OCT 0 9 2019

L-2019-091
10 CFR 50.90

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington D C 20555-0001

RE: St. Lucie Nuclear Plant, Unit 2
Docket No. 50-389
Renewed Facility Operating Licenses NPF-16

License Amendment Request to Modify the Reactor Coolant Pump (RCP) Flywheel Inspection Program Requirements

Pursuant to 10 CFR Part 50.90, Florida Power & Light Company (FPL) hereby requests an amendment to Renewed Facility Operating License NPF-16 for St. Lucie Nuclear Plant Unit 2 (St. Lucie Unit 2). The proposed license amendment modifies the St. Lucie Unit 2 Technical Specifications (TS) by revising the Reactor Coolant Pump Flywheel Inspection Program requirements consistent with the conclusions and limitations specified in NRC safety evaluation (SE), Acceptance for Referencing of Topical Report SIR-94-080, "Relaxation of Reactor Coolant Pump Flywheel Inspection Requirements", dated May 21, 1997.

The enclosure to this letter provides FPL's evaluation of the proposed changes. Attachment 1 to the enclosure provides the St. Lucie Unit 2 TS pages marked up to show the proposed changes. No changes are proposed to the St. Lucie Unit 2 TS Bases.

FPL has determined that the proposed license amendment does not involve a significant hazards consideration pursuant to 10 CFR 50.92(c), and that there are no significant environmental impacts associated with the proposed changes. The St. Lucie Plant Onsite Review Group (ORG) has reviewed the proposed license amendment. In accordance with 10 CFR 50.91(b)(1), a copy of the license amendment request is being forwarded to the State designee for the State of Florida.

FPL requests that the proposed license amendment is processed as a normal license amendment request, with approval within one year of the submittal date. Once approved, the amendment shall be implemented within 90 days.

This letter contains no new regulatory commitments.

Should you have any questions regarding this submittal, please contact Mr. Wyatt Godes, St. Lucie Licensing Manager, at (772) 467-7435.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on OCT 0 9 2019

Sincerely,

Daniel D. DeBoer
Site Director, St. Lucie Nuclear Plant
Florida Power & Light

Enclosure

Attachments

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, St. Lucie Nuclear Plant, Units 1 and 2
USNRC Senior Resident Inspector, St. Lucie Nuclear Plant, Units 1 and 2
Ms. Cindy Becker, Florida Department of Health

ENCLOSURE

Evaluation of the Proposed Changes

St. Lucie Nuclear Plant 2
License Amendment Request to Modify the
Reactor Coolant Pump (RCP) Flywheel Inspection Program Requirements

1.0 SUMMARY DESCRIPTION

Florida Power & Light Company (FPL) requests an amendment to Renewed Facility Operating License NPF-16 for St. Lucie Unit 2. The proposed license amendment modifies the St. Lucie Unit 2 Technical Specifications (TS) by revising the Reactor Coolant Pump Flywheel Inspection Program requirements consistent with the conclusions and limitations specified in NRC safety evaluation (SE), Acceptance for Referencing of Topical Report SIR-94-080, "Relaxation of Reactor Coolant Pump Flywheel Inspection Requirements", (Reference 6.1).

2.0 DETAILED DESCRIPTION

2.1 Reactor Coolant Pump (RCP) and Flywheel

The four RCPs function to maintain adequate cooling flow in the reactor coolant system (RCS) by circulating a large volume of primary coolant water at high temperature and pressure. The RCPs provide sufficient forced circulation flow through the RCS to assure adequate heat removal from the reactor core during power operation. A low limit on the RCP flowrate is established to assure that specified fuel design limits are not exceeded. The RCPs can be disassembled and inspected internally.

