

December 16, 1986

Docket No. 50-219

Mr. P. B. Fiedler
Vice President & Director
Oyster Creek Nuclear Generating Station
Post Office Box 388
Forked River, New Jersey 08731

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E. Jordan
B. Grimes
J. Partlow
N. Thompson
J. Donohew
C. Jamerson
ACRS (10)

Dear Mr. Fiedler:

SUBJECT: INTEGRATED PLANT SAFETY ASSESSMENT REPORT SECTION 4.32 - BATTERY
STATUS ALARMS (TAC 49410)

Re: Oyster Creek Nuclear Generating Station

In Section 4.32 of the Integrated Plant Safety Assessment Report (IPSAR) for Oyster Creek, NUREG-0822, the staff concluded that the commitments made by the licensee to install alarms were acceptable and that these alarms, with other battery indications that exist, will have the dc power system bus voltage monitoring annunciation for Oyster Creek meeting the current criteria. By letters dated November 16 and 29, 1982, GPU Nuclear Corporation (the licensee) provided an acceptable schedule to complete the necessary modifications by the current Cycle 11 Refueling (Cycle 11R) outage and interim measures to be followed until the modifications were completed. As discussed in the enclosed Safety Evaluation, the staff concludes that the licensee's responses are adequate to resolve this IPSAR section.

The resolution of the Systematic Evaluation Program topic involves the installation of battery status alarms in the current Cycle 11R outage and the revision of a plant procedure to add the check of the resistance through the battery breakers. You are requested to inform the staff of any delay in the installation of the alarms and when the procedures have been revised and the check will be made.

Sincerely,



Jack N. Donohew, Jr., Project Manager
BWR Project Directorate #1
Division of BWR Licensing

Enclosure:
Safety Evaluation

cc: See next page

8612230100 861216
PDR ADOCK 05000219
P PDR

DBL:BWD1
CJamerson
10/17/86

DBL:BWD1
JDonohew:jg
10/18/86

DBL:BWD1
JZwolinski
12/16/86

DPLB:PBIA
CGrimes
10/18/86

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Dear Mr. Fiedler:

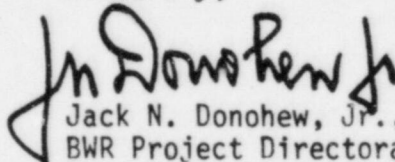
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Mr. P. B. Fiedler
Oyster Creek Nuclear Generating Station

Oyster Creek Nuclear
Generating Station

cc:

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

GPU NUCLEAR CORPORATION

JERSEY CENTRAL POWER AND LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

IPSAR SECTION 4.32, DC POWER SYSTEM BUS

DOCKET NO. 50-219

1.0 INTRODUCTION

The Integrated Plant Safety Assessment Report (IPSAR) for Oyster Creek is the documentation of the staff review of the plant under the staff's Systematic Evaluation Program (SEP). The IPSAR is NUREG-0822 dated January 1983. SEP Topic VIII-3.B, DC Power System Bus Voltage Monitoring and Annunciation, which is IPSAR Section 4.32, is concerned with the staff's review to assure the design adequacy of the dc power system battery and bus voltage monitoring and annunciation schemes such that the operator can (1) prevent the loss of an emergency dc bus; or (2) take timely corrective action in the event of loss of an emergency dc bus. The staff has reviewed the dc power system battery, battery charger, and bus voltage monitoring and annunciation design of Oyster Creek with respect to dc power system operability status indication to the operator.

2.0 CRITERIA

10 CFR 50.55(h), through IEEE Std. 279-1971, and General Design Criteria (GDC) in Appendix A to 10 CFR Part 50 (GDC 2, 4, 5, 17, 18, and 19), as implemented by Standard Review Plan (SRP) Section 8.3.2, Regulatory Guides 1.6, 1.29, 1.32, 1.47, 1.75, and 1.118, and Branch Technical Position (BTP) ICSB-21, require that the control room operator be given timely indication of the status of the batteries and their availability under accident conditions.

As a minimum, the following indications and alarms of the Class 1E dc power system(s) status shall be provided in the control room:

- Battery current (ammeter-charge/discharge)
- Battery charger output current (ammeter)
- dc bus voltage (voltmeter)
- Battery charger output voltage (voltmeter)
- Battery high discharge rate alarm
- dc bus undervoltage and overvoltage alarm
- dc bus ground alarm (for ungrounded system)
- Battery breaker(s) or fuse(s) open alarm
- Battery charger output breaker(s) or fuse(s) open alarm
- Battery charger trouble alarm (one alarm for a number of abnormal conditions which are usually indicated locally).

