



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 32 TO FACILITY OPERATING LICENSE NO. NPF-41
ARIZONA PUBLIC SERVICE COMPANY, ET AL.
PALO VERDE NUCLEAR GENERATING STATION, UNIT NO. 1
DOCKET NO. STN 50-528

1.0 INTRODUCTION

By letter dated March 2, 1988, the Arizona Public Service Company (APS) on behalf of itself, the Salt River Project Agricultural Improvement and Power District, Southern California Edison Company, El Paso Electric Company, Public Service Company of New Mexico, Los Angeles Department of Water and Power, and Southern California Public Power Authority (licensees), requested an amendment to Facility Operating License No. NPF-41, for the Palo Verde Nuclear Generating Station, Unit 1. The proposed amendment would incorporate as a condition to the license the acceptable commitments currently in place for monitoring the vibration of the reactor coolant pump shafts.

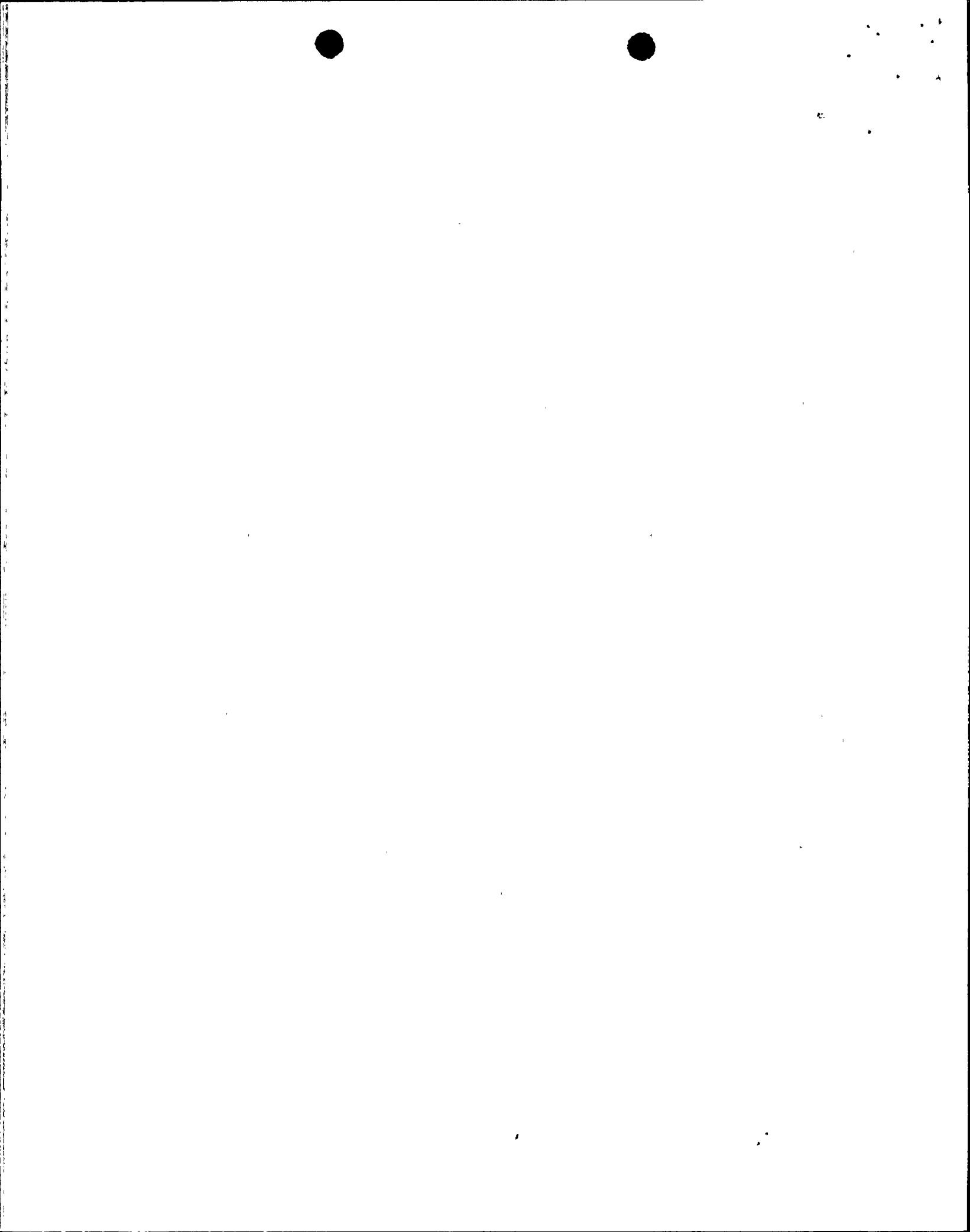
2.0 BACKGROUND

By letter dated October 8, 1987, the licensees informed the Commission that European reactor coolant pumps, similar to the Palo Verde pumps in design and manufacture, had exhibited shaft cracking. As a result, the licensees inspected the four pump shafts at Palo Verde Unit 1 during the first refueling outage, October 1987 to January 1988. The inspection revealed that cracks of varying depths and lengths were present on the shaft of all four pumps. No shaft failures have been experienced at Palo Verde. However, the NRC staff was concerned that the European data, as well as the information obtained from Palo Verde Unit 1, indicated an increased probability of a reactor coolant pump shaft failure.

Although the existing reactor protection system would shut the reactor down upon a pump shaft failure, the increased probability of a shaft failure suggested by the data had raised immediate concerns relative to the public health and safety. (These concerns also applied to Palo Verde Units 2 and 3 since they have the same reactor coolant pump design).

On October 24, 1987, the licensees met with the NRC staff regarding this matter and provided an interim report on the inspection findings to that date. Subsequently, a meeting was held on November 4, 1987, with representatives of the licensees and representatives from Germany involved with the evaluation of this problem in the related European

