



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 156 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 December 17, 1998, and as supplemented by letter dated January 21, 1999, the Washington Public Power Supply System (the Supply System, or the licensee) requested changes to the Technical Specifications (TS) (Appendix A to Facility Operating License No. NPF-21) for the WPPSS Nuclear Project No. 2. The proposed changes would revise TS Surveillance Requirement 3.8.1.8 to remove the restriction on testing of the manual transfer between the startup and backup offsite power sources while in Modes 1 or 2. The automatic transfer between the startup and backup offsite power sources portion of TS Surveillance Requirement 3.8.1.8 remains not being allowed during Modes 1 and 2.

The January 21, 1999, supplemental letter provided additional clarifying information and did not change the staff's original no significant hazards consideration determination published in the Federal Register on December 22, 1998 (63 FR 70807).

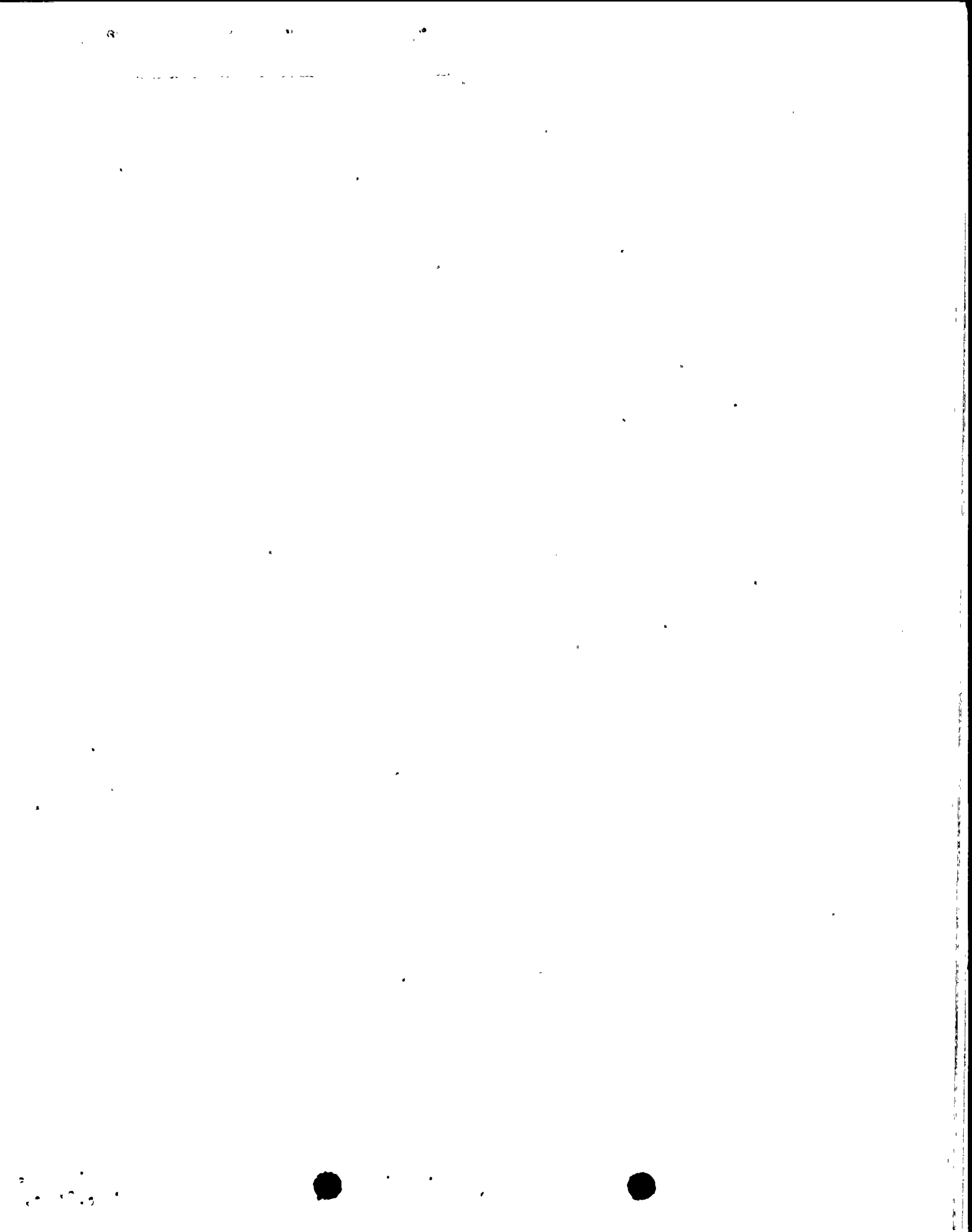
2.0 BACKGROUND

TS Surveillance Requirement 3.8.1.8 is performed to verify both the automatic and manual transfer of the power supply to safety related buses from the startup (preferred) offsite source to the backup (alternate) offsite source. The transfer of the 4.16 kV Division 1 and 2 bus power supplies from the startup offsite source to the backup offsite source demonstrates the operability of the alternate source distribution network to power the Division 1 and 2 shutdown loads. However, the surveillance is currently restricted by a TS note which states that the surveillance shall not be performed while in Modes 1 and 2. The proposed TS change is to modify this note to specify that the mode restriction would only apply to the automatic transfer between the startup and backup offsite power sources. This would permit the licensee to test the manual transfer between startup and backup offsite power sources with the plant at power.

