



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 132 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 September 18, 1994, Washington Public Power Supply System (the licensee) requested an amendment to License No. NPF-21 to change the Technical Specifications (TS) for the Washington Nuclear Project No. 2 (WNP-2) on an emergency basis. The proposed amendment would allow WNP-2 to continue plant operation without full compliance with the requirements for operability of containment isolation valves in the hydraulic lines to the reactor recirculation system (RRC) flow control valves.

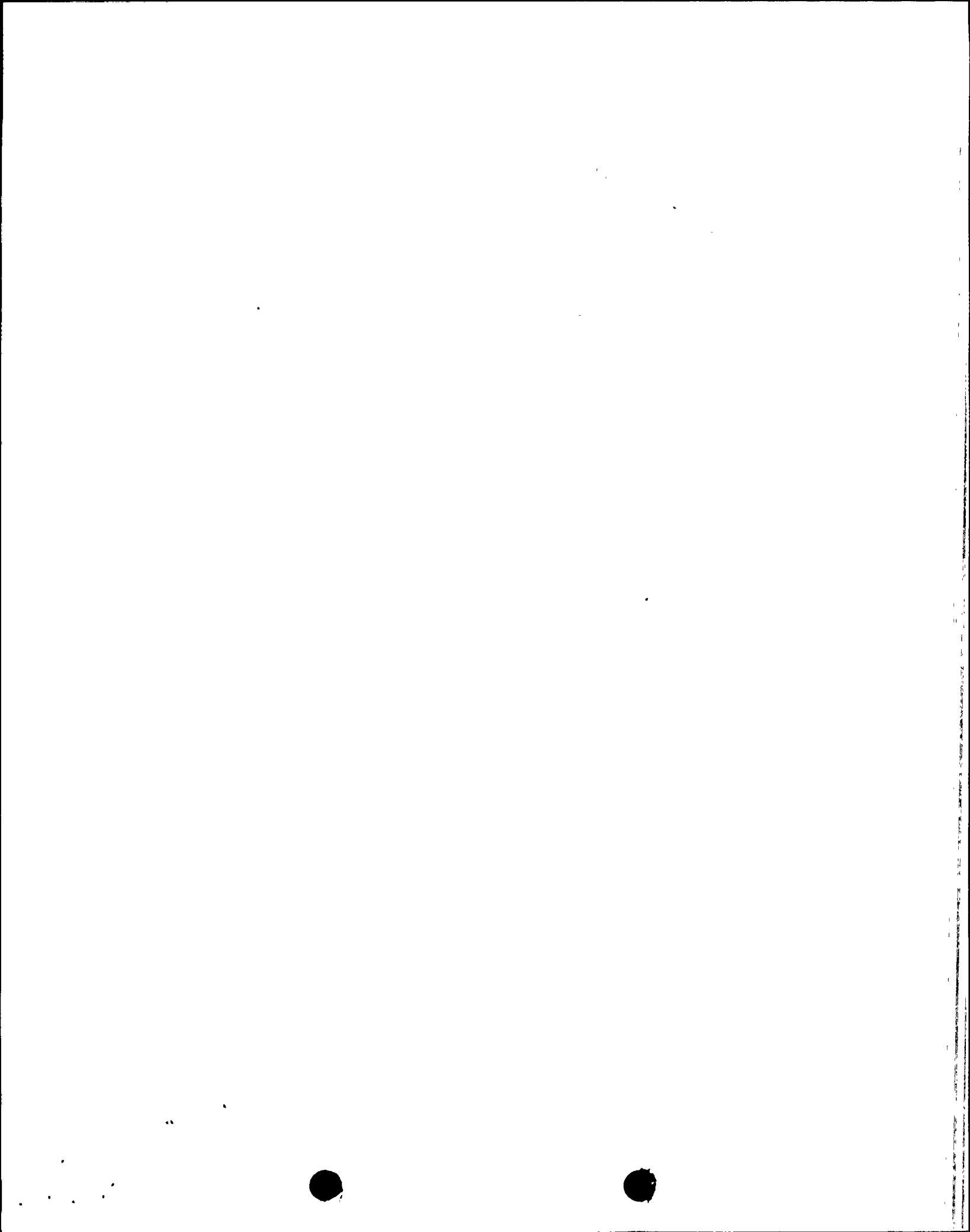
On September 15, 1994, a condition of noncompliance with the WNP-2 TS was identified as part of an ongoing review of automatic containment isolation logic. The licensee was conducting this review as part of corrective actions for a similar condition identified in June 1994 during the refueling outage. The original condition was identified during an assessment of containment atmospheric monitoring system containment isolation logic performed after receipt of information from the Institute of Nuclear Power Operations (INPO) regarding a problem at another plant. The licensee requested, and was verbally granted, enforcement discretion on September 15, 1994, to operate in noncompliance with the requirements of TS Action Statement 3.6.3.a. The staff documented its action in a Notice of Enforcement Discretion, dated September 20, 1994.

