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 FACIL: 50-250 Turkey Point Plant, Unit 3, Florida Power and Light C 05000250
 50-251 Turkey Point Plant, Unit 4, Florida Power and Light C 05000251
 AUTH. NAME AUTHORITY AFFILIATION
 WOODY, C. P. Florida Power & Light Co.
 RECIP. NAME RECIPIENT AFFILIATION
 THOMPSON, H. R. Division of Pressurized Water Reactor Licensing - A (post B)

SUBJECT: Forwards projected values for RT (Pressurized thermal shock)
 at termination of OLS in 070427, per 10cfr50.61(b)(1). Results
 indicate that limiting value will be 263 F, comparing
 favorably to screening criterion for circumferential welds.

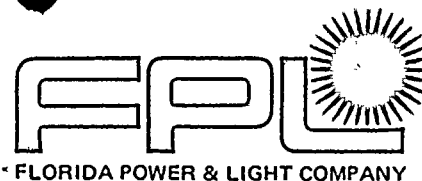
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JAN 23 1988

L-86-09

Mr. Hugh R. Thompson, Director
 Division of PWR Licensing - A
 U.S. Nuclear Regulatory Commission
 Washington D.C. 20555

Dear Mr. Thompson:

Re: Turkey Point Units 3 & 4
 Docket Nos. 50-250, 50-251
10 CFR 50.61 (b)(1) Report

10 CFR 50.61 (b)(1) requires the submittal of projected values of RT (PTS) for the end of the operating license for Turkey Point Units 3 and 4. This requirement arises from the concern over reactor vessel embrittlement and pressurized thermal shock.

FPL has responded vigorously to the PTS issue. We continue to monitor the results of the programs enacted at Turkey Point Units 3 & 4 to reduce the rate of neutron fluence exposure to the reactor vessel through modified core loading design. We have also documented more comprehensive data on the chemical composition and initial material properties of the reactor vessel. Our efforts in all these areas have been reviewed by your staff and the results are summarized in the attached Tables 1 & 2.

The results of our work to date demonstrate that the limiting RT (PTS) at the termination of the Turkey Point Units 3 and 4 operating license (April 27, 2007) will be 263° F for both units. These values compare favorably to the screening criterion for circumferential welds of 300° F as given in 10 CFR 50.61. The supporting information for these values is included in Attachment 1. FPL is committed to maintaining the reactor fluence reduction program to ensure that the Turkey Point reactor vessels will not exceed the screening criterion.

Therefore, FPL concludes that there is no longer any basis for concern regarding pressurized thermal shock at either Turkey Point Units 3 or 4, as evidenced by the significant margin between our projections and the screening criterion.

Should you or your staff have any questions on this information, please contact us.

Very truly yours,

C. O. Woody
 C. O. Woody
 Group Vice President
 Nuclear Energy Department

COW/JEM:ss

Attachment

cc: Dr. J. Nelson Grace - Region 11, USNRC
 Harold F. Reis, Esquire
 PNS-LI-86-05

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Add:

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ATTACHMENT 1

Re: Turkey Point Units 3 & 4
Docket Nos. 50-250, 50-251
10 CFR 50.61 (b)(1) Report

Pursuant to the requirements of 10 CFR 50.61 the following material is submitted:

- o All Baseline materials listing
- o Copper and Nickel concentration
- o Initial RT(NDT)
- o Neutron fluence as of January, 1986
- o Neutron fluence as of April 2007 (termination of license)
- o Calculated RT (PTS) for January 86 and April 07
- o References for all bases for the above

Beltline Description

Both vessels were fabricated by Babcock and Wilcox for Westinghouse. The beltline consists of two ring forgings joined by an automatic submerged arc weld. The forgings are ASME SA508 Grade B material. The welds for both units are designated as SA 1101 which is a copper coated Page welding wire using a Linde 80 weld flux.

Table 1 lists the beltline materials, heat numbers for the forgings and weld wire and weld flux lot numbers. Also included in Table 1 are the copper and nickel concentrations and initial RT(NDT) for each material.

It has been concluded by the USNRC in Secy. 82-465 that the high copper circumferential, Linde 80 welds are the critical beltline materials in both Turkey Point Units 3 and 4. In addition, safety evaluations have been performed by the USNRC staff on both the materials properties⁽¹⁾ and flux reduction programs⁽²⁾ previously mentioned. Actual initial RT (NDT) and more representative values of copper and nickel were approved. Low leakage core loading was evaluated and verified that Turkey Point 3 and 4 would remain below the screening criterion for 32 EFPY.