The RCP flywheel consists of two "hollow" type steel plates attached to the motor shaft at the top and bottom, each shrunk-fit unto a spoke arrangement. The flywheel functions to maintain the rotational inertia of the motor and provide sufficient coast-down flow to assure adequate core cooling in the event power to the RCP is lost. RCP flywheels are designed to withstand normal operating conditions, anticipated transients and the design basis loss of coolant accident loadings combined with the safe shutdown earthquake loadings. The material used to manufacture the flywheel is produced by a process that minimizes flaws and provides adequate fracture toughness. The criteria for RCP flywheel design are compatible with the safety philosophy of the reactor coolant pressure boundary. Access to the flywheels is provided during refueling outages for volumetric examinations.

2.2 Current Technical Specifications Requirements / Description of the Proposed Changes

TS 6.8.4.o, Reactor Coolant Pump Flywheel Inspection Program, specifies requirements for the St. Lucie Unit 2 RCP Flywheel Inspection Program per the recommendation of Regulatory position c.4.b of Regulatory Guide (RG) 1.14, Revision 1 (Reference 6.2). The proposed change modifies the requirements of TS 6.8.4.o as follows:

TS 6.8.4.o Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel ~~***per the recommendation of Regulatory position c.4.b of Regulatory Guide 1.14, Revision 1, August 1975.***~~ ***by either a 100% volumetric inspection of the upper flywheel over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or a surface examination (magnetic particle testing and/or penetrant testing) of exposed surfaces defined by the volume of the disassembled flywheel, at least once every 10 years.***

2.3 Reason for the Proposed Change

The proposed license amendment serves to reduce outage maintenance and inspections that contribute marginally to safety.

3.0 TECHNICAL EVALUATION

The proposed license amendment modifies the St. Lucie Unit 2 TS by revising the RCP Flywheel Inspection Program requirements consistent with the NRC staff's SE, Acceptance for Referencing of Topical Report SIR-94-080 (Reference 6.1). Specifically, the proposed change modifies TS 6.8.4.o by replacing Recommendation c.4.b of RG 1.14 (Reference 6.2) with a requirement to inspect each RCP flywheel by either a 100% volumetric inspection of the upper flywheel over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or a surface examination (magnetic particle testing and/or penetrant testing) of exposed surfaces defined by the volume of the disassembled flywheel at least once every ten-years.

3.1 Background

TS 6.8.4.o currently requires an inspection of each RCP flywheel in accordance with Recommendation c.4.b of RG 1.14, Revision 1 (Reference 6.2). The requirement derives from the presumption that the flywheels could degrade and produce high energy missiles at normal operating and over-speed conditions. The RG 1.14 recommendations serve to minimize the potential for RCP flywheel failure to levels that preclude the need for protection against the consequences of failure. Recommendation c.4.b of RG 1.14 calls for an ultrasonic volumetric examination of the higher stress concentration areas at the bore and keyway at approximately three-year intervals as well as a surface examination of all exposed surfaces and complete ultrasonic volumetric examination at approximately ten-year intervals. Per Recommendation c.4.b, the flywheel inspections are to coincide with licensee's inservice inspection schedule required by Section XI of the American Society of Mechanical Engineers (ASME) Code.

In March 1995, Structural Integrity Associates completed for the Combustion Engineering Owners Group (CEOG), topical report SIR-94-080 (Reference 6.3), which established a technical basis for relaxing the three-year RCP flywheel inspection recommended in RG 1.14. The topical report postulates an initial flaw for the flywheels and performs a crack growth and stability analysis under the most severe environmental and loading conditions. In May 21, 1997, the NRC issued a SE for SIR-94-080, concluding that (1) all RCP flywheels meet the proposed non-ductile fracture criteria and have adequate fracture toughness during their service periods, and (2) all flywheels [except Waterford 3] satisfy the excessive deformation criterion of RG 1.14. The staff's conclusions were based on the fracture toughness (K_{IC}) values reported in SIR-94-080 for participating plants, including St. Lucie. In the SE, the staff authorized the application of SIR-94-080 in requests to extend RCP flywheel inspections from three to ten years provided the licensee verify the reference temperature (RT_{NDT}) for their RCP flywheels and demonstrate that the corresponding fracture toughness (K_{IC}) values are equivalent to those reported in SIR-94-080. The SE further stated that for flywheels made of materials other than SA 533B and SA 508, the licensee must justify use of the 'fracture toughness (K_{IC}) versus T-R_{NDT}' curve in Appendix A of the ASME Section XI Code to derive their respective K_{IC} values. The St. Lucie Unit 2 RCP flywheels fall into this latter category.