The licensee is requesting this change to support post-maintenance testing to the circulating water (CW) system pump, CW-P-1C. CW-P-1C is a large 5060 hp pump and starting a pump of this size is expected to cause the voltage on the electrical bus that supplies the pump to drop to approximately 88 percent (lasting approximately 3 seconds). This is the normal voltage drop for starting a CW system pump, however due to the intrusive maintenance that was performed on the pump, the possibility exists for a more significant bus undervoltage condition. This bus

9902020402 990127
PDR ADOCK 05000397
P PDR





undervoltage condition has the potential for challenging safety-related electrical buses and the associated emergency diesel generators. The licensee proposes to transfer the safety related electrical bus (SM-8) to the backup offsite power source during the test. This will isolate SM-8 from the voltage drop caused by starting the CW pump.

3.0 EVALUATION

The current TS Surveillance Requirement 3.8.1.8 tests the automatic and manual transfer from the startup to the backup offsite power source to demonstrate the operability of the alternate distribution network to power the shutdown loads. The surveillance is modified by a note that states that the surveillance shall not be performed in Modes 1 or 2. The basis for the note is that, during operations with the reactor critical, performance of the SR could cause perturbations to the electrical distribution system that could challenge continued steady state operation and, plant safety systems.

In its submittal, the licensee stated that the automatic transfer from the startup to the backup offsite power source is a "break before make" (dead bus) transfer and would cause system perturbations. The staff agrees with the licensee that this transfer should not be tested with the plant at power. Unlike automatic transfer, the manual transfer from startup to backup offsite power is a controlled evolution, where it is a make-before-break (bumpless) transfer. Once the backup power supply is paralleled with the startup power supply, the backup power supply breaker is closed, and then the startup power supply breaker automatically opens. During the manual transfer, power is not lost and there is no system perturbation.

The licensee also stated that although a complete loss of offsite power is not anticipated as a result of the manual transfer, it had performed a risk analysis for the plant configuration of the unavailability of the startup and backup transformers for the period of time allowed by the Limiting Condition for Operation for TS 3.8.1.8. It was determined that the evaluated condition was not risk significant reflected by a core damage probability of less than 1E-6. Further, the licensee stated that its operating history indicated that transferring of offsite AC power sources has been performed several times with no realized electrical distribution system perturbations and manual transfer between electrical sources during power operation is consistent with the WNP-2 final safety analysis report (FSAR).

During staff review of the licensee's submittal, the Electrical Engineering Branch raised an issue that was not addressed in the licensee's risk assessment. The additional issue involves a specific type of failure of an electrical breaker to open as designed during the manual transfer when the two power sources become paralleled on the emergency bus. The type of failure in question is less probable than a simple failure to open, but it is more disruptive because it creates a short circuit on the bus. This type of failure has occurred at other nuclear power plants, but it is rare.

The licensee submitted additional information to address the risk of this type of failure in a letter dated January 21, 1999. The staff has reviewed this information and concluded that it provides reasonable assurance that the additional risk due to multiple applications of the requested technical specification revision will be "very small", as defined in R.G. 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The licensee's evaluation conservatively estimated the increase in core



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

damage frequency to be about $1.6E-7$ per application. Substantially conservative aspects of the licensee's analysis included (1) assuming that conditions between the normal and backup power sources would always be such that paralleling them would create an over-current demand for a breaker to open, (2) assuming that all failures to open for the normal power supply breaker would be of the rare, disruptive type, and (3) not crediting normal operator actions for correcting the resulting condition before core damage occurred. In addition, the staff notes that the two possible alternatives to the licensee's request (i.e., shutting down to test equipment or testing equipment while at power without isolating it from the safety bus) would also create additional risks. On this basis, the staff agrees with the licensee that the requested modification to the technical specifications is appropriate with respect to its associated risk implications.

