

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-317/92-17
50-318/92-17

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 13-17, 1992

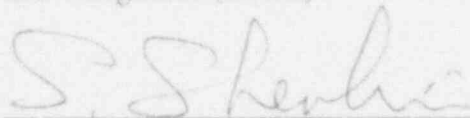
Inspector:



J. Furd, Senior Radiation Specialist,
Facilities Radiation Protection Section (FRPS),
Facilities Radiological Safety and Safeguards
Branch (FRSSB), Division of Radiation Safety
and Safeguards (DRSS)

7-20-92
date

Approved by:



W. Pasciak, Chief, FRPS, FRSSB, DRSS

7/20/92
date

Areas Inspected: Announced inspection of the radiation protection program including: management organization, assurance of quality, radiation control during outage operations, ALARA, and implementation of the above programs.

Results: Continued strong performance in radiological work control, together with improved radiological housekeeping were noted. Weak performance in controlling outage dose was also identified. Within the areas inspected, no violations were identified.

DETAILS

1. Personnel Contacted

1.1 Licensee Personnel

- D. Adams, Supervisor Dosimetry
- W. Coursey, Radiological Controls Shift Supervisor
- * R. Franke, Compliance Engineer
- * S. Hutson, Supervisor, Radiological Control - Operations
- * P. Katz, Superintendent, Technical Support
- D. Leslie, Quality Audits
- * G. Phair, Assistant General Supervisor, Radiological Control and Support
- T. Sydnor, Outage Manager
- * B. Watson, General Supervisor Radiation Safety
- * J. Wood, Senior Engineer, Quality Audits Unit
- * P. Wright, Supervisor, Radiological Controls - ALARA

1.2 NRC Personnel

- * A. Howe, Resident Inspector
- S. Greenlee, Reactor Engineer
- * W. Pasciak, Section Chief, Facilities Radiation Protection Section

* Denotes those present at the exit interview on July 17, 1992.

2. Purpose

The purpose of this safety and health inspection was to review the licensee's programs for radiation safety during normal and outage operations. Inspection areas included radiological work control and housekeeping, ALARA, assurance of quality, and training.

3. Previously Identified Items

(Open) Violation (50-317/92-13-01; 50-318/92-13-01) Improper waste manifests for five spent resin shipments. The licensee has completed its short term corrective actions, including modifications to the appropriate software and issuance of a procedure on resin sample analysis, and begun resuming shipment of this type of radwaste. Long term corrective actions, including the development of management guidelines for the Chemistry Department and conducting a review of other Chemistry Department infrequent tasks, was scheduled to be completed in October 1992. This item remains open.

4. Radiation Safety

On March 19, 1992, the licensee entered its refueling outage 1-R-10, for Unit 1. This was the first refueling outage the licensee had conducted since its extended shutdown. As part of this inspection, numerous plant tours and interviews were conducted to evaluate the licensee's program for radiation safety during this outage, including control of work activities, radiological housekeeping, and ALARA.

4.1 ALARA

The licensee established an ALARA goal for the refueling outage of 194 Person-Rem. As of the end of this inspection, total dose was at approximately 255 Person-Rem, which was well above the established goal for both the outage and the site annual goal of 230 Person-Rem. Based upon the above, the ALARA Supervisor proposed a revised annual goal of 340 Person-Rem and an outage goal of 300 Person-Rem.

Discussions with the licensee staff indicated that the bulk of the greater than anticipated dose was as the result of the extended outage duration, extra jobs and work, and higher than anticipated dose rates, especially in the steam generators. When the outage was commenced, its duration was scheduled for 83 days. At the time of this inspection, the outage was anticipated to be completed after 140 days. Additional jobs arose during the outage in part due to emergent work needed to repair defects identified during outage inspections of plant equipment, and also due to outage management not freezing the scope of work prior to the start of the outage. Higher dose rates were experienced in the steam generators than had been anticipated in planning for the outage. The outage ALARA goal was established based upon an anticipated dose rate of 4 Rad per hour (4 R/hr). This estimate was based upon historical data together with data from Unit 2. Actual dose rates were determined to be 6 R/hr, which lead to significantly higher total dose expended in the steam generator work.

Lack of appropriate prior outage management planning, failing to freeze the scope of work, and failing to adequately plan the work activities of several groups working simultaneously in the same area, led to the bulk of the extra dose encountered during this outage. Senior licensee management, including the Outage Manager, indicated that freezing work scope and better preparation and coordination among the various working groups was a major change that was to be incorporated into the Unit 2 refueling outage in 1993. The success of this revised outage management plan will be reviewed during future inspections in this area.

As of the conclusion of this inspection, the following major job paths during the outage were significantly over their budgeted projected doses:

<u>Job</u>	<u>Projected</u>	<u>Actual</u>
Steam Generator Thermal Sleeve	27.0	68.2
Steam Generator Primary Maintenance	23.0	29.5
PZR Insulation Replacement	1.7	7.6
SDC Heat Exchanger Spacers	3.2	17.2
RCP Motor Replacement	4.0	9.6
11A RCP Seal Replacement	0.45	2.1

(All values expressed in Person-Rem)

Although, in general, all jobs were determined to be progressing or completed at a dose expenditure greater than that originally projected, one notable exception was in the area of reactor disassembly, refueling, and reassembly, where the work was completed for just under 35 Person-Rem, where the projected dose was 50 Person-Rem.

