

SAFETY EVALUATION  
ON RELIEF FROM EXAMINATION OF REACTOR COOLANT PUMP  
FLORIDA POWER & LIGHT COMPANY  
TURKEY POINT UNIT NO. 4  
DOCKET NO. 50-251  
INSERVICE INSPECTION SECTION  
MATERIALS ENGINEERING BRANCH

BACKGROUND

Section XI of the ASME Code requires examination of one reactor coolant pump during each ten-year interval of plant operation. By letter (L-82-514) dated November 18, 1982, Florida Power & Light Company submitted a request for relief from the requirement for Turkey Point Unit 4 and provided information in support of the request. Pursuant to 10 CFR 50.55a (g)(6)(i), this information will be evaluated to determine if the requirement is impractical for the Turkey Point 4 facility and relief from the requirement can be granted after the necessary findings are made.

RELIEF REQUEST

Relief from performing volumetric and visual examinations of a reactor coolant pump is requested.

SECTION XI CODE REQUIREMENTS

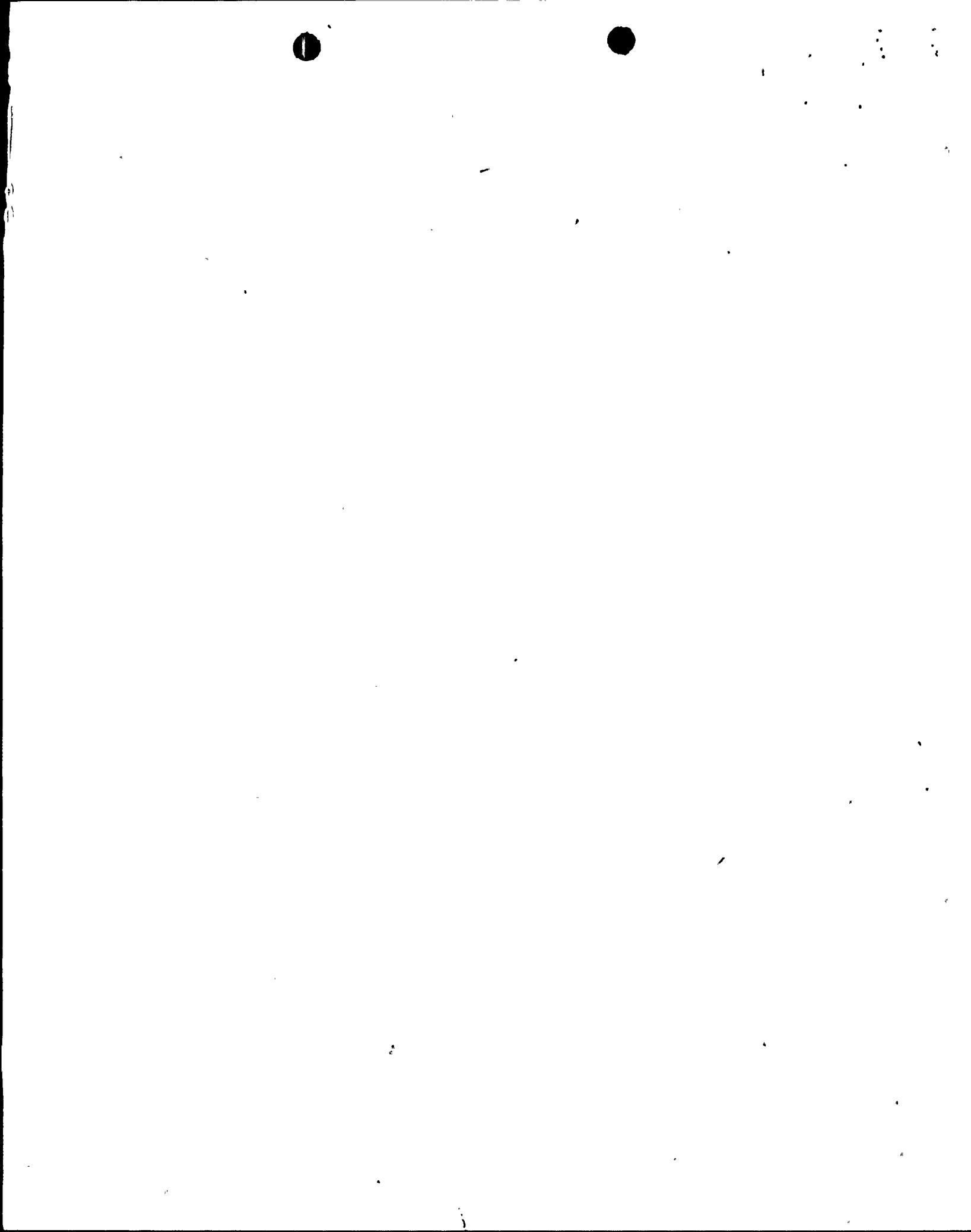
- 1) Code Item No. B5.6 - Volumetric examination, to include 100% of pressure retaining welds, of one pump in each group of pumps performing similar functions in a system. The examinations shall be performed during each inspection interval, and may be performed at or near the end of the inspection interval.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

