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 HOVEY, R.J. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION
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SUBJECT: Application for amends to licenses DPR-31 & DPR-41, modifying
 TS to change SR for TS 4.4.10 re reactor coolant pump
 flywheel insp.

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10 CFR \$50.36
10 CFR \$50.90

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Proposed License Amendments
Reactor Coolant Pump Flywheel Inspection

In accordance with 10 CFR \$50.90, Florida Power and Light Company (FPL) requests that Appendix A of Facility Operating Licenses DPR-31 and DPR-41 be amended to modify the Turkey Point Units 3 and 4 Technical Specifications. The purpose of the proposed license amendments is to revise the Technical Specifications to change the Surveillance Requirement of Technical Specification 4.4.10. The current Technical Specification specifies inspection of the reactor coolant pump flywheels in accordance with Regulatory Guide 1.14, and Regulatory position C.4.b. Regulatory position C.4.b, requires an in-place ultrasonic volumetric examination of the areas of high stress concentration at the bore and keyway at approximately 3-year intervals and a surface examination of all exposed surfaces and complete ultrasonic volumetric examination at approximately 10-year intervals. The proposed change will require flywheel inspections once every ten years. The proposed change is in accordance with NRC recommendations as documented by NRC letter to Duquesne Light Company, Beaver Valley Power Station, dated September 12, 1996, "Acceptance for Referencing of Topical Report WCAP-14535, 'Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination'".

The next required flywheel inspections for Turkey Point Units 3 and 4 are ultrasonic volumetric examinations currently scheduled for the Unit 3 March 1997 refueling outage and the Unit 4 October 1997 refueling outage. Therefore, FPL requests review and approval of the proposed amendments by January 31, 1997.

FPL has determined that the proposed license amendments do not involve a significant hazards consideration pursuant to 10 CFR \$50.92. A description of the amendments request is provided in Attachment 1. The no significant hazards determination in support of the proposed Technical Specifications change is provided in Attachment 2. Attachment 3 provides the proposed revised Technical Specifications page.

In accordance with 10 CFR \$50.91(b)(1), a copy of these proposed license amendments is being forwarded to the State Designee for the State of Florida.

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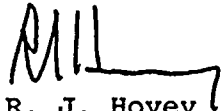
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The proposed license amendments have been reviewed by the Turkey Point Plant Nuclear Safety Committee and the FPL Company Nuclear Review Board.

Should there be any questions on this request, please contact us.

Very truly yours,

A handwritten signature in dark ink, appearing to read 'R. J. Hovey', with a stylized flourish at the end.

R. J. Hovey
Vice President
Turkey Point Plant

OIH

Attachments

cc: S. D. Ebnetter, Regional Administrator, Region II, USNRC
T. P. Johnson, Senior Resident Inspector, USNRC, Turkey Point Plant
W. A. Passetti, Florida Department of Health and Rehabilitative Services

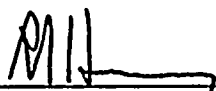
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Proposed License Amendments
Reactor Coolant Pump Flywheel Inspection

STATE OF FLORIDA)
) ss.
COUNTY OF DADE)

R. J. Hovey being first duly sworn, deposes and says:

That he is Vice President, Turkey Point Plant, of Florida Power and Light Company, the Licensee herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensee.



R. J. Hovey

Subscribed and sworn to before me this

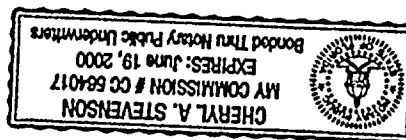
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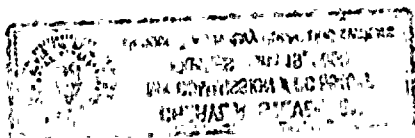
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NOTARY PUBLIC, in and for the County of Dade, State of Florida

R. J. Hovey is personally known to me.



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ATTACHMENT 1

DESCRIPTION OF AMENDMENTS REQUEST

Description and Purpose

Changes are proposed to revise Turkey Point Units 3 and 4 Technical Specifications (TS) surveillance requirement for the Reactor Coolant Pump (RCP) flywheel examinations. TS Surveillance Requirement 4.4.10 requires RCP flywheel inspections per the recommendations of Regulatory Position C.4.b of Regulatory Guide (RG) 1.14, Revision 1, August 1975. Regulatory positions C.4.b.1 and C.4.b.2 of the RG require an in-place ultrasonic volumetric examination of the areas of higher stress concentration at the bore and keyway at approximately 3-year intervals, during the plant shutdown coinciding with the Inservice Inspection (ISI) Schedule as required by Section XI of the ASME Code.

