensee's interpretation, the worker may not be adequately informed of the radiological hazard. The licensee acknowledged the inspector's observations and planned to review the procedural guidelines.

During plant observations, the inspector found that containers of radioactive materials were generally controlled in accordance with the licensee's procedure. In the case of "in-use" containers, the inspector found that the trefoil and words "Radioactive Material" were present. The inspector did not identify any containers having a measurable dose rate that were not adequately labeled. Therefore, no inspection findings were identified.

4OA6 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. R. Powers and other members of licensee management on August 18, 2000. Additional discussions with Messrs. D. Wood and S. Watkins were conducted on August 29, 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

M. Barfelz, Regulatory Affairs
P. Holland, Emergency Preparedness
I. Jackiw, Regulatory Affairs
W. Kropp, Regulatory Affairs
R. LaBurn, Acting General Supervisor, Radiation Protection Support
T. Noonal, Director, Performance Assurance
R. Powers, Senior Vice President
D. Raye, Radiation Protection
M. Rencheck, Vice President, Engineering
R. Rickman, Managerial Staff Assistant
F. Timmons, Site Protective Services
S. Watkins, Acting Superintendent, Radiation Protection
L. Weber, Operations Manager and Acting Plant Manager
D. Wood, Acting Manager, Radchem - Environmental

NRC

B. Barlett, Senior Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-315/2000018-01 50-316/2000018-01	NCV	Failure to perform an adequate radiological evaluation for the loading of highly contaminated filters. (2OS1.3)
50-315/2000018-02 50-316/2000018-02	NCV	Failure to perform and document HRA key inventories in accordance with procedures. (2OS1.4)
50-315/2000018-03 50-326/2000018-03	NCV	Failure to perform unconditional release surveys in accordance with procedures. (2PS1.1)

Closed

50-315/2000018-01 50-316/2000018-01	NCV	Failure to perform an adequate radiological evaluation for the loading of highly contaminated filters. (2OS1.3)
50-315/2000018-02 50-316/2000018-02	NCV	Failure to perform and document HRA key inventories in accordance with procedures. (2OS1.4)

50-315/2000018-03 50-326/2000018-03	NCV	Failure to perform unconditional release surveys in accordance with procedures. (2PS1.1)

Discussed

None

LIST OF ACRONYMS

ALARA	As-Low-As-Is-Reasonably-Achievable
CEDE	Committed Effective Dose Equivalent
CR	Condition Report
DRS	Division of Reactor Safety
HIC	High Integrity Container
HRA	High Radiation Area
NCV	Non-Cited Violation
OS	Occupational Radiation Safety
PERR	Public Electronic Reading Room
RCA	Radiologically Controlled Area
SDP	Significance Determination Process
TEDE	Total Effective Dose Equivalent
VHRA	Very High Radiation Area

LIST OF DOCUMENTS REVIEWED

Audits and Assessments

"1999 Assessment of the Radiological Effluent Monitoring Program, DC Cook Nuclear Power Plant, February 1 - 12, 1999," dated March 1999.

"Health Physics Self-Assessment, D. C. Cook Nuclear Generating Station, May 8 -12, 2000."

Condition Report (CRs) Nos.

P-99-26256, P-00-00803, P-00-00965, P-00-00967, P-00-01672, P-00-01934, P-00-02073, P-00-02238, P-00-02404, P-00-03210, P-00-03437, P-00-04933, P-00-05069, P-00-05326, P-00-05584, P-00-05678, P-00-06015, P-00-06077, P-00-06211, P-00-06418, P-00-06561, P-00-06567, P-00-06850, P-00-07471, P-00-07871, P-00-08330, P-00-08118, P-00-08851, P-00-08880, P-00-11381, P-00-11388, P-00-11486, and P-00-11523.

Miscellaneous

Data Sheet 2, PMP 6010.RPP.301 (Revision 13a), "Control of Material in a Restricted Area," for release Nos. 00LS0278, 00LS0294, 00LS0295, 00LS0298, 00LS0303, and 00LS0305.

General Employee Training, Radiation Worker Training Study Guide, Revision 23, GE-C-2200-HO-1, dated July 2000.

Memorandum from J. L. Leichner to D. C. Loope and D. L. Noble, "Radiological Technical Position, Off-site Radiological Soil Contamination," dated December 10, 1992.

"Radiation Protection Department Key Log, RPAC," for July and August of 2000.

Radiation Protection Leadership Plan, Revision 6bd, dated August 16, 2000.

Radiation Work Permit Nos. 001010 (Revision 6), 001011 (Revision 3), 001098 (Revision 2), 002012 (Revision 0), 002013 (Revision 1), and 002015 (Revision 0).

RP Shift Turnover Sheets, dated July 25, 2000, and August 9, 2000.

Procedure Nos.

12 PMP 2220.001.001 (Revision 2), "Foreign Material Exclusion (FME);"
12 PMP 6010.RPP.003 (Revision 9), "High, Extreme High and Very High Radiation Area Access;"
12 PMP 6010.RPP.301 (Revision 13a), "Control of Material in a Restricted Area;"
12 THP 6010.RPC.572 (Revision 2), "Calibration of the Gamma-40 Portal Monitor;"

12 THP 6010.RPC.590 (Revision 1), “Calibration of the Aptec PMW-3 Personnel Monitor;”
12 THP 6010.RPC.592 (Revision 0), “Calibration of the Bicron SAM-11 Small Articles Monitor;”
12 THP 6010.RPI.500 (Revision 13), “Instrument Issue and Operational Testing;” and
12 THP 6010.RPI.503 (Revision 7), “Quality Control of Laboratory Counting Equipment.”

Surveillance and Testing Records

Data Sheet 1, 12 THP 6010.RPC.592 (Revision 0), “Calibration of the Bicron SAM-11 Small Articles Monitor,” performed on January 11, 2000 (SAM-11-191) and on December 6, 1999 (SAM-11-189).

Form RP-572-a (Revision 0), “Portal Monitor Calibration Data Sheet,” performed on July 25, 2000 (Monitors POR-454 and POR-492) and on May 15, 2000 (Monitors POR-1400 and POR-1402).

Form RP-590-a (Revision 0), “Aptec PMW-3 Calibration Data Sheet”:

Monitor	Dates of Calibration
PMW-1	August 3, 2000, and March 23, 2000
PMW-2	May 6, 2000, and March 4, 2000
PMW-3	July 22, 2000, April 7, 2000, and November 24, 1999
PMW-4	April 6, 2000, and January 22, 2000
PMW-5	April 19, 2000
PMW-6	July 24, 2000, July 4, 2000, May 6, 2000, May 3, 2000, and April 19, 2000
PMW-7	August 3, 2000, and February 28, 2000
PMW-8	July 24, 2000, and November 8, 1999
PMW-9	March 14, 2000
PMW-10	July 24, 2000, and March 17, 2000
PMW-11	July 27, 2000, July 4, 2000, February 16, 2000, and December 6, 1999
PMW-12	July 24, 2000, January 15, 2000, and December 7, 1999