3.2 RCP Flywheel Certified Mill Test Report (CMTR)

The flywheels currently installed in the St. Lucie Unit 2 RCP motors were produced to ASTM-A 516-69 Grade 65. This material is equivalent to ASTM/ASME A-516 Grade 70, as the reported yield and tensile strength exceed the requirements of Grade 70, and there are no other technical differences between these specifications. This equivalence is also

noted in topical report SIR-94-080 (Reference 6.3). It should be noted that at the time topical report SIR-94-080 was in development, the flywheels were installed in the St. Lucie Unit 1 RCPs and are referred throughout topical report SIR-94-080 as the Unit 1 RCP flywheels. Each RCP motor and flywheel was subsequently relocated from Unit 1 to Unit 2 during a refurbishment effort from 2011 to 2017.

FPL conducted a review of the Certified Mill Test Report (CMTR) dated June 1, 1971, for the St. Lucie Unit 2 flywheels to verify that the topical report SIR-94-080 criteria for RT_{NDT} are satisfied. The four RCP flywheels were procured on a single contract and the material information was provided in a May 25, 1972, letter from Byron Jackson to Combustion Engineering. The letter stated that the test report for the ASTM-A-516-69 GR 65 flywheel material for the RCP drive motor*s* (i.e. plural) were attached, though only one CMTR was enclosed. FPL concludes that the CMTR provided by Byron Jackson is representative of all four St. Lucie Unit 2 flywheels based on internal correspondence from Combustion Engineering dated August 14, 1972, documenting a review of the material toughness data and verifying a fracture toughness (K_{IC}) of "at least" 90 ksi$\sqrt{in}$ for the four flywheels. The RCP motor flywheels applicable to this amendment request will be identified in the St. Lucie Unit 2 Inservice Inspection (ISI) Program Plan, as a part of the augmented inservice inspection program, by the corresponding RCP motor serial numbers indicated below:

RCP Motor Serial Nos.
40574-1
40574-2
40574-3
40574-4

3.3 Criterion 1: Reference Temperature - RT_{NDT}

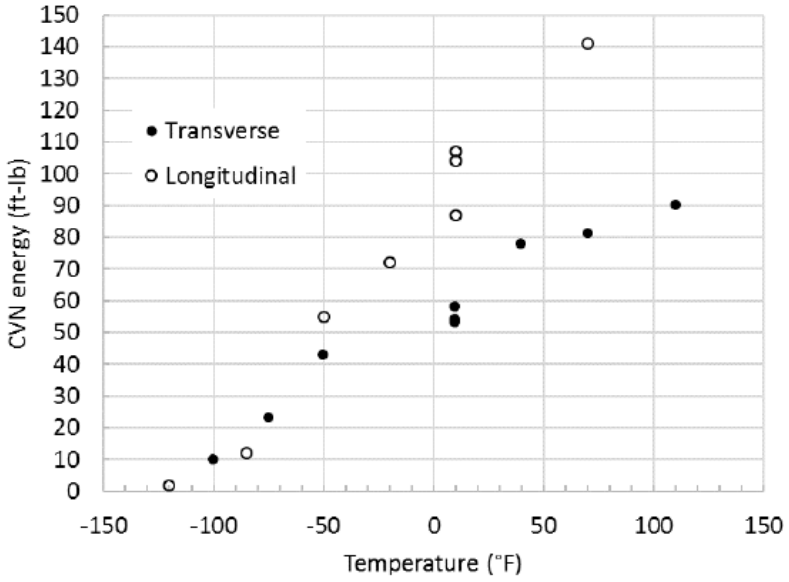
In the SE for topical report SIR-94-080 (Reference 6.1), the staff requested that licensees seeking an extension of the flywheel inspection frequency must verify the reference temperature (RT_{NDT}) for their RCP flywheels. NB 2331(a) of ASME Code, Section III (Reference 6.4), describes a means for determining the reference temperature (RT_{NDT}) for the RCP motor flywheels. Per NB-2331(a)(4),