The next required flywheel inspections for Turkey Point Units 3 and 4 are scheduled for the Unit 3 March 1997 refueling outage and the Unit 4 October 1997 refueling outage. FPL is requesting to revise the RCP flywheel inspection surveillance requirement in accordance with NRC recommendations as documented by NRC letter to Duquesne Light Company, Beaver Valley Power Station, dated September 12, 1996, "Acceptance for Referencing of Topical Report WCAP-14535, 'Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination'".

Specifically, FPL is requesting that TS 4.4.10, page 3/4 4-38 be changed to read as follows:

"In addition to the requirements of Specification 4.0.5, each reactor coolant pump flywheel shall be inspected at least once every 10 years, by either conducting an in-place ultrasonic examination over the volume from the inner bore of the flywheel to the circle of one-half the outer radius, or conduct a surface examination (magnetic particle and/or liquid penetrant) of exposed surfaces of the disassembled flywheel."

The proposed change will reduce personnel radiation exposure, and will minimize the possibility of damage to the RCP flywheel due to the disassembly and reassembly required to perform the examination. WCAP 14535, "Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination", developed by the Westinghouse Owners Group (WOG), in conjunction with other participants, presents the basis for complete elimination of the RCP flywheel inspections. WCAP 14535 was submitted to the NRC for review on January 24, 1996, by Duquesne Light Company for application to Beaver Valley Power Station Units 1 and 2. On September 12, 1996, the NRC issued a Safety Evaluation Report documenting its approval of WCAP 14535. The NRC Safety Evaluation requests utilities that submit plant-specific applications of this topical report for their flywheels, verify that the flywheels are made of SA 533B or A516 material. The NRC SE requests additional actions for licensees having Group-15 and Group-10 flywheels. Turkey Point RCP flywheels are Group-13 flywheels and are fabricated from SA 533B material, therefore, no additional actions are required to verify plant-specific applicability of the results presented in WCAP 14535. The justification for the

proposed change is based on FPL's operating experience at Turkey Point Units 3 and 4 and the technical justification presented in WCAP 14535.

Inspection Methodology and Summary Results

RCP flywheel inspections are performed in accordance with the Turkey Point Units 3 and 4 Inservice Inspection (ISI) Program during refueling outages or motor refurbishment. The volumetric ultrasonic examinations are performed to the accessible surfaces of the flywheel after removal of the RCP flywheel shroud cover and/or gauge hole plugs. Scaffolding is required to access the surfaces to be examined. The volume of the flywheel is inspected for planar defects from the bore, keyways, and around the gauge holes.

The RCP motor design prohibits the performance of a complete volumetric examination of the RCP motor flywheel without disassembly of the upper motor area. The estimated exposure for this inspection is 1.5 Man Rem.

WCAP 14535 documents the results of flywheel inspections from approximately 57 nuclear stations covering approximately 217 flywheels and 729 examinations. The results show that there were no indications found that would affect the integrity of the flywheels. A number of recordable indications found were in the form of nicks and gashes in the keyway area created as a result of the disassembly and subsequent reassembly required to perform the flywheel inspections. Indications were found in the Northeast Utilities' Haddam Neck flywheels at the weld and heat affected zones used to join the two flywheel plates together. All of the Westinghouse flywheels except Haddam Neck are made of SA 533B. The Haddam Neck flywheels were made of boiler plate steel.

Turkey Point Units 3 and 4 flywheels are not welded, nor designed with this configuration, and therefore are not subject to the weld area cracking observed on the Haddam Neck RCP flywheels. Turkey Point has seven RCP flywheels in the ISI surveillance inspection program (i.e., six installed and one spare.) As presented in WCAP 14535, Turkey Point has performed 37 flywheel inspections with results showing two recordable indications. The first recordable indication observed in 1974, was determined to be laminations and was accepted as-is. The second recordable indication was observed in 1993 as a result of liquid penetrant testing. The indication was in one keyway and was determined to be torn metal which was removed by buffing. As discussed in WCAP 14535, these indications are classified as knicks or gashes generally found at the keyway area, created by the act of removing or reassembling the flywheel. These indications are not expected to propagate throughout the service life of the flywheels and were dispositioned as not affecting flywheel integrity. Based on the results of flywheel inspections performed at Turkey Point Units 3 and 4 over the past 20 years, FPL has concluded that the integrity of the flywheels and the potential for flywheel failure has not been adversely affected.

