

March 24, 1997

Mr. Michael B. Roche  
Vice President and Director  
GPU Nuclear Corporation  
Oyster Creek Nuclear Generating Station  
P.O. Box 388  
Forked River, NJ 08731

SUBJECT: OYSTER CREEK - ISSUANCE OF AMENDMENT RE: SURVEILLANCES OF THE STATION BATTERIES (TAC NO. M97421)

Dear Mr. Roche:

The Commission has issued the enclosed Amendment No. 189 to Facility Operating License No. DPR-16 for the Oyster Creek Nuclear Generating Station, in response to your application dated November 27, 1996.

The amendment changes the acceptance criteria for the individual cell voltage from 2.0v to 2.09v, the frequency for battery specific gravities to implement the recommendations of IEEE 450-1995, deletes surveillance 4.7.B.4.d, and adds a clarifying phrase "while on a float charge..." where appropriate.

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

(Original Signed By)

Ronald B. Eaton, Senior Project Manager  
Project Directorate I-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-219

Enclosures: 1. Amendment No. 189 to DPR-16  
2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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GPU Nuclear Corporation  
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Sincerely,

A handwritten signature in black ink, appearing to read "Ronald B. Eaton".

Ronald B. Eaton, Senior Project Manager  
Project Directorate I-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

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M. Roche  
GPU Nuclear Corporation

Oyster Creek Nuclear  
Generating Station

cc:

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

GPU NUCLEAR CORPORATION

AND

JERSEY CENTRAL POWER & LIGHT COMPANY

DOCKET NO. 50-219

OYSTER CREEK NUCLEAR GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 189  
License No. DPR-16

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by GPU Nuclear Corporation, et al. (the licensee) dated November 27, 1996, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-16 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 189, are hereby incorporated in the license. GPU Nuclear Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of issuance, to be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Patrick D. Milano, Acting Director  
Project Directorate I-3  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: March 24, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 189

FACILITY OPERATING LICENSE NO. DPR-16

DOCKET NO. 50-219

Replace the following pages of the Appendix A, Technical Specifications, with the attached pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove

4.7-1  
4.7-2  
4.7-3  
4.7-4

Insert

4.7-1  
4.7-2  
4.7-3  
4.7-4

#### 4.7 AUXILIARY ELECTRICAL POWER

Applicability: Applies to surveillance requirements of the auxiliary electrical supply.

Objective: To verify the availability of the auxiliary electrical supply.

Specification:

A. Diesel Generator

1. Each diesel generator shall be started and loaded to not less than 20% rated power every two weeks.
2. The two diesel generators shall be automatically actuated and functionally tested during each refueling outage. This shall include testing of the diesel generator load sequence timers listed in Table 3.1.1.
3. Each diesel generator shall be given a thorough inspection at least once per 24 months during shutdown.
4. The diesel generators' fuel supply shall be checked following the above tests.
5. The diesel generators' starting batteries shall be tested and monitored the same as the station batteries, Specification 4.7.b.

B. Station Batteries

1. Weekly surveillance will be performed to verify the following:
  - a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.
  - b. The designated pilot cell voltage is greater than or equal to 2.09 volts for Station Battery B and 2.0 volts for Station Battery C while the respective battery is on a float charge.
  - c. The overall battery voltage is greater than or equal to 125.4 volts for Station Battery B and 120 volts for Station Battery C while the respective battery is on a float charge. (Diesel battery; 112 volts).
  - d. The pilot cell specific gravity, corrected to 77° F, is greater than or equal to 1.190.

2. Quarterly Surveillance will be performed to verify the following:
  - a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.
  - b. The voltage of each connected cell is greater than or equal to 2.09 volts for Station Battery B and 2.0 volts for Station Battery C while the respective battery is on a float charge.
  - c. The specific gravity, for each tenth cell, is greater than or equal to 1.190 when corrected to 77° F. The specific gravity and electrolyte temperature of every tenth cell (Diesel; every fourth cell) shall be recorded for surveillance review.
  
3. Annual surveillance will be performed to verify the following:
  - a. The active metallic surface of the plates shall be fully covered with electrolyte in all batteries.
  - b. The voltage of each connected cell is greater than or equal to 2.09 volts for Station Battery B and 2.0 volts for Station Battery C while the respective battery is on a float charge.
  - c. The specific gravity for each cell is greater than or equal to 1.190 volts when corrected to 77° F. The electrolyte temperature and specific gravity for every cell shall be recorded for surveillance review.
  
4. At least once per 12 months, the diesel generator battery capacity shall be demonstrated to be able to supply the design duty loads (diesel start) during a battery service test.
  
5. At least once per 24 months during a shutdown, the following tests will be performed to verify battery capacity.
  - a. Battery capacity shall be demonstrated to be at least 80 % of the manufacturers' rating when subjected to a battery capacity discharge test to be considered operable.

- b. Any battery which is demonstrated to have less than 85 % of manufacturers ratings during a capacity discharge test shall be replaced during the subsequent refueling outage.
- c. Station battery capacity shall be demonstrated to be able to supply the design duty cycle loads during a battery service test.

Basis: The biweekly tests of the diesel generators are primarily to check for failures and deterioration in the system since last use. The manufacturer has recommended the two week test interval, based on experience with many of their engines. One factor in determining this test interval (besides checking whether or not the engine starts and runs) is that the lubricating oil should be circulated through the engine approximately every two weeks. The diesels should be loaded to at least 20% of rated power until engine and generator temperatures have stabilized (about one hour). The minimum 20 % load will prevent soot formation in the cylinders and injection nozzles. Operation up to an equilibrium temperature ensures that there is no over-heat problem. The tests also provide an engine and generator operating history to be compared with subsequent engine-generator test data to identify and correct any mechanical or electrical deficiency before it can result in a system failure.

