BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 040206-EI
FLORIDA POWER & LIGHT COMPANY

IN RE: FLORIDA POWER & LIGHT COMPANY'S PETITION TO DETERMINE NEED FOR TURKEY POINT UNIT 5 ELECTRICAL POWER PLANT

DIRECT TESTIMONY & EXHIBIT OF:

DAVID N. HICKS

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

FLORIDA POWER & LIGHT COMPANY

DIRECT TESTIMONY OF DAVID N. HICKS

DOCKET NO. 04____-EI

MARCH 8, 2004

Q. Please state your name and business address.

A. My name is David N. Hicks. My business address is Florida Power & Light Company, 700 Universe Boulevard, Juno Beach, Florida, 33408-0420.

Q. By whom are you employed and what position do you hold?

A. I am employed by Florida Power & Light Company ("FPL" or the "Company") as Director of Project Development.

Q. Please describe your duties and responsibilities in that position.

A. I have overall responsibility for the development of FPL power generation projects.

Q. Please describe your education and professional experience.

A. I received a Bachelor of Economics from the University of Hawaii-Manoa in 1983 and a Masters of Economics from the University of California-Santa Barbara in 1987. I have approximately 15 years experience in the power generation industry, including production cost modeling, business management, and project development.

Q. What is the purpose of your testimony?

A. I describe the site and unit characteristics for the combined cycle power plant proposed for FPL's Turkey Point plant site, including the size, number and type of unit, the heat rate and operating characteristics (i.e., equivalent availability factor, equivalent forced outage rate, capacity factor, and operating costs), the fuel types, the estimated cost of the project, and the projected in-service date. I also discuss FPL's experience with building and operating combined cycle generating plants and demonstrate that the assumptions made for the Turkey Point project are reasonable and achievable.

Q. Are you sponsoring an exhibit in this case?

A. Yes. It consists of the following documents:

Document DNH-1	Typical 4x1 CC Unit Process Diagram
Document DNH-2	FPL Operational Combined Cycle Plants & FPL Combined Cycle Construction Projects In Progress
Document DNH-3	Turkey Point Plant Vicinity Map
Document DNH-4	Turkey Point Unit 5 Proposed Power Block Area
Document DNH-5	Turkey Point Unit 5 Fact Sheet
Document DNH-6	Overall Water Balance for the Turkey Point Site
Document DNH-7	Turkey Point Unit 5 Expected Construction Schedule
Document DNH-8	Turkey Point Unit 5 Construction Cost Components

Q. Are you sponsoring any sections in the Need Study document?

A. Yes. I co-sponsor Section III and sponsor Appendix J of the Need Study document.

I. Overview of Combined Cycle Technology

A. Description of Technology

Q. Please describe the combined cycle technology that will be used for the Turkey Point Project?

A. Referring to Document DNH-1, a combined cycle unit is a combination of combustion turbines (CTs), heat recovery steam generators (HRSGs), and a steam-driven turbine generator (STG). Each of the combustion turbines compress outside air into a combustion area where fuel, typically natural gas or light oil, is burned. The hot gases from the burning fuel air mixture drive a turbine, which, in turn, directly rotates a generator to produce electricity. The exhaust gas produced by each turbine, where the temperature is on the order of 1,100°F, is passed through a HRSG before exiting the stack at approximately 200°F. The energy extracted by the HRSG produces steam, which is used to drive a STG. The utilization of waste heat from the combustion turbines provides an overall plant efficiency that is much better than that of the CTs or the conventional STG alone.

Each CT/HRSG combination is called a "train." The number of CT/HRSG trains used establishes the general size of the STG. In the case of the proposed Turkey Point Unit 5, four CT/HRSG trains will be connected to one STG, giving rise to the characterization of the project as a "four on one" (4x1) combined cycle plant.

