



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 121 TO FACILITY OPERATING LICENSE NO. NPF-21
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397

1.0 INTRODUCTION

By letter dated July 29, 1993, as supplemented March 11 and 17, 1994, the Washington Public Power Supply System (the licensee) submitted a request for changes to the Washington Nuclear Plant, Unit 2 (WNP-2), Technical Specifications (TS). The proposed changes would revise the WNP-2 TS to allow the use of a new main hoist grapple mast on the refueling platform.

The licensee proposed changes to TS Surveillance Requirements (SR) 4.9.6.a, 4.9.6.f, and 4.9.6.g that would revise the refueling platform load limits to reflect the new values for the new refueling mast General Electric (GE) Model NF500. These proposed changes are being made to accommodate the use of the new GE Model NF500 refueling mast that will replace the existing GE NF400 mast.

2.0 EVALUATION

2.1 System Description

The refueling platform is a self-propelled gantry crane which spans the spent fuel storage and the reactor vessel. Its purpose is to transport fuel and reactor components to and from spent fuel pool storage and the reactor vessel. As one of three hoists on this bridge, the main hoist is used to transport and orient fuel bundles for placement in the reactor vessel core, the spent fuel pool storage racks, and the spent fuel shipping cask. The main hoist consists of a telescoping mast and grapple suspended from a trolley system to perform its functions.

2.2 Comparison of Existing and New Masts

The existing GE Model NF400 mast consists of four segment, open-frame, telescoping, triangular sections. It will be replaced with an upgraded model, GE Model NF500, which is a four segment, solid, tubular telescoping mast. The NF500 mast is less prone to mast bowing which could lead to structural damage or grapple misalignment. Its increased rigidity also improves the ability to precisely locate the hoist where desired. Furthermore, the NF500 mast also

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provides improved contamination control by limiting the tendency for dripping onto the refueling platform. Another significant difference between the NF400 and the NF500 mast is that the latter outweighs the former by approximately 400 pounds. The licensee states that the function or the operation of the fuel grapple hoist mechanism or the refueling platform will remain unaffected by the use of the NF500 mast.

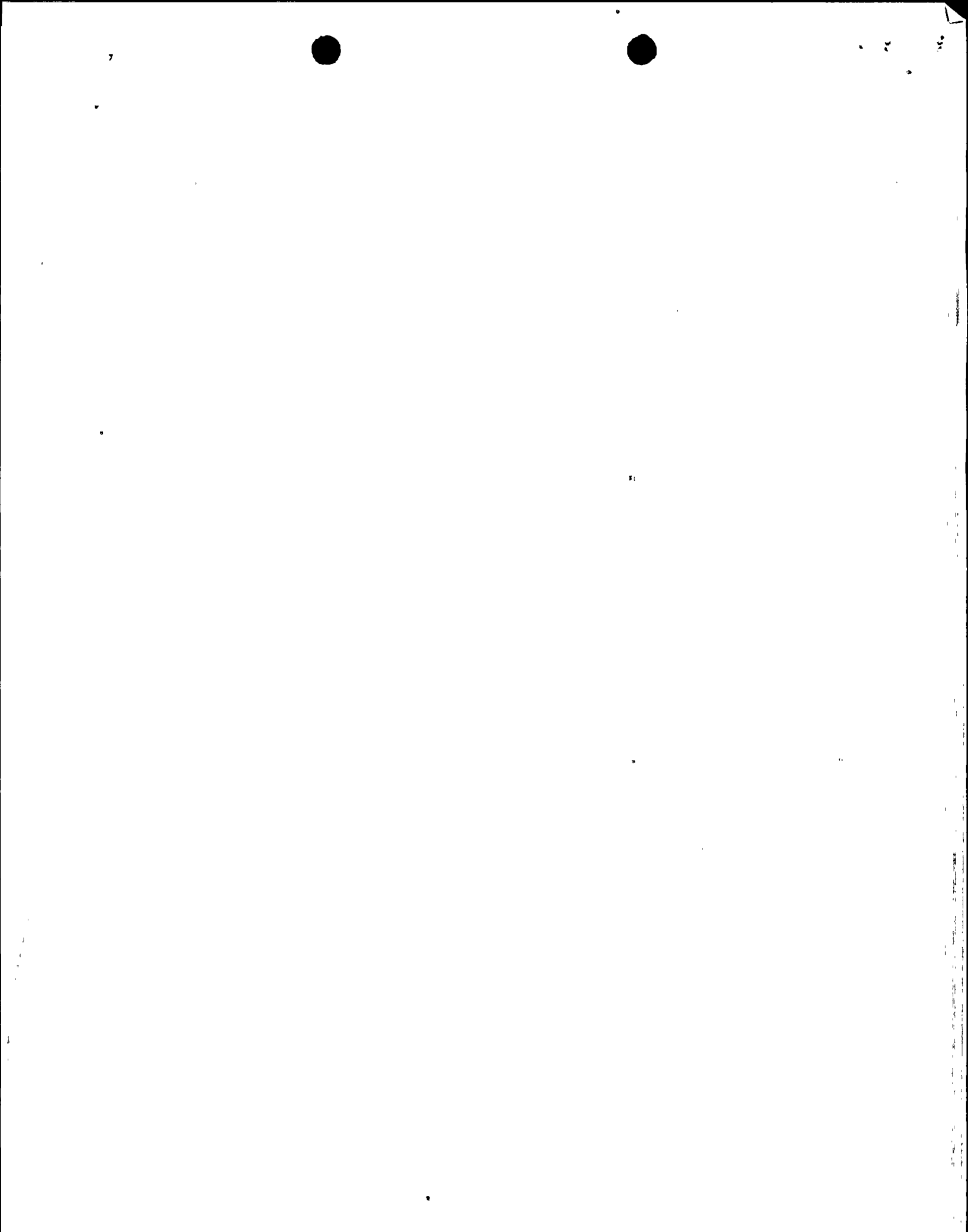
2.3 Proposed Changes to TS Surveillance Requirements.

