

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

|                               |   |                        |
|-------------------------------|---|------------------------|
| In the Matter of              | ) |                        |
|                               | ) |                        |
| FLORIDA POWER & LIGHT COMPANY | ) | Docket Nos. 50-250 OLA |
|                               | ) | 50-251 OLA             |
| (Turkey Point Nuclear         | ) |                        |
| Generating Units 3 & 4)       | ) |                        |

AFFIDAVIT OF DANIEL C. POTERALSKI

My name is Daniel C. Poteralski. I am the Manager of Nuclear Fuel Technology in the Fuel Resources Department of Florida Power & Light Company (FPL). My business address is P.O. Box 029100, Miami, FL 33102. A copy of my resume and professional qualifications is attached and is incorporated herein by reference. In my capacity as Manager of Nuclear Fuel Technology, I am responsible for assuring the technical adequacy and accuracy of reactor core safety analyses for Turkey Point, including the analyses in support of the July 20 Amendments and October 7 Amendments.

In "Petitioners' Brief on the Conflict Posed by the Legal Requirement of Timeliness and Equitable Considerations" (Petitioners' Brief), dated March 3, 1984, Petitioners make mistaken factual assertions regarding two sets of amendments to

the operating licenses for Turkey Point Nuclear Generating Units 3 and 4. The purpose of this affidavit is to address their incorrect assertion that the set of amendments noticed at 48 Fed.Reg. 33076, 33080 (July 20, 1983) "is the same as, part and parcel of, and to the same purpose" as the set of amendments noticed at 48 Fed.Reg. 45862 (October 7, 1983). (Petitioners' Brief, p. 4). As is demonstrated below, this belief is incorrect and has no basis in fact.

#### I. Description of the Amendments

##### A. Description of the Set of Amendments Noticed on July 20, 1983 (July 20 Amendments)

On June 3, 1983, FPL requested a set of license amendments to support a planned modification in the fuel and burnable absorbers used in each of the reactor cores at Turkey Point. At that time, FPL was authorized to use Westinghouse 15x15 low parasitic (LOPAR) fuel and borosilicate glass burnable absorber rods. The June 3, 1983, application sought permission to utilize Westinghouse 15x15 Optimized Fuel Assemblies (OFA) and Wet Annular Burnable Absorber (WABA) rods. A notice of FPL's request was published at 48 Fed. Reg. 33076, 33080 (July 20, 1983).

The purpose of the July 20 Amendments is to improve fuel economy at Turkey Point. The LOPAR fuel assemblies utilize a material called Inconel in the grids which align the fuel rods in the assemblies. Borosilicate glass burnable absorber rods utilize stainless steel cladding to contain the neutron

absorbing material in the control rods. OFA is a design improvement over the LOPAR fuel assemblies used at Turkey Point. The major design change in OFA is the substitution of less parasitic (less neutron absorbing) Zircaloy grid material for the Inconel grid material of the LOPAR fuel assembly design. The OFA Zircaloy grids result in improved uranium utilization due to fewer neutrons being unproductively absorbed in the grid material. Similarly, WABA is a design improvement over the borosilicate glass burnable absorbers because the WABA design replaces stainless steel cladding with less parasitic Zircaloy cladding; WABA is also attractive because it captures fewer neutrons at the end of its lifetime. Since fewer neutrons are parasitically absorbed by OFA/WABA, the OFA/WABA design results in significant fuel savings. Thus, the sole purpose of transferring to the use of OFA/WABA is for economic reasons.

Except for the grid design, the fuel rods in the OFA/WABA design are essentially the same as the fuel rods used in prior Turkey Point cycles. The transition to OFA/WABA does not affect the power distribution in the reactor core. In fact, the only changes in the Turkey Point Technical Specifications resulting from the use of OFA/WABA are changes in the wording which permits the use of WABA and borosilicate glass absorber rods, changes in the control rod drop time limits, and changes to reflect a different departure from nucleate boiling ratio (DNBR) correlation used to analyze the OFA design. Transfer to

the use of OFA/WABA does not necessitate any changes in the core safety limits, such as the limits on the total peaking factor or the hot channel factor. In short, the use of the OFA/WABA design in itself does not result in any appreciable changes in either the power distribution within the core or the neutron flux at the reactor vessel wall.