B. **Operating Advantages**

Q. What level of operating efficiency is anticipated for the Turkey Point Project?

A. The proposed FPL combined cycle unit is based on the use of GE "F" Class advanced combustion turbines. In general, combined cycle plants can be expected to achieve a fuel to electricity conversion rate ("heat rate") of less than 7,000 Btu/kWh, as opposed to values in the 10,000 Btu/kWh range for more conventional steam-electric generating units. This is a fuel efficiency improvement of about 30 percent. FPL anticipates that the new Turkey Point combined cycle unit will achieve a base heat rate of 6,835 Btu/kWh (based on an average ambient temperature of 75°F).

Q. Are there other operational advantages to combined cycle technology?

A. Yes. Another advantage of the multi-train combined cycle arrangement is that it allows for greater flexibility in matching unit output to system operating characteristics over time. As designed, the proposed Turkey Point Unit 5 can function as either a base load or intermediate unit as required by the Company's system.

C. FPL's History of Building and Operating Combined Cycle Plants

Q. Does FPL have experience in building combined cycle plants?

A. Yes, FPL has extensive experience in building combined cycle plants. FPL's first combined cycle plant (Putnam Units 1&2) went into service in 1976. As shown in Document DNH-2, FPL has 5,603 MW (net summer) of combined cycle capacity in service, and the addition of Manatee Unit 3 and Martin Unit 8 is scheduled to be completed by June 2005, adding 2,214 MW.

Q. Please describe FPL's history of operating combined cycle plants.

A. As I just mentioned, FPL has 5,603 MW (net summer) of combined cycle equipment presently in-service, including 18 GE 7FA CTs. Our expertise with this equipment and our commitment to total operational quality enabled us to achieve an operating run of 203 consecutive days at Martin Unit 3 — a world record for F technology GE equipment at that time.

In addition to its combined cycle operating experience, FPL has extensive experience operating simple-cycle CTs, which comprise the "front end" of the combined cycle technology. FPL has operated ten GE 7FA CTs in simple-cycle mode at its Fort Myers and Martin plant sites in Florida. FPL also has been operating 48 smaller simple-cycle units for approximately 30 years.

Q. Please describe FPL's track record in building and operating combined cycle units.

A. FPL has consistently completed all combined cycle construction projects in time to supply the needs of the customer.

In meeting its obligation to serve, FPL has demonstrated its ability to construct reliable and efficient plants. For example, in 1994 we began commercial operation of two new combined cycle units at our Martin plant and, just two years later, were awarded Power magazine's Power Plant of the Year Award for world-class performance in O&M and availability. In addition, the Fort Myers Repowering Project was recognized in 2003 by Power magazine as one of its top power plants in the world.

To ensure ongoing best-in-class performance in today's highly competitive electricity generating industry, FPL focuses on excellence in people, technology, business and operating processes. FPL promotes a shift team concept in its power plants that emphasizes empowerment, engagement and accountability, with an understanding that each employee has the necessary knowledge, skill and motivation to perform any required task. This multifunctional, team-driven and well-trained workforce is the key to FPL's ability to consistently meet and often exceed plant performance objectives.

With world-class operational skills from which to draw, the Company maximizes the value of its existing and new assets by employing the best practices that underlie FPL's industry-leading positions. FPL's fossil-fueled fleet continues to achieve an above average availability compared with the U.S. industry average.

Q. Please describe how FPL monitors the operational performance of its power plants.

A. Technology helps FPL optimize plant operations, gain process efficiencies and leverage the deployment of technical skills as demand for services increases. An example is the Company's Fleet Performance and Diagnostics Center (FPDC) in Juno Beach, Florida. The FPDC provides FPL the capability to monitor every fossil-fueled plant in its system. The Company can compare the performance of like components on similar generating units, determine how it can make improvements and prevent problems before they occur. Live video links can be established between the FPDC and plant control rooms to immediately discuss, prevent and solve problems. In 2001, FPL was presented with an Industry Excellence Award from the Southeast Electric Exchange for the FPDC. The proposed Turkey Point Unit 5 combined cycle project will be connected to the FPDC.

