

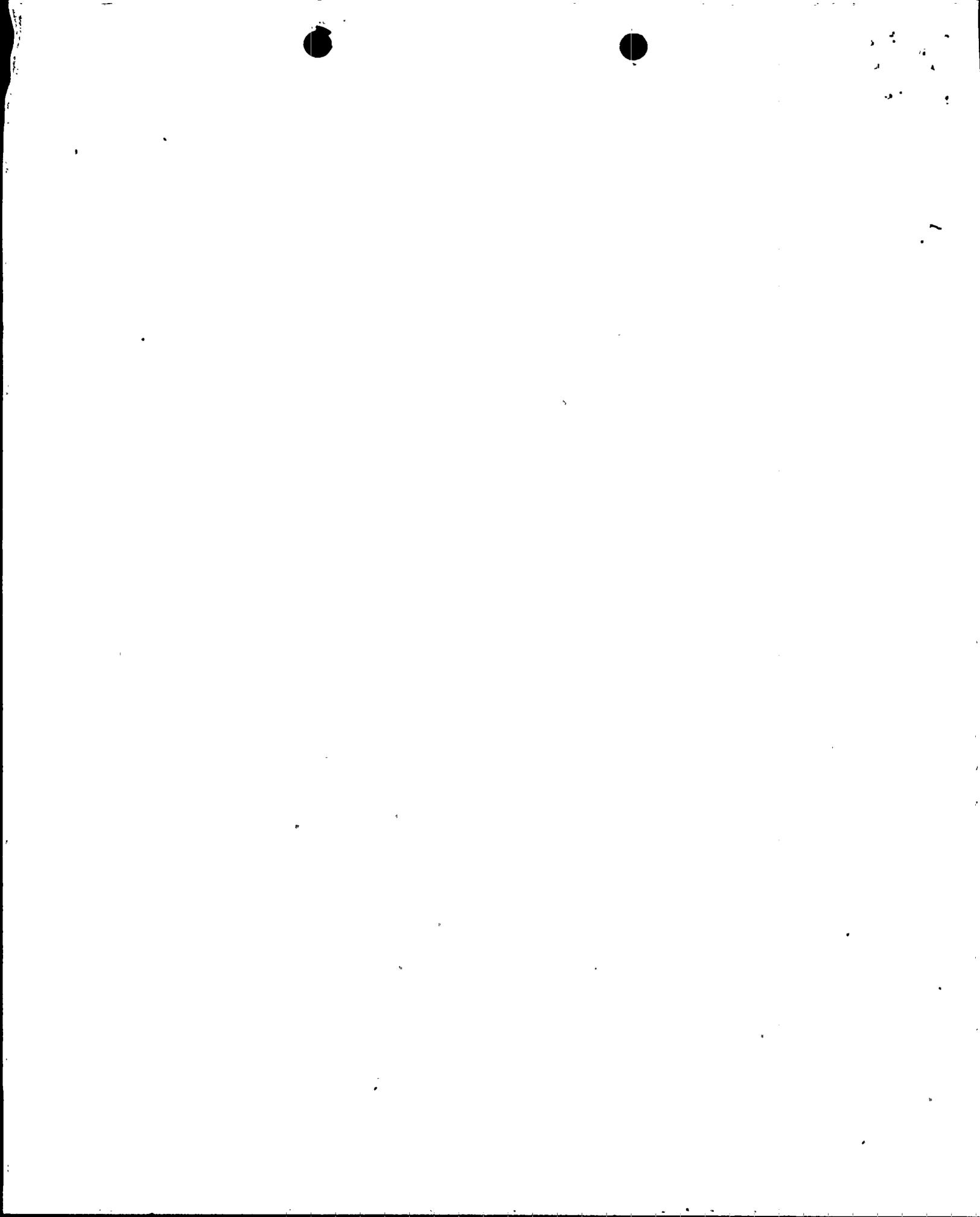
SAFETY EVALUATION REPORT  
FOR CONTAINMENT PURGING/VENTING  
DURING NORMAL OPERATION  
TURKEY POINT PLANTS, UNITS 3 AND 4  
DOCKET NOS. 50-250/251

1. INTRODUCTION

A number of events have occurred over the past several years which directly relate to the practice of containment purging and venting during normal plant operation. These events have raised concerns relative to potential failures affecting the purge penetrations which could lead to degradation in containment integrity, and, for PWRs, a degradation in ECCS performance. By letter, dated November 28, 1978, the Commission (NRC) requested all licensees of operating reactors to respond to certain generic concerns about containment purging or venting during normal plant operation. The generic concerns were twofold:

- (1) Events had occurred where licensees overrode or bypassed the safety actuation isolation signals to the containment isolation valves. These events were determined to be abnormal occurrences and were so characterized in our report to Congress in January 1979.
- (2) Recent licensing reviews have required tests or analyses to show that containment purge or vent valves would shut without degrading containment integrity during the dynamic loads of a design basis loss of coolant accident (DBA-LOCA).

