

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/93009(DRSS)

Docket No. 50-255

License No. DPR-20

Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Facility Name: Palisades Nuclear Generating Plant

Inspection At: Palisades Site, Covert, Michigan

Inspection Conducted: April 26-29, May 6-8 and May 10-12, 1993

Inspector: William Snell for
D. W. Nelson
Radiation Specialist

5/26/93
Date

Approved By: William Snell
William Snell, Chief
Radiological Controls Section 2

5/26/93
Date

Inspection Summary

Inspection on April 26-29, May 6-8 and May 10-12, 1993 (Report No. 50-255/93009(DRSS))

Areas Inspected: Routine announced inspection of the radiation protection program including: organization and management controls; external exposure control; control of radioactive materials, contamination, and surveys; maintaining occupational exposures ALARA (Inspection Procedures (IP) 83750); refuel outage planning; and preparation and performance during the dry cask storage project (IP 83750). Open items from past identified concerns (IP 83750) were also reviewed.

Results: No violations or deviations were identified. The licensee's radiation protection program appears to be effective in controlling radiological work and in protecting the public health and safety. Strengths included staff stability, the reorganization of the radiological services department (RSD), the job scheduling and planning group and RSD planning for the dry cask storage project. Areas where improvement appeared to be merited included housekeeping practices in infrequently visited areas of the auxillary building, radiation protection practices during the dry cask storage project and radiological access control.

DETAILS

1. Persons Contacted

- * J. Beer, Radiation Protection Manager
- * A. Clark, ALARA Program Coordinator
- **K. Haas, Radiological Services Department Manager
- * C. Hillman, Licensing
- * J. Kuemin, Licensing Administrator
- **D. Malone, Radiological Services Superintendent
- * M. Mennucci, Health Physics (HP) Technical Supervisor
- * T. Neal, HP Support Superintendent
- * R. Rogers, Safety and Licensing Director

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

* Denotes those present at the formal exit meeting on April 29, 1993.

** Denotes individuals present at informal exit meetings held May 8 and May 12, 1993.

2. General

This inspection was conducted to review aspects of the licensee's radiation protection program. Included in this inspection was a followup of outstanding items in the areas of radiation protection. The inspection included a tour of radiation controlled areas in the auxiliary building, containment and the spent fuel pool; observations of licensee activities; review of representative records and discussions with licensee personnel.

3. Licensee Action on Previous Inspection Findings (IP 83750)

(Closed) Open Item 255/91011-02: Untimely input of survey results into radiation work permits (RWP).

The inspector reviewed the newly revised (April 6, 1993) Administrative Procedure on Radiation Work Permits (RWP) and found that the issue of timely input of survey results had been addressed in the procedure. The procedure requires in part that RWPs be put on hold until confirmatory surveys due to changes in radiological conditions are received, reviewed and addressed in the RWP. In addition, the RSD Planning and Scheduling group were responsible for reviewing all work requests and assuring that sufficient time was allocated to obtain the necessary surveys and incorporate the results into a RWP. This item is closed.

(Closed) Unresolved Item 255/91022-02: The licensee's definition of a restricted area appeared to be too all inclusive versus how it was defined in 10 CFR Part 20.

This issue was brought back for management review and it was determined that the licensee's definition of a restrictive area was acceptable. However, to avoid future confusion, the licensee decided to modify the definition. The item remained open until the licensee had redefined their restrictive area to only include those areas within the security fence and the outlying radioactive waste buildings. All individuals entering the restrictive areas would be trained, the extent of which will be based on the likelihood of exposure from radioactive materials. For example, escorted visitors will be given a handout addressing basic health physics principles. All unescorted personnel, on the other hand, will be required to attend General Employee Training (GET). This item is closed.

4. Organization and Management Controls (IP 83750)

The inspectors reviewed the licensee's organization and management controls for radiation protection 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.

Staff stability continues to be a strength for the RSD. Since the last inspection (50-255/92025(DRSS)) the RSD has retained all of its technical staff. One technician has given notice that he will be leaving to join the staff at Big Rock Point prior to the scheduled June 4, 1993, Refuel Outage and the licensee had made plans to replace the technician prior to the outage. The inspector noted only one change in the RSD at the management level; the former Radiation Protection Manager (RPM) from Big Rock Point joined the staff in February 1993, as the licensee's new RPM. The new RPM will have no supervisory responsibilities but will instead perform assessments of the RSD for RSD management and provide technical support to the staff when needed. A review of the new RPM's qualifications and responsibilities indicated that the new RPM had met the requirements of Regulatory Guide 1.8. and did have direct access to the plant manager.

No violations or deviations were identified.

