



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 147 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 April 25, 1995, the Washington Public Power Supply System (WPPSS, or the licensee) requested changes to the Technical Specifications (Appendix A to Facility Operating License No. NPF-21, or TS) for the WPPSS Nuclear Project No. 2 (WNP-2). The proposed changes would add a reactor water cleanup (RCU) system high blowdown containment isolation trip function and associated Limiting Condition for Operation (LCO) and surveillance requirements to Tables 3.3.2-1, 3.3.2-2, and 4.3.2.1-1 of the TS.

2.0 BACKGROUND

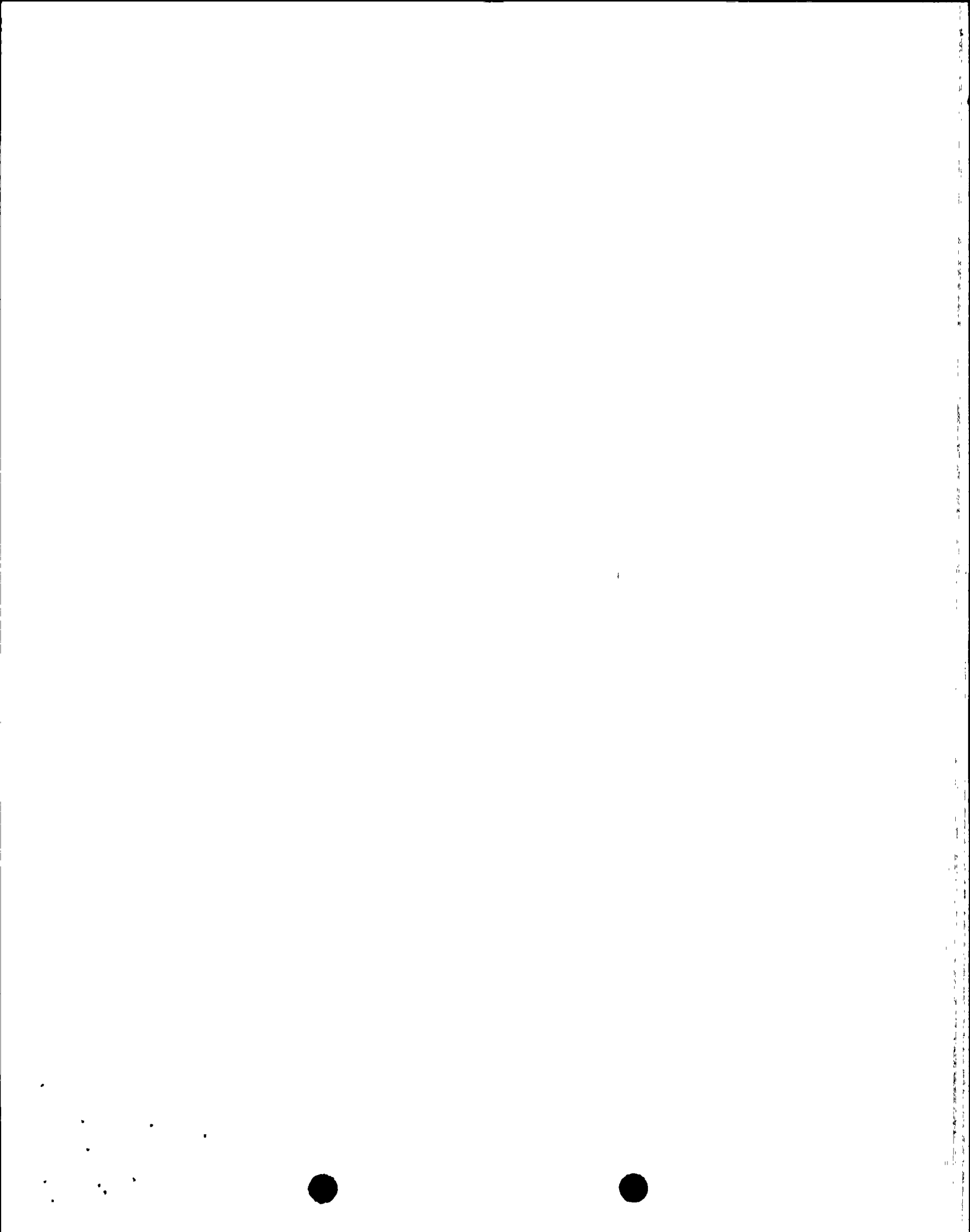
By letter dated October 25, 1993, WPPSS reported an unanalyzed high energy line break (HELB) in a RCU line at WNP-2. The licensee identified this condition during a programmatic engineering review of HELBs.

The licensing basis for the analysis of HELBs is stated in Section 3.6.1.1.2 of the WNP-2 FSAR, and requires postulation of circumferential breaks at all terminal ends of ASME Class 2 and 3 pressurized piping. WPPSS had not included the required postulated break for the 4" diameter pipe segment terminating at valve RCU-FCV-33, and therefore did not fully meet the design basis for this plant as stated in the FSAR.