The NRC position of the November 1978 letter requested licensees to cease purging (or venting) of containment or limit purging (or venting) to an absolute minimum. Licensees who elected to purge (or vent) the containment were requested to demonstrate that the containment purge (or vent)



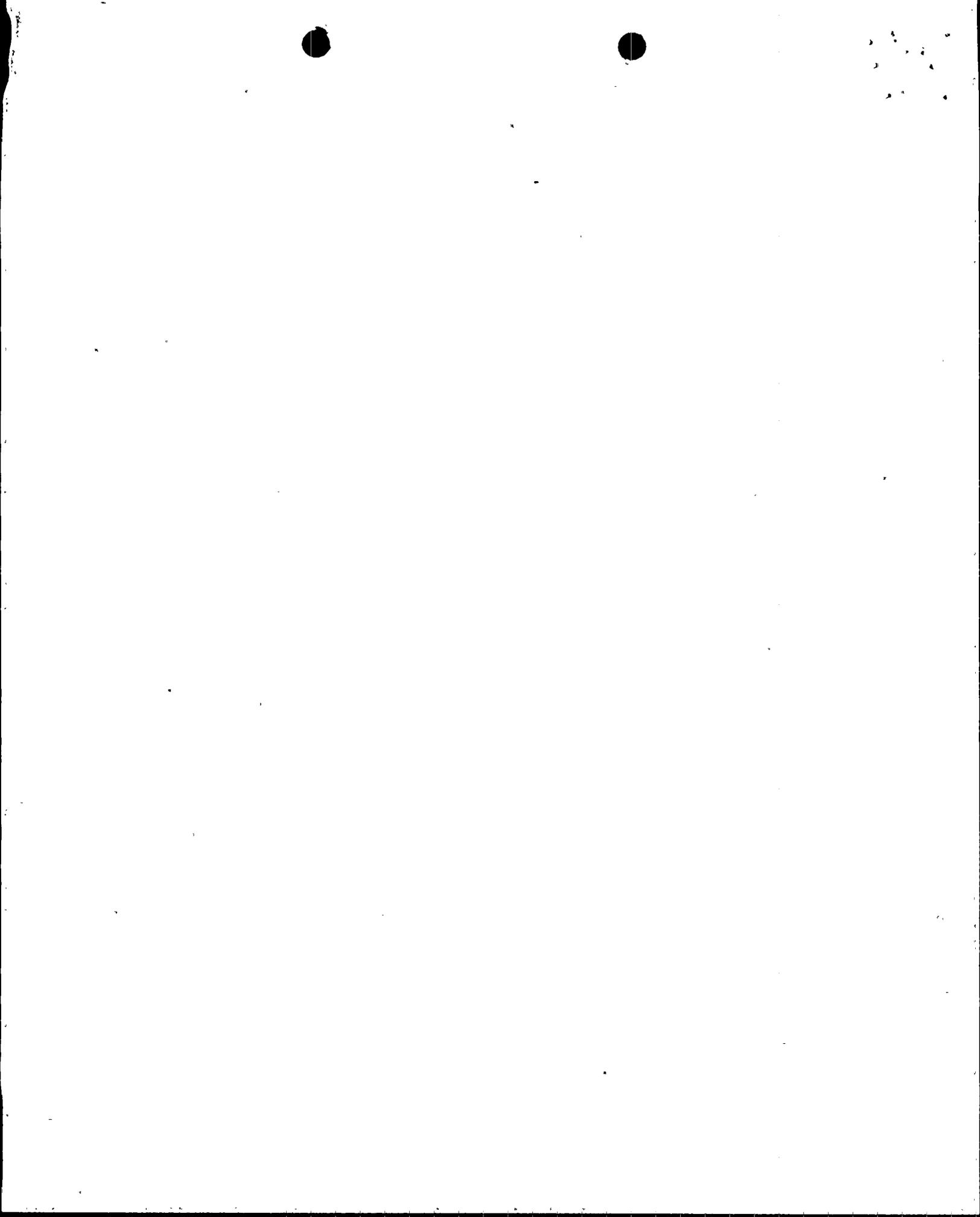
that the containment purge (or vent) system design met the criteria outlined in the NRC Standard Review Plan (SRP) 6.2.4, Revision 1 and the associated Branch Technical Position (BTP) CSB 6-4, Revision 1.