The licensee's emergency TS change request is to add a note to the surveillance requirements in TS 3/4.3.6.3, Table 3.6.3-1, "Primary Containment Isolation Valves," that would allow continued plant operation without meeting the single-failure criterion for the RRC flow control valve hydraulic lines.

2.0 DISCUSSION

There are two RRC flow control valves. Each valve is operated by hydraulics supplied and returned through four separate lines. A combination of two of the four lines constitutes a closed system inside containment. Each line has two containment isolation valves, both outside containment, resulting in a total of eight containment isolation valves for each RRC flow control valve. Each set of eight containment isolation valves for one RRC flow control valve is controlled by one relay contact in the control circuit for the containment isolation valves. Thus, the failure of one of these relay contacts would result in the failure of four containment penetrations to isolate on demand.

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The NRC staff had accepted the aspect of this containment isolation design using two valves outside containment in the original licensing Safety Evaluation Report (SER) (NUREG-0892, dated March 1992), since it met alternate criteria as specified in the Standard Review Plan (NUREG-0800). The containment isolation function is required, however, to meet single-failure criteria, as discussed in Section 6.2.4.3.1 of the Final Safety Analysis Report and SER Section 6.2.4. This would require a design that ensured that no single active failure would result in loss of containment integrity following design-basis events. In its recent reevaluation of the containment isolation logic, the licensee determined that the containment isolation valves for the RRC hydraulic lines did not meet single failure criteria, and declared these containment isolation valves inoperable. The licensee's subsequent request for TS amendment would result in a temporary modification of the design basis for the containment isolation of the RRC hydraulic lines to allow operation without meeting single-failure requirements for isolation of these containment penetrations until the next plant shutdown to at least hot shutdown, but not later than May 15, 1995.

The licensee stated in its request that the relays were replaced in the spring 1994 refueling outage. Following replacement, the relays were functionally and response-time tested, and operated satisfactorily. The licensee further stated that the failure rate for this relay design is low. Thus, there is a high degree of confidence that the relays will function as required. The licensee also stated that a loss of power to the logic circuit would result in isolation valve closure. Existing operations' procedures and training provide assurance that plant operators will remotely manually close the isolation valves using key lock switches in the control room in the event that the relays did fail. The instrumentation used by the operators to determine that the containment isolation valves failed to close is Class 1E, and meets Regulatory Guide 1.97 requirements for containment isolation instrumentation. This remote manual closure is not affected by the relays in question. This provides assurance that the RRC hydraulic lines will be isolated if required following a loss-of-coolant accident (LOCA). As an additional compensatory measure, the licensee committed to provide additional information to the plant operations personnel to remove fuses in the control room that would cause valve closure. Thus, the licensee concluded that the failure of the containment isolation valves for the RRC hydraulic lines to close was unlikely.

The licensee also evaluated the overall likelihood of offsite releases for events involving these valves. For offsite releases to occur, an initiating event (a LOCA) would have to occur. In conjunction with the event, the hydraulic lines to the RRC flow control valves would have to break in two locations, one inside and one outside containment. In addition to these failures, the relay that provides the closure control signal to the valves in the postulated failed hydraulic line would also have to fail, and the operators would also have to fail to follow up on automatic actuations. The licensee determined that the design of the piping and valves would not result in consequential failure of the hydraulic lines as the result of a LOCA. Thus, the probability of the multiple failures required to cause an offsite

release is low when the sequence is considered within the probabilistic risk analysis. The licensee, therefore, concluded that the proposed change was acceptable. Based on these considerations, the staff concludes that the proposed change is acceptable

### 3.0 EMERGENCY CIRCUMSTANCES

The licensee is conducting an ongoing assessment of automatic containment isolation logic trains in response to an INPO network notification of a problem at another plant. The licensee identified the problem with the containment isolation valves for the RRC flow control valve hydraulic lines on September 15, 1994, and performed an operability assessment. Identification of the nonconforming condition rendered the associated containment isolation valves inoperable at the time the condition was identified. Thus, the licensee could not have identified the need for the TS change prior to this time.