B. Description of the Set of Amendments  
Noticed on October 7, 1983 (October 7 Amendments)

On August 19, 1983, FPL requested changes to the Technical Specifications contained in its Turkey Point operating licenses. Among other things, these changes increase the limits on the hot channel factor and the total peaking factor applicable to operation of the reactor cores for Turkey Point. A notice of FPL's request was published at 48 Fed. Reg. 45862 (Oct. 7, 1983).

The primary purpose of the October 7 Amendments is to support FPL's program for reducing neutron flux at the reactor vessel wall and thereby to mitigate reactor vessel embrittlement and the theoretical possibility of pressurized thermal shock. Changes in the limits on the hot channel factor and the total peaking factor provide FPL with more flexibility for arranging the fuel assemblies and burnable absorbers in the reactor. More specifically, these changes permit FPL to increase the power in the center of the core and to decrease the power at the periphery of the core. By lowering the power at the periphery of

the core, FPL reduces the neutron flux at the reactor vessel wall.

The October 7 Amendments do not authorize FPL to operate Turkey Point at higher total power levels, nor do they restrict the methods by which FPL may modify the power distribution within the Turkey Point reactor cores. There are several possible methods of modifying the power distribution within a core, including changing the pattern in which fresh fuel and partially depleted fuel is arranged, changing the pattern of fuel enrichment, changing the control rod insertion pattern, and changing the pattern in which burnable poisons are used. In general, these methods may be classified as changes in the core arrangement or loading. FPL plans to reduce the power and neutron flux at the core periphery by changing the pattern in which fuel and burnable absorbers are used. However, it may be noted that this result could be also achieved by other methods in conformance with the October 7 Amendments.

II. There is No Connection Between the July 20 Amendments and October 7 Amendments

As is discussed above, the purpose of the July 20 Amendments is to improve fuel economy. The purpose of the October 7 Amendments is to allow FPL to reduce the neutron flux at the reactor vessel wall. These two sets of amendments are separate and independent and have no connection or relationship other than the coincidence that both amendments are being



implemented concurrently. In fact, the decision to implement the fuel economy measure in Cycle 9 was made nearly four (4) years prior to the decision to implement the reduced vessel flux core loading.

It would be possible for FPL to operate at full power using OFA/WABA without authorization to implement the October 7 Amendments. This is because, as stated previously, the mere change in the type of fuel assemblies and the type of burnable absorbers has no appreciable effect upon the power distribution within the core as long as there is no significant change in the amount or location of fuel and burnable absorbers being used.

Conversely, it would be possible for FPL to operate at full power using the new limits on the total peaking factor and hot channel factor without authorization to utilize OFA/WABA. This is because FPL could modify the arrangement of its previously-approved LOPAR fuel and borosilicate glass burnable absorbers (instead of OFA/WABA) to reduce the power at the periphery of the core.

In short, FPL could and would implement either set of amendments even if, for any reason, the other set of amendments was not approved. Thus, while FPL has sought both sets of amendments and is, in fact, operating pursuant to both sets, utilization of either set is not dependent upon utilization of the other set of amendments.

FPL is utilizing fuel and burnable absorbers, including OFA/WABA, in such a manner that the pattern or "loading" in the

core results in a reduction in the neutron flux at the reactor vessel wall. This loading affects the hot channel factor and the total peaking factor which are the subject of the October 7 Amendments. However, this reduction in neutron flux could be effectuated by using only previously-approved LOPAR fuel and borosilicate glass burnable absorber rods and is not dependent upon approval of the July 20 Amendments. Similarly, it would be possible to utilize OFA/WABA without modifying the loading of fuel and burnable absorbers in the core, and without appreciably affecting the hot channel factor and the total peaking factor. In short, the type of fuel assemblies and burnable absorber rods used in the core is a separate and independent consideration from their loading or arrangement within the reactor core. The July 20 Amendments only pertain to type of fuel and burnable absorber without addressing core loading; and the October 7 Amendments only relate to the core loading or arrangement without addressing the type of fuel and burnable absorber. It is purely a matter of coincidence that FPL is changing both the type and loading or arrangement of fuel assemblies and burnable absorbers at the same time. FPL could, in fact, change either without changing the other.

