APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-382/87-08 License: NPF-38

Docket: 50-382

Licensee: Louisiana Power & Light Company (LP&L)
N-80
317 Baronne Street
New Orleans, Louisiana 70160

Facility Name: Waterford Steam Electric Station, Unit 3 (Wat-3)

Inspection At: Taft, St. Charles Parish, Louisiana (Wat-3 Site)

Inspection Conducted: April 28 through May 1, 1987

Inspector: H. D. Chaney, Radiation Specialist, Facilities Radiological Protection Section — Date: 6/17/87

Approved: B. Murray, Chief, Facilities Radiological Protection Section — Date: 6/17/87

Inspection Summary

Inspection Conducted April 28 through May 1, 1987 (Report 50-382/87-08)

Areas Inspected: Routine, unannounced inspection of the radiation protection program including: organization and management controls, external occupational exposure control and personnel dosimetry, internal exposure control and assessment, control of radioactive materials and contamination, surveys, and monitoring, facilities and equipment, and reportable events. An allegation concerning respiratory protection equipment was also reviewed.

Results: Within the areas inspected, one violation was identified (failure to maintain personnel exposure records, see paragraph 5). No deviations were identified. The allegation was not substantiated (see paragraph 6).

DETAILS

1. Persons Contacted

LP&L

*R. Barkhurst, Vice President, Nuclear (Site Director)
*J. R. McGaha, Acting Plant Manager
*S. Alleman, Assistant Plant Manager
*W. T. LaBonte, Radiation Protection Superintendent
P. V. Prasankumar, Technical Support Superintendent
*T. O. Gray, Operations Quality Assurance (QA) Supervisor
*R. P. Lee, QA Representative
*A. S. Lockhart, Manager, Nuclear Operations Support and Assessment (NOSA)
*D. Landeche, Health Physics (HP) Supervisor
*R. C. McLeandon, Dosimetry Supervisor
*G. E. Wuller, Operational Licensing
*P. T. Mairose, Operating Licensing Engineer
D. Hoel, HP Supervisor
*R. Kenning, Corporate HP
B. Goldman, ALARA Supervisor/Coordinator

Others

*J. G. Luehman, NRC Senior Resident Inspector
*K. H. Oh, Korea Advanced Energy Research Institute Observer, NRC Region IV
S. T. Clark, HP Consultant, NUMANCO
G. V. Policastro, HP Consultant, IRM

*Denotes personnel in attendance at the exit interview.

2. Inspector Observations

The following is an observation the NRC inspector discussed with the licensee during the exit interview on May 1, 1987. This observation is not a violation, deviation, unresolved item or open item. The observation was identified for licensee consideration for program improvement, but the observation has no specific regulatory requirement. The licensee stated that the observation would be reviewed.

Respiratory Protection Equipment

The licensee had accepted an appraisal, by another nuclear utility, of a vendor service that currently retests the licensee's respiratory filter cartridges. This appraisal did not provide sufficient detail on how the appraiser determined that the vendor was meeting the federal regulations and NRC guidance (30 CFR Part 11.140-11 and NUREG 0041, Section 10) for retesting of used filter cartridges.

3. Follow-up on Previous Inspection Findings

(Open) Bulletin 78-08: Radiation Levels During Fuel Transfer - This item was initially discussed in NRC Inspection Report 50-382/86-24. The licensee had determined from radiological surveys, conducted during spent fuel transfers, that the dose rates adjacent to tube shielding in the reactor containment annulus apparently exceeded the values in the Final Safety Analysis Report, Section 12.3.1.4. Due to the lack of sufficient data in the original surveys, the licensee stated that additional surveys will be conducted during the next scheduled refueling outage to confirm radiation levels. This item will remain open pending licensee completion of additional surveys.

4. Program Areas Inspected

The following program areas were inspected. Unless otherwise noted, the inspection was completed and revealed no violations, deviations, unresolved items, or open items. Notations after a specific inspection item are used to identify the following: I = item not inspected or only partially inspected; V = violation; D = deviation; U = unresolved item; and O = open item.