II. Turkey Point Combined Cycle Project

A. Site Description

Q. Please describe the existing facilities at the Turkey Point Plant site.

A. The Turkey Point Plant has reliably supplied electric power to FPL's customers since 1967, when Unit 1 began operation. The Turkey Point Plant site occupies 11,000 acres near Homestead, Florida. A vicinity map of the Turkey Point Plant site is presented on Document DNH-3.

The generating capacity of the Turkey Point Plant has increased over the years through the addition of new units to meet increasing demand for electricity. Generating units at the Turkey Point Plant site (and their current net peak summer capacity) presently include: Units 1 (403 MW) and 2 (400 MW), which are residual oil/natural gas-fired steam units, and Units 3 and 4 (nuclear generating units, each 693 MW). The Turkey Point Plant site currently has a total summer net generating capability of approximately 2,189 MW. The site includes a 5,900-acre cooling canal system that serves Units 1, 2, 3, and 4.

Q. Please discuss the proposed location of Turkey Point Unit 5 relative to the existing units on-site.

A. The portion of the Turkey Point Plant site that will be occupied by temporary and permanent project facilities comprises approximately 73 acres within the defined project area of approximately 90 acres. The project area is located north of Units 1 and 2. Existing Units 1, 2, 3 and 4 will remain in operation, and the Turkey Point Unit 5 project location will not impact the Units 1, 2, 3 and 4 site.

The location of the new combined cycle Unit 5 at the existing Turkey Point Plant site and the selection of the combined cycle technology will maximize the beneficial use of the site while minimizing environmental, land use, and cost impacts otherwise associated with development of a large power plant. Turkey Point Unit 5 will utilize a number of existing facilities and employees, while increasing the generating capacity of the site without increasing the overall size of the site.

B. Project Description

Q. Please describe the proposed Turkey Point Unit 5 project in more detail.

A. The unit's general arrangement is shown on Document DNH-4. Unit 5 will be a 4x1 combined cycle unit consisting of four 159-MW GE "F" Class advanced CTs, with dry low-NOx combustors, and four HRSGs which will use the waste heat from the CTs to produce steam to be utilized in a new steam turbine generator.

Each CT unit will utilize inlet air evaporative cooling. Direct inlet fogging systems achieve adiabatic cooling using water to form fine droplets (fog). The result of the fogging is a cooler, more moisture-laden air stream. This allows additional power to be produced more efficiently. For the GE Frame 7FA CT, an 8°F average decrease in temperature typically results in a 3.0 percent increase in power and an associated 1.2 percent decrease in heat rate. Thus, while power increases, the production of power is more efficient with lower emissions per MWh generated.

The inlet foggers normally would be utilized when the ambient air temperature is greater than 60°F. Given an average annual temperature for the FPL system of approximately 75°F, the output and heat rate benefits of fogger operation are included in the base rating of 984 MW (net summer) for Turkey Point Unit 5.

Each HRSG will include duct burners. The duct burners can be fired during peak demand periods to add an additional 96 MW of capacity to the unit at an incremental heat rate of 8,700 Btu/kWh.

For a peak operating mode, an additional 64 MW of output also can be achieved by raising the fuel flow to the CT for "peak firing " and injecting steam into the CT for "power augmentation." Peak firing and power augmentation results in an expected incremental heat rate for this mode of 11,500 Btu/kWh (75°F). However, peak firing and power augmentation will shorten the normal replacement period for some CT components; therefore, it normally will be reserved for peak need periods and not routinely dispatched ahead of duct firing.

Turkey Point Unit 5, with a summer generating capacity of approximately 1,144 MW (net) from the base operation, duct burning, and peak operating mode capabilities described above, will be among the most efficient electric generators in Florida. The expected operating characteristics of Turkey Point Unit 5 are shown in Document DNH-5.

