

APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-298/84-26

License: DPR-46

Docket: 50-298

Licensee: Nebraska Public Power District (NPPD)  
P. O. Box 499  
Columbus, Nebraska 68601

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: Cooper Nuclear Station, Nemaha County, Nebraska

Inspection Conducted: November 13-16, 1984

Inspector: D. L. DuBois 12/13/84  
D. L. DuBois, Senior Resident Inspector (SRI) Date

Approved: J. P. Jaudon 12/13/84  
J. P. Jaudon, Chief, Project Section A, Date  
Reactor Project Branch (RPB) 1

Inspection Summary

Inspection Conducted November 13-16, 1984 (Report 50-298/84-26)

Areas Inspected: Special unannounced inspection in the area of Technical Specification required surveillance testing of 125 volt and 250 volt station batteries. The inspection involved 25 inspector-hours by one NRC inspector.

Results: Within the area inspected, two violations were identified (failure to demonstrate operability of station batteries, paragraph 2; failure to have procedures for conducting battery charges, paragraph 2).

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DETAILS

1. Persons Contacted

Principal Licensee Personnel

- \*D. Schaufelburger, NPPD General Manager
- \*L. Kuncl, Assistant General Manager - Nuclear
- \*P. Thomason, Division Manager of Nuclear Operations
- \*R. Wilbur, Division Manager - Nuclear Services
- \*G. Trevors, Division Manager - Quality Assurance
- \*J. Pilant, Manager, Technical Staff, Nuclear Power Group
- \*V. Wolstenholm, Quality Assurance Manager
- \*J. Meacham, Technical Manager
- \*D. Whitman, Technical Staff Manager
- \*L. Roder, Administrative Services Manager
- \*J. Weaver, Nuclear Licensing and Safety Manager
- \*R. Brungardt, Operations Supervisor
- \*P. Ballinger, Operations Engineering Supervisor

The NRC inspector also interviewed other licensee personnel.

NRC Personnel

- \*N. Grace, Director, DQASIP, IE
- \*P. McKee, Chief, ORPB, IQASIP, IE
- \*E. Johnson, Chief, Reactor Project Branch 1, RIV
- \*J. Jaudon, Chief, Project Section A, RPB1, RIV
- \*L. Wheeler, PAT Team Leader, PAS, IE
- \*L. Callan, Chief, PAS, IE

\*Indicates presence at the enforcement conference on November 16, 1984.

2. Surveillance Testing of 125 Volt and 250 Volt Station Batteries

The SRI reviewed the results of licensee surveillance tests of the 125 volt and 250 volt station batteries in order to determine if the licensee has demonstrated operability of these components.

The 125 volt and 250 volt batteries were manufactured by Exide. The battery model numbers are FHGS ironclad 23 and 19 respectively. Technical Specification surveillance requirements for the batteries include a rated load discharge test once each operating cycle, quarterly measurements of specific gravity on all cells and temperature measurements of every sixth cell, and weekly measurements of the specific gravity and temperature of pilot cells. The tests and measurements are designed to show that the batteries have full capacity capability and that they are in a fully charged state.

Rated load tests were last conducted May 5, 6, 7, and 8, 1983. The tests were accomplished in accordance with licensee procedure 6.3.15.2, "Station Battery Rated Load Test," Revision 7, dated August 3, 1981. A comparison of information provided in the manufacturer's technical manual and procedure 6.3.15.2 is as follows:

<u>Battery</u>	<u>Minimum Required Discharge Rate (amps)</u>		<u>Capacity Measured For 8 Hours (ampere-hours)</u>	
	<u>Vendor Manual</u>	<u>Procedure</u>	<u>Vendor Manual</u>	<u>Procedure</u>
125v	209a	104a	1672ah	803ah
250v	171a	138a	1368ah	1100ah

The above information indicates that the licensee's procedure will only determine a battery capacity of approximately 50% and 80%, for the 125 volt and 250 volt batteries respectively. The general characteristics of lead acid storage batteries, as described in IEEE-450 (1975), are such that, at the end of life, battery capacity decreases rapidly. A capacity of 80% or less is considered replacement criteria. Thus, the SRI concluded that the licensee's battery tests did not measure the true state of the batteries and could not detect a degraded battery prior to failure. This failure to demonstrate operability of the batteries is an apparent violation.

The SRI verified that the licensee has not maintained records of battery charges. Thus, it could not be determined when the batteries were returned to an operable status following the discharge tests that were conducted. This failure to demonstrate operability of the batteries is an apparent violation.

Measurements of specific gravities on all battery cells is a method by which the state of charge (hence the operability) is demonstrated. IEEE 450 (1975) is an NRC endorsed standard for storage batteries. This standard states that specific gravities should be corrected for temperature and electrolyte level. It also states that the average of corrected specific gravities should be compared to the acceptance test average of corrected specific gravities. If the average specific gravity is more than .010 less than the acceptance test average value, an equalizing charge is required to assure that the battery is fully charged. The vendor's technical manual has similar requirements. The SRI noted that licensee procedure 6.3.15.1, "Station Battery Quarterly Check," Revision 12, dated September 4, 1984, does not require any corrections of specific gravity for either temperature or electrolyte level. Moreover, this procedure states, on the various data sheets, that minimum acceptable specific gravity is 1.190. This is a significantly lesser requirement than the .010 average drop requirement delineated above. The SRI concluded that licensee procedures did not provide instructions for the calculation of technically sound values of specific gravity and therefore, battery operability was not demonstrated. Review of licensee records and

procedures indicated that specific gravity had not been corrected for electrolyte temperature and level during the period January 20, 1982 through November 13, 1984. This failure to demonstrate operability of the batteries is an apparent violation.

In summary, the three examples of apparent violations given above, indicates a failure of the licensee to adequately demonstrate operability of the 125 volt and 250 volt station batteries. This failure constitutes an apparent violation. (298/8426-01)

The SRI further noted that there was not a licensee procedure for conducting battery charges. Since battery charging is an activity affecting quality, the failure to have a procedure to control battery charging is an apparent violation. (298/8426-02)

4. Enforcement Conference

On November 16, 1984, an enforcement conference was held at the CNS to discuss the findings of this special inspection. The licensee was represented by the persons noted in paragraph 1. Mr. E. H. Johnson, Chief, Reactor Project Branch 1, Region IV, and other members of the USNRC Region IV staff noted in paragraph 1, represented the Commission.