> *When no Charpy tests have been performed at a temperature ≤ T_{NDT} + 60°F, or when Charpy tests at T_{NDT} + 60°F do not meet the requirements of (2), then the temperature at which a minimum of 50 ft-lb absorbed energy and 35 mils lateral expansion is attained can be determined from a full Charpy impact curve.*

As described in NB-2331(a)(4), the RT_{NDT} can be obtained utilizing a full Charpy impact curve, which conservatively estimates the temperature at which a material exceeds a transverse 'Charpy Energy' of 50 ft-lb and 35 mils lateral expansion (referred to in this amendment request as T_{50}).

The Charpy impact curve shown below was created by plotting the transverse and longitudinal impact test results specified in the CMTR provided by Byron Jackson.

Charpy Impact Data Plot



The figure displays T_{50} to be between +10°F and -30°F. A T_{50} value of +10°F was used for conservatism. Three impact tests were performed at this temperature, and all three exceeded 50 ft-lb absorbed energy and 35 mils lateral expansion. Based on a T_{50} temperature of +10°F, the RT_{NDT} is determined to be -50°F as follows:

$$RT_{NDT} = T_{50} - 60^oF = +10^oF - 60^oF = \underline{-50^oF}$$

3.4 Criterion 2: Fracture Toughness (K_{IC})

In the SE for topical report SIR-94-080 (Reference 6.1), the staff requested that licensees seeking an extension of the flywheel inspection frequency must demonstrate that the corresponding fracture toughness (K_{IC}) values are equivalent to those reported in topical report SIR-94-080 (Reference 6.3) and, for flywheels of materials other than SA 533B and SA 508, the licensee must justify the use of the 'K_{IC} vs. T-RT_{NDT}' curve in Appendix A, ASME Section XI Code (ASME K_{IC} vs. T-RT_{NDT} curve) to derive the respective K_{IC} values.

To demonstrate that the Topical Report SIR-94-080 results are applicable to the St. Lucie Unit 2 RCP flywheels, the fracture toughness, K_{IC}, must be equivalent to at least 90ksi$\sqrt{in}$ at 100°F. Using ASME Section XI Code, Non-Mandatory Appendix A, Article A-400 (Reference 6.5), the lower bound ASME K_{IC} vs. T-RT_{NDT} curve can be approximated by the equation below, where "T" is the flywheel normal operating temperature:

$$K_{IC} = 33.2 + 20.734\exp[0.02\ (T - RT_{NDT})],$$

For the purposes of this evaluation the measured ambient containment temperature of approximately 100°F is used as the flywheel operating temperature, which is the value applied in topical report SIR-94-080.

Using 100°F for the flywheel normal operating temperature and the Reference Temperature (RT_{NDT}) of -50°F discussed in Section 3.3 of this amendment request, the fracture toughness, K_{IC}, derived from the Article A-400 equation of Non-Mandatory Appendix A, ASME Section XI Code (Reference 6.5) is as follows:

$$K_{IC} = 33.2 + 20.734 \exp[0.02 (100 - (-50))] = 449.65 \text{ ksi}\sqrt{\text{in}}$$

As can be seen, the calculated K_{IC} far exceeds 90ksi√in, which was considered typical for the ASTM/ASME SA 516 Grade 70 flywheels assumed for St. Lucie in the fracture mechanics evaluation of topical report SIR-94-080 (Reference 6.3).

3.5 K_{IC} vs. T-R_{NDT} Curve Applicability

Though the calculated K_{IC} value is well above the fracture toughness specified in topical report SIR-94-080 for the RCP flywheels currently installed at St. Lucie Unit 2, application of the ASME K_{IC} vs. T-RT_{NDT} curve must be justified since the St. Lucie Unit 2 flywheels are of ASTM/ASME SA 516 Grade 70 equivalence rather than SA 533B or SA 508. Figure A-4200-1 of ASME Section XI Code, Non-Mandatory Appendix A (Reference 6.5) provides the ASME K_{IC} vs. T-RT_{NDT} curve.