Q. Please describe the potential air emissions of the Turkey Point Unit 5 project.

A. Protecting the environment while providing safe, reliable and adequate power to customers is of great importance to FPL. FPL's Turkey Point plant site will continue to comply with all applicable regulatory standards through construction and operation of Turkey Point Unit 5.

The use of clean fuels and combustion controls will minimize air emissions from Turkey Point Unit 5 and ensure compliance with applicable emission-limiting standards. Using clean fuels minimizes emissions of sulfur dioxide, particulate matter and other fuel-bound contaminants. Similarly, combustion controls minimize the formation of nitrogen oxides (NOx), and the combustor design limits the formation of carbon monoxide and volatile organic compounds. When firing natural gas, NOx emissions will be controlled using dry low-NOx combustion technology and selective catalytic reduction (SCR), which will limit NOx emissions to 2.5 parts per million volume dry (ppmvd) (@ 15% O2 on natural gas). Water injection and SCR will be used to reduce NOx emissions during CC operation when firing light oil. These design alternatives maximize control of air emissions consistent with regulatory requirements for emission rates reflecting use of the "best available control technology." Taken together, the design of Turkey Point Unit 5 will incorporate features that will make it one of the most efficient and clean power plants in Florida.

Q. What types of fuel will Turkey Point Unit 5 be capable of burning?

A. The project will be capable of burning two fuel types: natural gas and light oil. In his direct testimony, Gerard Yupp explains how fuel will be supplied to the Turkey Point Unit 5 project.

C. Water Supply – Access and Availability

Q. What are the water requirements for the Turkey Point Unit 5 project, and how will they be met?

A. The overall water balance for the Turkey Point site is shown on Document DNH-6. Primary water uses for Turkey Point Unit 5 will be for condenser cooling, combustion turbine inlet foggers, steam cycle makeup and service water. Water also will be used on a limited basis for NOx control when using light oil. Condenser cooling for the steam cycle portion of Unit 5 will be accomplished using a mechanical draft cooling tower with saline make-up water from deep Floridan Aquifer wells. Service and process water for the unit will come from the existing potable water supply servicing the site.

D. Electric Transmission Interconnection Facilities

Q. How will the Turkey Point Unit 5 project be interconnected to FPL's transmission network?

A. The project will connect to the existing on-site system substation via a new tie line. The existing on-site system substation will be expanded to accommodate the new interconnection to FPL's electric transmission system.

E. Proposed Construction Schedule

Q. What is the proposed construction schedule for the Turkey Point Unit 5 project?

A. A summary of construction milestone dates is shown on Document DNH-7. FPL will begin construction upon receipt of the necessary federal and state certifications and permits. The expected construction duration for the Turkey Point Unit 5 project is 27 months, based on the Company's experience constructing Martin Units 3 & 4, the Fort Myers and Sanford plants, and the rate of progress for the current construction projects at the Martin and Manatee plants. Therefore, with a planned in-service date of June 2007, the Company anticipates that construction must commence on or before March 15, 2005.

Q. What is the current status of the certifications and permits required to begin construction of Turkey Point Unit 5?

A. The project's site certification application was submitted on November 20, 2003, and was deemed complete by the Florida Department of Environmental Protection (FDEP) on December 4, 2003. As of March 8, 2004, the Company is awaiting a determination of sufficiency for Turkey Point Unit 5 from FDEP.

F. Estimated Construction Costs

Q. What does FPL estimate that the Turkey Point Unit 5 will cost?

A. In the economic analysis, the expected installed cost for the Turkey Point Unit 5 is $580.3 million (2007 dollars). This cost includes $472.2 million for the power block, $26.4 million for the transmission interconnection and integration, $29.9 million for upgrades to the existing natural gas infrastructure serving the Turkey Point site, and $51.8 million in allowances for funds used during construction (AFUDC) to an in-service date of June 2007. The components of the total plant cost are shown in Document DNH-8.