Stress and Fracture Evaluation

In accordance with the regulatory requirements for flywheel design specified in RG 1.14, Revision 1, Section C, Subsection 2, WCAP 14535 documents the results of the detailed stress and fracture evaluation of the RCP flywheels. The stress and fracture evaluation was performed for six flywheel groups bounding the range of domestic flywheel dimensions.

Per RG 1.14, Section C, item 2f, the normal flywheel speed should be less than one-half of the lowest of the critical speeds calculated for ductile failure, nonductile failure and excessive deformation. The normal operating flywheel speed for the Turkey Point flywheels is 1200 rpm. A ductile failure analysis was performed for each flywheel group assuming a range of crack lengths. The minimum calculated limiting speed assuming no cracks are present is 3155 rpm. Therefore, the normal flywheel speed must be less than 1577 rpm. The normal operating flywheel speed of 1200 rpm is below 1577 rpm. The minimum calculated limiting speed assuming a crack length of 10" is present is 2698 rpm. The normal operating speed of 1200 rpm is below the 1349 rpm requirement.

Per RG 1.14, Section C, item 2g, the predicted LOCA overspeed should be less than the lowest of the critical speeds calculated for ductile failure, nonductile failure and excessive deformation. The minimum calculated limiting speed for ductile failure assuming a crack length of 10" is present is 2698 rpm. WCAP 14535 documents 1500 rpm as the predicted LOCA overspeed for Westinghouse flywheels. The 1500 rpm LOCA overspeed is less than the minimum calculated limiting speed for ductile failure of 2698 rpm. Therefore, the requirements of item 2g for ductile failure are met.

A nonductile failure analysis was performed for flywheel integrity assuming flywheel overspeed of 1500 rpm and various critical crack lengths emanating radially from the keyway. The analysis considered a range of RT_{NDT} values of 0°F and 60°F. The results of the analysis determined that the critical crack lengths are quite large, even when considering higher values of RT_{NDT} and a lower than expected operating temperature. In addition, a fatigue crack growth analysis performed determined that crack growth is negligible over a 60 year life of the flywheel, even assuming a large initial crack length.

WCAP 14535 documents the results of excessive deformation analysis performed at the flywheel overspeed of 1500 rpm which shows that the maximum calculated flywheel deformation of only 0.010 inches is negligible.

The results of the analyses presented in WCAP 14535 and summarized above, show that 1) RCP flywheels have a very high tolerance for the presence of flaws, 2) there are no significant mechanisms for inservice degradation or deformation of the flywheels, and 3) fatigue crack growth over a 60 year life of the flywheel is negligible. Therefore, flywheel inspections performed prior to service are sufficient to ensure flywheel integrity during their service life.

Risk Assessment

WCAP 14535 documents RCP flywheel structural reliability evaluations performed for each of the flywheel groups using conservative input values for preservice flaw existence, initial flaw length, inservice flaw detection capability, and RCP start/stop transients. The results of these evaluations determined that flywheel inspections beyond ten years of plant life have no significant benefit on the risk of flywheel failure. Most flaws that could lead to flywheel failure are detected during preservice examinations or early in plant life, and crack growth is negligible over plant life. Sensitivity studies documented in WCAP 14535 showed that improved flaw detection capability and increased number of inspections resulted in a very small relative change in the calculated failure probability.

Summary

The results of flywheel inspections presented in WCAP 14535 show that flywheel integrity and plant safety are actually increased by eliminating all flywheel inspections. Detailed stress and fracture analyses as well as risk analysis have been completed with the results indicating there would be no change in the probability of failure for RCP motor flywheels if all inspections were eliminated. Therefore, the additional personnel exposure and cost of the inspection is not warranted given no quantifiable safety benefit.

Evaluation of Request

FPL believes that the proposed change is justified based on the following:

1. Turkey Point has performed 37 flywheel inspections with no indications affecting flywheel integrity.
2. FPL and industry experience, as shown in WCAP 14535, document there is a low probability of RCP motor flywheel failure. A review of industry information through the WOG revealed no critical flaws identified on RCP motor flywheels, and no RCP flywheel failures have been reported.
3. The WOG effort includes FPL Turkey Point Units 3 and 4 flywheels. Detailed stress and fracture analyses as well as risk analysis have been completed with the results indicating that there would be no change in the probability of failure for RCP motor flywheels if all inspections were eliminated.
4. Flywheel inspections result in personnel exposure and additional costs related to outage time and replacement power.
5. Flywheel inspections have the potential for increased probability of failure resulting from flywheel damage incurred during disassembly or reassembly of the flywheel.

