

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-219/87-14

Docket No. 50-219

License No. DPR-11

Priority -

Category C

Licensee: GPU Nuclear Corporation
Oyster Creek Nuclear Generating Station
P.O. Box 388
Forked River, NJ 08731

Facility Name: Oyster Creek Nuclear Station

Inspection At: Forked River, New Jersey

Inspection Conducted: May 4-8 and May 18-22, 1987

Inspectors:

S. Sherbini
S. Sherbini, Radiation Specialist

6-22-87
date

J. McFadden
J. McFadden, Senior Radiation Specialist

6-22-87
date

Approved by:

M. Shanbaky
M. Shanbaky, Chief
Facilities Radiation Protection Section

6/22/87
date

Inspection Summary: Inspection on May 4-8 and May 18-22, 1987 (Inspection Report No. 50-219/87-14)

Areas Inspected: Routine, unannounced safety inspection of the radiological protection activities on site. Areas inspected included: organization, staffing and qualification of radiological protection personnel; the respiratory protection and bioassay programs; and hot particle control and skin dose assessment.

Results: No violations were identified.

DETAILS

1.0 Personnel Contacted

1.1 Licensee Personnel

F. Applegate, Supervisor, Respirator Maintenance
D. Arbach, Manager, Radiological Health
*J. Barton, Deputy Director, Oyster Creek
P. Canale, Group Supervisor, Dosimetry
K. Cielecy, Senior Administrator, Compensation
*B. DeMerchant, Licensing Engineer
*M. Douches, Ops/QA
M. Glashan, Supervisor, Station Services
R. Hurley, Dosimetry Supervisor
D. Kaulback, Manager, Station Services
*J. Kowalski, Licensing Manager, Oyster Creek
*B. Leavitt, Deputy Director, Radiological Controls
M. Littleton, Manager, Radiological Engineering
D. Miller, Radiological Engineer
*D. Robillard, QA Lead Auditor
M. Slobodien, Director, Radiological Controls
*J. Sullivan Jr., Plant Operations Director
K. Wolf, Radiological Engineer

1.2 NRC Personnel

W. Bateman, Senior Resident Inspector
*J. Wechselberger, Resident Inspector

*Indicates attendance at the exit meeting

2.0 Organization, Staffing and Qualifications

The organization, staffing and qualifications of personnel in the Radiological Controls Department was reviewed as part of this inspection. The following areas of weakness were identified.

- The qualifications of some of the personnel in the department did not appear to meet the minimum educational and experience requirements of their positions as described in the position description sheets. These sheets were provided to the inspector by the section managers of the Radiological Controls Department. Further discussions with licensee representatives to resolve the discrepancies revealed apparent inconsistencies between company departments regarding the minimum requirements for the positions in question. Furthermore, some positions did not appear to have any position description or minimum requirements. The licensee acknowledged that the position description sheets give a misleading impression regarding the staffing level in the department. The licensee further stated that, despite the

apparent discrepancies between the minimum requirements as presented in the sheets and the actual qualifications of the staff, the staff are qualified to occupy their current positions. The licensee also stated that the position description sheets will be reviewed and updated soon.

The respiratory protection program is under the direction of a Respiratory Protection Supervisor (RPS). This person is in charge of both the Oyster Creek and TMI programs. The designee for the RPS at Oyster Creek is a Radiological Engineer in the Radiological Engineering section. His function is to address routine problems that might arise at the site. The licensee stated that this arrangement was adopted because there is no need for a full time RPS at each site. According to NUREG-0041, responsibility for the respiratory protection program is to be vested in one individual. The licensee stated that this individual is the RPS. However, the program is administered by two independent departments on site. The Radiological Controls department is in charge of air sampling, engineering controls for airborne activity, respirator requirements for entry into potential airborne areas, assignment of intakes, and the bioassay program. The Maintenance, Construction, and Facilities (MCF) department is in charge of respirator cleaning, maintenance, and issue, as well as the service air system that provides air for supplied air respirators. The inspector stated that this division of function appeared to violate the intent of NUREG-0041 in that the RPS, a member of the Radiological Controls department at TMI Unit 2, is not responsible for activities in the MCF department at Oyster Creek. The licensee stated, however, that the RPS does indeed exercise this function even though his position in the organization does not give him responsibility for the MCF personnel assigned to respirator work. The licensee further stated that this is accomplished because of the cooperation between MCF, the RPS, and his designee on site. The licensee also stated that this division of the respiratory protection program has been in place for a long time and has proved effective. The inspector stated that although this does not appear to satisfy the letter of the recommendation in NUREG-0041, it does appear to satisfy the intent, and that the inspection revealed that the system does appear to function effectively. The continued effectiveness of this arrangement will be reviewed periodically in future inspections.

3.0 Respiratory Protection Program

Review of the respiratory protection program included the following areas.

- Air Sample Analysis
- Respirator Maintenance and Issue
- Whole Body Counting
- Excreta Bioassay Program
- Procedures dealing with the above areas.

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The following weaknesses were identified during the inspection.

Air Sample Analysis

- The sample counting procedure allows samples suspected of containing over 25% maximum permissible concentration based on field measurements to be counted on the gamma spectrometer without gross beta measurements. Although this is generally sound, the gamma spectrometer will not identify pure beta emitting isotopes if present. This may result in underestimating the intake if based on gamma analysis alone.
- Background checks on the counting instruments are made on a daily basis. However, the procedures do not specify quantitative criteria to allow a decision to be made regarding the acceptability of the background reading. The guidance given the technician is qualitative and states in essence that a significant change in background is not acceptable.
- The results of air sample counting are not recorded directly on the air activity log sheet used to record counting data. Instead, the technician records the net count rate obtained from the sample. This practice makes it impossible to check the data sheet because the original data is not recorded. Good practice requires that all data be recorded before any calculations are carried out.
- Source checks are made daily on the counting instruments, and three sigma acceptance criteria are established for these tests. However, there is little quality control performed on the counting instruments. Such quality control normally includes control charts for background and check sources, as well as the chi squared test, among others. This ensures close control of the quality of the counting data. Such practices are standard in quantitative analysis laboratories.

