U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-318/87-07

Docket No. 50-318

License No. DPR-69 Priority---- Category C

Licensee: Baltimore Gas and Electric Company
P.O. Box 1475
Baltimore, Maryland 21203

Facility Name: Calvert Cliffs Nuclear Power Plant, Unit 2

Inspection At: Lusby, Maryland

Inspection Conducted: March 23-27, 1987

Inspectors: J. McFadden 4-20-87
J. McFadden, Senior Radiaion Specialist date

Approved by: M. Shanbaky 4/20/87
M. Shanbaky, Chief date
Facilities Radiation Protection Section

Inspection Summary: Inspection on March 23-27, 1987 (Inspection Report No. 50-318/87-07)

Areas Inspected: An unannounced occupational radiation protection inspection at Unit 2 during an outage including: external exposure and personnel dosimetry, internal exposure control and assessment, control of radioactive materials and contamination, surveys, and monitoring, and ALARA. One regionally-based inspector was onsite for the inspection.

Results: No violations were identified.

DETAILS

1.0 Persons Contacted

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

1.1 Licensee Personnel

*R. Bodin, Supervisor-QC-Operations
J. Brown, Instructor-Training
J. Carlson, Plant Health Physicist
*S. Cowne, Sr. Engineer-licensing
B. Dansberger, ALARA Coordinator-Radiation Control/ALARA
T. Koranek, Shift Supervisor-Radiation Control/Operations
*J. Lemons, Manager-Nuclear Operations Department
*J. Lenhart, Supervisor-Radiation Control/Operations
*N. Millis, General Supervisor-Radiation Safety
*G. Phair, Supervisor-Radiation Control/ALARA
E. Reimer, Plant Health Physicist
*L. Smialek, Sr. Plant Health Physicist
J. Tiernan, Vice President-Nuclear Energy
B. Watson, Asst. General Supervisor-Radiation Control and Support
R. Woods, Technician-Radiation Control/Operations
R. Wyvill, ALARA Coordinator-Radiation Control/ALARA

1.2 NRC Personnel

T. Foley, Senior Resident Inspector
D. Trimble, Resident Inspector

*Attended the exit meeting on March 27, 1987.

Additional licensee personnel were contacted during this inspection or interview.

2.0 Purpose

The purpose of this inspection was to review the licensee's occupational radiation protection program with respect to the following elements:

- External occupational exposure control and personal dosimetry
- Internal exposure control and assessment
- Control of radioactive materials and contamination, surveys, and monitoring
- Maintaining occupational exposures ALARA

3.0 External Occupational Exposure Control and Personnel Dosimetry

The licensee's program for external occupational exposure control and personnel dosimetry was reviewed against criteria contained in:

- 10 CFR 20, Standards for Protection Against Radiation
- Licensee's Technical Specification 6.0, Administrative Controls
- Licensee's Radiological Safety Procedure Manual

The licensee's performance relative to these criteria was determined by:

- discussions with licensee personnel
- observations of the performance of radiation safety activities
- tours of the reactor containment and of the auxiliary building
- reviews of procedures and documentation

The following aspects of external exposure control and personnel dosimetry were reviewed and appeared adequate and effective: the special radiation work permit (SWP) program, tracking of cumulative dose for each worker and dissemination of same on a twice daily basis, individual access and exposure control, use of special control point watch stations (SCPWs) (in containment) and level HP stations (in auxiliary building), pre-job briefings, ALARA reviews (pre-and post-job), ALARA field service inspection reports, special dosimetry, surveys for SWPs, use of temporary, local shielding, of closed circuit television (CCTV) systems, and of remote manipulators on steam generator (S/G) work, dosimetry records, and skin dose evaluations for contamination incidents.

An SWP for diving in the spent fuel pool and the associated requirements generated by an ALARA review were inspected. The inspector noted that there was no detailed guidance for underwater surveys as to the number and spacing of measurement points in the dive path and dive work area/s. Underwater surveys were reviewed by the inspector and appeared to be adequate and effective. The licensee stated that the importance of underwater surveys is recognized, that thorough initial surveys, consuming several hours, are conducted. Followup surveys, after potential changes in underwater radiological conditions, are made. The licensee also stated that consideration will be given to documenting the details of their current practice for conducting underwater surveys prior to diving operations.

Within the scope of this review, no violations were identified.

4.0 Internal Exposure Control and Assessment

The licensee's program for internal occupational exposure control and assessment was reviewed against criteria contained in:

- 10 CFR 20, Standards for Protection Against Radiation
- Licensee's Technical Specification 6.0, Administrative Controls
- Licensee's Radiological Safety Procedure Manual

The licensee's performance relative to these criteria was determined by:

- discussions with licensee personnel
- observations of the performance of radiation safety activities
- tours of the reactor containment and of the auxiliary building
- review of procedures and documentation

The following aspects of internal exposure control and assessment were reviewed and appeared adequate and effective: SWP requirements for HEPA-filtered exhaust units, air sampling, and respiratory protective equipment, the use of ventilation containments, exhaust units, and respirators, and record keeping (respirator use/air activity worksheets, mpc-hours log, and air sampling results).

