

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-317/86-17
50-318/86-17

Docket No. 50-317
50-318

License No. DPR-53
DPR-69

Priority -

Category C

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

Facility Name: Calvert Cliffs Nuclear Power Plant

Inspection At: Lusby, Maryland

Inspection Conducted: September 15-19, 1986

Inspectors: T. Tuccinardi
T. Tuccinardi, Radiation Specialist

10/20/86
date

for J. McFadden
J. McFadden, Radiation Specialist

10/20/86
date

Approved by: M. Shanbaky
M. Shanbaky, Chief, Facilities Radiation
Protection Section

10/21/86
date

Inspection Summary:

Inspection on September 15-19, 1986 (Report Number 50-317/86-17, 50-318/86-17).

Areas Inspected: A routine, unannounced safety inspection was performed of the licensee's implementation of the radiation protection program and outage preparations including: ALARA; internal and external exposure control; control of radioactive material, surveys, and records; and outage staffing.

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

- *N. L. Millis, General Supervisor-Radiation Safety
- *L. J. Smialek, Senior Plant Health Physicist
- *L. S. Larragoite, Licensing
- *B. A. Watson, Asst. General Supervisor-Radiation Control and Support
- *A. B. Anuje, Supervisor, Quality Audits Unit
- *R. E. Bodin, Supervisor, Quality Control, Operations
- *T. E. Goff, Supervisor, Dosimetry
- *G. P. Phair, Supervisor, Radiation Control-Operations
- *J. R. Lemons, Manager, Nuclear Operations Department
- *E. H. Roach, Quality Assurance Specialist
- K. Cellars, Outage Coordinator
- P. Putman, Quality Assurance
- S. Hutson, Supervisor, ALARA
- S. Cowne, Licensing
- T. Parry, SWP Coordinator
- J. Roller, Instructor
- J. Brown, Instructor

*Attended exit meeting on September 19, 1986.

1.2 Other personnel were also contacted or interviewed during this inspection effort.

2.0 Purpose

The purpose of this routine inspection was to review implementation of the radiation protection program and outage preparation to include the following:

- * Status of previously identified items
- * ALARA
- * Internal exposure control
- * External exposure control
- * Control of radioactive material, surveys, and records
- * Outage staffing
- * High Radiation Area Control

3.0 Status of Previously Identified items

(Closed) Unresolved Item (50-317/85-12-03 and 50-318/85-10-03).
Additional review of licensee system to document changes to notify HP Techs of changes to SWP's.

A review of Revision 3 and 4 of Procedure RSP-1-106 "Special Work Permit" (SWP) was performed to assure the procedure had been changed to include notification of HP Technicians of changes to SWP's. The review verified such changes had been performed.

4.0 ALARA

The licensee's ALARA program was reviewed against criteria contained in:

- * 10 CFR 20.1, Purpose
- * Licensee Technical Specifications, Section 6, Administrative Controls
- * Licensee Instruction Manual
- * Licensee Radiation Safety Procedures Manual
- * Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable"
- * Reg. Guide 8.10 "Operating Philosophy for Maintaining Occupational Radiation Exposure As Low As Is Reasonably Achievable"

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

- *Review of SWPs and their ALARA reviews
- *Review of monthly ALARA reports
- *Discussions with licensee personnel
- *Review of RSP1-115, ALARA Procedure

On the basis of providing a defined organizational unit which has ALARA activities as its sole function and which includes a supervisor, five technicians, a technician trainee, and a clerk, the licensee has demonstrated a major commitment to ALARA. In addition to screening initial requests for SWPs and performing ALARA reviews as required, this unit has some operational responsibilities including maintenance and provision of supplied-breathing-airline equipment and of portable ventilation equipment. This unit also becomes involved in the installation of shielding and job coverage to monitor the implementation of ALARA requirements.

The licensee sets annual person rem goals for the site. The site goal is divided up between the various departments and in some cases between the work units within a department. In addition, the rate of accumulation of collective dose over the year for each department is estimated based on planned work evolutions involving radiation exposure. These site and department goals (plus exposure by job function and number of SWPs with greater than one hundred millirem for the month) are tracked and trended in monthly ALARA reports. These reports use tabular data, bar graphs, line graphs, and pie charts to present the monthly and year-to-date dose breakdown and the actual vs. estimated accumulated dose for the site and the various departments. Deviations from the dose projections, evaluations of the deviations, and responses are addressed in these reports.

