

U. S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF REGULATORY OPERATIONS

REGION I

RO Inspection Report No.: 50-219/73-06

Docket No.: 50-219

Licensee: Jersey Central Power and Light Co

License No. DPR-16

Madison Avenue at Punchbowl Road

Priority: \_\_\_\_\_

Morristown, New Jersey

Category: C

Location: Oyster Creek, Forked River, N.J.

Type of Licensee: 1930 MWT, BWR

Type of Inspection: Special, Announced

Dates of Inspection: April 10-11, 1973

Dates of Previous Inspection: March 13, 1973

Reporting Inspector: *F. S. Cantrell*

F. S. Cantrell  
Reactor Inspector

8/9/73  
Date

Accompanying Inspectors: *D. L. Capton for*  
Performing D. L. Pomeroy

8/22/73  
Date

*D. L. Capton for*

8/22/73  
Date

U. POTAPOVS  
Senior Metallurgical Engineer  
Technical Assistance Branch, RO

Other Accompanying Personnel: \_\_\_\_\_

Reviewed By: *G. W. Reinmuth for*

G. W. Reinmuth, Chief, Technical Assistance Branch

8/22/73  
Date

*D. L. Capton*  
D. L. Capton, Senior Reactor Inspector

8/22/73

## INSPECTION REPORT

### Background

The fuel for the Oyster Creek Spring 1973 refueling was made by EXXON Nuclear Company (ENC) (formerly Jersey Nuclear). The original core and fuel for previous reloads (Fall '71, Spring '72) was made by General Electric Company, except for 4 ENC bundles that were installed during the Spring '72 outage.

The licensee's application<sup>1</sup> for this reload contains details of the mechanical, thermal-hydraulic, and nuclear characteristics of this fuel. It also includes<sup>2</sup> an outline of the ENC Q/A program for fabrication of this fuel and the Q/A activities of the applicant relative to this fuel. The applicant (Jersey Central Power & Light Company - JCP&L) delegated the Q/A-Q/C responsibility for this reload fuel to their sister organization General Public Utilities Service Corporation (GPUSC). Both JCP&L and GPUSC are subsidiaries of GPU. This report summarizes our review of the activities performed by GPUSC personnel in discharging this Q/A-Q/C responsibility.

### Scope of Inspection

On April 10-11, 1973, D. Pomeroy and U. Potapovs examined the GPUSC activities relating to their overall quality assurance effort in the procurement of Oyster Creek reload fuel from EXXON Nuclear Company. The inspection consisted of: 1) A review of product specifications and processing control requirements for the reload fuel, 2) A review of the documented results of the GPUSC audits of EXXON Nuclear and, 3) discussion with GPUSC personnel of their Q/A program, the design of the ENC fuel and the ENC manufacturing processes.

### Personnel Contacted (GPUSC)

B. H. Cherry - Manager, Nuclear Fuels  
E. W. Allen - Quality Assurance  
R. Denning - Nuclear Fuels Engineering

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<sup>1</sup>Facility Change Request No. 4 Docket No. 50-219 dated January 18, 1973. Also see Supplement No. 1, dated February 22, 1973 and Supplement No. 2 dated April 4, 1973

<sup>2</sup>Attachment No. 1 to Change Request No. 4.

Management Interview

During the inspection the items noted in the "significant findings" section, (below) were discussed with the personnel contacted (Listed above). No commitments were solicited nor received.

Significant Findings

1. General

The Oyster Creek third reload fuel was supplied by the EXXON Nuclear Company. The reload fuel consists of 148 bundles.

Four lead assemblies (UO<sub>2</sub> fuel) were produced earlier and were inserted in the Oyster Creek core during the Spring of 1972. Although the fuel bundle design appears geometrically similar to the original (GE) fuel, differences were noted in the cladding thickness, pellet configuration and processing techniques.

The reload fuel has thicker cladding and dished pellets with a L/D ratio of less than one. The cladding I.D. surfaces are not autoclaved. Similar to the original loading, the ENC fuel bundles are designed to accommodate disassembly and reconstitution.

It was noted that reload fuel will include 200 archive rods with a thoroughly documented material and processing history to aid in continuing fuel performance evaluation.

2. Q/A - Q/C Program

A review of the documented results of the GPUSC activities in auditing the fuel supplier and his subvendors indicated that:

- a) The licensee's program was as stated in his application.
- b) An effective and well documented audit program was implemented and,
- c) The program appeared to meet the requirements of 10 CFR 50, Appendix B.

The program was conducted with considerable support from consultants (MPR Associates, Inc. and S. M. Stroller Corp.). Their use appeared to supplement the capabilities of GPUSC in the fuel manufacturing area.

The licensee's program was effective in causing a number of improvements to be made in ENC Q/C program. These modifications included, for example:

- a) Changes in the ENC Q/A organization to more clearly separate Q/A responsibilities from production responsibilities.
- b) Improvements in the statistical bases for moisture and total gas samples.
- c) Updating of written test procedures.
- d) Improvements in the control of the storage and handling of  $UO_2$  powder and pellets.
- e) Requiring changes in a subvendor's Q/C program prior to accepting him as a supplier.

The licensee identified a problem in his early audits in that the documentation of follow-up action by ENC was difficult to trace. This was resolved by identifying specific items in the GPUSC audit reports by number and requesting ENC to document the resolution by reference to that number.