



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 101 TO FACILITY OPERATING LICENSE NO. DPR-31
AND AMENDMENT NO. 95 TO FACILITY OPERATING LICENSE NO. DPR-41
FLORIDA POWER AND LIGHT COMPANY
TURKEY POINT PLANT UNIT NOS. 3 AND 4
DOCKET NOS. 50-250 AND 50-251

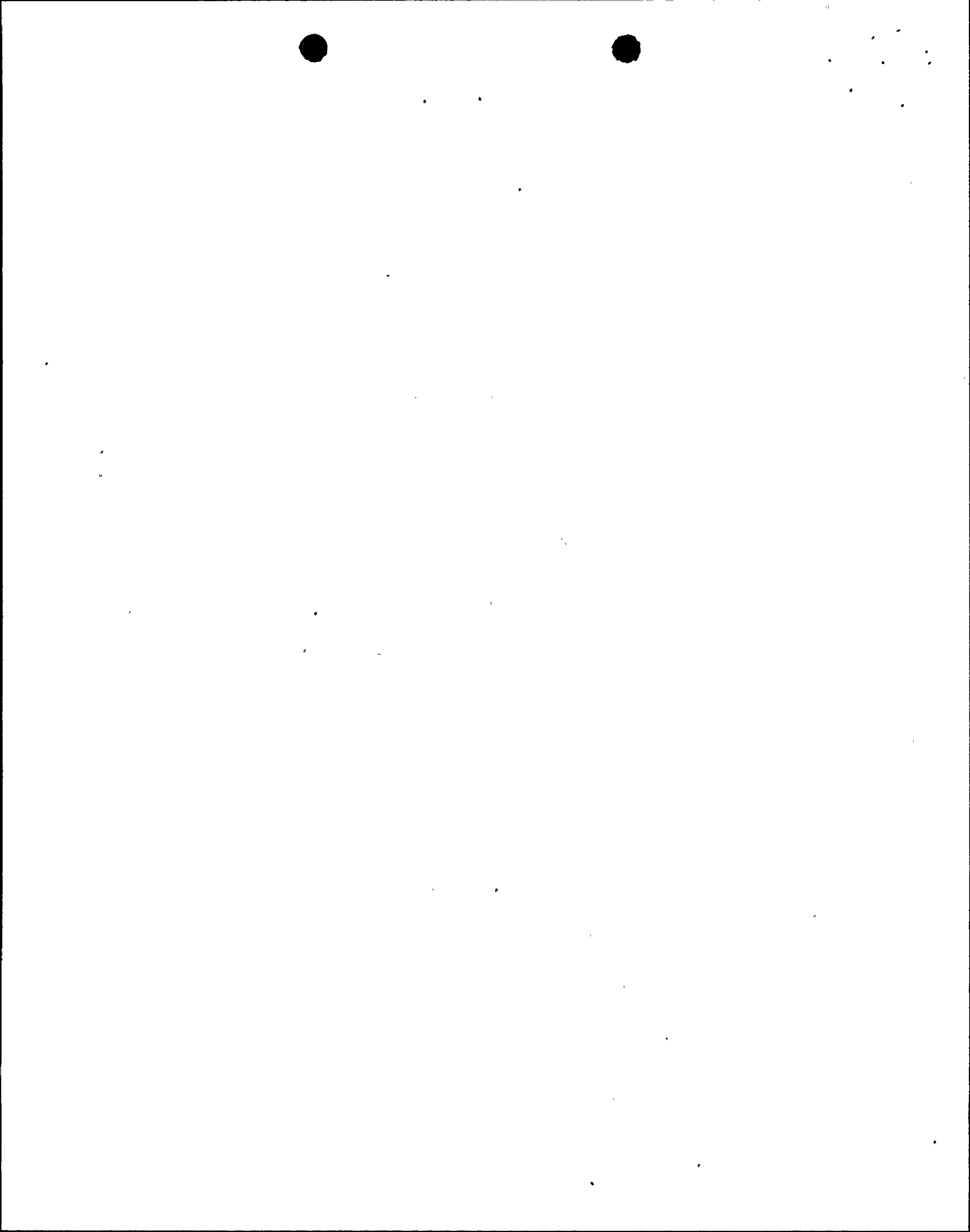
I. INTRODUCTION

A single failure mode has been identified¹ in Turkey Point Units 3 & 4 which could degrade the performance of the low pressure injection system during the injection phase of a large LOCA.