To demonstrate that the ASME K_{IC} vs. T-RT_{NDT} curve is conservative and applicable to the A 516 Grade 65/70 plate material, conversion of the Charpy V-notch impact data was performed. Conversion of the Charpy V-notch data provides a single temperature data point to determine if application of the ASME K_{IC} vs. T-RT_{NDT} curve is conservative and representative. To convert the data, two industry accepted empirical correlations derived by Sailors and Corten (Reference 6.6) and by Roberts and Newton (Reference 6.7) were employed. Both correlations ignore strain rate effects and thereby would be expected to be conservative. Both equations are used to provide relative magnitude of the available fracture toughness, although the correlation developed by Roberts and Newton is considered a lower bound. The specific equations and results for these correlations are summarized for the St. Lucie Unit 2 flywheels in the table below. Note: 'CVN' refers to the transverse Charpy impact test values specified on the CMTR provided by the vendor, Byron Jackson, for the RCP flywheels currently installed at St. Lucie Unit 2.

Correlation Equations and Results

Correlation Name	Equation	Result for PSL Unit 2 (ksi√in)	
		CVN At Room Temp.	CVN At +110°F
Corten and Sailors	$K_{IC} = 15.5 (CVN)^{0.5}$	139.5	147.0
Roberts and Newton	$K_{IC} = 9.35(CVN)^{0.63}$	149.0	159.2

The above correlations demonstrate that the critical stress intensity values of the actual material at the Charpy test temperature are of greater toughness than the lower bound ASME K_{IC} vs. T-RT_{NDT} curve.

3.6 License Renewal Considerations

Topical report SIR-94-080 (Reference 6.3) conservatively assumes 4000 cycles of RCP start-ups and shut downs in its analysis of crack growth rates. For St. Lucie Unit 2, the projected lifetime occurrences of plant heat ups and cool downs is 500 based on the original 40-year design life cycle. The St. Lucie Unit 2 Class 1 piping and components were subsequently reviewed for thermal fatigue and confirmed to be acceptable for a 60-year design life, which accounts for the period of extended operation (PEO). Additionally, the RCPs are cycled when filling and venting the reactor coolant system which occurs prior to unit start-up. Conservatively estimating three RCP cycles per fill and vent activity and a fill and vent activity for each heat up and cool down results in 2000 RCP start/stop cycles, which is easily bounded by the 4000 cycles assumed in topical report SIR-94-080.

3.7 Summary

The maximum reference temperature, RT_{NDT}, for the St. Lucie Unit 2 RCP flywheels has been established as -50°F based upon the information available. A review of the Charpy test information associated with flywheels fabricated of ASTM-A-516 Grade 70 was used to conservatively estimate the fracture toughness, K_{IC}, based on analytical correlation. These estimates demonstrate that the fracture toughness of the St. Lucie Unit 2 RCP flywheels is bounded by the lower bound values of the K_{IC} curve with sufficient margin. As such, the St. Lucie Unit 2 RCP flywheels are of sufficient fracture resistance to justify extending the inspection frequency to once every ten years consistent with the conclusions and limitations in the NRC's SE for topical report SIR-94-080 (Reference 6.1).

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

- General Design Criteria (GDC) 1 of Appendix A to 10 CFR 50 states that SSCs important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed.

- GDC 4 of Appendix A to 10 CFR 50 states that SSCs important to safety be designed to accommodate the effects of and be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. The GDC further states that the structures, systems, and components shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures.

- GDC 10 of Appendix A to 10 CFR 50 states that the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences.

- Regulatory Guide (RG) 1.14, Revision 1, describes a method acceptable to the NRC of implementing GDC 4 with regard to minimizing the potential for failures of the flywheels of reactor coolant pump motors in light-water-cooled power reactors.