## II. DISCUSSION AND EVALUATION

The purge/vent systems at Turkey Point, Units 3 and 4 consist of two 48-inch lines and two 54-inch lines, respectively, for purging the containment atmosphere to allow personnel access and one 2-inch line in each unit to maintain the containment pressure during normal operation within a prescribed range.

The licensee responded to the NRC position letter of November 1978 by stating that they planned to justify unlimited purging, however, they would continue their practice of minimizing the number of purges and the duration of each purge during power operation. Based on their reactor operating experience, the licensee estimates that they need 200 hours of combined purges per year during power operation ( $\geq 2\%$  power) for the site (200 hours total for both units). We have reviewed the licensee's justification for the estimated annual usage of the purge system and find it to be acceptable.

The licensee has provided the results of an analysis of the mass of air and steam released to the environment prior to purge system isolation following a LOCA. The effect of the containment atmosphere being released on containment pressure has been bounded by two extreme cases (air alone and steam alone). The total mass released is calculated as 11,299 lbs. air or 8,588 lbs. steam. The containment pressure reduction resulting from this loss of air is computed to be 1.84 psi; the pressure reduction associated



with the loss of steam is 2.36 psi. The licensees indicated that the effect of containment pressure upon the calculated peak clad temperature is typically 5°F psi (from results of the FLECHT experiments). Therefore, the effect of purging on the ECCS performance is minimal for the Turkey Point plants. We have reviewed the licensee's assumptions used in the above mass-release analysis, and conclude that the mass released through the purge system prior to the system isolation following a LOCA has been conservatively calculated.

The licensee has not provided sufficient information concerning the provisions made to ensure that isolation valve closure will not be prevented by debris which could potentially become entrained in the escaping air and steam. We request that additional assurance of isolation valve closure such as debris screens should be provided for the purge supply and exhaust ductwork. Any such assurance should be seismic Category I design.

A vent system is periodically used during normal plant operation to maintain the containment pressure within prescribed limits. The system utilizes 2-inch valves for containment isolation. We have reviewed the isolation provisions for this system's containment penetration and conclude that they comply with General Design Criteria 54 and 56. Moreover, the concern over the ability of the valves to close during a LOCA transient does not apply to these small valves.