Two parallel motor-operated valves (863 A&B) connect the discharge lines of the RHR pumps with the suction of the high pressure injection pumps. During the recirculation phase of a LOCA, these valves are opened to supply sump water through the RHR pumps to the SI system. The valves are also opened to allow hot leg injection during the long term after a LOCA. Otherwise the valves are closed.

If, however, either valve is inadvertently opened during the injection phase of a LOCA, the RHR pump discharge would be partially diverted from the primary coolant system. The licensee has proposed a method of preventing inadvertent actuation of the valves². The initial proposal² included provisions to allow restoration of power for a limited time of 24 hours. This portion of the proposed amendment request was clarified by a subsequent submittal³. The initial request only specified restoration of power for surveillance of valve

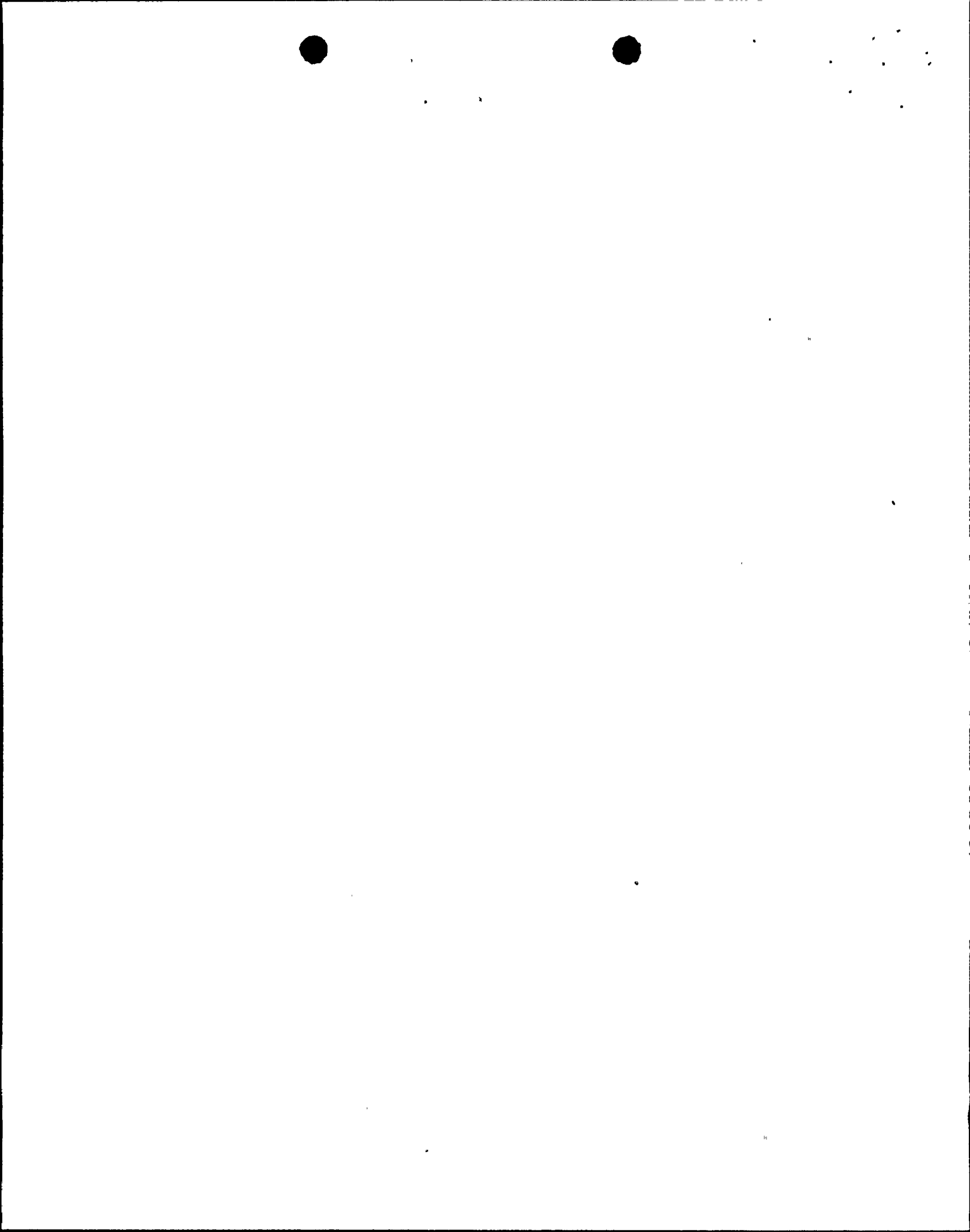
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operability and did not specify other conditions where limited restoration of power might be necessary such as required valve maintenance. The temporary period of 24 hours was unchanged, thus the change only identifies that temporary restoration may be necessary under limited circumstances to provide flexibility in the surveillance and maintenance of the valves. With the valves in the closed position, motive power to the motor operators would be removed by locking open the appropriate circuit breakers in the motor control centers. This is an effective method which has been used extensively to protect against valve single failure problems. However, there is a potential problem with the use of this procedure for valves 863 A&B and several other valves (862 A&B and 864 A&B) which are already locked in the open position in the same way. All of these valves are required to operate during switchover from injection to recirculation during a LOCA. By locking out power at the motor control centers, a situation is created in which operator action outside of the control room is required to reinstate power. Branch technical position ICSB 18 (PSB)⁴ precludes removal of power from valves in this manner unless power can be restored from the main control room.