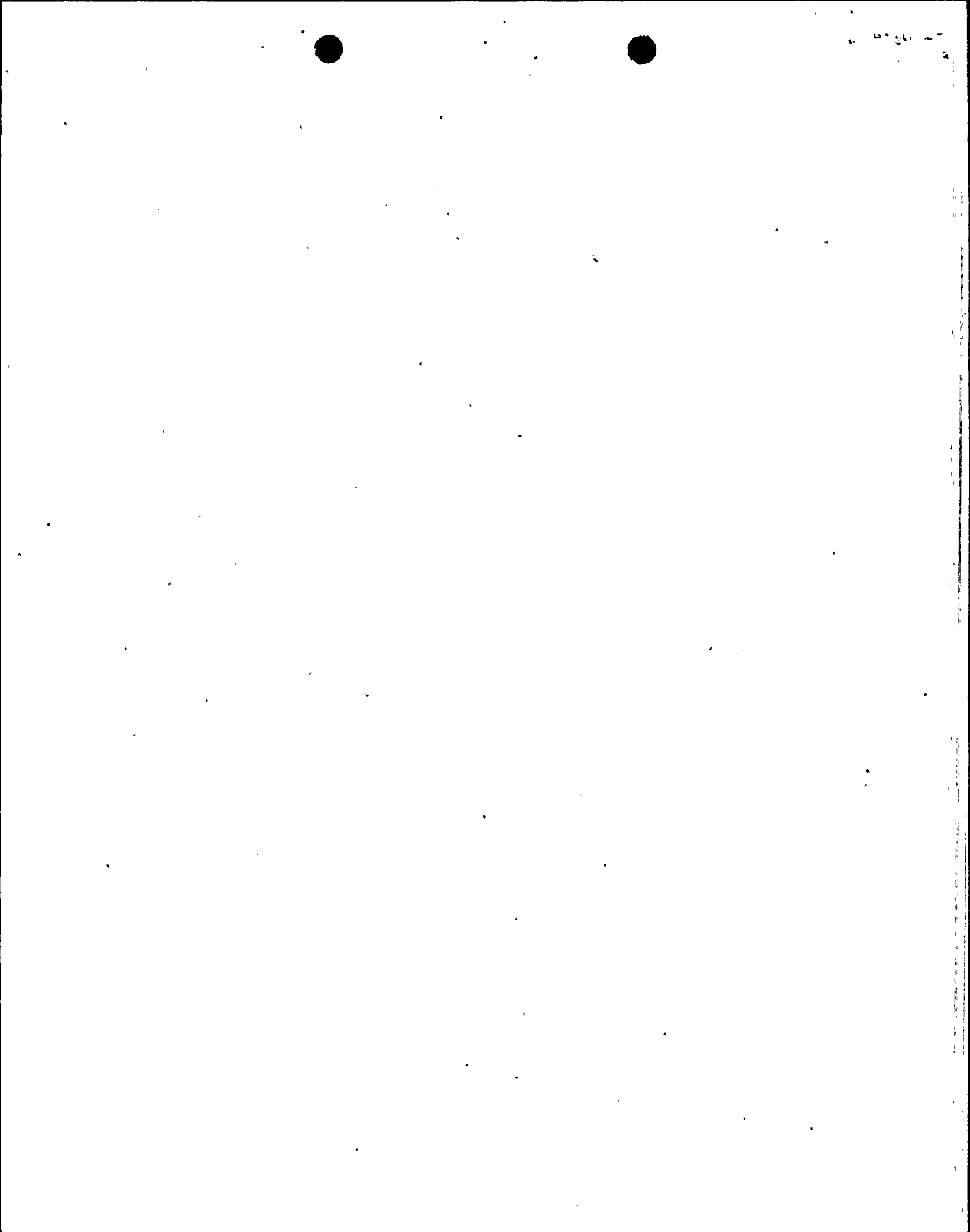
Also, during a conference call with the licensee on January 21, 1999, the staff raised a question on the reliability and maintenance of circuit breakers at WNP-2. The licensee responded to the staff's questions in its letter dated January 21, 1999. The licensee stated that the maintenance of circuit breakers at WNP-2 is performed in accordance with manufacturer instructions and industry recommendations and operating experience. The maintenance of breakers at WNP-2 is performed once every four years and includes visual inspection, breaker opening and closure timing, lubrication, measurement and adjustments. In addition, the licensee has stated that it is an active member of the EPRI/NMAC Breaker Owners Group, assuring that the breaker maintenance program at WNP-2 incorporates the latest industry practices and recommendations. The staff is satisfied that the licensee's breaker maintenance program and activities encompass industry practice and guidelines for assuring highly reliable breakers.

The staff notes that Generic Letter (GL) 91-04, "Guidance on Preparation of a License Amendment Request for Changes in Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," concluded that technical specifications need not restrict surveillances as only being performed during shutdown and that these restrictions can be removed from the TS. The staff has determined that surveillances, such as the manual transfer discussed above, may be performed in other than shutdown conditions without jeopardizing safe plant operations. The control of plant conditions appropriate to perform the test is an issue for procedures and has been determined by the staff to be unnecessary to be maintained as TS restrictions. As indicated in GL 91-04, allowing this control is consistent with the vast majority of other TS surveillances that do not dictate plant conditions for performance of the surveillances.

The staff finds the licensee's proposed TS changes consistent with the guidance in GL 91-04 and FSAR. Also, the staff finds that performance of the manual transfer from startup to backup offsite power supply can be accomplished in Modes 1 and 2 without causing system perturbations. The staff also considers the manual transfer to be a controlled evolution with minimal risk and approval of the change is consistent with TS changes approved at other operating facilities. Based on the above information, the changes are 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 surveillance requirement. 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 (63 FR 70807). 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.

Principal Contributors: J. Cushing
C. Poslusny
A. Gill
S. Long

Date: January 27, 1999