3.0 DISCUSSION

In the staff's safety evaluation (SE) dated June 29, 1981, it was stated that two 125 V batteries (B and C), four battery chargers, and two dc buses comprise the Oyster Creek Class 1E dc power systems. Control room indication consists of bus voltmeters (two), charger voltmeters (two), a bus ground alarm (bus B), a bus ground detector light (bus C), battery charger failure alarms (four), and a "Normal Supply Off" annunciator. The Oyster Creek control room had no indication of battery current, battery charger current, battery high discharge rate, bus under/overvoltage, battery breaker status, or charger breaker status. Therefore, the Oyster Creek dc power systems monitoring was not in compliance with current licensing criteria.

In Section 4.32 of the Oyster Creek IPSAR, the staff stated that the licensee has committed to install alarms for the B and C battery breaker open, C battery charger open, and C battery ground in the control room. The staff concluded in the IPSAR that these alarms were acceptable and that with other battery indications listed above the plant dc power system bus voltage monitoring and annunciation will meet current criteria. The licensee was to provide a schedule to complete these modifications.

By the licensee's letters dated November 16 and 29, 1982, it was stated that the necessary modifications would be completed by the end of the current Cycle 11 Refueling (Cycle 11R) outage and that, for an interim measure, there would be periodic inspections of the battery systems after the Cycle 10R outage. In its SE dated June 22, 1983, the staff, however, was concerned with the ability of the licensee to monitor the battery charging current with sufficient accuracy to assure that the battery has a low resistance connection to the bus. The staff noted that a current shunt that would provide for easy charging current measurement may be too large for full load operation. Therefore, the staff requested a description of how the battery connection integrity will be monitored by the instrumentation that will be part of the final modifications.

4.0 EVALUATION

In the IPSAR Section 4.32 and the SE dated June 22, 1983, the staff concluded that the addition of the battery status alarms to be installed in the Cycle 11R outage were sufficient for the staff to conclude that Oyster Creek met the current criteria for dc power system bus voltage monitoring and annunciation. In its letter dated June 22, 1983, the staff discussed the licensee's interim measures until the alarms were installed and raised a concern about the ability of the licensee to monitor the battery charging current with sufficient accuracy. This was one of the interim measures proposed by the licensee.

The licensee's responses to the staff's concern in the letter dated June 22, 1983, were its letters dated June 7, 1985 and April 4, 1986 and the meeting at the site on June 16 and 17, 1986, on the status of licensing actions. The meeting summary is dated August 1, 1986. In these responses, the licensee stated the following:

- (1) Procedures (tour sheets) require that every shift it is verified that the breaker, between the dc bus and dc batteries, is closed.

- (2) Procedures (634.2.002/3) require a weekly and monthly check of the battery cell specific gravity, which indicates if the batteries need to be charged, and the batteries recharged if it is needed.
- (3) Procedures (643.2.002/3) require weekly and monthly visual inspection of battery cell-to-cell and terminal connection, cell plates and cell condition.
- (4) Procedure (634.2.001) requires a battery capacity test and a cell-to-cell resistance test every 18 months. The licensee stated that an additional check of the resistance through the breaker can be added to this procedure.
- (5) The breakers are a molded case breaker. They are hermetically sealed in a cabinet which the manufacturer recommends not opening.

The procedures listed above meet the required surveillance of batteries in the BWR Standard Technical Specifications, NUREG-0213, Revision 3. These procedures provide assurance that the batteries and its connections are in good condition and able to perform their intended function. The licensee proposed check of the resistance through the breaker would determine directly if the connection from the batteries to the bus is not a low resistance path.

5.0 CONCLUSION

Based on IPSAR Section 4.32 and the staff's SE dated June 22, 1983, the staff concludes that the addition of the battery status alarms to be installed in the Cycle 11R outage are sufficient to have the dc power system bus voltage monitoring and annunciation meet current criteria. These alarms are listed in Section 3.0. Based on the licensee's procedures discussed in Section 4.0 above and its proposed check of the resistance through the breakers, the staff concludes that its concern is resolved. Therefore, the staff concludes that the licensee has satisfactorily resolved this SEP Topic.

6.0 REFERENCES

- (1) Letter from D. M. Crutchfield (NRC) to I. R. Finfrock, Jr. (JCP&L), SEP Topic VIII-3.B, dated June 29, 1981.
- (2) Integrated Plant Safety Assessment Report for Oyster Creek, NUREG-0822, dated January 1983.
- (3) Letter from D. M. Crutchfield (NRC) to P. B. Fiedler (GPUN), Integrated Assessment Followup Item, dated June 22, 1983.
- (4) P. B. Fiedler (GPUN) to J. A. Zwolinski (NRC), SEP Topic No. VIII-3.B, dated June 7, 1985.
- (5) P. B. Fiedler (GPUN) to J. A. Zwolinski (NRC), SEP Topic VII-1.A and SEP Topic VIII-3.B, dated April 4, 1986.

- (6) Meeting of June 16 and 17, 1986, at Oyster Creek site, summary dated August 1, 1986.

Principal contributor: J. Donohew

Dated: December 16, 1986.