

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-322/87-06

Docket No. 50-322

License No. NPF-36

Priority --

Category C

Licensee: Long Island Lighting Company  
P.O. Box 618  
Wading River, New York 11792

Facility Name: Shoreham Nuclear Power Station

Inspection At: Wading River, New York

Inspection Conducted: March 30 - April 3, 1987

Inspectors: A. Woodcock for  
T. Dragoun, Senior Radiation  
Specialist

4/30/87  
Date

A. Woodcock for  
R. Loesch, Radiation Specialist

4/30/87  
Date

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

4/30/87  
Date

Inspection Summary: Inspection on March 30 - April 3, 1987 (Report No. 50-322/87-06)

Areas Inspected: Routine safety inspection of radiological controls including: ALARA, worker training, exposure recordkeeping, area posting, material labeling, maintenance of survey meters, Q/C surveillances, and status of previously identified items.

Results: No violations were identified.

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## DETAILS

### 1.0 Persons Contacted

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

#### 1.1 Licensee Personnel

S. Skorupski, Assistant Vice President - Nuclear  
\*J. Notaro, Acting Director, Quality Assurance, Safety and Compliance  
\*M. Buring, Health Physics Engineer  
\*J. Carey, Licensing Engineer  
\*R. Crowe, Operations Staff Manager  
E. Cubeta, Instrument Services Foreman  
M. Cuppola, Technical Support Training Supervisor  
\*N. DiMascio, Rad. Controls Division Manager  
M. Donegan, Radiological Support Supervisor  
\*R. Glazier, Supervisor, QCD  
\*R. Grunseich, Operational Compliance Eng.  
\*J. Manso, Compliance Engineer  
S. Petty, Instructor, Production Training  
\*J. Ramanuja, Health Physicist, NED  
\*J. Scalice, Assistant Plant Manager  
\*J. Schmitt, Radiological Affairs Manager  
\*C. Seaman, Quality Control Division Manager  
\*D. Smith, Compliance Engineer  
K. Taylor, Section Supervisor, Rad. Protection Division, NED  
\*D. Terry, Manager, Production Training Department  
R. Thompson, Dosimetry Supervisor

\*Attended the exit meeting on April 3, 1987.

### 2.0 Purpose

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

- Status of Previously Identified Items
- ALARA Program
- General Employee Training
- Personnel Exposure Recordkeeping and Reporting
- Posting of Radiation Areas and Labeling of Radioactive Material
- Quality Control Surveillances

- Calibration and Maintenance of Portable Survey Meters

### 3.0 Status of Previously Identified Items

- 3.1 (Open) Follow-Up Item (85-04-10(a)) - Evaluate and establish appropriate sample system purge times. The licensee's engineering evaluation indicates that about ten sample volumes will be purged during normal sampling. Methods to verify correct flow rates are being evaluated.
- 3.2 (Closed) Follow-Up Item (85-04-11(c)) - Consider computer assisted decay corrections for source terms in Modcomp software. The Modcomp program has been modified to include decay corrections.
- 3.3 (Closed) Follow-Up Item (85-04-12(b)) - Perform study to ensure that personnel exposures are within GDC 19 during sampling. A time and motion study indicating that dose criteria will be met was completed by a contractor in August 1985.
- 3.4 (Closed) Follow-Up Item (86-15-01) - Provide survey maps. A large number of survey maps have been generated and provided with identification numbers. Procedure SP 61.D18.01, "Radiological Survey Schedules and Location", has been revised to specify use of these maps along with other scheduling controls to improve routine surveys.
- 3.5 (Closed) Follow-Up Item (86-15-02) - Improve airborne survey records and actions required on a CAM alarm. Procedure SP 63.030.03 has been revised and includes CAM alarm actions with requirements for grab sampling and recordkeeping.
- 3.6 (Closed) Follow-Up Item (85-04-10(k)) - Establish several operating/sample collection procedures for the PASS facility. Procedure EPIP 2-11 covers air sampling while EPIP 2-9 provides for coolant sampling. Each procedure has detailed instructions for lineups to various sample points provided as attachments.

