FPL

APR 0 1 2006

L-2006-037
10CFR50.4
10CFR 50.60(a)

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

Subject: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-25
Reactor Vessel Surveillance Capsule
Proposed Change in Withdrawal Schedule

This letter serves to inform the Nuclear Regulatory Commission (NRC) of Florida Power & Light Company's (FPL) intent to revise the Reactor Vessel Surveillance Program (RVSP) capsule withdrawal schedule for Turkey Point Units 3 and 4. NRC Administrative Letter 97-04, "NRC Staff Approval for Changes to 10 CFR Part 50, Appendix H, Reactor Vessel Surveillance Specimen Withdrawal Schedules," requires NRC review and verification that changes to the RVSP capsule withdrawal schedule meet the Standard ASTM E-185-82, "Standard Practice for Conducting Surveillance Tests for Light-water Cooled Nuclear Power Reactor Vessels, E 706 (IF)."

In accordance with 10 CFR 50.60(a), the attachment to this letter provides the necessary information for NRC review of and concurrence with the proposed surveillance capsule withdrawal schedule change. FPL requests NRC review and concurrence of the revised RVSP capsule withdrawal schedule by October 29, 2006, prior to the currently scheduled withdrawal date for Unit 4 capsule X, (capsule 4-X), during the Unit 4 Fall refueling outage.

The currently approved RVSP capsule withdrawal schedule is provided in Table 1. The proposed change to the integrated RVSP for Units 3 and 4 will revise the program to conform to the ASTM E-185-82 Standard. In accordance with ASTM E-185-82, Table 1, the recommended withdrawal schedule for the fifth capsule (capsule 4-X) is at the end of life (EOL) such that the surveillance capsule fluence is not less than once or greater than twice the peak EOL vessel fluence. EOL for Units 3 and 4 is 48 EFPY based on the renewed license expiration dates of 2032 and 2033 respectively. The revised EOL vessel fluence at the limiting weld is projected to be 3.93E19. FPL will revise the RVSP withdrawal schedule for the fifth capsule (capsule 4-X) from 24.0 effective full power years (EFPY) to 33.2 EFPY (from 2006 to 2015). The revised schedule will change the surveillance capsule target fluence from 3.85E19 to 5.89E19. A change to the surveillance capsule withdrawal schedule for capsule Unit 4-X is required to meet the EOL fluence requirements for the fifth capsule with the renewed license expiration dates. The proposed revised RVSP surveillance capsule withdrawal schedule is provided in Table 2.

Designated for original PM 9/5/06

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Neutron fluence projections used to determine the revised withdrawal schedule for the fifth capsule (capsule 4-X) are obtained from calculations performed by Westinghouse as documented in Westinghouse report FPL-02-038, "Neutron Exposure Projections Based on Continued Use of Power Suppression Rods in Future Core Designs." The calculation results are provided in Attachment 1. The capsule 4-X neutron fluence projections are based on the same methodology used in the analysis for Unit 3 capsule X (capsule 3-X), documented in WCAP-15916, dated September 2002, and submitted to the NRC by FPL letter L-2002-199 dated October 8, 2002. The capsule 4-X analysis model included the use of part length Hafnium absorbers in the core, which is the current Turkey Point fuel management philosophy. The calculated lead factor and projected neutron fluence assume a 95% capacity factor. The capsule 3-X measured fluence was used as an approximation of the capsule 4-X fluence since they both had approximately the same EFPY at the time of capsule 3-X withdrawal on September 21, 2001.

By letter dated April 22, 1985, the NRC approved an integrated surveillance program for Turkey Point Units 3 and 4. Changing the withdrawal schedule for the fifth capsule (capsule 4-X) does not have any impact on the Turkey Point Units 3 and 4 integrated surveillance program. The mechanical property data requirements for an integrated surveillance program have been met by data obtained from surveillance capsules T-3, T-4, V-3 and X-3. Additional mechanical property data is available from surveillance capsule A5 which contained Turkey Point material and was irradiated and tested in 1999 as part of the B&W Reactor Vessel Owners Group program. In addition, there are two supplemental capsules containing Turkey Point weld metal: 1) surveillance capsule A2 being irradiated at Crystal River as part of the B&WOG Master Integrated Surveillance Program; and 2) a capsule that has recently been installed at Point Beach. Dosimetry data from capsule 4-X is not required to validate the model used to calculate the neutron exposure. As documented in FPL letter L-2002-199, comparisons of the measured dosimetry results to both the calculated and least squares adjusted values for all surveillance capsules withdrawn from service through 2001 at Turkey Point Unit 3 met the acceptance criteria specified by Regulatory Guide 1.190, and therefore, validated the model used to calculate the neutron exposures.

