U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-317/91-11
50-318/91-11

Docket Nos. 50-317
50-318

License Nos. 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: April 15-19, 1991

Inspector: _____ 4/23/91
J. Furia, Senior Radiation Specialist, Facilities Radiation Protection Section (FRPS), Facilities Radiological Safety and Safeguards Branch (FRSSB), Division of Radiation Safety and Safeguards (DRSS) date

Approved by: _____ 4/24/91
W. Pasciak, Chief, FRPS, FRSSB, DRSS date

Inspection Summary: Inspection on April 15-19, 1991 (Combined Inspection Report Nos. 50-317/91-11; 50-318/91-11

Areas Inspected: Routine unannounced inspection of the radiation protection and transportation programs including: management controls, audits, training, instrumentation, packaging, shipment and implementation of the above programs.

Results: Within the areas inspected, no violations or deviations were noted.

DETAILS

1. Personnel Contacted

   1.1 Licensee Personnel

   J. Brown, Technical Training Coordinator
   * J. Carlson, Supervisor, technical Training
   B. Ficke, Radiation Control Shift Supervisor
   R. Franke, Compliance Engineer
   * S. Hutson, Supervisor, Radiation Control - Operations
   * P. Katz, Superintendent, Technical Support
   J. Lenhart, Supervisor, Materials Processing
   * M. Milbrandt, Compliance Engineer
   D. Mitchell, Training Instructor
   * G. Phair, Assistant General Supervisor, Radiation Control & Support
   * L. Smialak, Senior Plant Health Physicist
   * B. Watson, General Supervisor - Radiation Safety
   * J. Wood, Lead Auditor, Quality Assurance

   1.2 NRC Personnel

   A. Howe, Resident Inspector
   * L. Nicholson, Senior Resident Inspector

   * Denotes those present at the exit interview on April 19, 1991.

2. Purpose

   The purpose of this routine inspection was to review the licensee's radiation safety program, especially in the areas of technician training, instrumentation calibration and use, radiation control operations, quality assurance and transportation of radioactive materials.

3. Previously Identified Items

   (Closed) 50-317/90-32; 50-318/90-32 and 50-317/90-14; 50-318/90-12 (Violation and Open Item) Improper High Radiation Area entries. The licensee conducted a site wide program to address these events, revised its General Orientation Training, and re-evaluated its High Radiation Area postings and boundaries. No further improper entries have occurred since June, 1990. This item is closed.

4. Radiation Safety

   Since the last inspection in this area, the licensee has appointed a new General Supervisor - Radiation Safety, who serves as the licensee's Radiation Protection Manager, in accordance with technical specifications. All other supervisors within the Radiation safety organization have remained the same. For 1991, the licensee has established a site wide ALARA goal of 260 person-rem. This aggressive goal which is 20% lower than the 1990 goal, includes the upcoming mid cycle outage for Unit 1. As of March 31, 1991, the licensee had a cumulative site wide dose of 53 person-rem. In addition, the licensee established a 1991 goal of not more

than 300 personnel contamination incidents (PCIs). This is significantly lower than the 1990 PCI level of 540. As of March 31, 1991, the licensee had 123 PCIs, which if projected over the year would result in approximately 400 PCIs. As a result, the licensee had initiated action to determine the root causes of the PCIs, and devise means of addressing these root causes. A radiation control technician was assigned to conduct plant tours and investigations of PCIs, and to document his findings with the Assistant General Supervisor - Radiation Control and Support (AGS-RCS). The inspector reviewed the first two weeks worth of reports generated by this technician, and determined the level of investigation to generally be good. As a result of this licensee initiative, in conjunction with past PCI documentation, revisions to policies and procedures were being formulated to address the identified common root causes of these events. Additionally, at the urging of the AGS-RCS, the licensee was preparing a training program for first line supervisors in the area of good HP practices, to emphasize the need of greater line management support of the radiation safety program.

4.1 Technician Training

In July, 1990, the licensee significantly revised its radiation safety technician training program, committing to having fully one quarter of its staff technicians in training during any 13 week training cycle. While in this training cycle, a technician would not be available for daily job coverage or other duties, except in the event of an emergency. As part of this inspection, direct observation of one of the technician training classes was made by the inspector. Training module RS-300-107, covering the Containment Ventilation Systems was observed. The class consisted of 13 technicians from the Radiation Control and Support group, with experience levels ranging from long time HP technicians at Calvert Cliffs to HP technicians just starting work at the plant. The topic was broken down into four subsystem areas: (1) Reactor Cavity Cooling; (2) Containment Cooling; (3) Iodine Removal Units; and (4) Control Element Drive Mechanism (CEDM) Ventilation. Each area was presented as a one our block of training, beginning with a systems overview, and proceeding through component descriptions, system functions during normal and emergency conditions, slides of the as found systems located in Calvert Cliffs, and a discussion of the radiological hazards associated with each system. A comprehensive examination given three days after the training presentation was utilized to evaluate the students understanding of the information presented. The training was determined by the inspector to be of excellent scope and depth for the students present. This was the second group of technicians to be part of this training program, the first group having completed their training cycle at the end of March, 1991. The inspector discussed this and other training modules with the licensee's Training Department staff, and found the staff to be highly motivated and enthusiastic in regards to this new training program. Comments for improvement of the course content were garnered from the first training cycle students, and revised training modules have been incorporated into the current cycle.

4.2 Instrumentation

The licensee utilizes a variety of portable instrumentation in the field to support the radiation safety program. The majority of these instruments were ion chambers, GM counters or neutron REM balls. All instruments, with the exception of the neutron detectors, were source checked utilizing a Cs-137 source once-per-day, typically on the night shift, with a source check label placed on each instrument as it passed this check.