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pumps. As a result of these meetings, the licensees and the staff concluded that crack initiation in the existing shafts is predominantly caused by the chrome plating in highly stressed areas of the pump shaft; therefore, modifications to the shaft, including removal of the chrome plating, are warranted for extended shaft life. In addition, the licensees and the staff concluded that a pump shaft vibration monitoring program, which includes a spectral analysis of the vibration data, would provide early warning trends if a crack has started and is propagating.

In response to these conclusions, in letters dated November 5 and 12, 1987, the licensees committed to install modified shafts, with the chrome plating removed, in the Palo Verde reactor coolant pumps during a refueling outage and to immediately augment the reactor coolant pump shaft vibration monitoring program, including a spectral analysis of the vibration data. (These commitments apply to all three Palo Verde units. For Palo Verde Unit 1, the shaft modifications were completed during the current refueling outage. For Palo Verde Units 2 and 3, the licensees committed to install modified shafts during the next refueling outage which began in February 1988 for Unit 2 and is scheduled to begin in 1989 for Unit 3.)

The Commission found the licensees' commitments, as set forth in their letters of November 5 and 12, 1987, acceptable and necessary and concluded that with these commitments the plant's safety is reasonably assured. (These commitments by the licensees have been included in a Confirmatory Order issued to Palo Verde Unit 2 on November 19, 1987 and as a license condition in the full power license issued to Palo Verde Unit 3 on November 25, 1987.)

3.0 EVALUATION

In the March 2, 1988 amendment request, the licensees proposed to incorporate as a condition to the Palo Verde Unit 1 license, the acceptable commitments currently in effect for monitoring the vibration of the reactor coolant pump shafts. The proposed condition is identical to the condition currently included in the licenses for Palo Verde Units 2 and 3.