Procedure	Program Area and Inspection Requirements
83722	Organization and Management Controls
	02.01 - Organization 02.02 - Staffing - O (see paragraph 7) 02.03 - Radiation Protection Manager 02.04 - Identification and Correction of Weaknesses 02.05 - Audits and Appraisals
83724	External Occupational Exposure Control and Personal Dosimetry
	02.01 - Audits and Appraisals 02.02 - Changes 02.03 - Planning and Preparation for Outages 02.04 - Personal Dosimetry 02.05 - Administrative Controls 02.06 - Records, Reports, and Notification - V (see paragraph 5)
83524	External Occupational Exposure Control and Personal Dosimetry
	02.01 - Physical Controls 02.02 - Administrative Controls 02.03 - Personal Dosimetry

83725 Internal Exposure Control and Assessment

02.01 - Audits and Appraisals - I
02.02 - Changes
02.03 - Planning and Preparation for Outages - I
02.04 - Assessing Individual Intakes of Radioactive Materials - I
02.05 - Engineering and Administrative Controls - I
02.06 - Respiratory Protection Equipment - I
02.07 - Records, Reports, and Notifications - I

83525 Internal Exposure Control and Assessment

02.01 - Administrative Controls
02.02 - Engineering Controls
02.03 - Respiratory Protection Equipment
02.04 - Air Sampling for Assessing Individual Exposure
02.05 - Bioassays

83526 Control of Radioactive Materials and Contamination, Surveys, and Monitoring

02.01 - Area Radiation and Airborne Radioactivity Monitors - I
02.02 - Portable Survey, Sampling, and Contamination Monitoring Instruments - I
02.03 - Protective Clothing and Equipment - I
02.04 - Radioactive Material and Contamination Control - I
02.05 - In-Plant Surveys and Monitoring - I

83726 Control of Radioactive Materials and Contamination, Surveys, and Monitoring

02.01 - Audits and Appraisals
02.02 - Changes
02.03 - Surveys and Monitoring - O (see paragraph 8)
02.04 - Radioactive Materials and Contamination Controls

83727 Facilities and Equipment

02.01 - Facility Changes

92703 IE Bulletin, Confirmatory Letter, and Generic Letter Follow-up

02.01 - Bulletin Review - O (see paragraph 3)
02.02 - Confirmatory Action Letter Review

90713 Review of Periodic and Special Reports

02.01 - Report Content - 0 (see paragraph 10)
02.02 - Verify Test Results
02.03 - Ascertain Adequacy of Corrective Action - 0 (see paragraph 10)
02.04 - Determine Classification of Report Contents
02.05 - Document Review and Closeout

5. Violations

The licensee's personnel radiation exposure monitoring and exposure records system was reviewed to determine compliance with of 10 CFR Part 20.

10 CFR Part 20.401(a), "Records of Surveys, Radiation Monitoring, and Disposal," requires that records showing the radiation exposures of all individuals for whom personnel monitoring is required under 10 CFR Part 20.202. Such records shall be kept on Form NRC-5, in accordance with the instructions contained in that form. The doses entered on Form NRC-5 shall be for periods of time not exceeding one calendar quarter.

During the inspection of exposure records, the NRC inspector determined on April 29, 1987, that an individual's Form NRC-5 had not been updated with the appropriate whole body exposure for the calendar quarter exposure period July 1 through September 30, 1986. The NRC inspector verified that the individual had worn personnel monitoring equipment and that this equipment (thermoluminescent dosimeter - TLD) had been processed by the licensee on or about October 5, 1986. The TLD results indicated that the individual had received approximately 174 millirem (deep dose to the whole body) during the third quarter, 1986. The NRC inspector determined that the failure to enter the proper exposure results was apparently an isolated case, and that it occurred due to a personnel error during data entry into the computerized dose record data base by a health physics technician. The NRC inspector inspected other exposure records, but did not identify any similar problems.

