4/13/81

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	Docket Nos. 50-250-SP
	)	50-251-SP
FLORIDA POWER & LIGHT COMPANY	)	(Proposed Amendments to
	)	Facility Operating License
(Turkey Point Nuclear Generating	)	to Permit Steam Generator
Units 3 and 4)	)	Repairs)

AFFIDAVIT OF MICHAEL T. MASNIK ON CONTENTION 7(b)-(c)

I, MICHAEL T. MASNIK, being duly sworn, state as follows:

1. I am employed by the U.S. Nuclear Regulatory Commission as a Senior Fisheries Biologist in the Division of Engineering, Office of Nuclear Reactor Regulation.

2. Contention 7 states, in part:

In evaluating the steam generator repair, the following has not been considered:

b. the effluent release from a full-flow condensate polishing demineralizing system; or

c. the environmental degradation caused by a full-flow condensate polishing demineralizing system.

The effluent releases and the environmental degradation occasioned by utilization of a full-flow condensate polishing demineralizing system have been considered in Section 4.3.3, entitled "Operational Impacts", of the Final Environmental Statement related to steam generator repair at Turkey Point Plant (NUREG 0743), dated March, 1981. I have prepared that Section

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(copy attached) and it is true and correct to the best of my knowledge. I hereby adopt that section as my direct testimony on Contention 7(b)-(c).

In summary, the function of the full-flow condensate polishing demineralizing system is to purify the condensate water by filtration and demineralization to assure high quality feedwater to the steam generators. It is anticipated that the removal of suspended solids and ionic species from the condensate water will reduce corrosion related phenomena.

Replacement of spent resins in the full-flow condensate polishing demineralized vessels will result in the periodic discharge of a waste stream into the Turkey Point cooling canal system. This waste stream will be released at a rate of less than 0.0009 m^3/sec (15 gpm) from the discharge structure to the discharge canal that leads into Lake Warren, a receiving pond, and then into the canal cooling system. It is anticipated that the small amounts of resins that may fail to be removed from the waste water prior to discharge pose no environmental threat and no biological impact to organisms inhabiting or utilizing the canal system or surrounding water bodies.

Michael T. Masnik

Subscribed and sworn to before me
this 13th day of April, 1982

Marilyn J. Alexander
Notary Public

My Commission expires: July 1, 1982

4.3.3 Operational Impacts

Operation of the full-flow condensate polishing demineralizers for each unit has also been evaluated. This system will be installed and become operational consistent with procurement lead times and planned outages. This is the only nonradiological modification to the plant that will be materially different from those identified in the Turkey Point FES (Ref. 11). The function of this system is to purify the condensate by filtration and demineralization to assure high-purity feedwater to the steam generator. It is anticipated that the removal of suspended solids and ionic species from the condensate water will reduce corrosion-related phenomena. The demineralizers will use a mixed-bed ion exchange

resin (Powdex, Ref. 27) in a series of vessels. Condensate water will be circulated into the vessels and through the exchange beds. Periodic replacement of the resins will occur due to a buildup of suspended solids and exhaustion of the ion exchange resins. Replacement of spent resins in the full-flow condensate polishing demineralizer vessels will result in the periodic discharge of a waste stream into the canal system. Resin vessels will be backflushed to a backflush receiver tank and resins replaced periodically depending on the buildup of suspended solids and ion-exchange capacity exhaustion. Replacement of spent resins in an on-stream vessel will occur about every two to three weeks (Ref. 28).

A total of eight vessels will be used for both units, four per unit, three operating at a given time, with one per unit in reserve. Maximum resin loading is approximately 136 kg (300 lb) dry weight per resin vessel per cycle. Backflushing will occur at an anticipated frequency of one per week per unit or two vessels per week for the plant. Approximately 24,000 L (6,350 gal) of high-purity water from the condensate storage tank will be used to backflush each demineralizer resin vessel (Ref. 28). The spent resins will be backflushed to a receiving vessel for resin-water separation. The spent resin handling subsystem is designed to process the backwashed resin slurry discharged from the resin vessels using a filtration system. After resin-water separation, the spent resins [(136 kg/week/unit), (300 lbs/week/unit)] will be monitored for radioactivity according to Section 3.9 of the Technical Specification for the plant entitled "Radiation Material Release." If the spent resins are within the limits for unrestricted disposal, as expected, they will be disposed of as nonradioactive waste. If onsite disposal is chosen, NRC is to be notified in writing 30 days in advance. The supernatant liquid [approximately 22,700 L (6,000 gal)] will be discharged to the canal system. The quality of the waste water prior to discharge is predicted to have a pH between 8.5 and 8.7, a dissolved oxygen concentration of 0.08 ppm, and a conductivity about 1 μmho/cm (Refs. 28, 29). The concentration of total suspended solids in the waste stream is expected to be significantly less than low volume waste source limits which are 100 mg/L instantaneous max., 30 mg/L monthly average, 40 CFR 423).

The waste water will be released at a rate of less than 0.0009 m^3/sec (15 gpm) from the discharge structure to the discharge canal that leads into Lake Warren, a receiving pond (Ref. 27), and then into the cooling canal system.