Q. Are these estimated costs for Turkey Point Unit 5 consistent with the estimated costs published in the 2003 Request for Proposals (RFP)?

A. Yes, these plant costs are consistent with FPL's estimates in Table VI-1 of the RFP.

III. Consequences of Delay

Q. What consequences on licensing and construction of Turkey Point Unit 5 would be likely if the need determination for the project was delayed?

A. To achieve our reliability criteria for summer 2007, FPL has set an in-service date of June 2007. The project has a projected 27-month construction schedule, which dictates that construction begins on or before March 15, 2005. Consistent with this schedule for commencing construction, FPL needs to receive a site certification for the project by the end of February 2005, with the air permit and Army Corp of Engineers (ACOE) dredge and fill permit issued concurrently or shortly after site certification. This remains a realistic timetable for the site certification, but with less than one month between the expected date upon which all approvals would be received and the actual date that construction must begin to support a June 2007 in-service date, it is imperative that the FDEP receive all agency reports (including the Commission's Need Determination) in a timely matter.

If the licensing of the project is delayed beyond March 15, 2005, FPL may not be able to meet its system reliability criteria in 2007. Also, the introduction of new low cost energy would be delayed to the detriment of FPL's customers.

IV. Conclusion

Q. What level of confidence does FPL have in the cost projection and construction schedule for the plant discussed herein?

A. In establishing the construction schedule and capital cost estimates for the plant, FPL has drawn upon its design and construction experience in Florida. FPL is confident that its current design philosophy and construction processes will allow the Company to complete these power blocks and associated transmission interconnections on schedule and in accordance with the expected construction costs.

Q. Please summarize your testimony.

A. FPL's Turkey Point Unit 5 project will use highly efficient, low-emission combined cycle technology, with which FPL has a great deal of experience building and operating. FPL is confident of the accuracy of its construction cost estimate and projected unit capabilities.

The Turkey Point site is an ideal location for the project because of the existing electric generating plant, gas transmission and electric transmission infrastructure, and minimal expected incremental environmental impacts.

There are no water supply, fuel supply, transmission or other constraints that will interfere with FPL's ability to successfully construct and operate either facility.