The inspector noted that, during this outage, there was an increased use of respirators and an increase in the number of individuals with tracked MPC-hours. These increases were caused by the fact that initial removable surface contamination levels in containment were higher than normal (due possibly to a leaking in-core instrumentation [ICI] flange) and to a short-term iodine degassing from the flooded-up refueling pool due to elevated containment temperature.

The inspector also noted that the licensee's program for posting airborne radioactivity areas and for tracking intake is still more rigorous than regulatory requirements in that areas are posted at 0.1 MPC and quantities equal to and greater than 0.1 MPC-hour are tracked. Review of the MPC-hours log indicated that there were no recorded cumulative totals greater than 10 MPC-hours over any seven consecutive days.

Within the scope of this review, no violations were identified.

5.0 Control of Radioactive Materials and Contaminations, Surveys, and Monitoring

The licensee's program for control of radioactive materials and contamination, surveys, and monitoring was reviewed against criteria contained in:

- 10 CFR 20, Standards for Protection Against Radiation
- Licensee's Technical Specification 6.0, Administrative Controls
- Licensee's Radiological Safety Procedure Manual

The licensee's performance relative to these criteria was determined by:

- discussions with licensee personnel
- observations of the performance of radiation safety activities
- tours of the reactor containment and of the auxiliary building
- review of procedures and documentation

The following aspects were reviewed and appeared adequate and effective: numerical adequacy and use of frisking, surveying and counting equipment, provisions for surveying for release of materials or equipment from the radiologically controlled area (RCA), and posting of signs and surveys.

During a tour of containment, the inspector noted several bags of radioactive material which did not appear to be marked and labeled in full compliance with the licensee's procedure RSP 1-111, "Identification and Control of Radioactive Material". The licensee stated that these bags were in transit and are properly labeled or posted with the words "Caution-Radioactive Material" prior to exit from the RCA. Several bags were not marked in a readily visible fashion as to survey date or surveyor's identity. The licensee stated that this item would be reviewed.

During review of the air sampling records, the inspector observed that airborne tritium sampling in containment while the refueling pool was flooded up was not being performed. The licensee stated that airborne tritium sampling is not performed since theoretical calculations and historical data show that such sampling is not required when the tritium concentration in the refueling pool water is below a predetermined value. The licensee's calculation will be reviewed in a future inspection.

The inspector also noted that approximately thirty air sampling results for March 4, 1987 had been documented as lost. The licensee stated that they had investigated this, that the lost surveys had been trending surveys, and that their loss had not resulted in a decrease in radiological protection on any SWP work.

Within the scope of this review, no violations were identified.

6.0 Maintaining Occupational Exposures ALARA

The licensee's program for maintaining occupational exposures ALARA was reviewed against criteria contained in:

- 10 CFR 20.1, Purpose
- Licensee's Technical Specification 6.0, Administrative Controls
- Liensee's Radiological Safety Procedure Manual

The licensee's performance relative to these criteria was determined by:

- discussions with licensee personnel
- observations of the performance of radiological safety activities
- tours of reactor containment
- review of procedures and documentation

The following SWP/ALARA packages among others were reviewed by the inspector

- SWP 87-2319, Remove defective ICIs, transfer to SFP, and clean ICI guide tubes

- SWP 87-2406, Entries into #21 and #22 S/G Primary side to install, remove, and repair nozzle dam equipment

The inspector attended the pre-job briefing for SWP 87-2319, and this briefing appeared to thoroughly cover the possible hazards and precautionary measures outlined in the ALARA review. The inspector noted that the conference room, used for pre-job SWP briefings, was equipped with a CCTV view of the work area and a videocassette recorder.

The package for SWP 87-2406 was reviewed and contained the following: The SWP, pre-job briefing attendance records, job/area acceptance inspection report (initial), surveys records, summary of special TLD, ALARA review (containing fifteen pages of detailed ALARA requirements), and an ALARA Job Inspection Report. This SWP package appeared exceptionally thorough and well done.

The licensee's actual 1986 person-rems for the site and Unit-1 outage were less than the goals. In addition, the licensee stated that a third 1986 goal of less than two rem (plant dose) for each individual was also met. Person-rem goals for 1987 have been set and are lower than those for 1986.

To have less than two rem (plant dose) for each individual is also a 1987 goal. Based on these numbers and on the ALARA inspection findings, this area is presently a licensee strong point.

	PERSON-REM	
	Site	Outage
1986 Goal	390	280
Actual	347	@245
1987 Goal	330	235

Within the scope of this review, no violations were identified.

7.0 Exit Interview

The inspector met with the personnel denoted in Section 1.0 at the conclusion of the inspection on March 27, 1987. The scope and findings of the inspection were discussed at that time.