The proposed change complies with the applicable regulatory requirements and does not alter the manner in which the facility is operated and maintained, consistent with GDCs 1, 4 and 10 of 10 CFR 50 Appendix A, and RG 1.14 as applicable. All applicable requirements will continue to be satisfied as a result of the proposed license amendment.

4.2 No Significant Hazards Consideration

The proposed license amendment modifies the St. Lucie Unit 2 Technical Specifications (TS) by revising the Reactor Coolant Pump Flywheel Inspection Program requirements consistent with the conditions and limitations specified in NRC safety evaluation (SE), Acceptance for Referencing of Topical Report SIR-94-080, "Relaxation of Reactor Coolant Pump Flywheel Inspection Requirements". As required by 10 CFR 50.91(a), FPL evaluated the proposed changes using the criteria in 10 CFR 50.92 and determined that the proposed changes do not involve a significant hazards consideration. An analysis of the issue of no significant hazards consideration is presented below:

(1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed license amendment would revise the RCP Flywheel Inspection Program by extending the frequency of flywheel volumetric examinations from three to ten years. Increasing the flywheel inspection frequency neither affects the design of any plant structure, system or component (SSC) nor the manner in which the SSCs are operated and controlled. No changes are proposed to the facility or to any accident analysis assumptions, inputs or expected outcomes. Increasing the flywheel inspection frequency is acceptable provided the flywheel metallurgical properties satisfy the criteria specified in the NRC safety evaluation for topical report SIR-94-080. Compliance with the NRC safety evaluation cannot adversely affect the likelihood or outcome of any design basis accident.

Therefore, the proposed license amendments would not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change to extend the frequency of RCP flywheel inspections from three to ten years does not affect RCP capability to provide adequate core cooling in the event of a power loss and thereby cannot create new inputs or assumptions associated with any accident analyses. The proposed change neither installs new plant equipment nor modifies the manner in which existing equipment is operated and controlled, and therefore cannot introduce new failure modes. Increasing the flywheel inspection frequency is acceptable provided the flywheel metallurgical properties satisfy the criteria specified in the NRC safety evaluation for topical report SIR-94-080. Compliance with the NRC safety evaluation cannot create new or different kinds of accidents.

Therefore, the proposed license amendments would not create the possibility of a new or different kind of accident from any previously evaluated.

(3) Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed change to extend the frequency of RCP flywheel inspections from three to ten years does not involve changes to any safety analyses, safety limits or limiting safety system settings. The proposed change does not adversely impact plant operating margins or the reliability of equipment credited in safety analyses. Increasing the flywheel inspection frequency is acceptable provided the flywheel metallurgical properties satisfy the criteria specified in the NRC safety evaluation for topical report SIR-94-080. Compliance with the NRC safety evaluation cannot result in a reduction in the margin of safety.

Therefore, the proposed license amendment would not involve a significant reduction in the margin of safety.

Based upon the above analysis, FPL concludes that the proposed amendments do not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of no significant hazards consideration is justified.

4.3 Precedents

In Reference 6.8, Dominion Nuclear Connecticut, Inc. was granted a license amendment for Millstone Nuclear Power Station, Unit No. 2 (MNP2), which extended the RCP flywheel inspection frequency from three to ten years. The cited precedent is similar to this amendment request in that the original MNP2 flywheels were of ASTM-A 516-69 Grade 65 and ASTM-A 300-68 specifications which met the minimum properties SA-516 Grade 70. Additionally, the precedent employed the correlations of Sailors and Corten (Reference 6.6) and of Roberts and Newton (Reference 6.7) to justify use of the ASME K_{IC} vs. T-RT_{NDT} curve for the original MNP2 flywheels. Similar to this amendment request, the fracture toughness values derived from the correlation formulas were based on the original Charpy impact test values. Also similar to this amendment request, MNP2 concluded, based in part on the flywheel material properties and the ASME K_{IC} vs. T-RT_{NDT} curve correlations, that topical report SIR-94-080 applied to the MNP2 RCP flywheels and thereby an extension of the examination frequency to ten years was justified.