II. EVALUATION

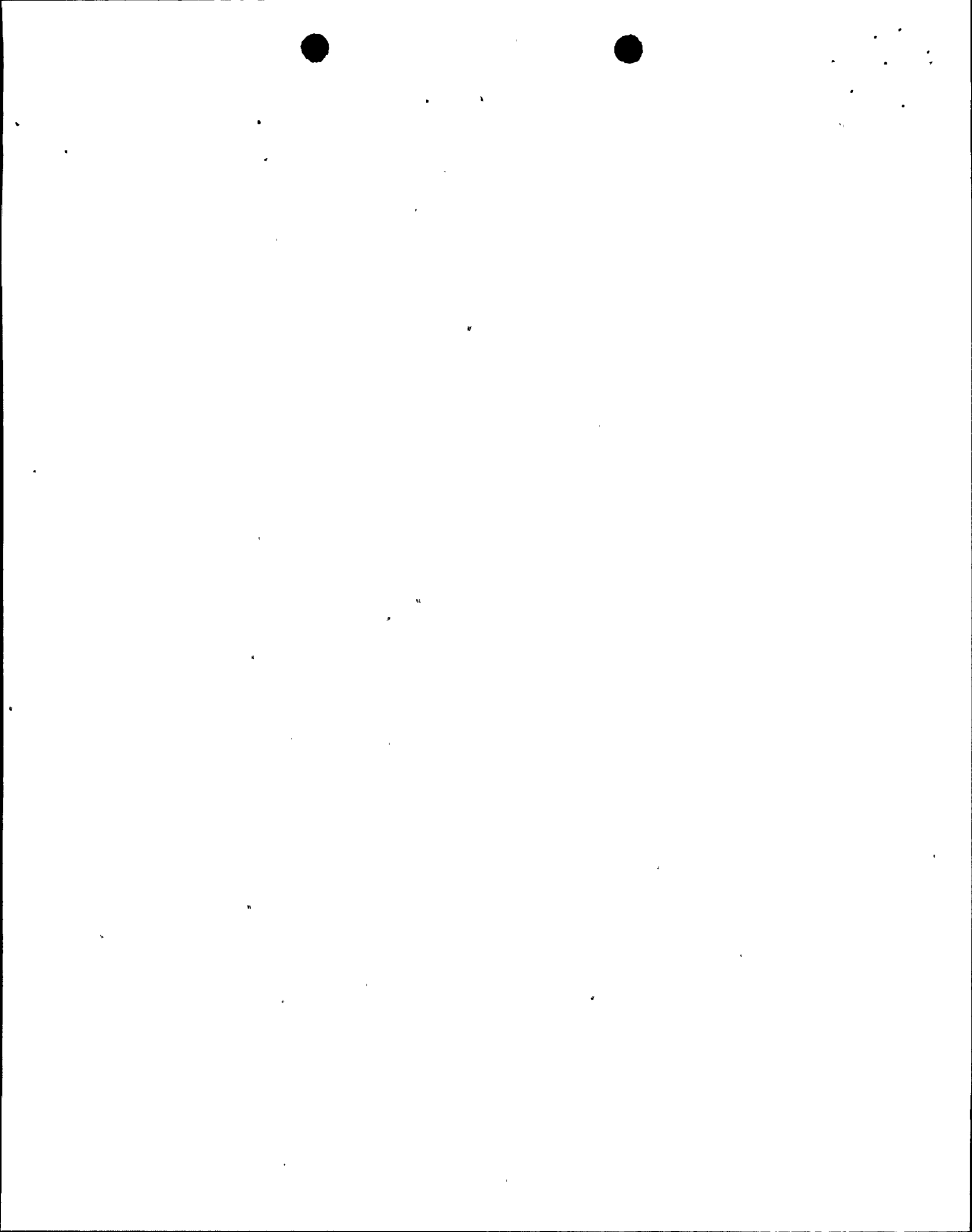
To approve the continuation of a situation in which power is removed from active valves at the Motor Control Centers (MCC), the NRC must be satisfied that (1) the procedure for reinstating power is effective and unambiguous, (2) the motor control centers are in an easily accessible area not affected by the accident environment, (3) the time required to reinstate power does not introduce any appreciable delay in switchover to recirculation, and (4) positive indication of valve position is maintained in the control room.



The procedure for reinstating power during a LOCA must have the following elements; (a) a nuclear or nuclear turbine operator must be assigned to each of the two Motor Control Centers such that successful action on the part of either operator is sufficient to allow switchover to recirculation, (b) these operators should be dispatched to their respective MCCs as soon as a LOCA has been identified, (c) they should have no other responsibilities until switchover to recirculation is completed, (d) power should not be reinstated until the low level (115,000 gal) on the RWST is reached, and (e) this procedure should be emphasized in the training and requalification of nuclear operators and nuclear turbine operators.

The Motor Control Centers are located two flights of stairs below the central control room, at ground level in the auxiliary building. The breakers are in an accessible location. It is not likely that an operator would encounter radiation or other adverse environmental conditions in or on the way to the MCCs. There is emergency lighting and the noise level is sufficiently low to allow ease of communication with the control room. Redundant, diverse and independent means of communication with the control room are available⁵.

Time response criteria for safety related operator actions have been estimated in a draft ANSI standard⁶. The document is intended for review of future designs of nuclear plants. Although the document is not intended for evaluation of operating reactors, the time response criteria are useful. According to ANSI N660 (draft), no operator action should be assumed until 20 minutes after the start of a LOCA. Each discrete action taken thereafter should be assumed to require one minute. The licensee estimates that it would take 2 minutes for the operator to reach the MCCs, in the worst case. If they started 20 minutes⁷ after the LOCA they would arrive at the MCCs two minutes



later and would require three minutes to reinstate the three breakers. Thus power would be available to the valves 25 minutes after start of the LOCA. Using the same criteria, the control room operator would not start to convert to recirculation until 20 minutes after the LOCA starts. His first actions (at one minute each) would involve turning off the safety injection pumps, RHR pumps and containment sprays. The power would not be required for these valves until 28 minutes into the accident, and consequently no delay in switchover to recirculation would be introduced by the operator action necessary to reinstate power⁸.

