



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

November 25, 1991

Docket No. 50-285

LICENSEE: Omaha Public Power District

FACILITY: Fort Calhoun Station, Unit 1

SUBJECT: SUMMARY OF MEETING HELD ON NOVEMBER 13 AND 14, 1991, WITH OMAHA PUBLIC POWER DISTRICT TO DISCUSS EMERGENCY DIESEL GENERATOR OPERABILITY DURING ELEVATED AMBIENT TEMPERATURE PERIODS

The staff met with the Omaha Public Power District (the licensee) on November 13, 1991, at the Corporate offices in Omaha and on November 14, 1991, at the Fort Calhoun site to discuss the diesel generator capability to carry full anticipated loads during summer periods with high ambient temperatures. The list of meeting attendees is enclosed.

The Fort Calhoun diesel generators (DG.) are located in separate rooms and situated such that air intake to the turbochargers can be relatively hot on days when the outside temperatures exceed 100° F. With elevated turbocharger intake temperatures and high jacket water cooling temperatures, the DGs may not be capable of operation. The licensee has been evaluating a number of solutions to the problem. In lieu of ducting cool air to the turbochargers, OPPD has adopted an approach which includes a number of DG enhancements, heat balance/DG performance calculations, and tests to substantiate the approach. The staff's review of the licensee's submittals had progressed to a point where independent calculations by the staff based on information from the licensee did not agree with the licensee's conclusions. The meeting was necessary to resolve the differences.

The licensee had identified a number of enhancements for the DGs, but the submittals address only a few. We have now determined that the licensee evaluated, adopted, and modified some of the enhancements. The most effective changes have been to steam clean the jacket water radiator and replace the glycol coolant with water for the high temperature periods. The licensee will supplement its submittals with a discussion of the remaining modifications.

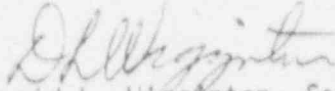
The test data and reports were not clear on the loads on the DGs during the tests and some footnote information and location of temperature readings mislead the staff. A review of the test documents and discussions corrected these issues. The licensee also discontinued the use of installed thermocouple readings for fan inlet temperature and went to exclusive use of a hand-held instrument for the readings. The licensee presented a sound and rational basis for the change, but the rationale was not recorded; the thermocouples were mislocated in an area of high backwash from the radiators, giving inaccurate readings for air inlet to the fans. The licensee will document the reasons and submit to the NRC.

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The licensee plans additional enhancements at the upcoming outage to replace the eight-blade fans with 12-blade fans and to reduce the fan tip clearance thereby reducing the fan backwash. Additional tests are planned to confirm the benefits of these enhancements. Discussions were held with the Resident Inspector in anticipation of the interest in these additional enhancements and tests.

The licensee's calculations and approach require that the jacket water coolant will be water during high temperature periods and that periodic cleaning of the radiators' external surfaces must be done to achieve the necessary heat transfer efficiency. The licensee may subsequently investigate the use of glycol coolant solution for the summer months and a separate staff review may be required. The meeting resolved the outstanding issues for the staff's review. The licensee will submit the additional information, explanations, and corrections necessary to support its calculational approach.



David L. Wigginton, Senior Project Manager
Project Directorate IV-1
Division of Reactor Project III/IV/V
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

Omaha Public Power District

Fort Calhoun Station, Unit No. 1

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Enclosure

MEETING BETWEEN NRC STAFF AND OMAHA PUBLIC POWER DISTRICT
FORT CALHOUN STATION, UNIT 1

DIESEL GENERATOR LOADING - AIR STUDIES

November 13, 1991

MEETING PARTICIPANTS

<u>NAME</u>	<u>ORGANIZATION</u>
D. Wigginton	NRR/PD4-1
M. Widmann	NRR/SPLB
T. Therkildsen	OPPD/Supv. Nuclear Licensing
R. L. Phelps	OPPD/Mgr. Design Engineering
K. D. Miller	OPPD
R. F. Mehaffey	OPPD/Principle Engineer DEN Elec.
Ed Murphy	SAIC/AMSEC
Dan Borcyk	OPPD/Design Engineering
Merl Core*	OPPD
R. Ronning*	OPPD/Systems Engineering

* Part-time

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ORIGINAL SIGNED BY
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Enclosure:
As stated

cc w/enclosure:
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