Due to the increased weight, the weight-dependent main hoist overload cutoff limit with the use of NF500 mast requires a new setpoint in the SR 4.9.6.a. This setpoint limits the lifting force of the main hoist to ensure that excessive force is not applied to a fuel assembly should it become stuck during handling operations, or to vessel internals should they become inadvertently engaged.

The new setpoint value is increased from 1250 to 1700 pounds, which accounts for both additional 400-pound weight difference and the physical manner in which the NF500 mast loads itself as the telescoping sections extend and retract. When extending, as additional sections are sensed as a load, the loading measurement could potentially spike, causing the sensed value to exceed the 400-pound differential weight. Thus, the additional 50-pound margin allows for this potential load measurement error yet does not allow excessive lifting forces to be exerted. The 1700-pound setpoint also ensures that a main hoist overload cutoff will occur prior to reaching the maximum allowable force which can be applied to a fuel assembly or to the vessel internals.

In addition to the overload cutoff limit, the main hoist loaded interlock and redundant interlock limits with the use of NF500 mast require new setpoints in SR 4.9.6.f and 4.9.6.g. The purpose of these limits is to initiate a control rod block when the hoist is loaded and positioned over the reactor vessel, prevent raising the hoist when the platform is over the vessel with the hoist loaded and control rod withdrawn, and prevent raising the mast when the grapple is not completely engaged to the load. Both the loaded interlock and the redundant interlock setpoints are increased from 535 and 600 pounds, respectively, to 750 pounds.

These loaded interlock setpoints are increased due to a combination effect of two factors. First, the increased inertia of the NF500 individual mast sections causes a higher spike response from the load cell weighing system than that of the NF400 mast. The second effect is due to the greater weight of the NF500 mast. However, the 400-pound differential is not needed in the use of the NF500 because the load sensed at the time of fuel grapple will not include the entire weight of the mast. All of the mast's telescoped sections are not carried by the cable, and not sensed by the load cells, until fully retracted. When extended, some of the weight of the mast is directly supported by the refueling platform, hence a 400-pound differential would not be an appropriate value to ensure correct operation of the load and redundant interlocks.



The changes to SR 4.9.6.a, 4.9.6.f, and 4.9.6.g result from replacing the NF400 mast with the NF500 mast that does not degrade system performance. Other than changing setpoint limits for overload cutoff and loaded interlocks, there are no changes to the procedures used for testing. This change will not alter test effectiveness in determining system reliability nor will it alter testing methodology. The revision will not alter the level of confidence in system operability or capability.

Provisions have been made in the SR changes to allow use of either the NF500 or NF400 mast. The addition of the new values for the NF500 mast while preserving the NF400 values provides greater flexibility in using plant resources to meet surveillance requirements in the event that the NF500 mast becomes inoperable.

2.4 Fuel Handling Accident (FHA) Analysis

The FHA analysis does not consider the weight of the mast as part of the dropped weight. Thus, the added weight of the NF500 mast does not change the consequences of dropping a fuel assembly. Additionally, since the installation of the NF500 mast does not change the features protecting against a mast drop, the WNP-2 Final Safety Analysis Report (FSAR) analysis for the fuel bundle-only FHA continues to bound accidents related to fuel handling.