The licensee continued to make limited progress in its attempts to reduce the number of Personnel Contamination Incidents (PCIs). Through early July, 1992, the rate of occurrence for PCIs was just below 1 per 1000 Radiation Controlled Area (RCA) entries. This was somewhat lower than the rate during the 1991 maintenance outages, and continued a general downward trend in PCIs at the site. Many of the PCIs occurring during late June and early July were as the result of contamination being absorbed through the Protective Clothing (PCs) being worn via sweating. It was noted by the inspector during RCA walkdowns that many areas of the plant were relatively hot and humid, and that personnel entering the Unit 1 Containment were often restricted to entries of not more than 1-2 hours in order to prevent heat stress. In an attempt to reduce the number of PCIs occurring via sweat soaked PCs, the licensee added a requirement that all personnel wearing PCs, also wear a set of scrubs (i.e. a surgical type two piece scrub suit) under their PCs. This has been of limited success since while it presents another barrier to personnel contamination, it also adds another layer of clothing in an already hot and humid situation.

4.2 Radiological Operations

As part of this inspection, several tours of the RCA were conducted. In general, plant areas were determined to be properly posted and controlled, with radiological housekeeping problems kept to a minimum. Inside the Unit 1 Containment, extensive clean-up efforts by the licensee were evident, especially on the 10' and 69' elevations. The majority of work being performed at the time of this inspection was on the 45' elevation, which was also where scaffolding and tools no longer needed for the outage were being staged for removal from the containment.

The inspector observed the Radiological Controls Shift Supervisor conducting pre-job briefings for workers, especially for work being performed under the Unit 1 vessel, and for an at power entry into Unit 2. These briefings were clear and concise, with all appropriate personnel in attendance, including the Radiation Control (RadCon) technician assigned to provide job coverage in attendance. Radiological conditions in the area to be worked, protective clothing requirements, dosimetry placement, and ALARA considerations were all carefully covered in these briefings.

Since the last inspection in this area, the licensee initiated a program of having an experienced senior RadCon technician periodically tour the RCA, especially the Auxiliary Building, to observe work in progress, assist the level RadCon technicians, and in general be available to workers who might have concerns or questions. The Radiation Safety Supervisors indicated that to date this program had been very successful.

4.3 Assurance of Quality

In accordance with the licensee's Quality Assurance Plan, at the time of this inspection, the licensee was conducting a Quality Assurance audit of radwaste activities as part of its annual radiological effluents audit. This audit, # 92-17, was scheduled to be released at the end of July, 1992. Discussions with the lead auditor, and the technical specialist assigned to evaluate the radwaste and transportation program, indicated that this was an in-depth technical audit, with the scope somewhat limited. Early in the audit process, the technical specialist identified a concern with the methodology utilized by the Materials Processing section to prepare waste and shipping manifests, and to account for the transuranic constituents in these shipments. A finding was to be written on this issue, and the Materials Processing response to it will be reviewed during a subsequent inspection in this area.

The inspector also examined the licensee's records for Surveillances conducted in 1992. To date, no surveillances in the radiation protection area have been

conducted. One surveillance was conducted related to spent fuel work, which referenced a previously identified violation involving a spent fuel shipment. This was the only reference to any of the activities under the direction of the General Supervisor - Radiation Safety.

4.4 Training

As part of this inspection, the inspector attended a review session provided by the Training Department for radiation safety technicians who were attempting to complete their initial training. These sessions cover plant systems which the technicians must be knowledgeable of in order to become qualified, but for which no formal classroom training was available at the time the technician desired to take the proficiency examination. These review sessions were added in 1991 at the behest of the Radiation safety Department, in order to aid in reducing the failure rate for technicians taking initial qualification examinations. Only one technician was preparing to take the examinations covered under the review session during the inspection, and so individual attention could be provided to him by the training instructor. Since the addition of these review sessions, the rate of failure by the trainee radiation safety technicians has been reduced.

The inspector also attended the qualification panel meeting for a RadCon technician who had completed his initial training program, including both classroom and on-the-job training. The technician was attempting to be qualified to stand shift, and the bulk of the qualification panel meeting was devoted to questions based on the technician being the only person standing shift in radiation protection. In attendance at the panel meeting was the RadCon training coordinator, a RadCon shift supervisor, and the Supervisor, RadCon Operations. The panel meeting lasted for approximately 90 minutes, with the technician being approved to stand shift, with the provision that within approximately one week, he report back to the RadCon Operations Supervisor on some questions asked during the panel, which the technician had difficulty answering.

5. Exit Interview

The inspector met with the licensee representatives denoted in Section 1 at the conclusion of the inspection on July 17, 1992. The inspector summarized the purpose, scope and findings of the inspection.