In addition to portable instrumentation, the radiation safety staff utilized gas flow proportional counters to count area wipes and gas particulate samples. As part of this inspection, the operation, quality control checks and procedures for utilization of these counters were reviewed. Licensee procedure RSP 1-119, Rev 0, "Operation of the Tenelec LB 5100", included instructions on the performance of daily efficiency checks using two standard sources, one for alpha and the other beta particles and monthly voltage plateau checks. The inspector noted that normally the vendor recommended that voltage plateau checks be performed each time the P-10 gas cylinder utilized by this system was changed out. The licensee performed this check in accordance with its own procedure once per month. In addition, the licensee's procedure for determining optimum operating voltage was relatively imprecise, allowing the equipment operator to select an operating voltage anywhere within the lowest third of the beta voltage plateau, while the vendor typically recommended operating the system at a voltage as close to the voltage knee as possible while still remaining on the plateau. The licensee was unable to substantiate its reasoning for selecting these parameters which differ from the vendors recommendation at the time of this inspection, but indicated that it would investigate these issues. The inspector will further evaluate these issues during a subsequent inspection in this area.

4.3 Radiation Control - Operations

As part of this inspection, direct observation of the licensee's radiation control - operations program was made. During this inspection, Unit 1 was operating at or near full power, while Unit 2 was being prepared for restart as soon as possible. The inspector conducted several tours of the licensee's Radiation Controlled Areas (RCA), especially in the Auxiliary Building and Materials Processing Facility (MPF). The licensee continued in its restoration project in specific rooms and general hallways in the lower elevations of the Auxiliary Building. The licensee hoped that this project, once completed, will aid in further reducing PCIs, and allow for ease of housekeeping. In the MPF, the restoration project will have to be performed partially again, as the floor coatings used did not properly set up and dry, leaving bubbles and troughs. This rework was anticipated to be performed during the summer of 1991.

Housekeeping within the Auxiliary Building was generally good.

Radiation control technicians were assigned to each floor of the auxiliary building to perform routine job coverage, conduct surveys, and perform wipe tests. Additional technicians were available to provide specific job coverage as needed. Direct line supervision of the staff was the responsibility of the Radiation Control Shift Supervisor (RCSS), who maintained an office at the 69' Access Desk. Plant personnel entering the RCA were required to check in at the Access Desk, to review the conditions and limitations of the Special Work Permit they would be working under; to be forwarded to the ALARA group for consultation on dose reduction techniques and practices to be utilized while performing their task; and to be assigned Radiation Control technician support, either from the floor technicians or from the additional special job coverage technicians.

Since the last inspection, some responsibilities of the RCSS have been transferred to a Documentation Reviewer. Specifically, paperwork generated in the field by the Radiation Control technicians which requires review in accordance with plant procedures was now sent to the Documentation Reviewer rather than the RCSS, freeing the RCSS for more direct operational overview of the technicians and of work in progress in the RCA. This new licensee initiative had been in place less than one month at the time of this inspection, and its success in aiding in the improvement of the licensee's radiation protection program will be reviewed during a future inspection in this area.

The inspector also examined the licensee's utilization of long-handled tools and poles in the spent fuel pool and reactor cavity. The licensee's procedures required that all poles and tools utilized must be vented, so as to provide an adequate safety margin to personnel performing this work. During the recent refueling of the Unit 2 core, poles not vented were utilized, however the licensee had performed an analysis demonstrating that these poles, which had 5 inch steel end caps, provided an adequate safety margin for workers. The licensee subsequently changed its procedures to allow for the use of these types of poles in the reactor cavity and spent fuel pool.

4.4 Quality Assurance

As part of its quality assurance program in the radiation safety area, the licensee conducted biennial audits of this area. Quality Assurance Audit 91-03, dated March 27, 1991, documented the results of the most recent audit in this area, which was performed during January and February, 1991. Four auditors, a lead auditor, a lead auditor in training, a technical specialist from outside the company and a technical specialist from within the company were utilized as the audit team. The scope and technical depth of this performance based audit was determined to be excellent. As a result of this audit, seven audit findings were issued, including a repetitive finding. The nature of the repetitive finding was the failure of the engineering staff to submit a FSAR change to resolve

discrepancies between current plant practices and procedures and the current FSAR. None of the remaining six findings involved an item of significant safety interest. The inspector did note that while final response to these audit findings was not due until 30 days after the publication of the audit, the Radiation Safety staff had taken action to resolve all discrepancies. Programatic changes in the areas of paperwork review and in the upgrading of procedures were underway at the time of this inspection.

5. Transportation

As part of this inspection, direct observation of the licensee's radioactive materials transportation program was made. The inspector observed the inspection and loading of shipment # 91-029, a shipment of compacted DAW, to the waste processing facility at SEG (a Westinghouse subsidiary) in Oak Ridge, Tennessee. The original shipment was to have contained 11 B-25 boxes of compacted DAW, however during the course of the preloading inspections conducted by representatives of the Materials Processing Facility (MPF) and the licensee's Quality Control group, one box was rejected for shipment since its drain plug could not be removed. This removal is required by licensee procedures in order to verify that no free-standing liquids were present in any of the B-25 boxes. The licensee personnel observed performed their duties in a highly professional manner.

6. Exit Interview

The inspector met with the licensee representatives denoted in Section 1 at the conclusion of the inspection on April 19, 1991. The inspector summarized the purpose, scope and findings of the inspection.