

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-317/94-23  
50-318/94-23

Docket No. 50-317  
50-318

License No. DPR-53  
DPR-69

Licensee: Baltimore Gas and Electric Company  
Post Office Box 1475  
Baltimore, Maryland 21203

Facility Name: Calvert Cliffs Nuclear Power Plant, Units 1 and 2

Inspection At: Lusby, Maryland

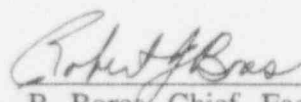
Inspection Conducted: July 5-8, 1994

Inspector:

  
J. Furia, Senior Radiation Specialist

7/11/94  
date

Approved by:

  
R. Bores, Chief, Facilities Radiation  
Protection Section

7/11/94  
date

Areas Inspected: Maintaining occupational exposures as low as reasonably achievable (ALARA), radwaste processing, transportation of radioactive materials, training and assurance of quality.

Results: Excellent performance in the minimization of radwaste generation was noted. In general, the radwaste and radioactive materials transportation program was conducted in a satisfactory manner. Difficulty in controlling outage scope continues to be a detriment to the success of the licensee's program for maintaining occupational exposures as low as reasonably achievable (ALARA). As a result, attention to ways to better integrate ALARA into your outage work activities, in particular, is needed. This issue is more fully discussed in Section 2 of the enclosed inspection report. Nonetheless, no specific safety concerns and no violations of NRC regulatory requirements were identified.

## DETAILS

### 1. Personnel Contacted

#### 1.1 Licensee Personnel

- \* P. Chabot, Superintendent, Technical Support
- \* C. Cruise, Plant General Manager
- \* C. Gradle, Compliance Engineer
- J. O'Neill, Supervisor, Quality Verification Operations
- \* W. Paulhardt, Supervisor, Radiation Control - Operations
- \* G. Phair, Assistant General Supervisor, Radiation Control and Support
- \* M. Rigsby, Assistant General Supervisor, Radiation Services
- \* D. Showalter, Lead Trainer, Technical Training
- \* B. Watson, General Supervisor - Radiation Safety
- J. Wood, Lead Auditor, Quality Assurance Unit
- \* R. Wyvill, Supervisor, Radiation Control - ALARA

#### 1.2 NRC Personnel

- K. Lathrop, Resident Inspector
- C. Lyon, Resident Inspector
- \* P. Wilson, Senior Resident Inspector

\* Denotes those present at the exit interview on July 8, 1994.

### 2. Radiation Protection

Since the last inspection in this area, the former Supervisor, Radiation Control - Operations was transferred to a plant health physicist position, and a new Supervisor was selected. The training and qualifications of the new Supervisor were reviewed by the inspector and determined to be appropriate for the position. Additionally, one of the Radiation Control Shift Supervisors was transferred to the Site Support Unit.

In response to a request for information from NRC-Region I, dated April 18, 1994, the licensee examined its control of access to the refueling cavity, a locked high radiation area. Specifically the NRC was concerned that adequate controls, in accordance with plant Technical Specification 6.12, were not being implemented in order to control access to this area during outages. In a response dated May 27, 1994, the licensee addressed controls implemented when personnel entered this area, but did not clearly address the issue of control of access when no one was in the cavity, especially when the 69' elevation special control point was not staffed. The inspector discussed this issue with the General Supervisor - Radiation Safety (GSRs), and was provided a copy of a memorandum, dated July 5, 1994, that discussed the controls that were in place when no one was in the cavity, especially when the 69' elevation special control point was not staffed. Licensee controls during these

instances included: (1) transfer of control of access to the containment to the personnel air lock, which was staffed by plant radiation controls personnel; (2) locking the containment at the personnel air lock; and, (3) providing radiation controls technician escort to personnel entering the containment. Based on this information, and the results of inspection visits to the containment during outages by both the NRC resident inspectors and this inspector, it appears that the licensee established appropriate control of access to the refueling cavity.