Whole Body Counting

- The procedure for operation of the whole body counter requires that a QA duplicate count be performed approximately every fiftieth personnel count. This duplicate count is being performed. However, there is no guidance in the procedure or otherwise to indicate how the results of this duplicate count are to be evaluated for acceptability. The review of such data is being performed by visual examination of the duplicate count results.
- Whole body counting procedures require, as part of the QA on the counter, that Radiological Engineering conduct a blind spike test of the counter using an NBS traceable source. This function appears to be performed only irregularly. No criteria are specified regarding the manner of determining acceptable performance, nor apparently are any explicit criteria being used to evaluate the test results.

- The whole body counter calibration procedures require that the efficiency curves generated by the system computer during calibration be verified to ensure a good fit with manually generated points. The procedure, however, does not indicate what manually generated points are, nor the criteria to use to determine that a good fit was obtained. Furthermore, this verification is not being performed.
- Procedure requires that the technician operating the whole body counter be provided periodically with decay-corrected activities for the sources used in calibrating the counter. This is not currently being done, and the technicians are doing the decay corrections themselves. Although this is not in itself a serious problem, it does represent an example of deviation from procedural requirements without a good reason to do so. Since the validity of the counter data is dependent on the accuracy of the calibrations, such deviation from procedure should have been formalized, and formal review of the decay corrections should have been implemented.
- Whole body counting QA procedures specify acceptance criteria for efficiency calibrations in terms of the standard deviation of the source activity. The procedure, however, did not describe how the standard deviation of the source activity is to be determined. Review of the QA data revealed that the standard deviation was being incorrectly calculated and that the incorrect standard deviation being used led to acceptance limits that were much wider than intended. The licensee corrected the error before the end of this inspection.
- The daily source check of the whole body counter uses acceptance criteria based on the standard deviation of the source check used in these tests. The procedure, however, provides an incorrect equation to calculate the standard deviation for use in determining the acceptance limits. The technicians were apparently not using this equation and were calculating the standard deviation correctly.
- The whole body counter operation is monitored under a contract with the manufacturer, Canberra. Licensee representatives stated that, as part of the contract, Canberra reviews the QA data performed on the system. The inspector reviewed the reports provided to the licensee by Canberra, but there was no indication in these reports that Canberra does review the QA data. Further discussions with the licensee indicated that there was no clear agreement between licensee representatives as to exactly what Canberra does with the data. The licensee stated that this situation is to be corrected soon because the licensee will take over this function from Canberra. This will be accomplished after licensee representatives are trained by Canberra on the details of operation of the whole body counter and the computer software.

Excreta Bioassay

- Bioassay procedure requires that the licensee ensure that the vendor performing the excreta bioassay participate in a recognized QA program. Bioassay procedure also requires that the results be reviewed and maintained by Radiological Engineering. The licensee was unable to provide the inspector with any data to indicate that this requirement is being met.
- The licensee stated that it has been a practice to use urine analysis in place of the required whole body count upon employee termination in some cases. This practice has been used when the whole body counter was not available because of equipment problems. The inspector pointed out that urine analysis does not provide the same type of data as the whole body counter, and the two are therefore not directly interchangeable. This practice had been identified as inappropriate in a licensee audit performed in 1984, but it has not been discontinued since the audit was published.

4.0 Radioactive (hot) particles.

Discussions with licensee representatives and review of skin contamination reports and laundry records suggest that hot particles are not encountered frequently at the site. Laundry records indicate one recent incident of a hot particle remaining on protective clothing after the clothing was laundered and returned to the site. Review of the laundry operation and of skin dose assessment records revealed two weaknesses in this area.

- Contaminated laundry is decontaminated and cleaned by an off-site contractor. Clean laundry returned to the site is randomly sampled to check for residual contamination. About 2% of the returned pieces are checked. Discussions with the licensee, however, indicated that there does not appear to be any QA program to ensure consistent service and also to verify that the radiation survey methods used at the laundry are sufficiently sensitive to detect any activity not removed by the laundering process.
- The skin dose assessment method used by the licensee involves the assumption that the activity on the skin is uniformly distributed over an area equal to that of the window of the detector probe used to measure that activity. That area is typically about 20 square cm. The effect of this assumption is to lead to underestimation of the skin dose by a factor of 20-30 if the contamination is in fact localized, such as in the case of a hot particle.

5.0 General Comments

The general finding in this inspection concerns the audit functions on site. As pointed out in several instances above, many of the audit functions required by procedure are not being performed. Even in the

cases of those that are performed, some audit findings are not being reviewed with sufficient care. Many quality control checks do not have quantitative criteria established to enable determination of the acceptability of the results. Closer technical overview appears to be needed in several areas of the Radiological Controls operation. These areas include the whole body counter, excreta bioassays, QA oversight of contractor operations, and general quality control practices. Discussions with the licensee concerning these issues indicated that the licensee has already developed a procedure that specifies the types of audits to be performed and the frequencies of the audits. This procedure is in the review process and is expected to be in effect soon.

6.0 Exit Meeting

The inspector met with licensee representatives at the conclusion of the inspection on May 22, 1987. The inspector summarized the scope of the inspection and the findings.