### III. Petitioners' Assertions

Petitioners seem to be under the impression that the July 20 Amendments are "the same as, part and parcel of, and to

the same purpose" as the October 7 Amendments because both sets of amendments are part of "an entire scheme or program . . . to deal with the site-specific problem of reactor vessel embrittlement and Pressurized Thermal Shock (PTS) at Turkey Point." (Petitioners' Brief, pp. 2-4). As is described earlier, however, this is simply incorrect. The July 20 Amendments pertain only to the type of fuel and burnable absorbers used at Turkey Point, which has no bearing on neutron flux at the reactor vessel wall, reactor vessel embrittlement, or PTS.

Petitioners also make several other factual statements which are incorrect. First, Petitioners assert that "utilization of the new fuel core design by its inclusion of a certain configuration of Wet Annular Burnable Absorber Rods (WABA) requires the modification to the Technical Specifications and reductions of safety margins sought in the October 7, 1983, notice." (Petitioners' Brief, p. 3). The configuration -- i.e., the amount and location of burnable absorber rods in the core -- is not the subject of the July 20 Amendments and has no bearing on the acceptability or purpose of that set of amendments. The July 20 Amendments pertain solely to changes in the type of burnable absorber rods used at Turkey Point and they do not pertain to changes in the configuration or loading of burnable absorbers. Therefore, the July 20 Amendments do not, as Petitioners imply, include a "certain configuration" of WABA rods. In sum, FPL could utilize OFA/WABA and operate at full



power without changing the limits on the total peaking factor and hot channel factor.

Second, Petitioners state that "a certain loss of thermal margin and operating flexibility would result from the use of burnable poison (WABA) rods." (Petitioners' Brief, p. 9). This statement is incorrect. The use of WABA rods rather than the previously-approved borosilicate glass burnable absorber rods does not result in "a certain loss of thermal margin and operating flexibility." Only the change in the loading or arrangement, not the change to the OFA/WABA design, affects parameters such as the total peaking factor and hot channel factor. Since the July 20 Amendments only address the type and do not address the loading, they are not related to the matter raised by Petitioners.

Finally, Petitioners state that the July 20 Amendments and the October 7 Amendments "are both part of the core redesign and that the new OFA core design, WABA rods, and the 18 month fuel cycle are all part of their program to achieve flux reduction and allow the Turkey Point units to run at 100% power." (Petitioners' Brief, p. 10). Apparently, Petitioners mistakenly have confused the change in the type of fuel and type of burnable absorber rods with the arrangement or loading of fuel assemblies and burnable absorber rods in the core. As described earlier, these are entirely separate and independent matters. It is possible to change the type of fuel assemblies

and burnable absorber rods without changing their loading, and vice versa. The July 20 Amendments only pertain to type and not to loading. This set of amendments is not part of any flux reduction program at Turkey Point. Similarly, the 18 month fuel cycle simply is not related to reduction in neutron flux, and its purpose is solely related to cost.

#### IV. Conclusion

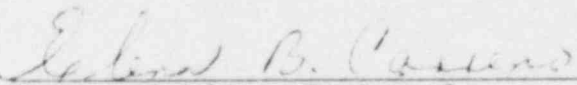
The July 20 Amendments authorize FPL to change the type of fuel and burnable absorber rods used at Turkey Point for the purpose of improving fuel economy. Use of OFA/WABA authorized by the July 20 Amendments does not appreciably affect power distribution in the reactor core or reduce neutron flux at the reactor vessel. In contrast, the October 7 Amendments allow FPL to change core safety limits in order to accommodate a change in loading of fuel assemblies and burnable absorber rods for the purpose of reducing neutron flux at the reactor vessel wall. Neither set of amendments is in any way dependent upon the other. The July 20 Amendments are not part of any FPL program to mitigate pressurized thermal shock.

STATE OF FLORIDA     )  
                              )  
COUNTY OF DADE       )

I, DANIEL C. POTERALSKI, being first duly sworn, do  
depose and say that the foregoing is true and correct to the  
best of my knowledge, information, and belief.