By letter dated December 3, 1993, WPPSS determined that this constituted an unreviewed safety question, and requested an amendment to the operating license of WNP-2 to allow a permanent exclusion for not postulating a circumferential break at this terminal end. This request was based on stress calculations which showed that at this location the stresses were considerably lower than the allowable stresses.

By letter dated July 7, 1994, the staff denied the requested amendment on the basis that consideration of stress level is only allowed at intermediate pipe locations between terminal ends. The staff stated that WPPSS was required to postulate a break at this terminal end, in accordance with Section 3.6.2 and Branch Technical Position (BTP) MEB 3-1 of the Standard Review Plan (SRP), and evaluate the environmental impact of the break.





3.0 EVALUATION

In its April 25, 1995, letter, WPPSS performed pipe whip and jet impingement analyses, in accordance with BTP MEB 3-1, for a HELB postulated at the piping connection to the RWCU blowdown flow control valve. The jet impingement analysis did not identify any new impingement targets. The pipe whip analysis identified the need for two additional pipe whip restraints for the 6" RWCU blowdown line in the area of the HELB, to limit pipe travel and prevent damage to flow instrumentation used to detect the HELB. These restraints were installed during the spring 1995 (R-10) maintenance and refueling outage. The staff finds this acceptable.

WPPSS has evaluated the environmental impact of the break, and has determined a need to install additional flow instrumentation to detect and mitigate the effects of the postulated HELB because the time delay associated with the current instrumentation logic could result in certain equipment in the reactor building exceeding its environmental qualification limit. The additional instrumentation is designed in accordance with applicable licensing design basis codes and standards, including single failure criteria. The piping/tubing and associated supports of the installed instrumentation have also been designed to withstand the effects of a design basis earthquake and the postulated HELB. The staff also finds this acceptable.

The proposed amendment does not remove or modify any existing Technical Specification requirements, but imposes additional requirements related to the new "Blowdown Flow - High" trip function. Two channels of the new "Blowdown Flow - High" trip function, one channel in each trip system, will be available and the proposed amendment requires that both channels be operable during plant startup and power operation or when reactor coolant temperatures are greater than 200°F. This ensures that no single instrument failure would preclude the isolation of the postulated RWCU HELB. In the event that a channel becomes inoperable, the inoperable channel will be required to be restored to operable status in accordance with LCO 3.3.2 and proposed Action 27. This new action will require that the RWCU blowdown line manual isolation valve (RWCU-V-32) or at least one of the system isolation valves (RWCU-V-1 or RWCU-V-4) be closed. If the RWCU system isolation valves are closed, the system will be declared inoperable. The subject HELB is postulated at RWCU-FCV-33 because it is the first normally closed valve on the blowdown line. Closure of either valve RWCU-V-32 or the system isolation valves will isolate this break location from the reactor. Closure of RWCU-V-32 does not create a new terminal end because a temporarily closed valve (i.e., a valve closed due to an Action Statement or for maintenance purpose) does not represent a normally closed valve.

A design change is being implemented to provide the necessary instrumentation for the "Blowdown Flow - High" trip function to reduce the postulated RWCU HELB detection and isolation initiation time from 45 seconds to 2.5 seconds. The 45 second value is the total response time for the "Δ Flow - High" trip function, which includes the 13 second emergency diesel generator starting time as discussed in Bases 3/4.3.2. The 2.5 second response time for the new "Blowdown Flow - High" trip function is consistent with the assumptions in the



blowdown analysis of the postulated RWCU HELB. This value includes time delays for instrumentation tolerances and operational flow transients to avoid spurious alarm and isolation actuations. The total isolation time assumed in the blowdown analysis is 18.75 seconds, which includes a 16.25 second valve isolation time consistent with FSAR, Table 6.2-16, but does not include the 13 second diesel generator starting time. The blowdown analysis of the postulated line break does not assume a reactor or turbine trip, and based on FSAR, Subsection 3.6.1.11.2.1, offsite power can be assumed to be available. Thus, the additional delay time for diesel generator starting is not required.

In summary, the proposed LCO setpoint, allowable value, and surveillance requirements ensure that the "Blowdown Flow - High" trip function will initiate isolation of a postulated HELB at the piping connection to the RWCU blowdown flow control valve consistent with the assumptions of the associated blowdown analysis. Existing Technical Specification requirements and method of plant operation remain unchanged. The staff, therefore finds the proposed change to add the new "Blowdown Flow - High" trip function acceptable.

The licensee stated that the loss of coolant and flooding effects from the postulated HELB (including any postulated radiological release effects) are bounded by the previously analyzed design basis main steam line break. Therefore, the radiological consequences of the postulated HELB would be less than those previously analyzed and are, therefore, acceptable.

The staff has determined that WPPSS has implemented the staff's recommendation by postulating a HELB in the WNP-2 RWCU. The licensee has indicated that no jet impingement targets have been identified, and has installed adequate pipe restraints to preclude pipe whip due to the postulated HELB, in accordance with requirements in SRP Section 3.6.2. The staff finds this acceptable.

4.0 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.

5.0 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 (61 FR 33777). 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.



6.0 CONCLUSION

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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