RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

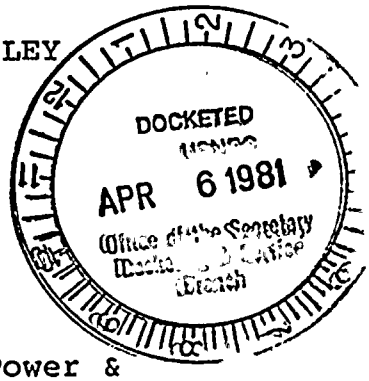
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

JOINT AFFIDAVIT OF A.J. GOULD AND J.M. PUGSLEY

IN SUPPORT OF MOTION FOR SUMMARY

DISPOSITION OF CONTENTION 5



I am A.J. Gould. I am employed by Florida Power & Light Company as a Power Resources Specialist. A resume of my professional qualifications and experience is attached and made a part of this testimony.

I am J.M. Pugsley. I am employed by Florida Power & Light Company as a Power Resources Specialist. A resume of my professional qualifications and experience is attached and made a part of this testimony.

The purpose of this testimony is to address Contention 5 which states:

> In evaluating the steam generator repair, the following has not been considered:
>
> a. the cost of a full-flow condensate polishing demineralizing system;

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.

INTRODUCTION

In addressing Contention 5, we will describe the proposed full-flow condensate polishing demineralizer system; describe how it operates; discuss the reasons why it is being installed; discuss why FPL does not believe it to be appropriate to include a consideration of the condensate polishing demineralizer system in this proceeding; and demonstrate that nevertheless adequate consideration has been given to the condensate polishing demineralizer system in this proceeding, including the cost of, effluent release from, and any environmental degradation anticipated to be caused by the proposed system.

DESCRIPTION OF THE SYSTEM

A full flow condensate polishing demineralizing system provides continuous on-stream filtering and demineralization of water that is circulated through the secondary side of the steam generators. Undissolved solid particles, as well as dissolved solids in the condensate are removed by this system.

The condensate polishing demineralizer system for each of the Turkey Point units (Units 3 and 4) is of the Powdex filter type, manufactured by Ecodyne Corporation, Graver Water Division, 2720 U.S. Hwy. No. 22, Union, N.J. 07083. The system consists of a group of filter/demineralizer vessels which use Powdex ion exchange materials, which are special preparations of ion exchange resins in finely divided forms.

Removal of the solid particles is accomplished by the filtering action of the demineralizer medium. Suspended impurities such as copper oxides, iron oxides, nickel oxides, and silica are removed by the filtering process.

Removal of the dissolved solids is accomplished by ion exchange activity, in which metal cations in the water are replaced with hydrogen or ammonium ions (cation exchange) and anions in the water are replaced by hydroxyl ions (anion exchange). Dissolved solids in the form of cations such as magnesium, sodium, calcium, copper, iron and nickel, and anions such as sulphate, chloride, and dissolved silica are removed by an ion exchange process.

Periodic replacement of the resins will be required due to a buildup of suspended solids and/or exhaustion of the ion exchange sites of the resins. To facilitate replacement of the resins, the condensate polishing demineralizer system includes precoat and spent resin handling subsystems. The precoat subsystem is used to evenly distribute powdered resins across

the resin retention elements within the filter demineralizers. The spent resin handling subsystem is used to collect, process and discard exhausted resins out of the filter demineralizers.

DESCRIPTION OF SYSTEM OPERATION

When in use, the condensate polishing demineralizer system will treat condensate flow discharged from the condensate pumps. The system may also be operated during feedwater recirculation and secondary system wet layup operation. The system design features filter demineralizer vessels in parallel that are normally used at their design flow rate. At lower flow rates either one or more vessels may be used. Flow control valves for the system will automatically divide the flow among the vessels in service. A total of eight vessels will be employed for both Units, four per Unit, three operating at a given time, with one per Unit in reserve.

In the precoat subsystem, resin is manually loaded into the precoat tank where it is mixed with demineralized water. The resin slurry is pumped to a filter/demineralizer vessel, where the resin is retained on the resin retention media by flow through the vessel. Water used in the precoat operation returns to the precoat pump suction, combines with the incoming resin slurry from the precoat tank, and is returned to the filter/demineralizer unit. The maximum loading is approximately 300 pounds per resin vessel per backwash cycle.

The spent resin handling subsystem is designed to function as follows. Pre-coated powdered resin is periodically flushed off the filter elements using condensate quality backwash water. The resulting water-resin slurry is collected in a backwash receiver tank. The first phase of solid and liquid separation occurs in the backwash tank as the denser solid material settles to the bottom of the tank due to gravity. This separation process results in a dense resin-water slurry at the bottom of the tank, and approximately 6000 gallons of supernatant liquid to be discharged for each backwash cycle. The solids are removed from the tank and collected in containers by use of a pressure filter. Before the supernatant liquid is discharged into the facility cooling canal system, it is filtered to less than 1 micron. The result is that the discharge will be a high quality liquid with a pH predicted to be between 8.5 and 8.7, a conductivity about 1 umho/cm^3, and a total solids concentration of well below the low volume waste source limits (40 CFR §423.22 - 100 mg/l instantaneous max., 30 mg/l monthly average). In other words, the quality of the water discharged is expected to be superior to that contained in the cooling canals.