Q. Does this conclude your testimony?

A. Yes.

TYPICAL 4x1 CC UNIT PROCESS DIAGRAM

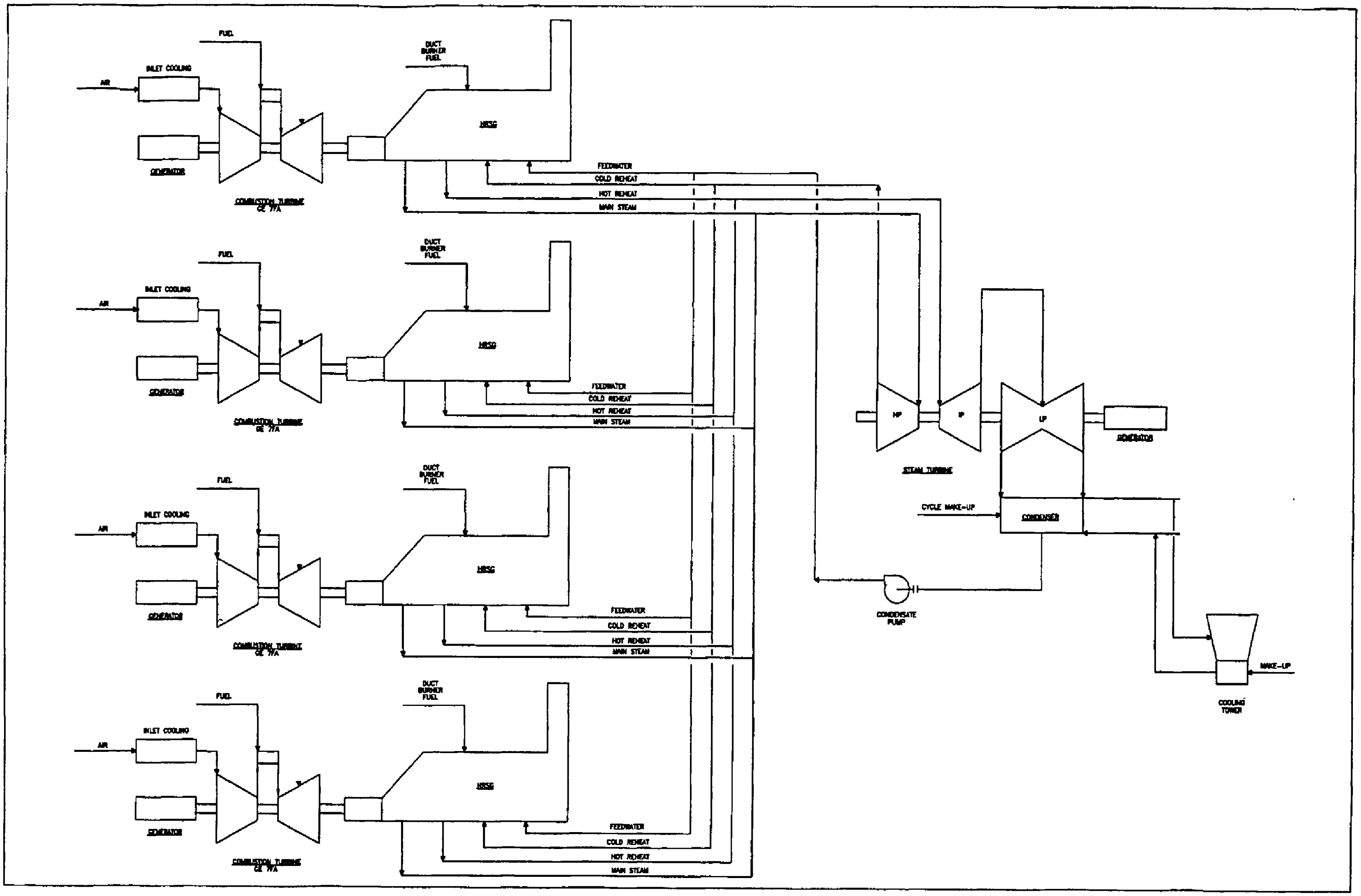


Exhibit No. ____
Document No. DNH-1
Page 1 of 1

FPL OPERATIONAL COMBINED CYCLE POWER PLANTS

Facility	Location	In-Service Year	Technology	Summer Capacity (MW)	Primary Fuel
Sanford Unit 4	FL	2003	4x1 combined cycle	940	Natural gas
Fort Myers Unit 2	FL	2002	6x2 combined cycle	1,423	Natural gas
Sanford Unit 5	FL	2002	4x1 combined cycle	940	Natural gas
Martin Unit 3	FL	1994	2x1 combined cycle	471	Natural gas
Martin Unit 4	FL	1994	2x1 combined cycle	472	Natural gas
Lauderdale Unit 4	FL	1993	2x1 combined cycle	430	Natural gas
Lauderdale Unit 5	FL	1993	2x1 combined cycle	429	Natural gas
Putnam Unit 1	FL	1976	2x1 combined cycle	249	Natural gas
Putnam Unit 2	FL	1976	2x1 combined cycle	249	Natural gas
			Total Combined Cycle Capacity - Summer (net) ➔	5,603	

FPL COMBINED CYCLE CONSTRUCTION PROJECTS IN PROGRESS

Project	Technology	Summer Capacity (MW)	Primary Fuel
Martin Unit 8	4x1 combined cycle	1,107	Natural gas
Manatee Unit 3	4x1 combined cycle	1,107	Natural gas