- 2) Code Item No. B5.7 - Visual examination of the internal pressure boundary surfaces on one pump in each of the group of pumps performing similar functions in the system during each inspection interval. The examinations may be performed at or near the end of the inspection interval.

LICENSEE BASES FOR RELIEF REQUEST

- 1) State-of-the-Art Ultrasonic Techniques have not been developed to meet the Code requirements for examination of the pump casings.
- 2) Radiographic examination is not possible without the complete disassembly of the pump. To perform this examination, large expenditures of manhours and man-rem are required with essentially no compensating increase in plant safety. Based on actual data compiled from the radiographic examination of the Turkey Point No. 3 reactor coolant pump casing welds and visual examination of the internal pressure boundary surfaces on one pump, in excess of 5900 manhours and 46 man-rem exposure were expended in the disassembly, examinations and reassembly of the pump.
- 3) There is no requirement by the pump manufacturer (Westinghouse) to disassemble the pump(s) as part of normal maintenance or inspection. Accordingly, Florida Power & Light Company's procedures do not require disassembly of the pump(s) for maintenance or inspection



purposes. There are no reported failures within the pump casings with these model pump(s). It's note worthy to mention that removal of the pump impeller does not provide access to the casing internal surfaces which would still prohibit the inspection (visual and volumetric) of the pump to Code requirements.

- 4) Florida Power & Light Company feels that adequate safety margins are inherent in the basic pump design. The structural integrity afforded by the existing pump casing material will not significantly degrade over its lifetime. The reactor coolant pump casing material, cast stainless steel (ASTM A351-CF8M), is widely used in the nuclear industry and has performed extremely well. The presence of some delta ferrite (typically 5% or more) substantially increases resistance to intergranular corrosion and stress corrosion cracking. The delta ferrite also results in improved resistance to pitting corrosion.
- 5) Florida Power & Light Company feels that the satisfactory inspection results achieved in February 1982, coupled with the same inspections conducted by three (3) other utility company's and employing the same manufacturer's model pumps, provides additional assurance as to the pump's casing integrity.

ALTERNATE EXAMINATION PROPOSED

In lieu of Volumetric Examinations, Florida Power & Light Co. proposes to perform:



- 1) 100% visual examination of the external surfaces only of one pump casing welds to the extent and frequency of Examination Category B-L-2.
- 2) Partial surface examination of the external casing weld(s) of only one pump, conditions permitting - to the frequency of Examination Category B-L-2.

EVALUATION

The reactor coolant pumps at Turkey Point Unit 4 are constructed of thick-wall cast stainless steel material. Because of the high ultrasound attenuation characteristics of the material, a volumetric examination utilizing ultrasonics would produce meaningless results. Because of the internal design of the pumps, removal of the motor and impeller would not provide access to the internal surface which is necessary for performing both radiographic and visual examinations.

