

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-219/85-33

Docket No. 50-219

License No. DPR-16 Priority -- Category C

Licensee: GPU Nuclear Corporation  
P.O. Box 388  
Forked River, New Jersey 08731

Facility Name: Oyster Creek, Nuclear Station

Inspection At: Forked River, New Jersey

Inspection Conducted: October 21-25, 1985

Inspector: Maria T. Miller 11/7/85  
M. T. Miller, Radiation Specialist date

Approved by: W. Pasciak 11/8/85  
W. Pasciak, Chief date  
BWR Radiological Protection Section

Inspection Summary:

Inspection on October 21-25, 1985 (Report No. 50-219/85-33)

Areas Inspected: Routine, unannounced safety inspection of the Radiation Control Program including personnel selection, qualification and training, occupational exposure control during an outage and ALARA. This inspection also reviewed the circumstances associated with one of your radioactive material shipments that exceeded regulatory external radiation limits. The inspection involved 46 inspector-hours onsite by one region based inspector.

Results: One violation was identified: external radiation limits during radioactive material transport exceeded applicable regulatory limits (paragraph 6.0).

## DETAILS

### 1.0 Persons Contacted

During the course of this routine inspection, the following personnel were contacted or interviewed.

#### 1.1 Licensee Personnel

- \*P. Fiedler, Vice President and Director, Oyster Creek
- \*R. Heward, Vice President, Director, Radiological and Environmental Controls
- \*J. Sullivan, Plant Operations Director
- \*D. Turner, Radiological Controls Director
- \*J. Barton, Deputy Director, Oyster Creek
- D. Arbach, Radiological Health Manager
- M. Littleton, Radiological Engineering Manager
- P. Scallon, Field Operations Manager
- \*G. Simonetti, Audit Manager, Oyster Creek
- \*T. Snider, Radwaste Operations Manager
- S. McAllister, Radiological Controls Training Supervisor
- \*A. Wacha, Radwaste Shipping Supervisor
- R. Heffner, Group Radiological Controls Supervisor
- \*B. Hohman, Licensing Engineer
- R. Hurley, Dosimetry Supervisor
- R. Schuber, Group Radiological Controls Supervisor
- G. Seals, Radiological Engineer

#### 1.2 NRC Personnel

- \*B. Bateman, Senior Resident Inspector
- \*J. Welhselberger, Resident Inspector

\* Attended the exit interview on October 25, 1985.

### 2.0 Purpose

The purpose of this routine inspection was to review the licensee's radiological controls program with respect to personnel selection, qualification and training, and occupational exposure control during a maintenance outage. In addition, the circumstances associated with an apparent violation of external radiation transportation regulations involving a radioactive material shipment from your facility to Quadrex Corporation was reviewed.

### 3.0 Personnel Selection, Qualification and Training

Personnel selection, qualification and training were reviewed against criteria contained in:

- 10 CFR 19.12, "Instruction to Workers,"
- Technical Specification 6.3.2,
- ANSI N 18.1, 1971, "Selection and Training of Nuclear Power Plant Personnel,"
- Procedure 9300-ADM-2622.01, Revision 0, "Radiological Controls Field Operations Personnel Qualification/Training Standard."

The licensee's performance relative to these criteria was determined by interviews with the Radiological Controls Training Supervisor, review of contractor personnel resumes and individual training files, selection criteria and observation of Radiological Controls Supervisors and Technicians while performing their functions.

Within the scope of this review, no violations were identified. The inspector noted that the Field Radiological Controls department had supplemented their staff with contractor personnel by the addition of 27 senior technicians, 10 junior technicians and 4 group radiological controls supervisors.

#### 4.0 Exposure Control During Maintenance Outage

The licensee's exposure control efforts for the current maintenance outage were reviewed against criteria contained in:

- 10 CFR 20.103, "Exposure of individuals to concentrations of radioactive materials in air in restricted areas,"
- 10 CFR 201, "Surveys,"
- 10 CFR 20.203, "Caution signs, labels, signals and controls,"
- Technical Specifications 6.11 and 6.13, "Radiation Protection Program" and "High Radiation Area," respectively.

The major tasks reviewed included work in the drywell and condenser including:

- Undervessel Inspection
- Equipment Qualification
- Hanger Inspection
- PASS Valve V-24-29 Replacement
- Recirculation Cooler Fans Maintenance
- "E" Recirculation Pump Seal Replacement
- Replacement of PSH-D Valve in Condenser Bay

The evaluation of licensee performance in this area was based on review of the following:

- High Radiation Area Key Control Log
- Radiation Work Permits October 20-24, 1985

- Airborne sampling and analysis October 20-24, 1985
- Selection and use of respiratory protective equipment
- Radiological Deficiency Reports June - October, 1985
- Personnel Contamination Reports and Skin Dose Calculations June - October, 1985
- Independent radiation surveys by the inspector.

The licensee's performance relative to these criteria was determined also from interviews with Field Operations personnel, review of selected procedures and tours of the drywell, reactor and turbine buildings, radioactive waste storage areas, and balance of plant.