### 4.0 ALARA Program

The status of the licensee's ALARA program was reviewed with respect to criteria contained in:

- 10 CFR 20.1, Purpose
- USNRC Regulatory Guides 8.8 and 8.10
- 67 FR 1716, Federal Radiation Protection Guidance for Occupational Exposure dated January 27, 1987
- International Commission on Radiological Protection Publication #26 and #30



- LILCO Nuclear Operations Corporate Policy 20, "Corporate Responsibilities for the As Low As is Reasonably Achievable (ALARA) Program"
- LILCO PD-NE-02, "ALARA Program Description"
- Licensee procedures RPD 5.22, RPD 5.23, NE-01-02, 12.012.02, 62.070.10, 62.070.08, 62.070.06, 62.070.04, 62.070.02.

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

- Discussions with the ALARA Engineer, Corporate Health Physicists, Corporate Materials Engineer, and Rad. Controls Division Manager.
- Review of Corporate ALARA Review Committee meeting minutes, QA Audit QS-86-02 (ALARA Program audit) and station ALARA exposure goals for 1987.
- Review of ALARA input for several Design Output Packages.

Within the scope of this review no violations were observed.

The procedures and policies that describe the Shoreham ALARA program are comprehensive and of excellent quality. The corporate and station ALARA positions are filled by qualified health physics personnel.

One major dose saving action is completed - the stellite rollers have been removed from the reactor control rods (a major source of  $\text{Co}^{60}$  activity). In addition, negotiations are underway with a vendor to supply a zinc injection system for the plant condensate system. Continuous injection of zinc to condensate water has been shown to significantly reduce build-up of radioactive contamination in BWR systems. The licensee is also renewing bids for a new design Residual Heat Removal Heat Exchanger that will reduce the frequency of maintenance on this contaminated component.

In early 1986 station Q/A auditors found that the ALARA program was not fully implemented in accordance with station policies. Various actions to resolve the audit findings are underway. For example, a two day ALARA course will be given to all design engineers in April 1987. A computerized dose tracking system was declared operational during this inspection.

The licensee exposure goal for 1987 is 37 man-Rem. This goal was chosen to be 15% lower than the average for a recently licensed BWR station during startup.

## 5.0 General Employee Training

The licensee's general employee training program was reviewed with respect to criteria contained in:

- 10 CFR 19.12, Instruction to workers
- 10 CFR 20 Standards for protection against radiation
- USNRC Regulatory Guide 8.29 "Instruction Concerning Risks from Occupational Radiation Exposure"
- FSAR Section 12.5.3.5, "Health Physics Training Program"
- Station Procedure 12.014.04, "Training Responsibilities"
- Station Procedure 12.014.03, "General Employee Training"

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

- Review of lesson plans: Health Physics Level I (#0601), Health Physics for General Employee Training Level II, and Respiratory Protection.
- Review of written examinations and student handouts.
- Interviews with instructors, the training supervisor and training manager.
- Review of the instructor qualification program, including a review of educational background and experience of current staff instructors.
- Observation of a classroom presentation.
- Tour of on-site training facilities and a new training complex in Central Islip, N.Y.

Within the scope of this review no violations were observed. The licensee's lesson plans, training aids and instructor qualification program are adequate.

The licensee has made a strong commitment to training as reflected by policies and procedures and construction of a very large training complex. The complex, scheduled to be fully operational in August 1987, will have a staff of 125 personnel and the latest equipment for hands-on training. The health physics and radiochemistry "laboratories" already have state-of-the-art equipment installed as do most of the training "shops".

## 6.0 Personnel Exposure Recordkeeping and Reporting

The licensee's method for recording and reporting personnel radiation exposures was reviewed with respect to criteria contained in:

- 10 CFR 19.13, Notification and reports to individuals.
- 10 CFR 20.102, Determination of prior dose.
- 10 CFR 20.202, Personnel monitoring.
- 10 CFR 20.408, Notification and reports to individuals.
- USNRC Reg. Guide 8.7, Occupational Radiation Exposure Records Systems.
- ANSI N13.6, Occupational Radiation Exposure Records Systems.
- Station Procedures 62.004.01, 62.004.02, 61.012.01, 61.012.05 and 61.012.07.

The licensee's performance relative to these criteria was determined from discussions with dosimetry personnel and a review of selected records.

Within the scope of this review no violations were observed.