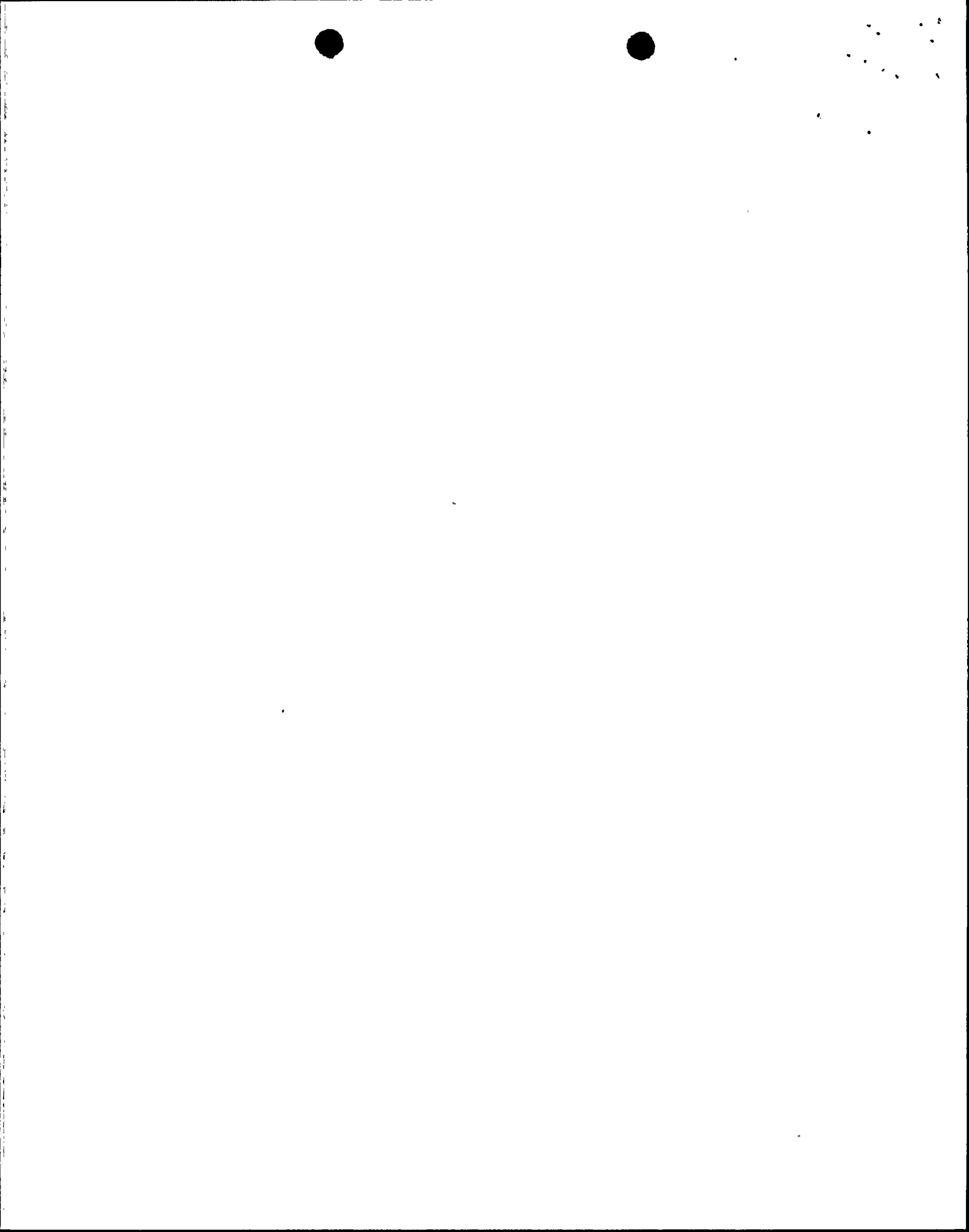
Since the proposed condition for the Unit 1 license is identical to the condition issued for the Unit 2 and 3 licenses, the staff finds the proposed amendment to be acceptable.

4.0 CONTACT WITH STATE OFFICIAL

The Arizona Radiation Regulatory Agency was advised of the proposed determination of no significant hazards consideration with regard to this amendment. No comments were received.

5.0 ENVIRONMENTAL CONSIDERATIONS

This amendment involves a change in the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20, which imposes additional limitations and surveillance requirements. The



staff has determined that this amendment involve no significant increase in the amount, and no significant change in the type, of any effluent that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued proposed findings that the amendment involves no significant hazard consideration, and there has been no public comment on such finding. 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 needs to be prepared in connection with the issuance of this amendment.

6.0 CONCLUSION

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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public. We, therefore, conclude that the proposed license condition is acceptable.

Principal contributor: E. A. Licitra

Dated: May 10, 1988



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