  
\_\_\_\_\_  
Daniel C. Poteralski

Sworn to and subscribed before me this 9 day of March  
1984.

  
\_\_\_\_\_  
Notary Public, State of  
Florida at Large

My Commission Expires:

Notary Public, State of Florida at Large  
My Commission Expires October 2, 1985  
Bonded thru Maynard Bonding Agency

April, 1983

Daniel C. Poteralski

Manager, Nuclear Fuel Technology

**EDUCATION:** M.S., Engineering, Union College, 1974  
B.S., Mechanical Engineering, Union College, 1971  
A.S., Engineering Science, Hudson Valley Community College, 1967

**EXPERIENCE:**

|              |  |
|--------------|--|
| 1969-1971    | General Electric Co. - Knolls Atomic Power Laboratory<br>S3G Project, Nuclear Analyst<br>Constructed reactor physics models of Naval nuclear reactors and performed subsequent performance evaluation.   |
| 1971-1972    | General Electric Co. - Knolls Atomic Power Laboratory<br>S5G Thermal Design and Performance Analysis Engineer<br>Performed plant accident analyses, core thermal-hydraulic analyses and evaluated NSSS equipment performance on a Naval nuclear reactor. |
| 1972-1974    | General Electric Co. - Knolls Atomic Power Laboratory<br>Kesselring Site Operation, Nuclear Test Engineer<br>Qualified KAPL Test Engineer on the DIG prototype nuclear power plant.  |
| 1974-1978    | FPL, Nuclear Analysis Department<br>Senior Engineer<br>Technical responsibility included licensing of reload nuclear fuel, core thermal-hydraulic analyses and system transient analyses for three operating nuclear plants.                             |
| 1978-1982    | FPL, Fuel Resources Department, Nuclear Fuel Technology<br>Supervisor<br>Responsible for management and technical direction of the Reactor Support Section.  |
| 1982-Present | FPL, Fuel Resources Department, Nuclear Fuel Technology<br>Manager   |

**PUBLICATIONS:**

"Verification of the RETRAN Computer Code with Measured Reactor Coolant Pump Coastdown Data;" Transactions of the American Nuclear Society; November 1978.

RETRAN - A Program for One-Dimensional Transient Thermal-Hydraulic Analysis of Complex Fluid Flow Systems, Volume 4: Applications; Contributing Author; EPRI CCM-5; December 1978.

**MEMBER OF:** -National Society of Professional Engineers  
-Florida Engineering Society, Member of Miami Chapter Energy Committee, 1981-2  
-American Nuclear Society; Member of Standards Working Group ANS 19.6, Power Reactor Physics Measurements; Treasurer - Florida Section ANS, 1982-4  
-EPRI Safety and Analysis Task Force

**QUALIFICATIONS/REGISTRATIONS/HONORS:**

- Registered Professional Engineer, State of Florida
- Florida Engineering Society "Certificate of Continued Professional Development", issued August 1981.

dep



July 6, 1983  
L-83-393

Office of Nuclear Reactor Regulation  
Attention: Mr. Darrell G. Eisenhut, Director  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Eisenhut:

Re: Turkey Point Units 3 & 4  
Docket Nos. 50-250, 50-251  
Pressurized Thermal Shock

In our letter of March 25, 1983 (Reference 1), we submitted the information presented in our January 26, 1983 meeting regarding our plans and schedules to resolve Pressurized Thermal Shock (PTS) issues at Turkey Point Units 3&4. As a follow-up to that meeting and subsequent submittal, FPL is requesting a meeting with the NRC Staff for the purpose of discussing the following two topics:

1. Turkey Point Unit 3 Cycle 9 Licensing

FPL submitted (Reference 2) a Safety Evaluation and associated Technical Specification changes to support the planned fuel design change from the Westinghouse Low Parasitic 15X15 (LOPAR) Fuel Assembly to the 15X15 Optimized Fuel Assembly (OFA) and use of the new Westinghouse Wet Annular Burnable Absorber (WABA) Rods for the Turkey Point Units. The first planned use of the OFA design and WABA rods is expected to be for Turkey Point Unit 3 Cycle 9.