The licensee's annual site person-rem goal for 1986 is 390. The goal for the 1986 Unit 1 refueling outage (10 year ISI) is 250 person-rem. This results in a goal of 140 person-rem for all routine work at Units 1 and 2. The goal of 390 person-rem represents an approximately ten percent reduction from the actual annual person-rem experienced in 1984 (the last single unit outage year). This indicates that the goal-setting process is being used as a tool to improve ALARA performance.

The licensee has a formalized ALARA suggestion program to aid in worker participation. An enhanced radiation worker training program has been conducted, in part to increase ALARA awareness. ALARA suggestions received through the suggestion program numbered approximately nine in 1984 and approximately forty-eight in 1985. The licensee indicated that several changes to the ALARA Suggestion Program are being considered. Instead of having a suggestion evaluation by several independent reviewers, a review committee concept is being contemplated. Also, a formalized incentive system is being considered.

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

5.0 Internal Exposure Control

5.1 The inspector viewed the licensee's control of internal exposure with respect to criteria contained in: 10 CFR 20 "Standards for Protection Against Radiation", and RSP-1-106 Special Work Permit (SWP). The following elements of the internal exposure program were reviewed:

- * Airborne radioactivity surveys;
- * Implementation of applicable administrative controls (e.g., special work permit survey requirements);
- * Respiratory protection equipment selection and use;
- * Maintenance of records, exposure reporting and notification
- * Use of engineering controls in-lieu of respiratory protection equipment; and
- * Adequacy of airborne radioactivity sampling and analysis methodology.

5.2 Issue of respirators was reviewed by the inspector. Respirators are issued as authorized by SWP after verification of respiratory protection training qualification and respirator fit booth test results. Prior to use a smoke test to verify an adequate fit is performed.

A sufficiently wide selection of MSA respiratory protection equipment designs and sizes are available to assure an adequate fit for licensee personnel and personnel expected during the upcoming outage. The fit booth utilized for booth testing is a Frontier Model 264 corn oil mist testing booth. An alternate Frontier model 264 testing booth is located in the Materials Processing Facility. The alternate testing booth is not expected to be needed prior to or during the upcoming outage.

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

6.0 External Occupational Exposure Control

The licensee's control of external exposure was reviewed against criteria in:

- *10 CFR 20, Standards for Protection Against Radiation
- *Licensee Technical Specifications, Section 6, Administrative Controls
- *Licensee Instruction Manual
- *Licensee Radiation Safety Procedure Manual

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

- *Touring the auxiliary building
- *Observation of radiologically controlled work activity
- *Observation of posting and labeling
- *Review of the implementation of the special work permit (SWP) system
- *Discussions with licensee personnel
- *Review of external dosimetry records and reports

The following licensee procedures, dealing with external occupational radiation exposure control and personnel dosimetry, were reviewed:

- *RSP 1-104, Area Posting and Barricading
- *RSP 1-106, Special Work Permit
- *RSP 1-110, Controlled Area Access
- *RSP 1-116, Dosimetry Issue and Dose Calculations Performed by Radiation Safety Units
- *RSP 3-102, Personnel Radiation Exposure Control
- *RSP 3-201, Personnel Dosimetry
- *RSP 3-202, Special Dosimetry
- *RSP 3-203, Use of Self-Reading Dosimeter
- *RSP 3-205, Determination of Neutron Exposure

In addition to reviewing the SWPs in effect for routine operations at the time of the inspection, the SWPs and ALARA reviews for past entries into the primary side of steam generators and for past spent fuel pool diving operations were inspected.

A Radiological Control Report and the response to it were also reviewed. This report dealt with an administrative overexposure (weekly and quarterly administrative exposure limits exceeded without authorization) due to inherent inaccuracies of neutron dose field calculations (dose rate x staytime). The response indicated that calculated staytime limits would be reduced appropriately to prevent further occurrences of this type. It was noted that the form used for this Report was not proceduralized.

