Omaha Public Power District

1623 HARNEY ■ OMAHA, NEBRASKA 68102 ■ TELEPHONE 536-4000 AREA CODE 402

August 17, 1982
LIC-82-283

Mr. J. T. Collins, Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Reference: Docket No. 50-285

Dear Mr. Collins:

Cycle 6 Fuel Performance Report

In accordance with Fort Calhoun Station Technical Specification 5.9.3(h), please find attached a report entitled "Summary of Irradiated Fuel Performance and Inspection Following Cycle 6 Operation". The report provides a summary of the fuel inspections and fuel performance analysis conducted during and following the District's 1981 refueling outage.

Sincerely,

W. C. Jones
Division Manager
Production Operations

WCJ/TLP:jmm

Attachment

cc: LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Avenue, N.W.
Washington, D.C. 20036

Mr. Lawrence A. Yandell - NRC
Senior Resident Inspector

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SUMMARY OF IRRADIATED FUEL PERFORMANCE AND INSPECTION FOLLOWING CYCLE 6 OPERATION

During and following the end of Cycle (EOC) 6 refueling outage, inspections of three (3) irradiated fuel assemblies (D005, G037, and G041), which were returned to the core for Cycle 7, and two (2) irradiated assemblies (D038 and D013), discharged prior to the 1981 refueling, were performed. The detailed visual inspections of the irradiated assemblies were conducted utilizing a periscope in the spent fuel pool. Burnup characteristics or anomalies inspected for included assembly length, shoulder gap, rod bow, and assembly bow. Four (4) fuel pins were removed from assembly D005 and were replaced with four (4) pins from discharged assembly D038. The four (4) pins removed from D005 are presently stored in the spent fuel pool awaiting shipment to Battelle-Columbus for detailed examination as part of the Department of Energy (DOE) extended burnup program.

Non-destructive oxide thickness characterization was also performed on both interior and exterior fuel rods from assemblies D005 and D038. The characterization was accomplished using an eddy current testing (ECT) probe (i.e., proximity probe). The oxide thickness measurements verified that a continued linear relationship between oxide thickness and burnup existed. This linear relationship between oxide thickness and burnup is considered valid through burnups of 52,000 MWD/MTU. This data was of paramount importance in determining the acceptability of returning fuel assembly D005 to the reactor for a sixth cycle of irradiation, which is expected to result in a burnup to approximately 52,000 MWD/MTU.

The inspection program was temporarily interrupted by a glycol spill in the spent fuel pool, which occurred on October 17, 1981. Subsequent spent fuel pool cleanup delayed the fuel inspections until resumption in late March, 1982. At that time, a detailed TV and periscope examination of assembly D013 was conducted and then D013 was disassembled and ten (10) rods removed. These rods were examined using the eddy current probe to verify their clad integrity and were then transferred with twelve (12) other rods removed earlier in the inspection program to a rod shipment basket in preparation for shipment to Battelle for hot cell examination.

The EOC-6 fuel examinations demonstrated the following:

1. Fuel burnup characteristics identified during the inspections were as expected.

2. Excellent fuel rod and assembly performance was observed for average burnups of 45 GWD/MTU.

3. Adequate shoulder gaps exist to permit burnups of greater than 50 GWD/MTU.

4. Cladding oxide film thickness measurements on Cycles 4 and 5 exposed assemblies are in agreement with oxidation models and fuel burnups to 50 GWD/MTU could be accomplished.

5. Channel closure of Fort Calhoun Station fuel follows the data trend established in other Combustion Engineering (CE) plants for lower burnups.

The detailed examinations conducted at the conclusion of Cycle 6 confirmed the excellent performance of the Fort Calhoun Station fuel assemblies. This is in agreement with the Cycle 6 reactor coolant radiochemistry data.