As part of this inspection, a review of the Unit 1 Refueling Outage (RF-11) performance, as it relates to maintaining occupational exposures as low as reasonably achievable (ALARA), was conducted. For this outage, the licensee established a goal of not more than 300 person-rem. Actual exposure for the outage was 367 person-rem, with a significant portion of the additional exposures attributable to outage scope growth (thirty-six percent of the total person-hours spent in the Radiologically Controlled Area [RCA] during the outage was beyond the original scope of the outage). While some of this growth was the result of emergent work related to test failures of equipment, a significant portion resulted from the licensee's continued difficulty controlling outage scope. This lack of appropriate outage scope control and planning continues to be the biggest detriment to the success of the licensee's ALARA program. By failing to identify all work, other than emergent work as the result of test failures or other uncontrollable issues, prior to the commencement of an outage, the ALARA Unit is unable to make accurate exposure assessments of various work activities. Due to this inability, decisions on whether or not to take actions to shield or otherwise attempt to lower area dose rates cannot be made appropriately, and accurate dose assessments cannot be made, resulting in missed opportunities to minimize personnel exposures. This was further demonstrated during the recent Unit 2 mid-cycle maintenance outage. For this outage, the licensee had established an outage scope freeze date. One week after this date, the outage scope was expanded four-fold, then just prior to the outage, the scope was shrunk. Due to the significant scope changes in this outage, the ALARA Unit was unable to plan effectively, and the inspector was unable to determine if the exposure results for this outage represented successful implementation of the ALARA program. Nonetheless, no violations of NRC regulatory requirements were identified.

### 3. Radwaste and Transportation

The licensee's program for the processing of radwastes, and their shipment was the responsibility of the Supervisor, Materials Processing. Working for him were five radiation shift technicians (RSTs) and six materials handlers, whose responsibilities included the collection and processing of plant wastes and laundry, shipment of all radioactive materials from the site, and decontamination of plant tools. The Supervisor, Materials Processing reported through the Assistant General Supervisor for Plant Support to the GSRS. The management structure and responsibilities of the Materials Processing Unit have not significantly changed since the last inspection.

### 3.1 Radwaste Processing

Primary plant water clean-up and spent fuel pool water treatment were handled through the utilization of mechanical filters and resins. Spent filters were collected and stored in polyethylene liners kept in radwaste onsite storage containers (OSSCs) designed for this purpose. The OSSCs were stored along the West Road. Spent demineralizer resins were transferred to the spent resin tank, located on the 45' elevation of the auxiliary building. These resins were sluiced into polyethylene liners and dewatered in preparation for disposal. The radwaste evaporator is no longer in use and is laid-up in the auxiliary building.

On an annual basis for resins and filters, and a biennial basis for dry active wastes (DAW), the licensee submitted composited plant samples to TMA/Norcal for total isotopic analysis. The results of these analyses were then reviewed by a plant chemist for the determination of plant scaling factors. The process for determining these scaling factors was accurately described in Chemistry Procedure CP-228-1, "10 CFR 61 Scaling Factor Surveillance". This program meets the regulatory requirements contained in 10 CFR 61.55(a)(8).

In late 1993, the licensee contracted with the Electric Power Research Institute (EPRI) to conduct a waste minimization review at Calvert Cliffs. During the previous five years, the licensee had made significant reductions in the volume of waste disposed, through the use of commercial waste volume reduction techniques, especially supercompaction services and waste incineration offered by SEG (a Westinghouse Company). The purpose of the EPRI study was to reduce the volume of waste generated, prior to the application of waste minimization technology. As a result of this study, entitled, "Calvert Cliffs Nuclear Power Plant Low Level Waste Characterization Study", the licensee has implemented significant changes to its materials purchasing and utilization practices. These have resulted in a greater than 50% decrease in the amount of waste generated. This is most clearly demonstrated by comparing the volumes of waste generated between the 1993 Unit 2 refueling outage (RF09) and the recently completed Unit 1 refueling outage (RF11). Both outages lasted approximately the same length of time, but the volume of radwaste generated in the 1993 outage was approximately 23,000 cubic feet, while for the 1994 outage, the volume generated was approximately 11,000 cubic feet.