The inspectors discussed with the licensee the advantages and disadvantages of proceduralizing activities not required to be proceduralized by regulations. This discussion was prompted after noting that the following were not covered by procedure: the radiological control report form, the fabrication and use of steam generator phantoms for dose rate studies, and the use of portable survey meters. The licensee indicated that, based on their operational experience without employing such procedures and on the depth of their training program, procedures for these activities were not necessary. The licensee also stated that procedures for use of several nonroutinely-utilized portable survey meters will be developed.

The licensee indicated that the Radiation Control-Operations unit had taken an assertive role in the implementation of an enhanced radiation worker training program in conjunction with the Radiation Control-ALARA unit.

Dosimetry unit personnel stated that a goal for the upcoming outage was to issue a cumulative individual dose status listing to each site work group twice per day (prior to shift change).

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

7.0 Control of Radioactive Material, Surveys, and Records

The licensee's program was reviewed against; 10 CFR 20, "Standards for Protection Against Radiation", Technical Specifications, and station procedures relative to radiation and contamination measurement and evaluation, and instrumentation.

During a facility tour, the plant was found to be well organized and clean. Housekeeping in the licensee's radiological areas was examined and found to be adequate. Tools and equipment associated with the upcoming outage were placed in storage areas. Radiation areas, high radiation areas, and contaminated areas were examined. The posting and barricading of these areas was found to be consistent and in accordance with station procedure and 10 CFR 20.

Radiological surveys are performed per procedure with sufficient detail to support radiological work. Current radiation, contamination and airborne surveys are posted on each Auxiliary Building level available to trade personnel and Health Physics personnel working in the area. They are also available from the SWP Coordinator during the prework briefing in the Health Physics office.

A randomly chosen selection of routine and job related radiation, contamination, and airborne surveys were removed from file and reviewed for usefulness and compared with station procedure. The survey data was found to be complete, informative, and readily available.

During the inspection, the following areas of concern were identified.

- *Trending of routine survey data is not being performed at this time. Trending of routine survey data was recommended for the purpose of identifying anomalous increases in radiation hazard.
- *No method is available, at present, to track corrective measures for deficient conditions entered in the Radiation Control Shift Supervisor log book.

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

8.0 High Radiation Area (HRA) Key Control

The use and control of HRA keys and the delegation of responsibility for use of the keys was examined during the inspection. HRA keys are made from unique key blanks that are not available to the general public, to ensure unauthorized individuals are unable to duplicate HRA keys. The Supervisor, Radiation Control Operation (SRCO) has the authority to duplicate HRA keys. Duplicate keys are obtained directly from the manufacturer.

Three HRA keys are signed out to non-health physics personnel: Calvert Cliffs (CC) Unit 1 Duty Auxiliary Operator, CC Unit 2 Duty Auxiliary Operator, and the Plant Shift Supervisor. The key log and key locker for these keys is kept in the control room under constant surveillance.

The remainder of the keys, key locker, and key log are maintained in the health physics office under the responsibility of the SRCO. The Radiation Control Shift Supervisor unlocks and assigns responsibility for HRA keys to Health Physics personnel. Otherwise, the key locker remains locked.

Additionally, there are three special keys for changing a locked HRA door to an unlocked door (and vice versa), based on changing plant conditions, and three keys to the Health Physics key locker. All of these keys are in the control of CC management personnel.

During the facilities tour, it was noted that lock guards had been installed on HRA doors to prevent any possibility of "jimmying" the locks to gain entry.

The above procedure for HRA Key Control is a recent development as a direct result of an employee allegation concerning a loss of HRA key control. To the licensee's credit, the above instituted changes were effective in correcting the loss of control and were completed within five working days.

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

9.0 Outage Staffing

Calvert Cliffs (CC) is expecting an increase in numbers of personnel. From 200-300 additional contractor personnel, and approximately 100 additional Baltimore Gas and Electric personnel are expected to be employed during the peak work load periods during the upcoming outage in CC Unit 1. Additional health physics (HP) personnel will also be hired. Approximately 45 senior HP technicians, 28 junior HP technicians, and 1 additional HP clerk will be hired. The HP technicians will be hired based on a review and verification of their previous work history. Those technicians will be assigned work responsibilities in the same areas of HP that they have prior experience.

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

10.0 Exit Interview

The inspectors met with the licensee representatives on September 19, 1986, to discuss the scope and findings of the inspection.