The failure to maintain proper personnel exposure records is an apparent violation of 10 CFR Part 20.401(a). (382/8708-01)

6. Allegations

Respiratory Protection Program (4-86-A-125)

An anonymous alleger reported to on-site NRC employees, on December 4, 1986, that radiation work permit (RWP) 86-1249, "Remove/Replace 2A RCP Seal Cartridge," required the use of air-fed hoods, but that workers were wearing full face respirators. The alleger also stated that there was a lack of air-fed hoods. The alleger stated that face-shields were being used in lieu of respirators for some other jobs.

The NRC inspector reviewed RWP 86-1249, other similar RWPs, and interviewed HP personnel. Matters related to the radiation protection programs during the first refueling outage and the above allegation were discussed in NRC Inspection Report 50-382/86-24. NRC Inspection Report 50-382/86-24 was conducted during the same period (December 15-19, 1986) that the allegations occurred.

Based on the NRC inspector's review, the allegations were not substantiated. The licensee apparently used air-fed hoods for personnel comfort reasons and not for added protection factors. The NRC inspector determined from the review of RWPs that on December 2, 1986, the appropriate modifications were made to RWP 86-1249 requirements using the RWP Continuation Sheet, to authorize the use of full-face particulate filtered respirators in lieu of air-fed hoods. The allegation concerning the use of face shields instead of respirators could not be substantiated. The NRC inspector determined that the licensee has implemented a conservative respiratory protection program. In many situations, respiratory protection equipment was required on RWPs when post-job evaluation revealed that projected airborne concentrations were not present during the job.

No violations or deviations were identified

7. Personal Dosimetry Program

The NRC inspector conducted a review of the licensee's personnel dosimetry program. The licensee uses a state of the art, computerized, multiple element thermoluminescent dosimeter system. The TLD system is supplemented by the use of self-reading pocket dosimeters (SRD). The licensee's program is certified in all eight categories of the National Voluntary Laboratory Accreditation Program (NVLAP) for dosimetry processors.

The TLD is a four element Panasonic, model 802 AS. Two elements are natural lithium (^{n}Li-6) borate granules and two are calcium sulfate granules with 15 milligram per square centimeter (mg/cm^2) nominal thickness. The filtration over the four elements is as follows:

Element	Filtration (mg/cm^2)
1	14 (mylar)
2	320 (mylar, plastic)
3	320 (mylar, plastic)
4	960 (lead, plastic)

The licensee's badge (TLD and Holder) approximates the density of tissue. The badge has been calibrated to provide dose equivalents for gamma, beta, and neutron radiation levels. TLD calibration corrections (based on exposures to Strontium-90 and Thalium-204 sources) and processing algorithms have been validated for measuring beta doses, for beta energies

commonly found in the licensee's areas, at a tissue depth of 7mg/cm^2. The TLD has also been cross calibrated with the licensee's portable neutron survey instruments using a Californium-252 source, and with specially conducted inplant neutron surveys conducted during power operations.

The NRC inspector reviewed experience resumes' of personnel assigned to the dosimetry program. Personnel assignments agreed with their qualifications. Position descriptions are provided for areas of responsibility within the dosimetry organization. However, the NRC inspector noted that the position description for the position of Utility Engineer Nuclear, which is a supervisory position over the Dosimetry Supervisor, lacks specificity in that it states the position applies to any one of three functional areas (ALARA, environmental, and dosimetry) without giving specific functional responsibilities for any of the three areas. The licensee stated that position descriptions for HP functional areas are currently being revised. This is considered an Open Item pending licensee completion of position description revisions (382/8708-02).

No violations or deviations were identified.