Under normal operating conditions, full cooling water flow for all four units is approximately 114 m^3/sec (1.8×10^6 gpm). The waste stream from the demineralizer will discharge for about 7 hours per week for each unit. The waste stream will represent about 0.0008% of the total discharge flow into Lake Warren at full four-unit operation. Even with multiple unit outage and simultaneous discharge of waste stream from both units, the waste would still represent less than 0.01% of the total discharge flow. Turbulent mixing in the discharge channel leading to the receiving pond is expected. Mixing is further enhanced by the geometry of the receiving pond. Because of the high purity of the backflush waste water stream and the anticipated water quality previously described, no measurable effects on aquatic organisms are anticipated (Refs. 30, 31). The total demineralizer backflush discharge volume for both units over the life of the plant would represent less than 0.5% of the total present volume of water in the canal system. No long-term degradation of water quality in the canal system due to concentration of pollutants in the waste stream system over the life of the plant is expected. The small amount of resins that may fail to be removed from the waste water prior to discharge poses no environmental threat:

the resins are highly insoluble, resistant to biological degradation, have no effect on biological oxygen demand (BOD) or total organic carbon (TOC), and are nontoxic at concentrations expected (Ref. 32).

No impact to organisms inhabiting or utilizing the canal system or surrounding water bodies, due to the discharge of the backflush waste water, is anticipated as a result of the (1) extremely small volume of water in relation to the discharge flow and the volume of the canal system, (2) high purity of the waste stream, (3) anticipated good mixing of the waste stream and the discharge flow, and (4) nontoxic aspect of the ion exchange resin.

It is concluded that changes in the operational characteristics of the station due to the steam generator repair or the condensate demineralizer will not have an adverse or detectable impact on species known to inhabit or used the Turkey Point cooling canal system.

PROFESSIONAL QUALIFICATIONS
Michael T. Masnik
NUCLEAR REGULATORY COMMISSION
Washington, D. C.

I am currently employed as Senior Fisheries Biologist in the Office of Nuclear Reactor Regulation, Division of Site Safety and Environmental Analysis, in the Environmental Specialists Branch, USNRC. As a member of the Aquatic Resources Section of this branch, I have responsibility for the review of applicants' Environmental Reports at both Construction (CP) and Operating License (OL) stages for completeness and environmental acceptability of proposed projects as they may affect natural ecological resources, commercial and sports fisheries resources, and other impacts on the aquatic environment. It is also my responsibility to provide written evaluation of aquatic resources for inclusion during preparation of both Final Environmental Statement (FES) - CP's and FES - OL's. I also act in the capacity of a consultant to other NRC components and provide analyses of aquatic problems through technical assistance requests.

Review of the applicant's environmental technical specifications at the operating license stage and subsequent appraisals of changes to such specifications are also part of my responsibilities. My work also involves the preparation of standard review plans, regulatory guides, and staff position papers dealing with aquatic resources. I provide written input to research proposals under consideration by the Commission dealing with aquatic problems and have served as a Commission representative during the formulation of the Second Memorandum of Understanding between EPA and NRC and have provided written input to both the EPA 316A and 316B guidance manuals.

In the past several years, as a member of the Aquatic Resources Section, I have written the aquatic resources related sections for the Edwin I. Hatch Nuclear Station Unit 2 (FES-OL) and the Perryman Early Site Review; reviewed and provided written input for the aquatic sections of FES-CP stages for the following plants: Marble Hill Nuclear Generating Station Units 1 and 2; Phipps Bend Nuclear Station; and the Yellow Creek Nuclear Plant Units 1 and 2; provided draft input to a NRC generic study on environmental impacts of the LMFBR program; reviewed and provided written comments on the second draft of the EPA 316B demonstration guidance manual; prepared a biological assessment for submission to the NMFS on the impact of construction and operation of the Salem and Hope Nuclear Stations on the endangered shortnose sturgeon in the Delaware River; provided and was questioned on testimony dealing with the impact of the operation of the Oyster Creek Nuclear Plant Unit 1 on the biota of the receiving waters and the Pilgrim Station Alternate Site Study; represented the USNRC in the area of ecological resources in the CEQ Interagency Working Group for Environmental Data and Monitoring; chaired a section of the Fourth National Workshop on Entrainment and Impingement as well as reviewed and provided comments on numerous solicited and unsolicited grant proposals submitted to the NRC for original research dealing with aquatic resources.

I have a Bachelor of Science in Conservation from Cornell University (1969), a Master of Science in Zoology from Virginia Polytechnic Institute and State University (1971), and a Doctor of Philosophy in Zoology from Virginia Polytechnic Institute and State University (1975).

While at Virginia Polytechnic Institute and State University, I undertook research in a variety of areas, specializing in zoogeography and distribution of freshwater fishes. Other areas of research which resulted in published papers include thermal studies on fishes, recovery of damaged aquatic ecosystems, and development of sampling methodology for fishes and macroinvertebrates. My formal education program has encompassed and emphasized studies in Zoology, Ecology, Ichthyology, Evolutionary Biology, and computer techniques for data handling and analysis.

I was a member of the scientific staff of the 1970 Duke University Caribbean Cruise involved in oceanographic investigations and have served as a consultant, through Virginia Polytechnic Institute and State University, for American Electric Power Company, Koppers Company, Inc., U.S. Army Corps of Engineers, and Tennessee Valley Authority.

During the summers of 1970 and 1971 I was employed as a field biologist by Ichthyological Associates, an ecological consulting firm under contract with Philadelphia Electric Company and Public Service Electric and Gas Company, to perform routine sampling on the Delaware estuary. My duties included routine fish sampling, plankton and benthos sampling, and inplant monitoring of impingement.

I am currently a member of the American Fisheries Society, American Association for the Advancement of Science and the Association of Southeastern Biologists, Society of Sigma Xi, and the Virginia Academy of Science.

I have authored or co-authored some 19 publications.