5. RSD Radiation Protection Initiatives (IP 83750)

Since the last inspection the RSD has taken a number of initiatives to improve the program.

- a. On January 1, 1993, the licensee implemented the new 10 CFR Part 20, one year prior to the mandatory starting date. To implement, the licensee spent approximately \$255,000 for materials and training and expended about 45 man-months of effort.
- b. The licensee installed a new large enclosed decontamination unit. The unit allows the licensee to decontaminated large pieces of equipment using the same abrasive materials. The unit should help to reduce the licensee's radioactive waste costs.

- c. The licensee began placing 26 electronic dosimeters (ED) at various locations throughout the plant to track dose rates. If the ED results closely mimic those of routine surveys the licensee plans to reduce the number of surveys performed to save dose.
- d. The licensee continues to practice early boration and hydrogen peroxide addition during shutdowns. Early results from the April 28, 1993, forced outage indicated that early boration had reduced the licensee's Co-60 inventory by approximately 1500 Curies.
- e. The licensee reduced the number of dosimeters issued to employees by approximately 150. Dosimeters will no longer be issued to clerical personnel and others who do not enter the RCA.
- f. The licensee purchased a number of new instruments including lapel air samplers, Eberline AMS-4 continuous air monitors, a portable germanium detector for source term characterization and neutron dosimeters.

All of the above licensee initiatives are excellent program improvements which are indicative of management's strong support of the RSD.

No violations or deviations were identified.

6. Non-outage Planning and Scheduling (IP 83750)

Another direct benefit of the June 1992 RSD reorganization was the formation of the RSD Health Physics Planning and Scheduling group (HPPS). The licensee created the new group with members from the old ALARA group. The group has five members, these include the Health Physics Planning and Scheduling Supervisor, the RWP/Planning Supervisor, the HP Scheduler and two technicians. The group is responsible for insuring that the RSD is aware of all upcoming jobs, coordinating job planning with other departments, generating Radiation Work Permits and short and long term ALARA planning. Management support for the group has been strong and as a result the RSD had gained greater control over its own schedule.

In addition to gaining greater control over the schedule the reorganization allowed the RSD to simplify its methodology for processing of work order requests. Essentially all non-emergent work order requests must be processed through the group before the job is authorized and a RWP issued. Emergent work (non-routine work required to keep the plant on line) can still be performed without the group's prior authorization with the explicit approval of the Duty Health Physicist. The process starts with the HP Scheduler. The scheduler attends the 1300 maintenance scheduling meeting (the plant's primary scheduling meeting) and reviews the Plant Daily Schedule to learn what new work order requests have been added to the seven day schedule. The scheduler brings the information back to the group and the Planning Supervisor determines if the work order has an associated authorizing

package in the job history database. Greater than 99% of all jobs now have an associated work package in the database. The supervisor reviews the package for radiation protection as well as ALARA concerns and either authorizes the issuance of a RWP or requests additional information from the work group's planner. After the review is complete and the package authorized, the group generates a RWP based on information provided by an old RWP and the survey data provided by radiological services. All old RWPs are now in a database and new RWPs are almost always cloned from the old ones. Again, the process virtually assures that RSD is aware of all new work orders and can allocate its resources accordingly.

Another enhancement started by the HPPS group was the "time-out" meeting. Following the 1300 scheduling meeting the scheduler downloads the data from the daily planning schedule database (ARTEMIS) and loads it into the group's database. The data is rearranged and enhanced (notes or comments added) and a new RSD schedule "Today's HP Office Report" generated. At the "time-out" meeting the scheduler meets with the Duty HP to discuss those work orders requiring HP support during the next three shifts. Technically, if a work order is not on the schedule the Duty HP is not obligated to provide HP support until its put on the schedule and the planning and scheduling group has reviewed the package. The inspector attended one of the "time-out" meetings and reviewed one of the "Today's HP Office Report" schedules and found both to be comprehensive and informative. At the meeting, the report was reviewed and each work order discussed in some detail. The meetings have been so successful that the RSD plans to increase the number of them during the 1993 refueling outage.

No violations or deviations were identified.

7. Outage Planning (IP 83750)

During the inspection the inspector reviewed the "Operations and Outage Management - 1993 Refueling Outage" schedule, an item by item listing of the work orders projected for the 1993 refueling outage scheduled to begin June 4, 1993 and found it to be comprehensive but only marginally useful for RSD planning purposes. Some information was lacking in the schedule so the HPPS group downloaded the master schedule into its own database and generated a more useful document. The new document lists work orders by their respective room number and allows the group to cross reference work orders in the job history database to the equipment numbers of components in each room. In addition, the group's staff had been augmented with personnel from other RSD groups (four liaison technicians and eight assistant duty HPs) who will assist with ALARA and work package planning reviews and generating RWPs. A review of the progress made in reviewing the work orders indicated that while most had been reviewed, progress in generating RWPs had been slow due to delays brought on by the April 28 unplanned forced outage and preparation for the dry cask storage project. Discussions with members of the group and

management indicated that the progress made by the RSD in reviewing the work requests and generating RWP's for the 1993 outage had been much improved over that of previous outages.