Within the scope of this review, no violations were identified. The licensee had instituted an extensive air sampling program to support the limited use of respirators for most tasks in the drywell. No cases of significant MPC hour assignments were noted.

#### 5.0 ALARA Implementation

The inspector reviewed the adequacy and effectiveness of the licensee's ALARA program. The review was with respect to criteria contained in the following:

- Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As Reasonably Achievable," Revision 3;
- Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As is Reasonably Achievable (Nuclear Power Reactors)," Revision 1-R;
- Regulatory Guide 8.27, "Radiation Protection Training for Personnel at Light-Water-Cooled Nuclear Power Plants," dated April 1981.

The licensee's efforts in this area were determined through interviews with the Radiological Engineering personnel, review of Radiological Engineering Reviews (RERs) for all major tasks scheduled for this outage and by review of the following program procedures:

- Procedure 9300-PLN-4010.01, Revision 0, "Oyster Creek ALARA Program Plan,"
- Procedure 9300-ADM-1201.02, Revision 0, "Radiological Awareness Reporting," and
- Procedure 9300-ADM-4010.02, Revision 0, "ALARA Review Procedure."

Within the scope of this review, no violations were identified. The inspector also noted that on-going job ALARA reviews were being performed.

The inspector was informed that the licensee was investigating all significant inhalation doses over the lifetime of the plant using a computerized sorting program. A status report based on this investigation will be available for NRC review by December 31, 1985.

#### 6.0 Details: Shipment OC 1036-85

On October 13, 1985, a contaminated control rod blade cutter was delivered by Oyster Creek for transport to Quadrex Corporation, Oak Ridge, Tennessee to be decontaminated and repaired by Waste Chem Inc., who is the vendor for this processing equipment. On October 15, 1985, the receiver's receipt survey determined that the external radiation limit of 10 millirem per hour at 2 meters was exceeded at four survey points ranging from 11 to 15 millirem per hour at 2 meters. In addition, a segment of a boron tube from a control rod blade (2.5 inches long, 3/16 inch outside diameter) with a contact reading of 40 R/hr was discovered upon disassembly of the equipment. Oyster Creek notified NRC Region I of an apparent problem with this shipment on October 17, 1985.

Shipping papers sent with the shipment indicated that there were two packages identified as radioactive material, low specific activity (LSA) to be shipped in an exclusive use open vehicle. Radiation surveys performed prior to release indicated that one survey point which measured 9.5 millirem per hour exceeded the licensee's administrative limit of 8 millirem per hour anywhere within two meters from the package as loaded for shipment. The licensee approved a waiver of the administrative limit since hydrolazing was unsuccessful in reducing dose rates from the control rod blade cutter. The inspector noted there was no shielding installed to reduce the 9.5 millirem per hour reading. The processing equipment was classified as LSA based on external smear survey results. The internals of the equipment were not opened and surveyed or inspected because only the vendor had the capability to disassemble the equipment, and no irradiated material was expected to remain within the processing equipment by design.

Based upon the scope of this review, the following violation associated with Shipment No. OC 1036-85 was identified:

- 10 CFR 71.5(a) states, in part, that each licensee who delivers licensed material to a carrier for transport, shall comply with the applicable DOT requirements in 49 CFR Parts 170 through 189 appropriate to the mode of transport. 49 CFR 173.441(b) states, in part, that a shipment may be transported as an exclusive use shipment if the radiation level does not exceed 10 millirem per hour at any point 2 meters from the vertical planes projected for the outer edges of the conveyance in the case of an open transport vehicle.

Contrary to the above, on October 13, 1985, the licensee delivered for shipment to Quadrex Corporation, radioactive material classified as LSA, and upon receipt at Quadrex, Oak Ridge Tennessee on October 15, 1985, the radiation level at 2 meters from the vertical planes projected from the outer edges of the conveyance was determined to be between 11 and 15 millirem per hour. Exceeding the external radiation limits as determined during the receipt survey constitutes a violation of 10 CFR 71.5(a) (50-219/85-33-01).

In addition, based upon the discovery of the boron tube upon disassembly, the package was improperly classified as LSA. The licensee's calculation of the specific activity of the irradiated boron tube, was approximately 2.9 millicuries per gram of Cobalt 60. This exceeded the LSA criteria of 0.3 millicuries per gram for Cobalt 60. This misclassification was not viewed as a violation because reasonable technical judgement based on the equipment design and past experience was exercised when preparing the shipment. However, the licensee's response to the above stated violation should also address their actions for handling situations when internal surveys are unavailable (50-219/85-33-01).

The inspector noted that a critique with the vendor was conducted regarding the events associated with this shipment and the design of the control rod blade cutter. The licensee stated this processing equipment would not be used until modification of the machine internals are completed.

#### 7.0 Exit Interview

The inspector met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on October 25, 1985. The inspector summarized the scope of the inspection and the findings. The inspector requested to receive an estimate of the curie content of the boron tube and better depiction of the location of the boron tube within the processing equipment. This information was received from the licensee on November 4, 1985.

At no time during the inspection was written material provided to the licensee by the inspector.