



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO FUEL BURNUP EXTENSION

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

WASHINGTON NUCLEAR PROJECT NO. 2

DOCKET NO. 50-397

1.0 INTRODUCTION

By a letter dated December 28, 1993, Washington Public Power Supply System (WPPSS) submitted a request to continue to extend the assembly exposure limits for Siemens Power Corporation (SPC) 8x8 fuel from 35,000 to 37,000 MWD/MTU for WPPSS Nuclear Project No. 2 (WNP-2). The staff previously approved such burnup extension in a safety evaluation dated July 1, 1992. However, the staff required that WNP-2 commit to confirm and resolve the fuel rod excessive growth issue. The fuel rod excessive growth was discovered at Grand Gulf for SPC 8x8 fuel. SPC determined the cause to be interference between the 120 mil channel boxes and the lower tie plates of the fuel assembly as a result of thermal expansion. The licensee provided inspection results for WNP-2 end of cycle (EOC) 8 and analyses to justify the burnup extension. The NRC staff's evaluation follows.

2.0 EVALUATION

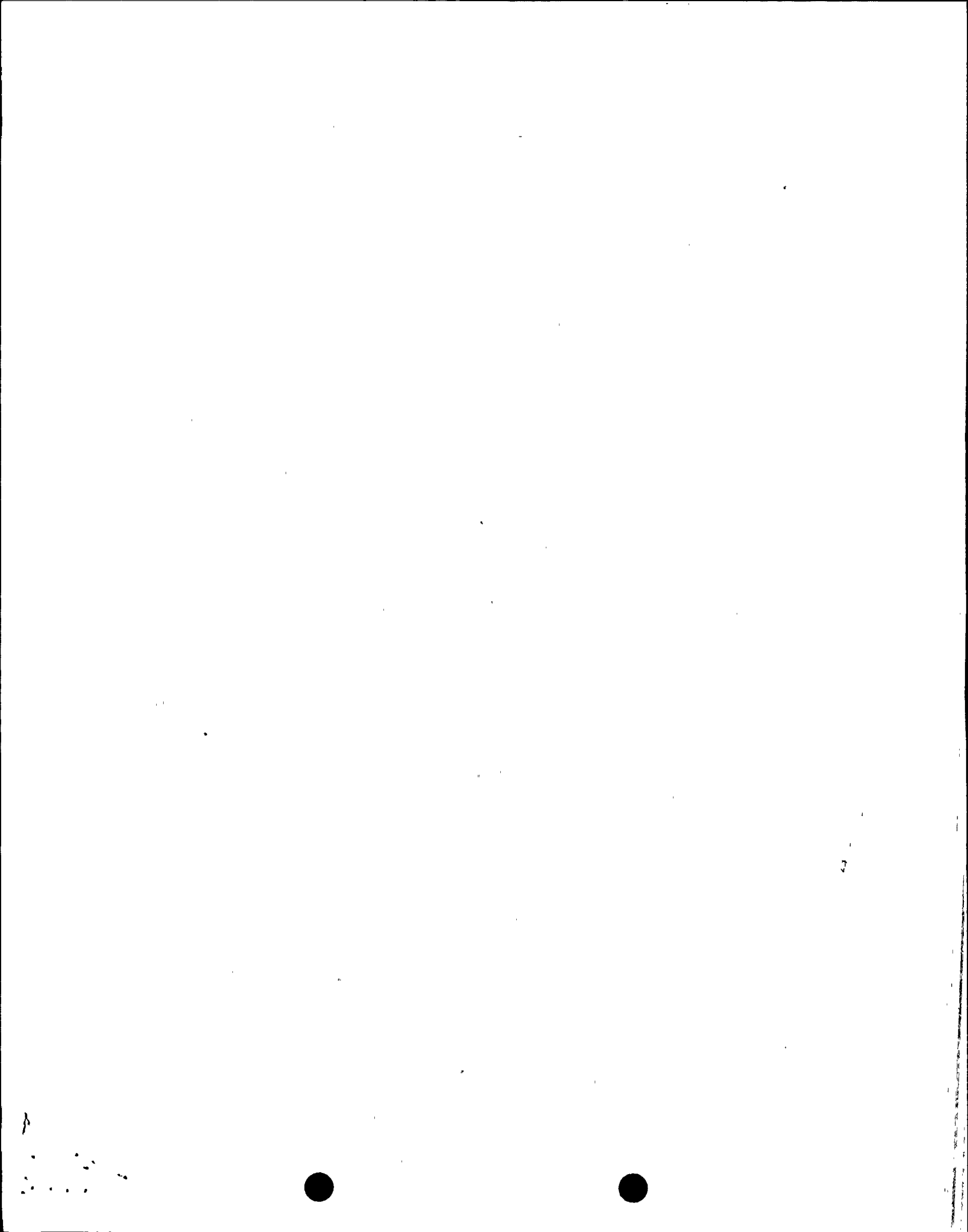
During a fuel inspection at Grand Gulf Unit 1 in May 1992, SPC discovered that in some fuel assemblies some of the fuel rods had higher growth rates than the tie rods. In general, tie rods should grow faster than fuel rods to maintain adequate shoulder clearance. SPC's detailed examination revealed that thermal expansion had caused interference between the 120 mil channel boxes and the lower tie plates. The interference effectively locked the lower tie plates to the channel boxes, thereby causing the fuel rods to grow faster than the tie rods. SPC also determined that the interference involved only 120-mil thick boxes, which had tight clearances with the lower tie plates. SPC corrected this problem by increasing the clearance between the channel boxes and lower tie plates without altering the flow conditions. Based on this corrective measure, we conclude that SPC has provided adequate assurance to prevent fuel rod excessive growth.

The channel boxes for WNP-2 are of 80 and 100 mil thickness. SPC inspected the fuel rod growth for WNP-2 EOC 8. The results showed no excessive fuel rod growth and adequate shoulder gap clearance for SPC fuel in WNP-2.

Based on the inspection results and different channel box dimensions from Grand Gulf channel box design, we conclude that the excessive fuel rod growth will not occur at WNP-2.

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### 3.0 CONCLUSION

We have reviewed the licensee's submittal of proposed burnup extension for WNP-2. Based on SPC's corrective measures on 120 mil channel boxes and satisfactory WNP-2 inspection results, we conclude that the licensee has met the requirement to resolve the fuel rod excessive growth issue and that the proposed burnup extension from 35,000 to 37,000 MWD/MTU assembly average is acceptable for WNP-2.

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and issuance of this request will not be inimical to the common defense and security or to the health and safety of the public.

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Date: May 16, 1994