No violations or deviations were identified.

8. Maintaining Occupational Exposures ALARA (10 CFR 83.150)

The inspector reviewed the station dose for 1992 and found it to be comparable with other similar PWRs. Total station dose for 1992 was 295 person-rem compared to 182 person-rem for 1991. Of that dose, 269 person-rem was accrued during the 72 day refueling outage. When compared with station dose from previous years (and ignoring the dose accrued during the steam generator replacement project) the data suggests a continuing downward trend. The inspector further noted that of the 295 person-rem for 1992, approximately 45 person-rem was accrued during the Safety Related Piping Reverification Program (SRPRP), a project indirectly related to the operation of the plant. A review of the monthly dose reports for the first three months of 1993 indicated the same downward trend. However, on any given non-outage day SRPRP work can double or triple that day's station dose. Once the SRPRP project is complete in 1996 the licensee expects to save, on average, about 20 rem per year. In addition, the licensee has set a target of less than 50 days for the 1993 outage and if the target is met station dose for 1993 should be well below the 1992 figure. Station dose will be closely monitored during the inspection planned for the 1993 outage.

Since the last inspection the licensee has allowed Instrumentation and Calibration (IC) technicians to enter the 590' level of containment while at full power. Operators had been making weekly entries into the 590' level of containment to perform required technical specification surveillances since the plant began operations, however, allowing entry for routine work raised questions about whether or not this activity violated ALARA principles. Prior to the first entry, the RSD made multiple entries into containment to characterize the gamma and neutron dose distribution. The RSD used four different modalities to measure the neutron energy distribution, the neutron flux and the dose rate. These included metered three and nine inch Rem balls, Landauer NutrackER multichip dosimeters, the licensee's Panasonic dosimeter with an 802 chip and several newly acquired neutron bubble dosimeters. The survey data indicated that on the 590' level of containment neutron as well as gamma dose rates were less than 10 mrem/hr in those areas where the instrument and calibration technicians would be working. Following a review of the data by the RSD HPs, entry into the 590' level was permitted.

No violations or deviations were identified.

9. Solid Radioactive Waste (IP 86750)

During a previous tour of the east radioactive waste processing building and the surrounding grounds (Inspection Report 50-255/92022(DRSS)), the inspector noted that the licensee had stored a contaminated anti-tip frame and its support plates adjacent to the building. The inspector further noted that the plastic sheeting covering both containers had torn and there was evidence that the wooden containers housing the equipment had leaked. Subsequent to that inspection the licensee moved both pieces of equipment into the east radioactive waste building, collected and analyzed soil samples from under and adjacent to where the equipment was located and confirmed that the containers had leaked some contamination into the soil. Soil found to be contaminated was collected, placed in containers and stored in the east radioactive waste building. Other containers holding contaminated sand and soil from other sites were also moved into the building. The inspector reviewed the soil sample results from before and after the soil was removed and considered the matter closed.

No violations or deviations were identified.

10. The Dry Cask Storage Project (IP 83750)

During the first visit to the facility the inspector reviewed the licensee's preparation for the project and during subsequent visits observed the RSD's performance during the loading and transfer of the first cask.

a. Planning.

Overall, the RSD's preparation for the dry cask storage project was excellent. It was noted that the licensee had prepared a document cross referencing station procedures with the requirements of the cask's Certificate of Compliance, had generated a detailed step by step procedure (FHS-M-32 "Loading and Placing the VSC into Storage") for loading and placing the cask in storage and had performed at least two complete dry runs of the loading and transfer of the cask prior to the start of the project. The inspector further noted that the RSD had inserted numerous radiological holdpoints into procedure FHS-M-32, had written a very detailed Work Instruction "Radiation Safety Monitoring Requirements For Dry Fuel Storage" in support of FHS-M-32, had given their staff a significant amount of additional training in support of the project, and had generated six separate briefing packages and RWPs, one for each phase of the project.

b. Moving the Multi-Assembly Sealed Basket (MSB) Transfer Cask (MTC) containing the MSB from the Spent Fuel Pool into the adjacent cask wash down pit and subsequent decontamination activities.