The licensee formally declared the containment isolation valves for the RRC hydraulic lines inoperable at 2:45 p.m. PDT on September 15, 1994, and entered TS 3.6.3, declaring all 16 affected containment isolation valves inoperable, affecting eight containment penetrations. Without relief, the TS require that within 4 hours of finding both containment isolation valves in one penetration inoperable, at least one of the containment isolation valves in each line would have to be shut and deactivated. This would have resulted in isolating hydraulics to the RRC flow control valves, with resultant loss of control over the RRC flow control valves. This condition would have severely restricted the operators' capability to respond to plant transients and to conduct normal power operations and power changes. The licensee determined that this was an imprudent operational condition.

If the containment penetrations are not isolated within four hours, the TS action statement then requires the licensee to shut down the plant to at least hot shutdown within 12 hours and to cold shutdown within the following 24 hours. The licensee based its request on its belief that there was a high level of confidence that the relays would function on demand, that the likelihood was low that the failures necessary to result in a postulated offsite release would occur, and that modification of the circuit at power involved significant risk of plant trip. The emergency amendment permits continued power operations without meeting the single-failure criterion for the RRC flow control valve hydraulic lines until the next plant shutdown, but not later than May 15, 1995.

The licensee requested on September 15, 1994, that the NRC staff exercise its discretion not to enforce the TS requirements of TS 3.6.3.a. The NRC staff provided verbal approval of the enforcement discretion during a conference call on September 15, 1994. The licensee provided formal documentation of its request for enforcement discretion by letter dated September 16, 1994, and the NRC staff provided written confirmation of its decision to grant enforcement discretion by letter dated September 20, 1994. The licensee submitted its request for emergency amendment to the TS on September 18, 1994. Accordingly, pursuant to 10 CFR 50.91(a)(5), the staff has determined that there are emergency circumstances warranting prompt approval of the proposed change in that failure to act in a timely way will result in shutdown of the plant.

Further, the staff has determined, for the reasons given by the licensee, that the licensee has made a timely application.

#### 4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission has made a final determination that the amendment involves no significant hazards consideration. Under the Commission's regulations in 10 CFR 50.92(c), this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The staff has evaluated the proposed changes against the above standards as required by 10 CFR 50.91(a) and has concluded that:

- a. The change does not involve a significant increase in the probability or consequences of an accident previously evaluated:

The proposed change temporarily modifies the requirement that the isolation logic for the containment isolation valves for the reactor recirculation system (RRC) flow control valve hydraulic lines be designed such that no single active failure would result in loss of containment integrity following design basis events. The containment isolation valves are designed to close in response to a design basis accident, and failure of these valves to close is not an initiator for any previously evaluated accident. The proposed change does not, therefore, affect the probability of an accident previously evaluated.

The proposed change temporarily alters the design of the control circuit that provides the automatic closure signal for the containment isolation valves for the RRC flow control valve hydraulic lines. The relays in the control circuit were replaced in the spring 1994 refueling outage. Following replacement, the relays were functionally and response time tested, and operated satisfactorily. The licensee further stated that the failure rate for this relay design is low. Thus, there is a high degree of confidence that the relays will function as required. The licensee also stated that a loss of power to the logic circuit would result in isolation valve closure. Existing operations' procedures and training provide assurance that plant operators will remotely manually close the isolation valves using key lock switches in the control room in the event that the relays did fail. This provides assurance that the containment isolation valves will close, if required in response to a postulated accident, and therefore would not affect the consequences of an accident previously evaluated.

- b. The change does not create the possibility of a new or different kind of accident from any accident previously evaluated:

The proposed change temporarily changes the single failure design requirements for the containment isolation valves for the RRC flow control valve hydraulic lines. This change does not create any new

modes of operation of any equipment, new system configurations, or change any initial conditions affecting plant operations than were assumed in the design analysis of the plant. Thus the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

- c. The change does not involve a significant reduction in a margin of safety:

The margin of safety potentially impacted by the proposed change is the allowable off-site and main control room exposures following a postulated LOCA, with acceptance based on 10 CFR Part 100 limits. As discussed in response to criterion a. above, there is a high degree of confidence that the containment isolation valves for the RRC hydraulic lines will close following a postulated LOCA. In addition, failure of the hydraulic lines both inside and outside primary containment would be required to generate a leakage path. This combination of events is highly unlikely, and involves multiple failures. Thus, there is a high degree of confidence that the proposed change will not affect the current design conclusion that these lines will not provide a leakage path from primary containment following a postulated LOCA, and therefore the margin of safety from the current design basis is not affected.