Please contact Walter Parker at (305) 246-6632, if there are any questions.

Very truly yours,

Terry Jones

Terry O. Jones
Vice President
Turkey Point Nuclear Plant

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point

Table 1
Surveillance Capsule Withdrawal Schedule
For Turkey Point Units 3 & 4

Capsule(d)	Capsule Location (Degree)	Updated Lead Factor	Removal EFPY(a)	Capsule Fluence (n/cm^2)
T_3[(b)]	270	2.60	1.15	7.39×10^{18}
T_4[(b)]	270	2.48	1.17	7.08×10^{18}
S_4[(b)]	280	1.60	3.41	1.43×10^{19}
S_3[(b)]	280	1.96	3.46	1.72×10^{19}
V_3[(b)]	290	0.75	8.06	1.53×10^{19}
X_3[(c)]	270	2.48	19.4 (29 years)	$*2.74 \times 10^{19}$
X_4[(c)]	270	2.48	24.0 (34 years)	$*3.85 \times 10^{19}$
Y_3	150	0.49	Standby	-----
U_3	30	0.49	Standby	-----
W_3	40	0.34	Standby	-----
Z_3	230	0.34	Standby	-----
V_4	290	0.79	Standby	-----
Y_4	150	0.49	Standby	-----
U_4	30	0.49	Standby	-----
W_4	40	0.34	Standby	-----
Z_4	230	0.34	Standby	-----

NOTES:

(a) Effective Full Power Years (EFPY) from plant startup.
(b) Plant specific evaluation.
(c) Since the vessel controlling material is the weld metal, and only Capsule V from Unit 4 and Capsules X from Units 3 and 4 contain weld specimens, Capsule X in Units 3 and 4 were moved to the 270° location to increase the lead factor.
(d) Unit designation shown in subscript.
* Projected.

Table 2

Proposed Revised Surveillance Capsule Withdrawal Schedule
Turkey Point Units 3 & 4

Capsule (Unit shown as subscript)	Capsule Location (Degree)	Updated Lead Factor	Removal EFPY (a)	Capsule Fluence (n/cm^2)
T_3	270	2.60	1.15	7.39×10^{18} (e)
T_4	270	2.48	1.17	7.08×10^{18} (e)
S_3	280	1.96	3.46	1.72×10^{19} (e)
S_4	280	1.60	3.41	1.43×10^{19} (e)
V_3	290	0.75	8.06	1.53×10^{19} (e)
X_3	270 (50)(b)	2.48	19.85	2.93×10^{19} (e)
X_4	270 (50)(b)	3.43(d)	33.2	5.89×10^{19} (c)
V_4	290	0.79	Standby	--
U_3	30	0.49	Standby	--
U_4	30	0.49	Standby	--
W_3	40	0.34	Standby	--
W_4	40	0.34	Standby	--
Y_3	150	0.49	Standby	--
Y_4	150	0.49	Standby	--
Z_3	230	0.34	Standby	--
Z_4	230	0.34	Standby	--

(a) Effective Full Power Years.
(b) The "X" capsules were moved from the 50 degree location to the 270 degree location in 1990.
(c) Projected 1.5 times EOL fluence for the limiting weld material.
(d) Based on future fluence only and only associated with limiting weld material.
(e) Fluence is measured.

ATTACHMENT 1 TO
L-2006-037

Westinghouse

Westinghouse Electric Company
Nuclear Services
P.O. Box 355
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USA

Mr. Andy Zielonka
Florida Power & Light Company
Turkey Point Nuclear Plant
9760 S.W. 344th Street
Florida City, FL 33035

Our ref: FPL-02-38

October 16, 2002

FLORIDA POWER & LIGHT COMPANY
TURKEY POINT UNIT 3
Neutron Exposure Projections Based on
Continued Use of Power Suppression Rods in Future Core Designs

References:
1. FPL Purchase Order No. 00053832, Rev. 001
2. Westinghouse Sales Order No. 12928
3. Westinghouse Letter FPL-02-30, 9/20/02, "Reactor Vessel Surveillance Capsule Analysis Final Report Transmittal
4. LTR-REA-02-101

Dear Mr. Zielonka:

Pursuant to the add-on scope of work (Ref. 1), obtained by Westinghouse that resulted from the recently completed Turkey Point Unit 3 Capsule X analysis documented in WCAP-15916 (Ref. 3), an additional set of neutron exposure projections for the surveillance capsule locations and reactor pressure vessel, including critical girth weld, are attached. It should be noted that the projections in WCAP-15916 are conservatively based on the assumption that part-length absorbers utilized in assemblies on the core flats will be discontinued in the future. In contrast, the attached projections assume that these power suppression rods will be used in the future. Thus, following the end of the current operating Cycle 19, the attached projections are based on the burnup-weighted average core design data from the last two fuel reloads that utilized these power suppression devices, i.e., Cycles 18 and 19. In addition, these projections assume that the current reactor power level of 2300 MWt will be maintained.

The attached tables provide neutron exposure values in terms of fast ($E > 1.0$ MeV) neutron flux/fluence and iron atom displacement rates/displacements (dpa) calculated for the Turkey Point Unit 3 surveillance capsules, maximum values for the reactor pressure vessel at the clad/base metal interface, and maximum values for the critical girth weld (located between the intermediate shell course and lower shell course vessel forgings) at the clad/base metal interface. The calculational methodology previously described in WCAP-15916, was also used to support

this work and satisfies the requirements specified in Regulatory Guide RG-1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," dated March 2001.

In addition, please find attached a Westinghouse Certification of Conformance for the work performed and transmitted by the Ref. 3 letter.

If you have any questions regarding this transmittal, please call Tom Laubham at 412-374-6788 or Mike Miler at 412-374-3353.

Sincerely,

WESTINGHOUSE ELECTRIC COMPANY LLC

Michael J. Miller /for

Douglas H. Warren
Customer Projects Manager

Attachments

cc: Steve Collard 1L, 1A

Attachment 1 to FPL-02-38
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Table 1

Summary of Calculated Neutron Exposure Rates and Integrated Exposures
At The Surveillance Capsule Center
(Centered at the Core Midplane)

Fuel Cycle	Irradiation Time [efpy]	Neutron Flux (E > 1.0 MeV) [n/cm^2-s]				
		0°	10°	20°	30°	40°
Cycle 19	21.16	7.64E+10	5.92E+10	3.65E+10	2.94E+10	2.02E+10
Future	32.00	7.03E+10	5.58E+10	3.79E+10	3.04E+10	2.05E+10
Future	48.00	7.03E+10	5.58E+10	3.79E+10	3.04E+10	2.05E+10
Future	54.00	7.03E+10	5.58E+10	3.79E+10	3.04E+10	2.05E+10

Fuel Cycle	Irradiation Time [efpy]	Neutron Fluence (E > 1.0 MeV) [n/cm^2]				
		0°	10°	20°	30°	40°
EOC 19	21.16	6.82E+19	5.11E+19	2.81E+19	2.16E+19	1.47E+19
Future	32.00	9.22E+19	7.02E+19	4.10E+19	3.20E+19	2.17E+19
Future	48.00	1.28E+20	9.84E+19	6.02E+19	4.73E+19	3.20E+19
Future	54.00	1.41E+20	1.09E+20	6.74E+19	5.31E+19	3.59E+19

Fuel Cycle	Irradiation Time [efpy]	Iron Atom Displacement Rate [dpa/s]				
		0°	10°	20°	30°	40°
Cycle 19	21.16	1.28E-10	1.00E-10	5.94E-11	4.80E-11	3.27E-11
Future	32.00	1.18E-10	9.44E-11	6.17E-11	4.97E-11	3.31E-11
Future	48.00	1.18E-10	9.44E-11	6.17E-11	4.97E-11	3.31E-11
Future	54.00	1.18E-10	9.44E-11	6.17E-11	4.97E-11	3.31E-11

Fuel Cycle	Irradiation Time [efpy]	Iron Atom Displacements [dpa]				
		0°	10°	20°	30°	40°
EOC 19	21.16	1.15E-01	8.68E-02	4.58E-02	3.53E-02	2.37E-02
Future	32.00	1.55E-01	1.19E-01	6.69E-02	5.23E-02	3.50E-02
Future	48.00	2.15E-01	1.67E-01	9.80E-02	7.74E-02	5.17E-02
Future	54.00	2.37E-01	1.85E-01	1.10E-01	8.68E-02	5.80E-02