Fluence Determinations

FPL's flux reduction programs have been reviewed by the NRC staff in enclosure 2 of reference 2. A topical report on fluence determinations is being prepared and will be submitted in the first quarter of 1986. Fuel management, quantification of vessel flux and methodology to verify the estimated fluences used in this submittal have been discussed with the NRC and are reviewed in reference 7. Table 2 gives vessel wall fluence for both units.

Calculations

Calculations for present and end of license RT(PTS) are based on equation 1 of 10CFR 50.61 (b)(2) which gave a lower value than equation 2 for both units. All data used for these calculations are presented in Tables 1 and 2. RT(PTS) for both units is presented in Table 2. Source material for all data is listed in the references. Both welds use actual values for initial RT (NDT) and 480°F is used for "M". Forgings use an "M" factor of 590°F.

TABLE 1

MATERIALS DATA FOR TURKEY POINT
BELTLINE MATERIALS

<u>UNIT</u>	<u>LOCATION</u>	<u>HEAT NO.</u>	<u>LOT NO.</u>	<u>% Cu</u>	<u>% Ni</u>	<u>RT(NDT)_o</u>
3	Intermediate shell	123 P 461 VA-1	N/A	0.058(3)	0.70(3)	40°F(6)
3	Lower shell	123 S266 VA-1	N/A	0.079(3)	0.68(3)	30°F(6)
3	Intermediate to Lower girth weld	71249	8445	0.26(1)	0.60(1)	10°F(1)
4	Intermediate shell	123 P 481 VA-1	N/A	0.054(4)	0.71(4)	50°F(5)
4	Lower shell	122 S 180 VA-1	N/A	0.056(4)	0.71(4)	40°F(5)
4	Intermediate to lower girth weld	71249	8445	0.26(1)	0.60(1)	10°F(1)

TABLE 2

TURKEY POINT FLUENCE DATA AND RT(PTS)
FOR BELTLINE MATERIALS (INNER WALL)

<u>UNIT</u>	<u>LOCATION</u>	FLUENCE ⁽⁷⁾ JAN 1986 <u>(n/cm²)</u>	RT(PTS) <u>JAN 86</u>	FLUENCE ⁽⁷⁾ APRIL 2007 <u>(n/cm²)</u>	RT (PTS) <u>APRIL 2007</u>
3	Intermediate shell	1.27×10^{19}	133°F	2.15×10^{19}	138°F
3	Lower shell	1.27×10^{19}	138°F	2.15×10^{19}	145°F
3	Intermediate to lower girth weld	1.27×10^{19}	236°F	2.15×10^{19}	263°F
4	Intermediate shell	1.19×10^{19}	139°F	2.16×10^{19}	144°F
4	Lower shell	1.19×10^{19}	131°F	2.16×10^{19}	136°F
4	Intermediate to lower girth weld	1.19×10^{19}	233°F	2.16×10^{19}	263°F

REFERENCES

1. USNRC Letter, Evaluation of Reactor Vessel Materials Data for Turkey Point Plant Units 3 and 4 Reactor Vessels, S. A. Varga to J.W. Williams, April 26, 1984.
2. USNRC Letter, Near Term Flux Reduction Program, Turkey Point Plant Units 3 and 4, S. A. Varga to J. W. Williams, February 27, 1985.
3. S. E. Yanichko, Florida Power and Light Company, Turkey Point Unit 3 Reactor Vessel Radiation Surveillance Program, WCAP 7656, Westinghouse Electric Corp., Pittsburgh, PA, May 1971.
4. S. E. Yanichko, Florida Power and Light Company, Turkey Point Unit 4 Reactor Vessel Radiation Surveillance Program, WCAP 7660, Westinghouse Electric Corp., Pittsburgh, PA, May 1971.
5. FPL Letter, L-77-326, Turkey Point Unit 3 and 4 Reactor Vessel Material Information, R. E. Uhrig to George Lear, October 21, 1977.
6. S. E. Yanichko, J. H. Phillips, S. L. Anderson, Analysis of Capsule T, Turkey Point Unit 3 Surveillance Program Reactor Vessel Radiation Surveillance Program, Westinghouse Electric corp., Pittsburgh, PA. December 1975.
7. USNRC Letter, Summary of Meeting held with FPL, October 3, 1985, Regarding Reactor Vessel Flux Reduction Fluence Calculations, D. G. McDonald to FPL, December 4, 1985.