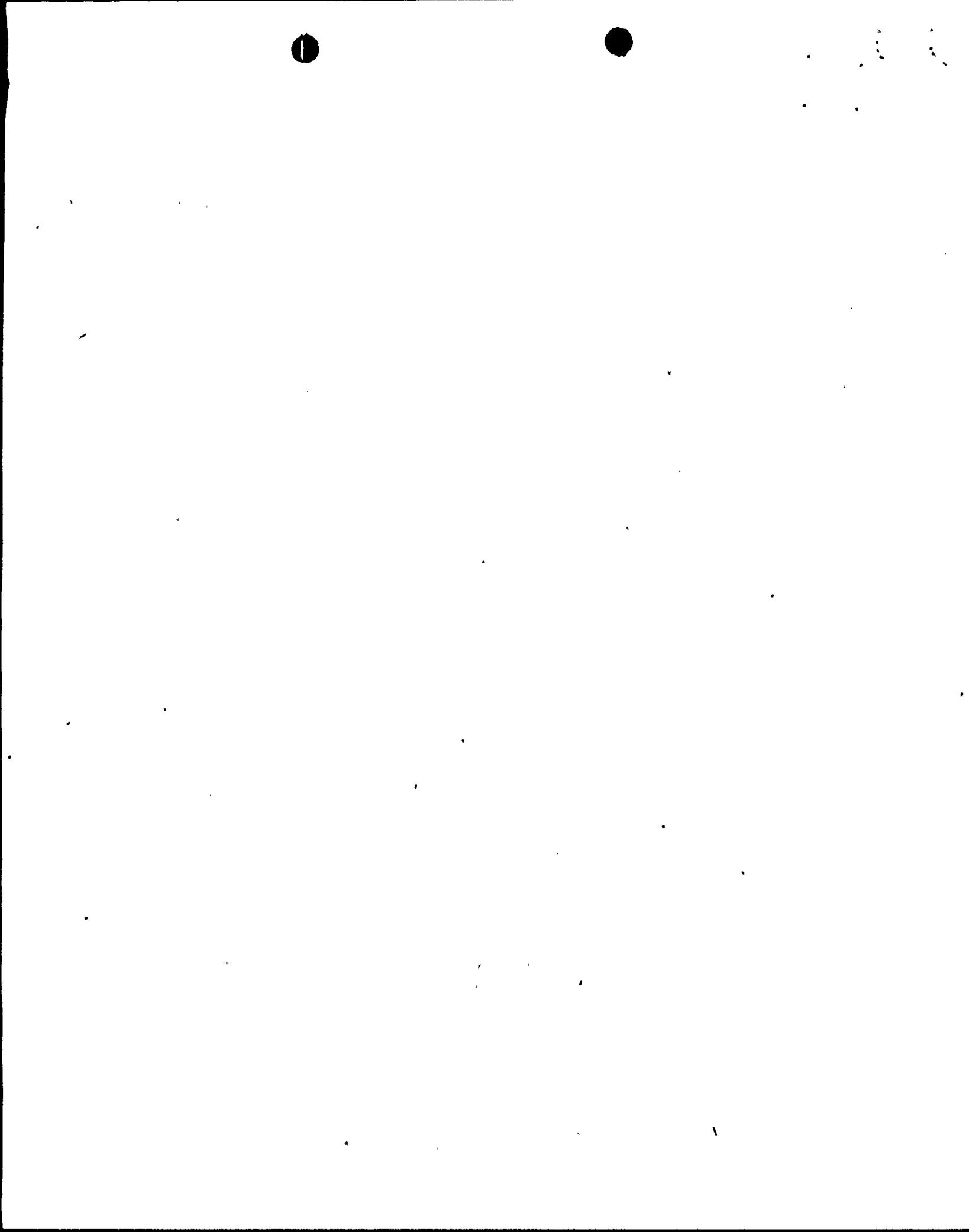
Radiographic examinations have been performed on other pumps with similar designs and materials and with approximately the same age and accumulated operating time. The data obtained from these examinations indicate no failures or reportable service - induced flaws in the pressure boundary material of the pumps.

In lieu of the required volumetric examination of the pump casing welds and visual examination of the internal surfaces, the licensee has proposed to perform 100% visual examination of the external surface and surface examination of a portion of the casing welds during the inspection interval.

Based on the pumps' design, materials of construction, and internal inaccessibility, the staff finds the examination requirements to be impractical to perform. The licensee's proposed alternate examinations will provide a high degree of certainty of the pumps' structural integrity. The staff concludes that relief from the volumetric examination of the pump's casing welds and visual examination of the internal surfaces may be granted provided the proposed alternate examinations are substituted.

Environmental Consideration

We have determined that the amendment does 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 amendment involves 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 this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that:

(1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: February 14, 1983