Since July 1, 1994, the licensee no longer has access to the Barnwell, South Carolina waste disposal facility. In anticipation of such a closure, the licensee several years ago constructed the Materials Processing Facility (MPF), which includes facilities for the storage of up to 75,000 cubic feet of processed DAW. Polyethylene liners containing spent resins or used mechanical filters are currently stored in any one of four OSSCs located along the West Road. Additional OSSCs will be purchased by the licensee shortly, with a storage pad to be constructed in the Lake Davies area. As part of this inspection, a review of the safety analysis reports for both the MPF and

the Lake Davies storage area was conducted. At the time of this inspection, the licensee was reevaluating the MPF analysis due to the increase in activity in each DAW container to be stored in this facility resulting from volume reduction. With this exception, both analyses were determined to be complete and to meet the regulatory requirements contained in Title 10, Code of Federal Regulations, Part 50.59 (10 CFR 50.59).

### 3.2 Transportation

As part of this inspection, the following records of radioactive materials shipments made in 1994 were reviewed.

<u>Shipment No.</u>	<u>Activity (Curies)</u>	<u>Type</u>
94-012	1.63E-03	Resins
94-023	1.72E-01	DAW
94-036	2.43E-01	DAW
94-037	1.12E-02	Laundry
94-039	1.84E+00	Neutron Shield
94-040	2.08E-02	Laundry
94-041	1.83E-02	Laundry
94-042	4.78E+00	Dewatered Resin
94-043	5.42E-04	Heater Sleeve

All of these shipments were determined to meet all applicable requirements set forth in 10 CFR Parts 20, 61 and 71, and 49 CFR Parts 100-177. Additionally the licensee had readily available copies of the current licenses for all licensees receiving shipment of radioactive material from Calvert Cliffs, and copies of the Certificates of Compliance for all NRC-approved shipping casks.

### 3.3 Training

In response to NRC IE Bulletin 79-19, the licensee committed to conduct biennial training in radwaste transportation and disposal. The licensee currently meets that commitment through the use of vendor supplied training, conducted at the licensee's training facilities. The last training was conducted in the Fall of 1992 by Waste Management Group, Inc. (WMG), and the next training was scheduled for October of this year. Attendees for this training not only include members of the Materials Processing Unit, but also include Quality Assurance Unit, Quality Verification Operations Unit and Technical Training personnel.

In addition to the vendor-supplied training, all Materials Processing Unit personnel receive initial radwaste and transportation training as part of the technical training program, and must complete a job card in this area in order to qualify as an RST in

the Materials Processing Unit. On a biennial basis, the Supervisor, Materials Processing, has been giving training to his personnel on the use of the RADMAN computer code.

Hazardous materials transportation training in accordance with 49 CFR 172.704 is conducted by a vendor on behalf of the licensee. This training is available both on a scheduled basis on site, and on an as needed basis off site through the University of Maryland.

4. Assurance of Quality

The licensee's program for the assurance of quality in the radiation safety area, including radwaste and transportation, includes audits and surveillances conducted by the Quality Audits Unit, audits by the Vendor Audits Unit, and surveillances by the Quality Verification Operations Unit. As part of this inspection, the inspector reviewed the audits and surveillances conducted by the licensee during the second half of 1993 and in 1994 to date.

The Quality Audits Unit conducted both surveillances and audits of radiation safety activities, including the Technical Specification required audit of the Process Control Program (PCP). This audit was last conducted in July of 1993 (Audit 93-10) and found no discrepancies with this program area. For 1994 the licensee has begun conducting quarterly audits of plant functional areas keyed to the areas examined under the NRC's Systematic Assessment of Licensee Performance (SALP) program. Through this audit program and the conducted surveillances, the licensee has identified a continuing programmatic weakness in the area of radiation protection instrument calibration, which has not been resolved. Further review of this area will be conducted during a future NRC inspection.

The Vendor Audits Unit was responsible for qualifying vendors to supply goods and services to the licensee, including NRC-approved shipping containers. Under this program, the licensee is a member of the Nuclear Procurement Issues Council (NUPIC), and uses NUPIC audits to qualify its cask vendor, Chem Nuclear Systems, Inc. (CNSI). The Quality Verification Operations Unit conducts surveillances of all radwaste shipments, and has recently begun to conduct broad scope surveillances of certain radwaste streams from waste processing through disposal or storage. The inspector determined that the licensee has in place an effective program to assure the quality of radwaste processing and transportation.

5. Exit Interview

The inspector met with the licensee representatives denoted in Section 1 at the conclusion of the inspection on July 8, 1994. The inspector summarized the purpose, scope and findings of the inspection. The licensee acknowledged the findings of the inspection.