The licensee uses a computer to track and compare direct reading dosimeter (DRD) and TLD badge results. Summary reports are printed out daily and made available to various departments on site. Termination reports are completed by extracting data from the computer files and completing a standard form. A supervisor checks and signs the final report. The record keeping and dose reporting appears to be adequate.

The inspector noted that for the special situation where several extra TLD/DRD sets would be issued, e.g. fuel pool diving operations, the procedure requires a supervisory "evaluation". No specific requirements are provided for the issuance or collection of special dosimetry. The computer record keeping program can only accommodate one special entry. The licensee stated that the appropriate policies and procedures would be revised as required to clarify the processing of special dosimetry. This matter will be reviewed in a future inspection (87-06-01).

## 7.0 Posting and Labeling of Areas and Material

The posting and labeling of radiation areas and radioactive material were reviewed with respect to criteria contained in 10 CFR 20.203, "Caution signs, labels, signals and controls" and IE Notice 84-82, "Guidance for Posting Radiation Areas". Various areas within the turbine building, reactor building and the drywell were inspected.



Within the scope of this review no violations were observed. Radiation levels and amount of radioactive material in the plant remains very low.

#### 8.0 Quality Control Surveillances

The licensee has an ongoing program for surveillance of health physics (HP) activities by Quality Control inspectors to ensure compliance with HP procedures. Between January 1986 and February 1987 a total of 27 surveillances were performed. The inspector discussed surveillance QC-86-471 completed in November 1986 with the Quality Control Division Manager, Radiological Controls Division Manager and one of the QC inspectors. This surveillance was selected for detailed review due to the number of significant "observations" recorded, the hazardous nature of the work (IRM replacement), and apparent disagreement between QC and HP regarding the validity of some observations. The remaining 26 other surveillances were also reviewed.

The inspector concluded that the QC Surveillance program continues to make a positive contribution towards improving the HP program. Management support for the surveillance program is good.

#### 9.0 Survey Instrument Control and Calibration

The licensee's program for the control and calibration of portable survey instruments was reviewed against criteria contained in the following:

- o 10 CFR 20.201 Surveys
- o ANSI N323-1978 "American National Standard Radiation Protection Instrumentation Test and Calibration"

Licensee Procedures:

- o 66.002.01 "Use of Instrument Calibration Unit"
- o 66.002.03 "Calibration Check of Instrument Calibration Unit"
- o 66.020.11 "Calibration of G.M. Detectors"
- o 66.010.11 "Calibration of Eberline MDL RO-7 High Range Survey System"

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

- o Discussion with cognizant personnel.
- o Tour of the Health Physics (HP) calibration facility.
- o Review of Condenser-"R" meter calibration certificates to verify NBS traceability.
- o Review of radioactive source decay curves for the sources used in the calibrator.
- o Observation of the performance of instrument source checks.
- o Review of instrument calibration and maintenance records.

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

The licensee has implemented a special training program to qualify technicians to perform calibrations and limited repairs of portable survey instrumentation. Currently, seven (7) technicians are qualified.

Calibrations are being performed utilizing Eberline 1000B and Shepard Model 89 calibrator, effectively covering the entire range of dose rates necessary. Vendor generated calibration curves are validated using Condenser-"R" chambers which are NBS traceable. The licensee has the capability to determine beta correction factors with measurements taken on a uranium slab. A moderated Californium 252 source allows for source checking the response of neutron instruments which are routinely calibrated by the University of Arkansas. Plutonium 239 and Americium 241 sources are available for alpha calibrations.

Instruments due for calibration are flagged and scheduled by computer weekly. Health Physics Operations collects the required instruments and delivers them to the calibration facility. Newly calibrated instruments are then returned to the storage lockers. The Health Physics Foreman for each section projects the instrument needs and ensures that the necessary instruments are available for use. An inspection of the instrument storage locker and accountability logs indicated an ample supply of instruments to support the Radiation Protection Program.

The overall Survey Instrument Program seems more than adequate for existing plant conditions and should be able to support any approved power ascension phases. The program's capability during a major refueling outage will be evaluated when appropriate.

#### 10.0 Exit Interview

The inspectors met with the personnel denoted in section 1.0 at the conclusion of the inspection on April 3, 1987. The scope and findings of the inspection were discussed at that time.