By letter dated August 29, 1983⁹, we requested that the LOCA procedures be changed to indicate the nuclear or nuclear turbine operators be dispatched to the appropriate locations to reinstate power to the valves required for recirculation as soon as a LOCA has been identified. The licensee has modified the LOCA Procedure (EOP 20001)¹⁰ to reflect our concerns. We have determined the emergency procedures for reinstating power include the necessary elements.

Currently, the control room does not receive a positive position indication for valves whose power has been removed to prevent a single failure problem. This omission represents a potential problem in itself. If the position of one of these valves were to be changed at some time after power is removed, the control room would have no positive indication of the realignment.

Consequently, it is a requirement of branch technical position ICSB 18 (PSB)⁴ that position indication be provided in the control room for all such valves.

In order to assure that the valves are properly aligned for ECC injection, the licensee must provide for continuous positive indication for all valves in

question. Furthermore, when power to valves 863 A&B is removed, the plant operational staff shall visually verify the proper position of valves 862 A&B, 863 A&B and 864 A&B.

By letter dated February 15, 1983¹¹, the licensee has indicated that a plant change/modification is being prepared by their engineering department to provide for single continuous position indication for valves 862 A&B, 863 A&B and 864 A&B. The existing procedures are adequate to assure proper valve alignment until the modifications are completed. The procedures require that the position of the valves be verified by the operational staff prior to power removal. The keys required to unlock the power control switches necessary to realign the valves are controlled by the operational staff. In addition, existing Technical Specifications require periodic safety system walkdowns to assure proper alignment of all valves.

III. SUMMARY

The proposed modifications^{2,3} to the Technical Specifications for Turkey Point Units 3 and 4 constitute a safe method of eliminating the single failure problem, including the elements in the procedures for removing and reinstating power, and the positive position indication being provided for all the valves in question in the control room.

IV. ENVIRONMENTAL CONSIDERATION

We have determined that the amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and, pursuant to

10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

V. CONCLUSION

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

Date: **FEB 22 1984**

Principal Contributors:

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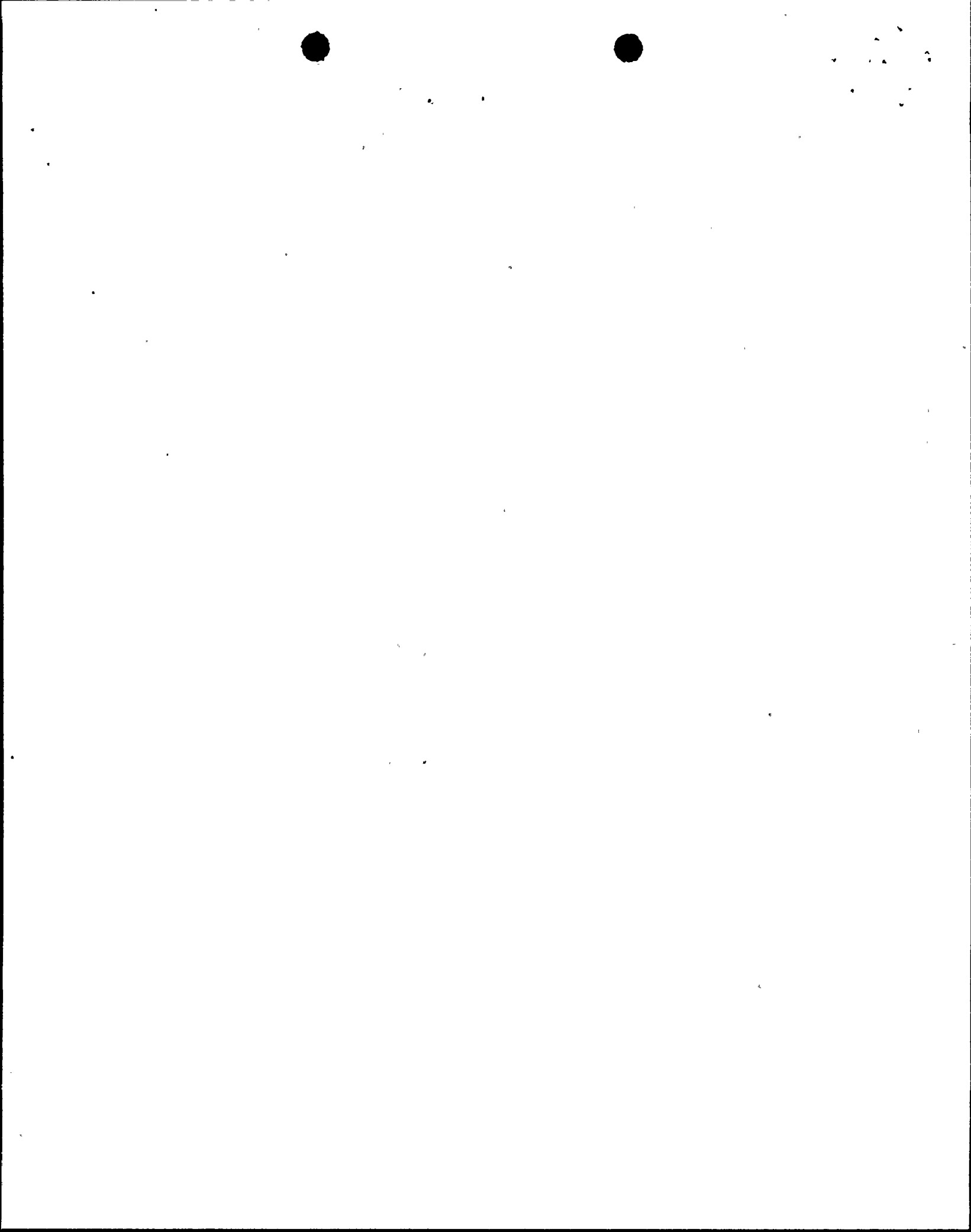
References and Footnotes

1. A. Schwencer (ORB #1) letter to D. G. Eisenhut, Assistant Director for Systems and Projects, "Single Failure on Turkey Point Units 3&4," June 22, 1978.
2. R. E. Uhrig (FP&L) letter to V. Stello (NRC), L-78-233, July 11, 1978.
3. R. E. Uhrig (FP&L) letter to V. Stello (NRC), L-78-262, August 9, 1978.
4. M. Srinivasan (PSB) memo to T. P. Speis, (DSI), August 13, 1981.
5. Telephone conversation; S. Verducci, P. Pace, R. Goldie, J. Balaquerro (FP&L) and R. Barrett, D. McDonald (NRC), August 27, 1982.

Telephone conversation; S. Verducci (FP&L) and D. McDonald (NRC), September 2, 1981.

Written confirmation of the relevant information from these conversations has been requested of the licensee.

6. American National Standard (draft), "Time Response Design Criteria for Safety Related Operator Actions," ANSI N660, March 1981.
7. A strict interpretation of ANSI N660 would not take credit for operator action outside the control room until 30 minutes after the start of a LOCA. That requirement is ignored here because of the proximity of the MCCs to the control room.



8. The actual procedures for switchover to recirculation have not been reviewed. This SER should not be interpreted as approval for the emergency procedures at Turkey Point.

9. S. Varga (NRC) to R. Uhrig (FP&L) dated August 29, 1983, Emergency Core Cooling System Valves - Single Failure Concerns.

10. J. Williams (FP&L) to S. Varga (NRC) dated October 21, 1983, Emergency Core Cooling System Valves - Single Failure Concerns.

11. R. Uhrig (FP&L) to S. Varga (NRC) dated February 15, 1983, Single Failure - ECCS Valves.