3.0 STATE CONSULTATION

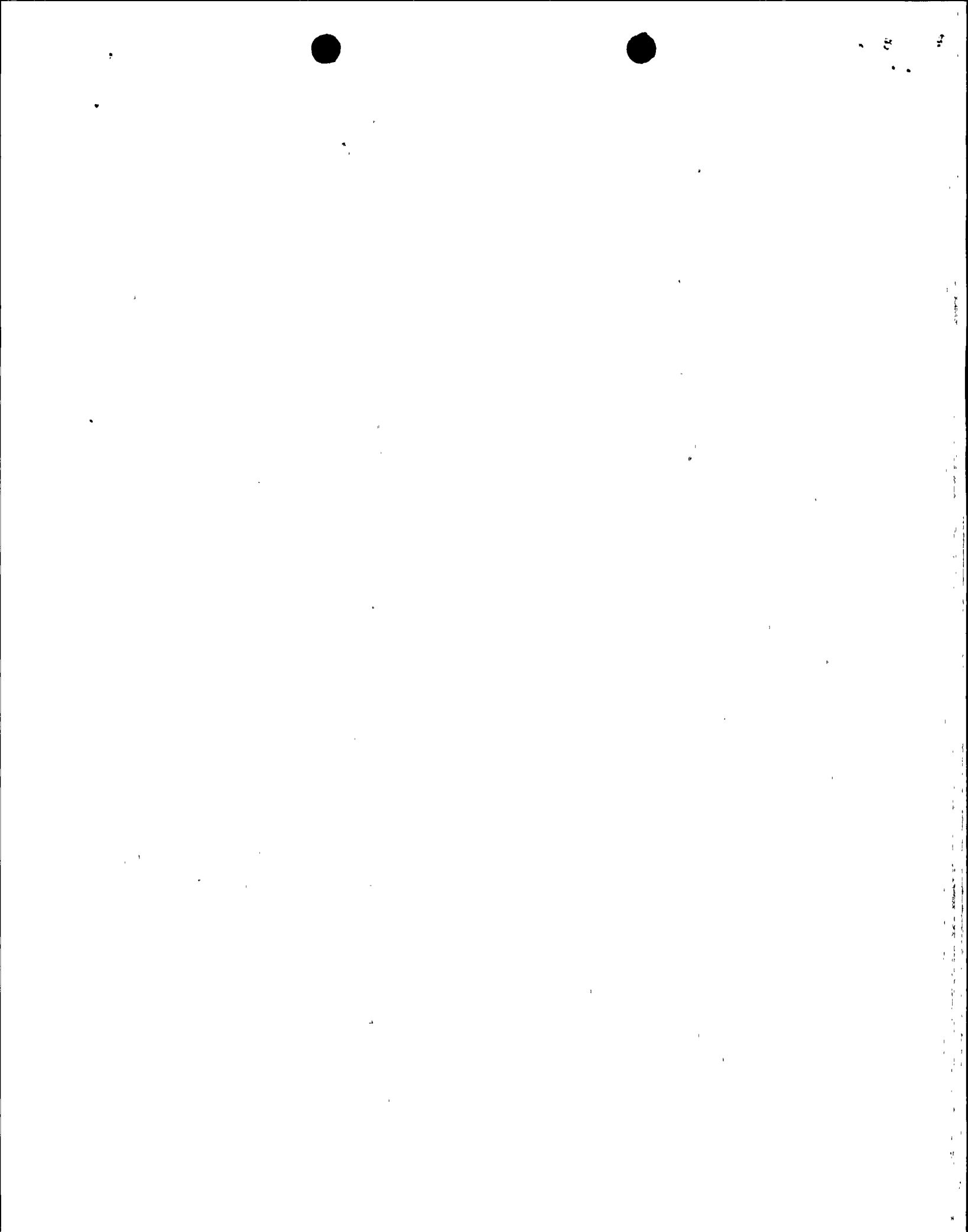
In accordance with the Commission's regulations, the Washington State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (59 FR 14900). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

5.0 CONCLUSION

The licensee evaluated the effect on safety of replacing the existing refueling platform main hoist mast with the GE Model NF500 mast and concluded that the changes will have no adverse effect on the margin of safety. The licensee also concluded that the nature of the changes is such that no new or



kind of accident can be created and that the changes do not alter the conclusions of existing accident analyses as documented in the WNP-2 FSAR and NRC Safety Evaluation Report.

The NRC staff has determined that the proposed changes to SR 4.9.6.a, 4.9.6.f, 4.9.6.g are acceptable since they are in accordance with the acceptance criteria of Section 9.1.5 of NUREG-0800, the Standard Review Plan. The staff's review of the information presented by the licensee concludes that the proposed changes do not adversely affect plant safety.

The Commission 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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