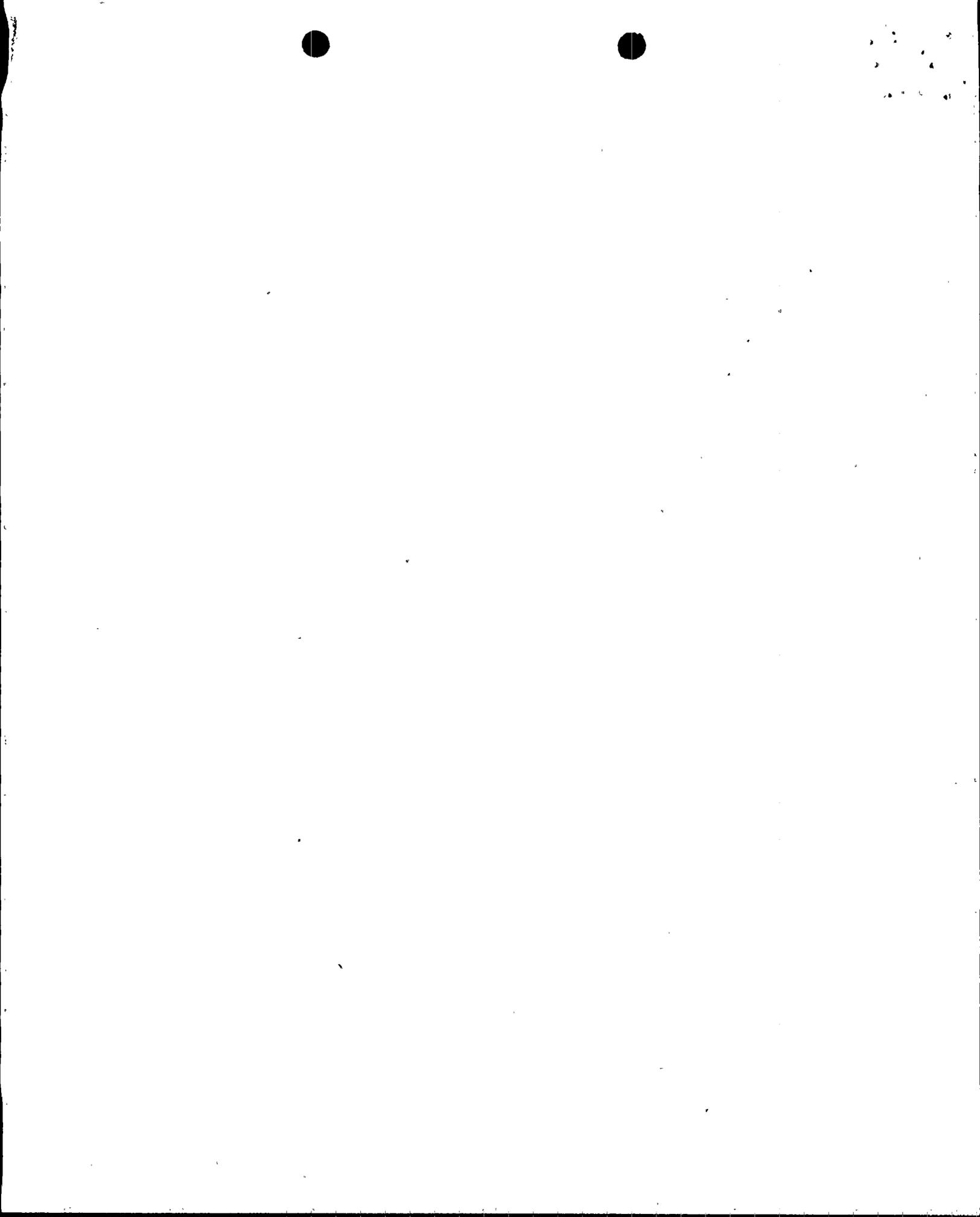
### III. CONCLUSION

We have reviewed the purge system against the guidelines of BTP CSB 6-4 (Revision 1), "Containment Purging During Normal Plant Operation." We conclude that the Turkey Point containment purge/vent system is acceptable, subject to the licensee's installation of a debris screen.

In addition, as a result of numerous reports on the unsatisfactory performance of resilient seats in butterfly-type isolation valves due to seal deterioration, periodic leakage integrity tests of the 48- and 54-inch butterfly isolation valves in the purge system are necessary. Therefore, the licensees should also propose a Technical Specification for testing the valves in accordance with the following testing frequency:

"The leakage integrity tests of the isolation valves in the containment purge/vent lines shall be conducted at least once every three months."

The purpose of the leakage integrity tests of the isolation valves in the containment purge lines is to identify excessive degradation of the resilient seats for these valves. Therefore, they need not be conducted with the precision required for the Type C isolation valve tests in 10 CFR Part 50, Appendix J. These tests would be performed in addition to the quantitative Type C tests required by Appendix J and would not relieve the licensee of the responsibility to conform to the requirements of Appendix J.



REQUEST FOR ADDITIONAL INFORMATIONContainment Purge and Vent Valve Operability  
Assurance Program

Justification demonstrating operability of the Turkey Point purge and vent valves for long term in accordance with our "Guidelines for Demonstration of Operability of Purge and Vent Valves" is required (ref. 1). This justification should include, as a minimum, method of test or analysis, results of the operability assurance program, and responses to inquiries transmitted in ref. 2.

Although the letter of December 9, 1980 (L-80-398) indicated the operability program is complete, the analysis and responses to the clarifications to the September 27, 1979 letter have not been submitted.

- 1) Attachment to letter to utilities of September 27, 1979: "Guidelines for Demonstration of Purge and Vent Valves."
- 2) "Clarification of September 27, 1979 Letter to Licensees Regarding Demonstration of Operability of Purge and Vent Valves."