Therefore, the recommended change to the RCP flywheel inspection frequency does not affect the integrity of the flywheels or significantly increase the probability of failure.

ATTACHMENT 2

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Description of Proposed License Amendments

Changes are proposed to revise Turkey Point Units 3 and 4 Technical Specifications (TS) to change the Reactor Coolant Pump (RCP) flywheel surveillance requirement. The proposed change will require RCP flywheel inspections once every ten years. TS Surveillance Requirement 4.4.10 requires RCP flywheel inspections per the recommendations of Regulatory Position C.4.b of Regulatory Guide (RG) 1.14, Revision 1, August 1975. Regulatory positions C.4.b.1 and C.4.b.2 of the RG require a volumetric examination of the areas of higher stress concentration at the bore and keyway at approximately 3-year intervals and a surface examination of all "exposed" surfaces of the flywheels and complete ultrasonic volumetric examination at approximately ten-year intervals during the plant shutdown coinciding with the Inservice Inspection (ISI) Schedule as required by Section XI of the ASME Code.

The next required flywheel inspections for Turkey Point Units 3 and 4 are scheduled for the Unit 3 March 1997 refueling outage and the Unit 4 October 1997 refueling outage. FPL is requesting to revise the RCP flywheel inspection surveillance requirement in accordance with NRC recommendations as documented by NRC letter to Duquesne Light Company, Beaver Valley Power Station, dated September 12, 1996, "Acceptance for Referencing of Topical Report WCAP-14535, 'Topical Report on Reactor Coolant Pump Flywheel Inspection Elimination'".

Specifically, FPL is requesting that TS 4.4.10, page 3/4 4-38 be changed to read as follows:

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Introduction

The Nuclear Regulatory Commission has provided standards for determining whether a significant hazards consideration exists (10 CFR §50.92 (c)). A proposed amendment to an operating license for a facility involves no significant hazards consideration, if operation of the facility in accordance with the proposed amendments would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. Each standard is discussed below for the proposed amendments.

Discussion

- (1) Operation of the facility in accordance with the proposed amendments would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed amendments do not involve a significant increase in the probability or consequences of an accident previously evaluated because:

The safety function of the RCP flywheels is to provide a coastdown period during which the RCPs would continue to provide reactor coolant flow to the reactor after loss of power to the RCPs. The maximum loading on the RCP motor flywheel results from overspeed following a large LOCA. The estimated maximum obtainable speed in the event of a LOCA was established conservatively. The proposed change does not affect that analysis. Reduced coastdown times due to a single failed flywheel is bounded by the locked rotor (instantaneous seizure) analysis, therefore, it would not place the plant in an unanalyzed condition. Therefore, these changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

- (2) Operation of the facility in accordance with the proposed amendments would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The use of the modified specifications can not create the possibility of a new or different kind of accident from any previously evaluated since the proposed amendments will not change the physical plant or the modes of plant operation defined in the facility operating license. No new failure mode is introduced due to the change in flywheel inspection frequency since the proposed changes do not involve the addition or modification of equipment, nor do they alter the design or operation of affected plant systems, structures, or components.

- (3) Operation of the facility in accordance with the proposed amendments would not involve a significant reduction in a margin of safety.

The operating limits and functional capabilities of the affected systems, structures, and components are basically unchanged by the proposed amendments. The WOG effort includes FPL Turkey Point Units 3 and 4 flywheels. FPL has performed 37 flywheel inspections with no indications affecting flywheel integrity. The margins of safety defined in RG 1.14, Revision 1 used in the analysis are not significantly changed. Detailed stress and fracture analyses as well as risk analysis have been completed with the results indicating that there would be no change in the probability of failure for RCP motor flywheels if all inspections were eliminated. Therefore these changes do not involve a significant reduction in the margin of safety.

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Attachment 2
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Summary

Based on the above, FPL has determined that the proposed amendments request does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of a new or different kind of accident from any accident previously evaluated, (3) involve a significant reduction in a margin of safety; and therefore the proposed changes do not involve a significant hazards consideration as defined in 10 CFR §50.92.

ATTACHMENT 3 to L-96-300

PROPOSED LICENSE AMENDMENTS
REACTOR COOLANT PUMP FLYWHEEL INSPECTION

PROPOSED TECHNICAL SPECIFICATIONS PAGE

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