The inspector observed the transfer of the MTC from the spent fuel to the cask wash down pit and noted the RSD technician's

preparation for the move. In addition to the training received before the start of the project each technician had participated in at least one dry run of the transfer. The lead technician had held a job brief with the personnel involved to discuss the job specific RWP and had visited the spent fuel pool on several occasions to insure all necessary equipment had been moved to the area. Even with the preparation, however, the inspector identified several concerns during the move.

Although radiation protection coverage during the move was generally very good the inspector did observe several poor RP practices. The inspector observed a RP technician setting potentially contaminated equipment into an adjacent clean area; a worker remove his cloth bootie and step back into the contaminated area; a posted clean walkway adjacent to the spent fuel pool wet from spray from potentially contaminated water dripping from the hoist cables and spray from the T-90 rinse; and technicians spending too much time standing adjacent to the transfer cask taking dose rate measurements. These concerns were discussed with RSD management immediately following the move.

Total dose for the move was 54.7 mrem, much less than the 650 mrem projected. Dose rates on the exterior surfaces of the transfer cask were less than expected.

c. Welding and Non-Destructive Testing of the two MSB lids.

Radiation protection coverage was not as extensive during this phase. The RP technician's responsibilities were limited to monitoring workers doses, collecting air samples and contamination control. No problems were noted during this phase.

Total dose for this phase was 514 mrem, again less than expected. Total dose would have been even lower if the welders had not had problems with the automatic welder.

d. Transferring the MSB from the MTC into the Ventilated Concrete Cask (VCC).

The RSD preparation and RP technician performance during this phase was very good to excellent. The inspector did note, however, that RP technicians continued to spend a great deal of time standing adjacent to the MTC measuring dose rates. Although ambient dose rates surrounding the cask were generally in the low mrem range, standing adjacent to it for extended periods of time is not a good ALARA practice. In addition, RP technicians continued to stand adjacent to the cask when dose rates increased half way through the transfer even though they had asked others present to move to lower dose rate areas. No other problems were noted.

Total dose for this phase was 120 mrem, again less than was expected.

e. Access Control.

While observing the loading and transfer of the VCC the inspector noted several individuals entering the spent fuel area and leaving after only a short stay. The inspector noted that only one individual was asked to leave the spent fuel pool area during the MSB transfer into the wash down pit even though there were several individuals present watching the transfer. Technically only those individuals who had been briefed by the RSD technician and had reviewed and signed the RWP should have been in the area during critical stages of the project. Ultimately the Project Manager was responsible for insuring that only those individuals on the RWP were present. The inspector noted that the licensee had elected not to post a guard or an RP technician at the entrance of either the spent fuel pool area or the trackway even though there was some uncertainty about the potential dose rates during the transfer of the MTC from the pool into the pit and the transfer of MSB into the VCC. In addition, RWPs for other work in the spent fuel pool area had been issued prior to the project and were still active. Someone under another RWP and not involved in the project could have legally entered the area during one of the transfers and received unnecessary dose. Concerns about access control was discussed with RSD management and will be closely monitored during the next outage inspection.

No violations or deviations were identified.

11. Plant Tours (IP 83750)

During the inspection the inspector toured the auxiliary building and containment and made multiple visits to the spent fuel pool. Although the inspector found debris on the floor in three areas of the auxiliary building and one area of containment, in general, housekeeping practices in both buildings was excellent. Postings, labeling and radiological controls in both buildings were found to be in accordance with regulatory as well as procedural requirements and all area surveys had been performed and the results posted in a timely manner. During the tour of east safeguards and the spent fuel pool the inspector noted that the licensee had elected to use yellow and magenta radiological floor tape to mark the boundaries of several small contaminated areas and had not used rope. Although this method for marking contamination boundaries is allowed by procedure it is generally not a good practice in areas where there is a lot of traffic. There was a lot of activity around the fuel pool on the day of the tour in preparation for the dry cask storage project and workers could have inadvertently stepped over the floor tape and entered the contaminated area. During subsequent visits to the spent fuel pool the inspector noted that ropes had been erected around the areas. In addition, the inspector found clean trash in many of the radioactive waste containers. The licensee has a policy

restricting the amount of material brought into the RCA but has had difficulty controlling the amount of clean material placed in radioactive waste containers. The issues were discussed at the April 29 exiting meeting.

No violations or deviations were identified.

12. Exit Interview (IP 30703)

The inspectors met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on April 29 and May 12, 1993, to discuss the scope and findings of the inspection.

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

- a. Radiological practices during the dry cask storage project. (Section 10)
- b. Access control. (Section 10)
- c. Housekeeping practices in the auxillary building. (Section 11)