As discussed in Reference 1, an increase in the  $F_{\Delta H}$  limit of the Technical Specification is required to achieve the desired flux reduction in Turkey Point Unit 3, Cycle 9. In addition, to achieve the higher  $F_{\Delta H}$ , without a power limiting reduction in the  $F_g$  limit, approval of the improved LOCA Reflood Model (BART) was requested. FPL will be submitting for NRC approval, Technical Specifications and supporting Safety Analyses to raise the  $F_{\Delta H}$  Technical Specification Limit and a new LOCA analysis for both Turkey Point Units. The reflood portion of the large break LOCA will be performed with the BART code, as described in WCAP-9561 (Reference 3). Approval of these submittals is required prior to startup from refueling.

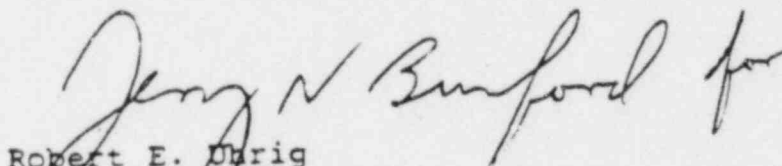


## 2. Pressurized Thermal Shock Update

As discussed in Reference 1, FPL is implementing a comprehensive program to address the Pressurized Thermal Shock issue for Turkey Point Units 3 and 4. Current activities are focused on near term flux reduction, fluence evaluations and plant specific transient analyses. Flux reduction results achieved with the Turkey Point Unit 3 Cycle 9 design and preliminary results for Turkey Point Unit 4 Cycle 10 will be described. In addition, an update on inhouse fluence evaluations and plant specific transient analyses will also be provided.

Turkey Point Unit 3 Cycle 9 is currently scheduled to startup on -December 1, 1983 with Turkey Point Unit 4 Cycle 10 following in the Spring of 1984. With the level of effort underway to implement the PTS action plan, an update meeting is requested for the first week of August, 1983. As a follow-up to this letter, FPL will provide a preliminary meeting agenda after the date for the meeting has been set. We appreciate the opportunity to continue our dialogue with your staff and look forward to presenting them with an update of our PTS program.

Very truly yours,



Robert E. Dorig  
Vice President  
Advanced Systems & Technology

REU/DCP/jc

cc: J. P. O'Reilly, Region II  
Harold F. Reis, Esquire

References: 1) FPL letter L-83-180; R. E. Uhrig (FPL) to S. A. Varga (NRC) "Turkey Point Units 3 & 4, Docket Nos. 50-250, 50-251 Pressurized Thermal Shock"; dated March 25, 1983.

2) FPL letter L-83-344; R. E. Uhrig (FPL) to D. G. Eisenhut (NRC) "Turkey Point Units 3 & 4, Docket Nos. 50-250 & 50-251 Proposed License Amendment, Optimized Fuel Assembly and Wet Annular Burnable Absorber," dated June 3, 1983.

3) WCAP-9561; BART-A1: A Computer Code for Best Estimate Analysis of Reflood Transients, January 1980.

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NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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|                                  | ) |                        |
| FLORIDA POWER & LIGHT COMPANY    | ) | Docket Nos. 50-250 OLA |
|                                  | ) | 50-251 OLA             |
| (Turkey Point Nuclear            | ) |                        |
| <u>Generating Units 3 and 4)</u> | ) |                        |

CERTIFICATE OF SERVICE

I hereby certify that copies of "Licensee's Response to Petitioners' Brief," dated March 14, 1984, and Attachments thereto were served on the following by deposit in the United States mail, first class, properly stamped and addressed, on the date shown below.

Dr. Robert M. Lazo, Chairman  
Atomic Safety and Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. Emmeth A. Leubke  
Atomic Safety and Licensing Board Panel  
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Dr. Richard F. Cole  
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Secretary  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Chief, Docketing and Service Section  
(Original plus two copies)

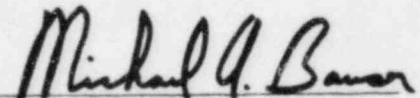
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Dated this 14th day of March 1984.

  
Michael A. Bauser

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