#### 5.0 STATE CONSULTATION

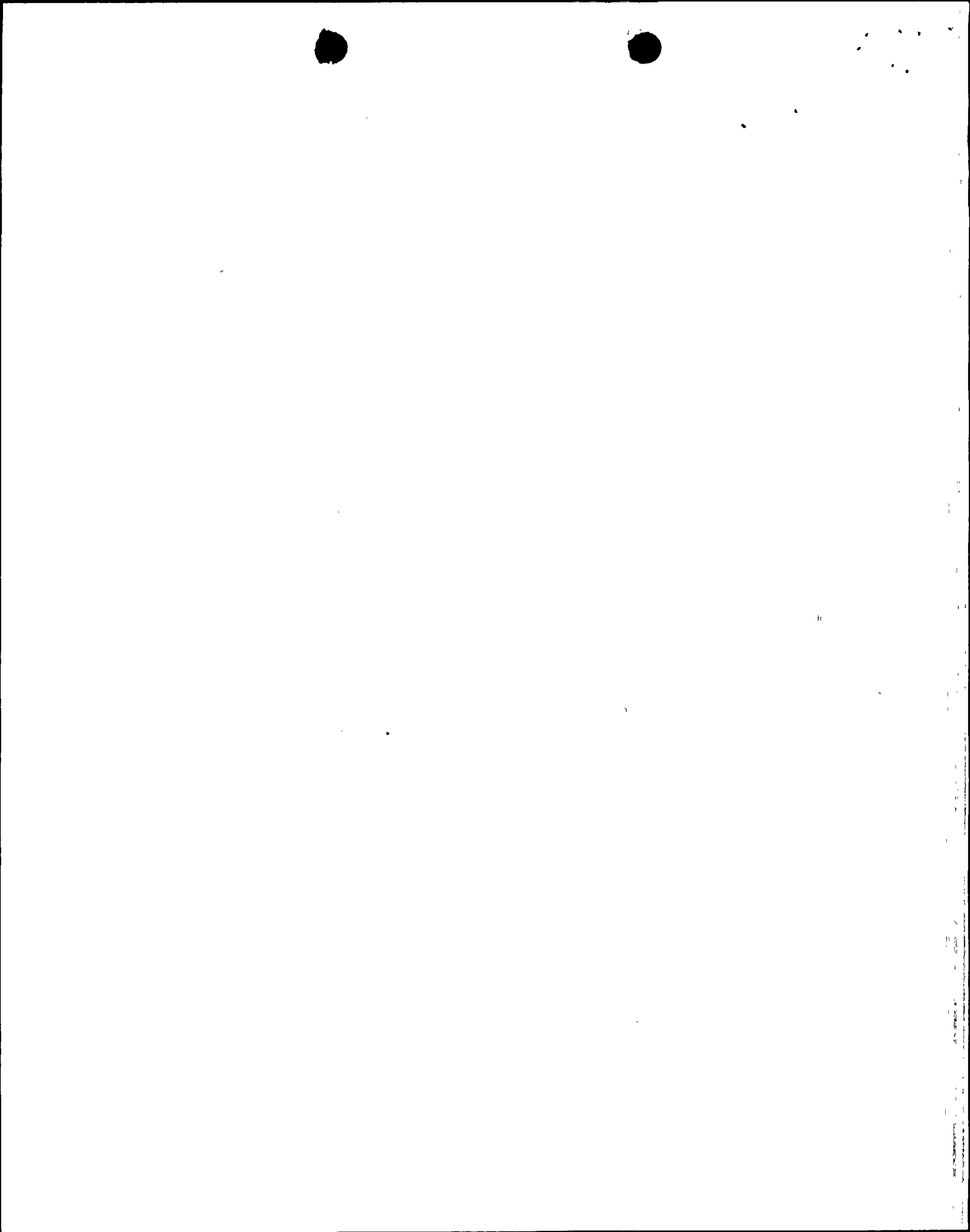
In accordance with the Commission's regulations, the Washington State official was notified of the proposed issuance of the amendment. The State official had no comments.

#### 6.0 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. 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 staff has made a final no significant hazards consideration finding with respect to this amendment. 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.

#### 7.0 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 Contributor: J. W. Clifford

Date: September 29, 1994



