

October 17, 1990

Docket Nos. 50-250  
and 50-251

Mr. J. H. Goldberg  
Executive Vice President  
Florida Power and Light Company  
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Dear Mr. Goldberg:

SUBJECT: TURKEY POINT UNITS 3 AND 4 - RELIEF FROM REACTOR COOLANT PUMP  
EXAMINATION (TAC NOS. 77074 AND 77075)

The purpose of this letter is to grant relief from examination requirements for welds and internal surfaces of reactor coolant pumps (RCPs) at Turkey Point Unit Nos. 3 and 4.

In a letter (L-90-156) dated May 30, 1990, FPL requested relief from certain examination requirements of Section XI of the ASME code. Section XI requires volumetric and visual examinations of welds and internal surfaces of one RCP once every 10 years of a plant's life.

The NRC staff has reviewed FPL's request for relief and determined that the examination requirements are impractical to perform on the RCPs and that your alternate examinations will provide assurance that the pumps are structurally acceptable. Enclosed is the staff's Safety Evaluation.

We have concluded that relief from the examination requirements is appropriate, and relief is hereby granted.

Sincerely,

(Original Signed By)

Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosure:  
As stated

cc w/enclosure:  
See next page

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*with*

Mr. J. H. Goldberg  
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Turkey Point Plant

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WASHINGTON, D. C. 20555

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REVIEW OF RELIEF REQUEST

REACTOR COOLANT PUMP EXAMINATION

FLORIDA POWER & LIGHT COMPANY

TURKEY POINT UNITS 3 AND 4

BACKGROUND

Section XI of the ASME Code requires examination of one reactor coolant pump during each 10-year interval of plant operation. By letter (L-90-156) dated May 30, 1990, Florida Power & Light Company submitted a request for relief from the requirement for Turkey Point Units 3 and 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 Units 3 and 4 facilities and relief from the requirement can be granted after the necessary findings are made.

RELIEF REQUEST

Relief is requested from the Code volumetric and visual examinations of the reactor coolant pump casing welds and interior surfaces during the inspection interval.

Section XI Code Requirements

EXAM CATEGORY    ITEM NO.

- |       |   |
|-------|---|
| B-L-1 | B12.10 - VOLUMETRIC EXAMINATION, to include 100% of the pressure retaining welds on one pump in each group of pumps performing similar functions in the system. |
| B-L-2 | B12.20 - VISUAL EXAMINATION of the internal pressure boundary surfaces on one pump in each group of pumps performing similar functions in the system.           |

Bases for Relief

Volumetric examination is not feasible due to the coarse grain structure inherent in thick stainless steel castings, which precludes the use of conventional ultrasonic examination techniques.

The pump casing is fabricated from cast stainless steel (ASTM A351, Grade CF8M) material.

Configuration of the pump design requires disassembly of the pump (including internal parts) to perform radiographic examination.

Visual examination is not practical since it requires total disassembly of the pump.

Radiographic examination is not possible without the complete disassembly of the pump. To perform this examination, large expenditures of man-hours 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 Unit No. 3 reactor coolant pump casing welds and the visual examination of the internal boundary surface of one pump, in excess of 5900 man-hours and 46 man-rem exposure were expended in the disassembly, examinations and reassembly of the pump.

There is a very low probability, based upon industry experience, that there will be a need to disassemble the pump(s) solely for maintenance purposes. 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 in the pump casings with these model pump(s).

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.

Satisfactory inspection results achieved in February 1982 coupled with the same inspections conducted by other utility companies and employing the same manufacturing model pumps, provide additional assurance as to the pumps' casing integrity.

Florida Power & Light Company, through the Westinghouse Owners' Group, has submitted to the ASME Code Committee, Code Case N-481, titled "Alternate Examination Requirements for Cast Austenitic Pump Casings." This Code Case was approved on March 5, 1990.

#### Alternative Examination

Perform a VT-2 visual examination of the exterior of all pumps during the hydrostatic pressure tests required by Table IWB-2500-1, Category B-P.

Perform a VT-1 visual examination of the external surfaces of the weld of one pump casing.

Perform a VT-3 visual examination of the internal surfaces whenever a pump is disassembled for maintenance.

Implementation Schedule for Unit 3

At or near the end of the inspection interval.

Inspection Interval 22 February 1984 to 21 February 1994  
Inspection Period 22 February 1991 to 21 February 1994

Implementation Schedule for Unit 4

At our near the end of the inspection interval.

Inspection Interval 15 April 1984 to 14 April 1994  
Inspection Period 15 April 1991 to 14 April 1994

EVALUATION

The reactor coolant pumps at Turkey Point Units 3 and 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.

CONCLUSION

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. Pursuant to 10 CFR 50.55a(g)(6)(i), the granting of this relief is authorized by law and will not endanger life or public property or the common defense and security and is otherwise in the public interest.

Dated:

Principal Contributor:  
D. Sellers