Table 2

Summary of Calculated Maximum Neutron Exposure Rates and Integrated Exposures
At The Pressure Vessel Clad/Base Metal Interface

Fuel Cycle	Irradiation Time [efpy]	Neutron Flux (E > 1.0 MeV) [n/cm^2-s]			
		0°	15°	30°	45°
Cycle 19	21.16	3.43E+10	1.86E+10	1.16E+10	7.84E+09
Future	32.00	3.17E+10	1.84E+10	1.20E+10	7.94E+09
Future	48.00	3.17E+10	1.84E+10	1.20E+10	7.94E+09
Future	54.00	3.17E+10	1.84E+10	1.20E+10	7.94E+09

Fuel Cycle	Irradiation Time [efpy]	Neutron Fluence (E > 1.0 MeV) [n/cm^2]			
		0°	15°	30°	45°
EOC 19	21.16	2.76E+19	1.42E+19	8.54E+18	5.67E+18
Future	32.00	3.85E+19	2.05E+19	1.26E+19	8.39E+18
Future	48.00	5.45E+19	2.97E+19	1.87E+19	1.24E+19
Future	54.00	6.04E+19	3.32E+19	2.10E+19	1.39E+19

Fuel Cycle	Irradiation Time [efpy]	Iron Atom Displacement Rate [dpa/s]			
		0°	15°	30°	45°
Cycle 19	21.16	5.89E-11	3.07E-11	1.96E-11	1.28E-11
Future	32.00	5.44E-11	3.03E-11	2.03E-11	1.30E-11
Future	48.00	5.44E-11	3.03E-11	2.03E-11	1.30E-11
Future	54.00	5.44E-11	3.03E-11	2.03E-11	1.30E-11

Fuel Cycle	Irradiation Time [efpy]	Iron Atom Displacements [dpa]			
		0°	15°	30°	45°
EOC 19	21.16	4.75E-02	2.35E-02	1.45E-02	9.28E-03
Future	32.00	6.61E-02	3.38E-02	2.14E-02	1.37E-02
Future	48.00	9.36E-02	4.91E-02	3.17E-02	2.03E-02
Future	54.00	1.04E-01	5.48E-02	3.55E-02	2.27E-02

Table 3

Summary of Calculated Maximum Neutron Exposure Rates and Integrated Exposures
At The Intermediate Shell Course to Lower Shell Course Girth Weld Clad/Base Metal Interface

Fuel Cycle	Irradiation Time [efpy]	Neutron Flux (E > 1.0 MeV) [n/cm^2-s]			
		0°	15°	30°	45°
Cycle 19	21.16	2.22E+10	1.46E+10	1.10E+10	7.49E+09
Future	32.00	2.05E+10	1.47E+10	1.15E+10	7.62E+09
Future	48.00	2.05E+10	1.47E+10	1.15E+10	7.62E+09
Future	54.00	2.05E+10	1.47E+10	1.15E+10	7.62E+09

Fuel Cycle	Irradiation Time [efpy]	Neutron Fluence (E > 1.0 MeV) [n/cm^2]			
		0°	15°	30°	45°
EOC 19	21.16	2.19E+19	1.25E+19	8.15E+18	5.48E+18
Future	32.00	2.89E+19	1.75E+19	1.21E+19	8.08E+18
Future	48.00	3.93E+19	2.49E+19	1.79E+19	1.19E+19
Future	54.00	4.31E+19	2.77E+19	2.00E+19	1.34E+19

Fuel Cycle	Irradiation Time [efpy]	Iron Atom Displacement Rate [dpa/s]			
		0°	15°	30°	45°
Cycle 19	21.16	3.84E-11	2.42E-11	1.87E-11	1.23E-11
Future	32.00	3.54E-11	2.42E-11	1.95E-11	1.25E-11
Future	48.00	3.54E-11	2.42E-11	1.95E-11	1.25E-11
Future	54.00	3.54E-11	2.42E-11	1.95E-11	1.25E-11

Fuel Cycle	Irradiation Time [efpy]	Iron Atom Displacements [dpa]			
		0°	15°	30°	45°
EOC 19	21.16	3.79E-02	2.07E-02	1.39E-02	8.98E-03
Future	32.00	5.00E-02	2.90E-02	2.05E-02	1.33E-02
Future	48.00	6.79E-02	4.12E-02	3.04E-02	1.96E-02
Future	54.00	7.46E-02	4.58E-02	3.40E-02	2.19E-02