4.4 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment modifies a regulatory requirement with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or changes an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

6.1 NRC letter to Director, Nuclear Safety Division, Entergy Operations, Inc., Acceptance for Referencing of Topical Report SIR-94-080, Relaxation of Reactor Coolant Pump Flywheel Inspection Requirements, May 21, 1997.

6.2 Regulatory Guide 1.14, Revision 1, Reactor Coolant Pump Flywheel Integrity, Revision 1, August 1975 (ADAMS Accession No. ML003739936)

6.3 Structural Integrity Associates, Inc., SIR-94-080-A, Revision 1, Relaxation of Reactor Coolant Pump Flywheel Inspection Requirements.

6.4 ASME Boiler and Pressure Vessel Code, Section III, Rules for Construction of Nuclear Power Plant Components, 2007 Edition, 2008 Addenda.

6.5 ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 2007 Edition, 2008 Addenda.

6.6 Sailors, R.H., Corten, H.T. “Relationship between Material Fracture Toughness using Fracture Mechanics and Transition Temperature Tests,” Fracture Toughness, Proceedings of the 1971 National Symposium of Fracture Mechanics, Part II, ASTM STP 514, American Society for Testing and Materials, 1972, pp.164-19l.

6.7 Roberts, R., Newton, C. Interpretive Report on Small Scale Test Correlations with K_{IC} Data; New York: Welding Research Council; Bulletin 265; February 1981.

6.8 NRC letter to Dominion Nuclear Connecticut, Inc. Millstone Nuclear Power Station, Unit No. 2 - Issuance of Amendment RE: Reactor Coolant Pump Flywheel Inspection; February 1, 2002 (ADAMS Accession No. ML013370406)

ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATION PAGES (MARKUP)

(1 page follows)

ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATION PAGES (MARKUP)

ADMINISTRATIVE CONTROLS (continued)

n. Diesel Fuel Oil Testing Program

A diesel fuel oil testing program to implement required testing of both new fuel oil and stored fuel oil shall be established. The program shall include sampling and testing requirements, and acceptance criteria, all in accordance with applicable ASTM Standards. The purpose of the program is to establish the following:

(i) Acceptability of new fuel oil for use prior to addition to storage tanks by determining that the fuel oil has:

1. An API gravity or an absolute specific gravity within limits,

2. A flash point and kinematic viscosity within limits for ASTM 2D fuel oil, and

3. A clear and bright appearance with proper color or a water and sediment content within limits;

(ii) Other properties for ASTM 2D fuel oil are within limits within 31 days following

by either a 100% volumetric inspection of the upper flywheel over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or a surface examination (magnetic particle testing and/or penetrant testing) of exposed surfaces defined by the volume of the disassembled flywheel at least once every 10 years .

every 31 days.

Oil Testing.

o. Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel ~~per the recommendation of Regulatory position c.4.b of Regulatory Guide 1.14, Revision 1, August 1975.~~

p. Snubber Testing Program

This program conforms to the examination, testing and service life monitoring for dynamic restraints (snubbers) in accordance with 10 CFR 50.55a inservice inspection (ISI) requirements for supports. The program shall be in accordance with the following:

1. This program shall meet 10 CFR 50.55a(g) ISI requirements for supports.

2. The program shall meet the requirements for ISI of supports set forth in subsequent editions of the Code of Record and addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure (BPV) Code and the ASME Code for Operation and Maintenance of Nuclear Power Plants (OM Code) that are incorporated by reference in 10 CFR 50.55a(b) subject to limitations and modifications listed in 10 CFR 50.55a(b) and subject to Commission approval.

3. The program shall, as required by 10 CFR 50.55a(b)(3)(v)(B), meet Subsection ISTA, "General Requirements" and Subsection ISTD, "Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants".

4. The 120-month program updates shall be made in accordance with 10 CFR 50.55a(g)(4), 10 CFR 50.55a(g)(3)(v) and 10 CFR 50.55a(b) (including 10 CFR 50.55a(b)(3)(v)(B)) subject to the limitations and modifications listed therein.