During normal operation, each unit will average one backwash cycle per week. Operation of the condensate polishers at Turkey Point Units 3 & 4 will result in Powdex material usage of approximately 57,000 lbs/yr.

Normally, the contents of the backwash receiver tank will contain no plant-related radioactivity. Under these circumstances, the supernatant liquid may be discharged to the facility cooling system in the normal manner. The solid powder material is not discharged to the cooling system. It is removed from the system as a dewatered solid which is non-toxic and suitable for land burial. For each backwash cycle, approximately 6000 gallons of supernatant liquid will be discharged, at a rate of approximately 15 GPM, into the cooling system at the discharge basin. Flow through the discharge basin due to forced pumping is approximately 1.8×10^6 GPM with all pumps running. Consequently, since the flow rate of the discharge stream is only about 0.0008% of the flow rate of the receiving stream, adequate mixing is provided.

The secondary systems are continuously monitored for any evidence of a primary to secondary leak. In addition, the steam generators are sampled and analyzed for radioactivity on a daily basis. In the event there is evidence of primary to secondary leakage, or radioactivity is detected in a steam generator, the backwash tank contents will be sampled and handled in accordance with Turkey Point procedures, Technical Specifications, and applicable NRC regulations for liquid or solid radioactive materials.

REASON FOR INSTALLATION

Beginning in mid-1978, FPL authorized expenditures for various plant improvements, including the installation of

condensate polishing demineralizers, which are designed to improve secondary water chemistry control, for all of its nuclear plants. These improvements were directed to be implemented, and are currently being implemented in the Company's operating nuclear power plants at St. Lucie and Turkey Point, consistent with procurement lead times and planned unit outages. These improvements are also being incorporated into the design of the Company's nuclear power plant which is presently under construction at St. Lucie. The decision to implement these improvements was made independent of the decision to repair the steam generators at Turkey Point Units 3 and 4.

REASON FOR NOT CONSIDERING INSTALLATION OF CONDENSATE POLISHING DEMINERALIZER SYSTEM AS PART OF STEAM GENERATOR REPAIR PROJECT

The Steam Generator Repair Report initially did not discuss installation of the condensate polishing demineralizer system. As set forth above, FPL's decision to install the condensate polishing demineralizer system was made independent from its decision to repair the steam generators at Turkey Point. The condensate demineralizers have utility independent of the repairs, and they will be installed whether or not the repairs are approved, and independent of the repair schedule.

Consequently, FPL believes that installation of the condensate polishing demineralizer system for Turkey Point Units 3 and 4 is not within the scope of the Steam Generator Repair Project. However, in Revision 7 to the SGRR, p. A-20-1, the

condensate polishing demineralizer system is discussed. And, as indicated below, adequate consideration has been given by the NRC Staff in this proceeding to the condensate polishing demineralizer system.

CONSIDERATION OF SYSTEM

Adequate consideration has been given by the NRC Staff in this proceeding to the economic and environmental costs of, effluent release from, and any environmental degradation anticipated to be caused by the condensate polishing demineralizer system. The system, including these items, is discussed in Sections 2.2 and 3.2.4 of the Updated Safety Evaluation Report (NUREG -0756), in the NRC Staff "Assessment of the Impacts of the Steam Generator Repair Program at the Turkey Point Plant on Threatened or Endangered Species", pp. 6, 7, U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation (November 1980), and in Sections 4.2, 4.3.3, 4.3.4 and 6 of the Final Environmental Statement (NUREG - 0743).

As set forth in those documents, and in this testimony:

A. Cost - The estimated cost of the condensate polishing demineralizer system for both units is $9,000,000.

B. Effluents: During normal operation, liquid effluents due to discharge of supernatant liquid from backwash cycles of the system will result in the discharge to

the cooling canal system of water having higher water quality than that of the cooling canals, and solid waste consisting of a concentrated slurry suitable for land burial.

If sampling of the liquid contents of the backwash receiver tank indicates levels of radioactivity which require handling as a radioactive liquid, appropriate steps will be taken before release into the cooling canal system in accordance with plant technical specifications and written procedures. Similarly, if solids from the backwash receiver tank are found to contain radioactivity in excess of regulatory limits, disposal will be by shipment offsite to a licensed burial ground in accordance with applicable NRC regulations for the disposal of low level solid waste.

C. Environmental Degradation: As set forth above, neither the operation of the condensate polishing demineralizer system, nor the effluents resulting from periodic backwash cycles, will cause any environmental degradation or any adverse environmental impact.

FURTHER AFFIANTS SAYETH NOT.

Date Apr. 1 2, 1981

A. J. GOULD

J. M. PUGSLEY

STATE OF FLORIDA)
) SS.
COUNTY OF DADE)

SWORN to and subscribed before me this 2nd day of April 1981.

