



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

TOPICAL REPORT DPC-NE-2007P
DUKE POWER COMPANY FUEL RECONSTITUTION ANALYSIS METHODOLOGY

DUKE POWER COMPANY

OCONEE NUCLEAR STATION, UNITS 1, 2, AND 3

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

MCGUIRE NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-269, 50-270, 50-287,
50-369, 50-370, 50-413, AND 50-414

1.0 INTRODUCTION

By letter dated September 23, 1993, Duke Power Company (licensee or DPC), submitted Topical Report DPC-NE-2007P, "Duke Power Company Fuel Reconstitution Analysis Methodology," for NRC review.

Topical Report DPC-NE-2007P describes a methodology of using filler rods (Zircaloy-4 or stainless steel) or vacancies to replace failed or damaged fuel rods during reconstitution of fuel assemblies for core reloads. The filler rods require mechanical, neutronic, and thermal-hydraulic analyses to demonstrate that the inclusion of the filler rods in fuel assemblies with the specific configurations and core locations chosen for a specific fuel cycle is acceptable with respect to the overall fuel performance and safety conclusions. However, the staff does not approve the use of vacancies for reconstitution because the vacancies do not conform to the thermal-hydraulic seismic and loss-of-coolant accident analyses.

The NRC staff was supported in this review by its consultant, Pacific Northwest Laboratory (PNL). The consultant's Technical Evaluation Report (TER), which is attached, provides technical findings relative to its review.

2.0 EVALUATION

The staff has reviewed the attached TER, and concludes that the TER provides an adequate technical basis to approve Topical Report DPC-NE-2007P. Therefore, the staff agrees with PNL's conclusion that the proposed fuel reconstitution methodology is conservative and is acceptable for filler rods. Based on our review, the staff adopts the findings in the attached TER.

9511130091 951027
PDR ADOCK 05000269
PDR

3.0 CONCLUSIONS

The staff has reviewed DPC's fuel assembly reconstitution methodology described in Topical Report DPC-NE-2007P, and finds it acceptable for reload licensing applications.

However, the licensee's use of solid replacement rods for fuel reconstitution in accordance with this document should conform to certain limitations as described in TER Section 6.0: (1) no more than 10 solid rods per assembly, (2) no more than 3 solid rods in a row, and (3) cycle-specific reload analyses must include the exact configuration and core location of reconstituted rods and assemblies. The staff does not approve the use of vacancies because the vacancies do not conform to thermal-hydraulic, seismic and LOCA analyses.

Attachment:
Technical Evaluation Report

Principal Contributor: S. Wu

Date: October 27, 1995