The test during refueling outages is more comprehensive, including procedures that are most effectively conducted at that time. These include automatic actuation and functional capability tests, to verify that the generators can start and assume load in less than 20 seconds and testing of the diesel generator load sequence timers which provide protection from a possible diesel generator overload during LOCA conditions. Thorough inspections will detect any signs of wear long before failure.

The manufacturer's instructions for battery care and maintenance with regard to the floating charge, the equalizing charge, and the addition of water will be followed. In addition, written records will be maintained of the battery performance. Station batteries will deteriorate with time, but precipitous failure is unlikely. The station surveillance procedures follow the recommended maintenance and testing practices of IEEE STD. 450 which have demonstrated, through experience, the ability to provide positive indications of cell deterioration tendencies long before such tendencies cause cell irregularity or improper cell performance.

The battery service test is a special capacity test to demonstrate the capability of the battery to meet the system design requirements. The Oyster Creek design duty cycle loads are determined by a LOCA subsequent to a loss of AC power. The battery performance test is a capacity test on the battery to check it against the manufacturer's specified capacity and is used to determine when the battery has arrived at the end of its life.

IEEE Standard 450-1975 recommends battery performance testing once per five years. IEEE Standard 308-1974 recommends battery performance testing once per three years. The Oyster Creek Technical Specifications require a performance test once per two years. Both IEEE Standards recommend decreasing the surveillance interval to annually when battery service life exceeds 85%.

The diesel generator batteries are challenged every two weeks to perform the 20% load test. This effectively performs an uninstrumented battery service test. The biweekly diesel start, when combined with the annual battery service test, provides an extensive amount of data on battery performance characteristics. This test data negates the need to lower the battery performance test interval from biennial to annually.

The station batteries are required for plant operation, and performing the station battery performance test requires the reactor to be in COLD SHUTDOWN. The guidance in IEEE 450-1975 would result in 3 performance tests to reach 85 % service life, followed by 3 performance tests to complete battery life. The guidance in IEEE 308-1974 would result in 5 performance tests to reach 85 % service life, followed by 3 performance tests to complete battery life. The Oyster Creek Technical Specifications require 8 performance tests to reach 85 % service life, followed by 2 performance tests to complete battery life. The requirement which would result in a reactor shutdown for the sole purpose of performing a battery performance test during the last 15 % of battery life cannot be justified to increase battery test performance from 2 to 3 in a 3-year period. Additionally, the increase in battery performance testing during the first 85 % of battery service life would result in a greater level of battery reliability by identifying, and causing to be corrected, small anomalies in cell performance thereby reducing battery failure probability.

The requirement to replace any battery in the next refueling outage which demonstrates less than 85% of manufacturers capacity during a capacity discharge test provides additional assurance of continued battery operability.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 189

TO FACILITY OPERATING LICENSE NO. DPR-16

GPU NUCLEAR CORPORATION AND

JERSEY CENTRAL POWER & LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

**1.0 INTRODUCTION**

By letter dated November 27, 1996, the GPU Nuclear Corporation (the licensee) submitted a request for changes to the Oyster Creek Nuclear Generating Station Technical Specifications (TSs). The requested amendment would change the acceptance criteria for the individual cell voltage from 2.0v to 2.09v, change the surveillance frequency for battery specific gravities to implement the recommendations of IEEE 450-1995, delete surveillance requirement 4.7.B.4.d, and add a clarifying phrase "while on a float charge..." where appropriate.

During the refueling outage 14R of Oyster Creek in 1992, GPU replaced the B station battery with a round-cells low-specific gravity AT&T (now Lucent Technologies) battery. The acceptance criteria for the existing battery individual cell voltage of 2.0 volts do not reflect the recommendation of the manufacturer Lucent Technologies; therefore, GPU is requesting the TS changes.

Additionally, the frequency of the specific gravities surveillance of the battery would be revised to reflect the recommendations of IEEE 450-1995, "Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications."

TS 4.7.B.4.d. related to battery low voltage annunciators verification every 24 months would be deleted as present TS battery inspection and testing requirements are adequate to verify battery operability and condition.

**2.0 EVALUATION**

In its submittals, GPU confirmed that the new round-cell low-specific gravity battery installed during Refueling Outage 14R at Oyster Creek has adequate capacity for future load. The usual individual cell voltage (ICV) on a float charge for this battery is 2.2 volts. However, the manufacturer recommends the low limit of the ICV to be 2.09 volts while on float charge. This value is higher than the existing 2.0 ICV in the TS. The 2.09 volts limit would

require actions at a voltage higher than the present TS and it is therefore more conservative. The staff finds this change acceptable.

The present TS requires quarterly verification of the specific gravity of each cell and recording the temperature of each fifth cell. The requested change is to test and record quarterly the specific gravity and temperature of every tenth cell. The TS change reflects the sampling of the cells as recommended by IEEE 450-1995, and therefore, the staff finds this change acceptable.

The existing TS 4.7.B.4. requires that at least once per 24 months during shutdown certain tests be performed to verify the battery capacity. Subsection (d) of TS 4.7.B.4 also requires verification of the battery annunciators low voltage pickup and reset values. The licensee is requesting removal of this annunciator surveillance. The present voltage indication in the control room and the existing and revised TS are adequate to verify the operability of the battery. Specifically, low voltage indication and alarm functions in the control room are still maintained to alert the operators of malfunction, and battery capacity is verified by periodic tests. Therefore, the staff finds the deletion of TS 4.7.B.4.d acceptable.

The Basis section did not require an update to effect this TS change.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Jersey State official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (62 FR 6576). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

**5.0 CONCLUSION**

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

**Principal Contributor: Saba N. Saba**

**Date: March 24, 1997**