Notary Public

My Commission Expires:

NOTARY PUBLIC STATE OF FLORIDA at LARGE
MY COMMISSION EXPIRES AUGUST 24, 1981
BONDED THRU MAYNARD BONDING AGENCY

Name: A. J. Gould

Position: Radwaste and Radiochemistry Specialist

Education: AA, Science

Presently enrolled at Florida International University completing upper class course work in Industrial Engineering Technology

Summary:

Florida Power & Light Company 9 Years
General Office Staff
Radwaste and Radiochemistry Specialist-1 Year
Nuclear Water Chemistry Specialist -1 Year
Nuclear Water Chemistry Coordinator -2 Years

Turkey Point Nuclear Plant
Plant Coordinator - Nuclear Chemistry -½ Year
Associate Plant Coordinator - Nuc. Ch.-½ Year
Plant Test Engineer - Nuclear Chem. -1 Year
Plant Technician - Nuclear Chemistry -1 Year

United States Navy, Nuclear Submarine Serv. -8 Years
Leading Engineering Laboratory Tech. -4 Years
Engineering Laboratory Technician -3 Years

Experience:

Mr. Gould is employed as a specialist on the General Office Staff of the Power Resources Department. His current responsibilities include operations at FPL's Nuclear Power Stations, which involve monitoring and evaluation of primary system radiochemistry parameters and/or are associated with the handling, treatment or disposal of radioactive materials.

Mr. Gould started his employment with Florida Power & Light Company at the Turkey Point Plant in August of 1972 as a Technician with the Nuclear Chemistry Laboratory. He participated in the initial start up of both of the Turkey Point units. Prior to his transfer to the General Office Staff, Mr. Gould held a position that included responsibility for supervising and coordinating the day-to-day activities of the Nuclear Chemistry Laboratory.

Mr. Gould joined the Power Resources General Office Staff as a member of the Power Resources Services Group in March, 1977. His primary responsibilities were in the area of Operations and other activities associated with Corrosion Protection of Primary and Secondary Systems at FPL's Nuclear Power Stations.

Mr. Gould transferred to the Power Resources Nuclear Services Group in March, 1980.

Prior to employment with Florida Power & Light Company, Mr. Gould served aboard a Nuclear Powered Submarine as an Engineering Laboratory Technician, Plant Operator, and Mechanic.

Professional Memberships: Member, American Nuclear Society

Industry Groups: Utility Nuclear Waste Management Group - Low-Level Waste, Edison Electric Institute

AIF Sub-committee on Solidification of Low-Level Reactor Radwaste, Atomic Industrial Forum, Inc.

Chemical Cleaning Sub-committee, Electric Power Research Institute (EPRI), Technical Advisory Committee to the Steam Generator Owner's Group

NAME J.M. Pugsley

POSITION Power Resources Specialist (Water Chemistry Control)

EDUCATION Miami Dade Jr. College

SUMMARY

7 years	Group Supervisor on the Power Resources Management Staff in the area of water chemistry, interior corrosion control, fossil fuel inventory accounting and chemical cleaning of Power Plant Systems.
1 year	Results Department Supervisor at a four unit 325 MW fossil fuel steam electric station in charge of chemistry control and unit performance testing and reporting.
3 years	Supervision and participation in the start-up activities of two 720 MW nuclear untis.
2 years	Laboratory Technician at modern high pressure steam electric stations.

EXPERIENCE Mr. Pugsley currently holds a staff position in the Power Resources Department. In this position, Mr. Pugsley is responsible for the Chemistry Control Programs at Florida Power and Light Company plants. Other duties include review and operation of make-up water systems, environment sampling and analysis, waste water treatment systems and fossil fuel inventory control.

Since Mr. Pugsley has been on the Power Resources Staff, he has been involved with several Industry Studies, including steam generator corrosion, steam generator chemical cleaning, steam purity, condensate polishing and condenser integrity and design.

Mr. Pugsley's group, using conceptual ideas suggested by the Electrical Power Research Institute, developed the first reliable, accurate and scientific method for tracer gas detection and location of very small amounts of condenser inleakage. This method is now widely used worldwide in the Power Industry.

Mr. Pugsley is used as an "In-House" Consultant on all chemistry and corrosion related problems. He organized a highly successful and on-going chemical cleaning program which has significantly improved the reliability and availability of Florida Power and Light Comapny units. He was deeply involved with the conceptual planning and design of the Waste Water Treatment Systems required to meet the Clean Water Act.

Before joining the Power Resources Staff, Mr. Pugsley was the Results Department Supervisor at the Cutler Plant; he was responsible for Laboratory functions, equipment performance testing and energy accounting of the station.

Mr. Pugsley was selected to participate in the start-up of Florida Power and Light's first nuclear units at Turkey Point. During these years, he was charged with setting up the laboratories, checking out the sampling systems and preoperational chemistry functions. He participated in the initial criticality and operations of both units.

Early in his career with Florida Power and Light Company, Mr. Pugsley was a Laboratory Technician at both Port Everglades and Turkey Point Fossil Fuel stations.

MEMBERSHIPS

Appointed to the Edison Electric Institute Chemistry Committee each year since 1976.