8. Skin Contamination/Hot Particle Dose Assessment

The NRC inspector reviewed the licensee's program for the assessment of skin dose from radioactive contamination. The licensee had issued procedure HP-2-101 which addresses the assessment of skin dose due to radioactive contamination. The licensee's program was developed using several industry reference documents and NRC Inspection and Enforcement Information Notice (IEIN) 86-23. The licensee's assessment program included the following items:

- Contamination is measured primarily with a beta/gamma frisking probe (e.g., Eberline HP 210 equivalent) with a detection area of approximately 20 cm^2. The resulting readings (counts per minute) are converted to disintegrations per minute (10 percent efficiency), and averaged over an area of 20 cm^2.

- The assessment only evaluates the beta component of contamination; the gamma component exposure is regarded as providing a negligible dose contribution.

- The assessment is equated to the dose at the basal layer of skin depth (7 mg/cm^2).

- The licensee's procedure does not address evaluation of skin doses when contamination is measured with instruments other than a frisker, such as an ion chamber type instrument with a relatively large detector area (e.g., Eberline R-02).

The NRC inspector determined that the licensee's program did not address the following items regarding skin contamination assessment and control of small radioactive particles.

- The dose assessment procedure does not include a determination of whether skin contamination was the result of a one or more small particles, or uniform skin contamination over a large area.
- Skin dose is average over an area of 20 cm^2, instead of 1 cm^2.
- The gamma component is not included in the skin dose assessment.
- The procedure does not specifically require identification of the source and isotopic composition of the contamination.
- The procedure does not address dose determinations based on ion chamber survey meter results.

The above concerns are considered an Open Item pending further review by the licensee (382/8708-03).

The NRC inspector reviewed several incidents and assessments of employee skin contamination and determined that none of the occurrences appeared to involve hot particles or fuel fleas.

No violations or deviations were identified

9. NRC Inspection and Enforcement Information Notice Review

The NRC inspector reviewed the licensee's program for reviewing and implementing the information contained in NRC IEINs.

The licensee's actions concerning the the following IEINs were reviewed:

79-19	81-26	83-05	83-10	83-59	84-14	84-50
86-22	86-23	86-24	86-44			

The licensee's actions were considered acceptable except for IEIN 86-23 which is discussed in paragraph 8 of this report.

No violations or deviations were identified.

10. Followup on Licnesee Event Reporting (LER)

(Open) LER 382/87-003: Technician Wore Contaminated Clothing Off-Site Due to Failure to Follow Procedures - The event the LER describes occurred on January 21 through 22, 1987, and involved the multiple failures of the licensee's contamination/radioactive material control program to detect and control such materials. The NRC inspector also reviewed a draft investigation report (prepared by the Health Physics Group technical staff in response to the LER) that identified several probable causes and the violations of procedures. This draft report also described proposed

corrective actions to be taken to prevent a recurrence of the incident. The draft investigation report did not identify any potential TS violations nor did it discuss reviewing for such violations.

The NRC inspector determined from his review of the aforementioned LER and the licensee's draft investigation report that some Technical Specifications (procedural compliance and high radiation area control) and an operating license condition (control of escorted personnel) were also apparently violated during this incident. It was also determined that licensee personnel had not formally informed the QA Department of these procedural violations as required by the QA Manual.

The NRC inspector discussed with licensee personnel the apparent TS violations resulting from this incident and requested that they also review the incident for possible TS violations, such as:

- License Condition 2.E, implementation of the "Physical Security Plan"
- TS 6.12, "High Radiation Area" controls.

The NRC inspector noted that a QA Department surveillance (QS-87-007), dated February 25, 1987, involving radiological control point operations identified that several of the problems referenced in the LER and draft investigation were still uncorrected.

The NRC inspector also discussed with the licensee the methods to be use in tracking the apparent problems identified in the draft investigation report.

This LER is considered open pending further NRC review, upon completion of licensee corrective actions (382/87-003).

No violations or deviations were identified

11. Exit Interview

The NRC inspector met with the NRC resident inspector and licensee representatives denoted in paragraph 1 on May 1, 1987, and summarized the scope and findings of the inspection as presented in this report.