MAP OF TURKEY POINT PLANT SITE AND SURROUNDING AREA

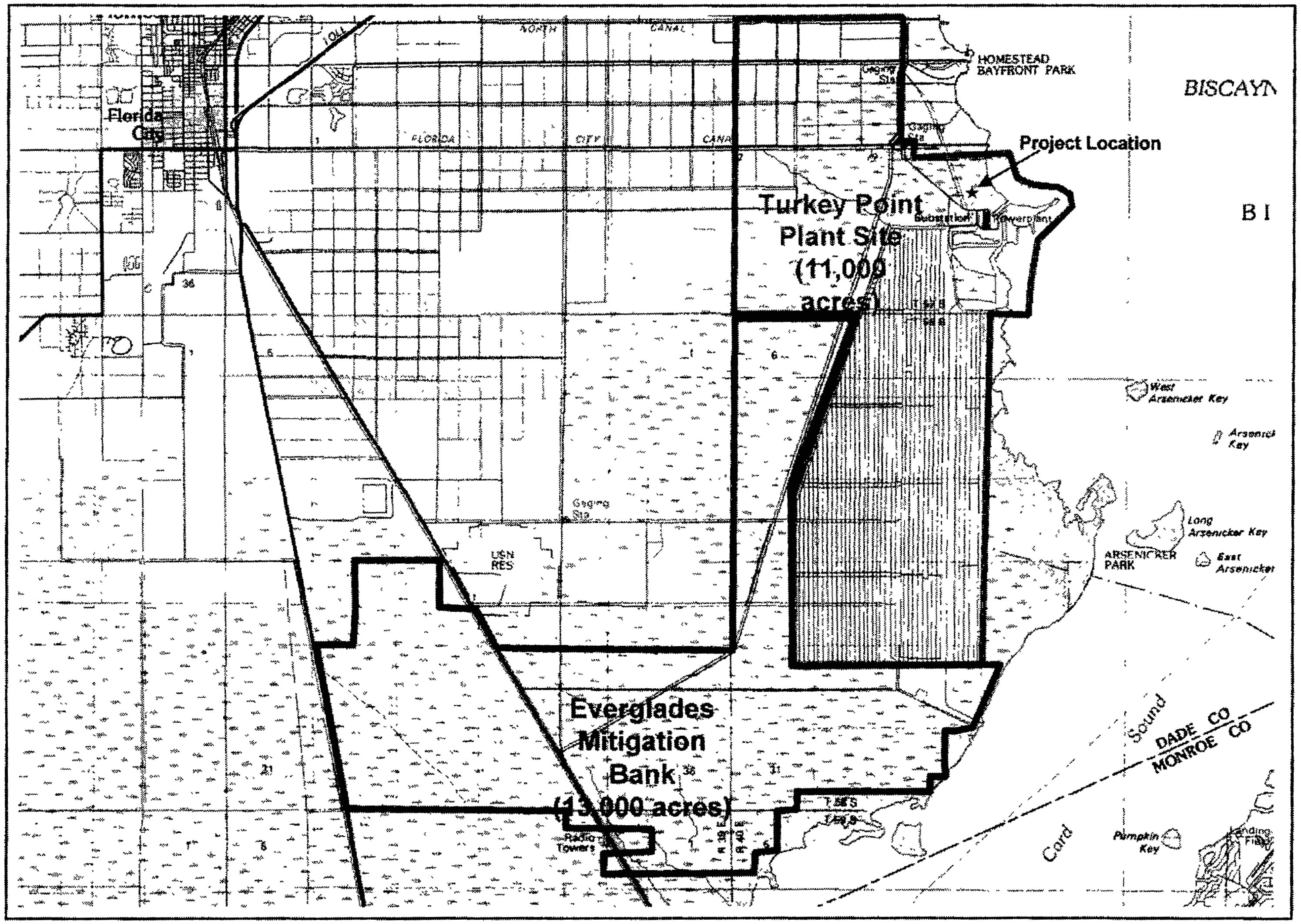
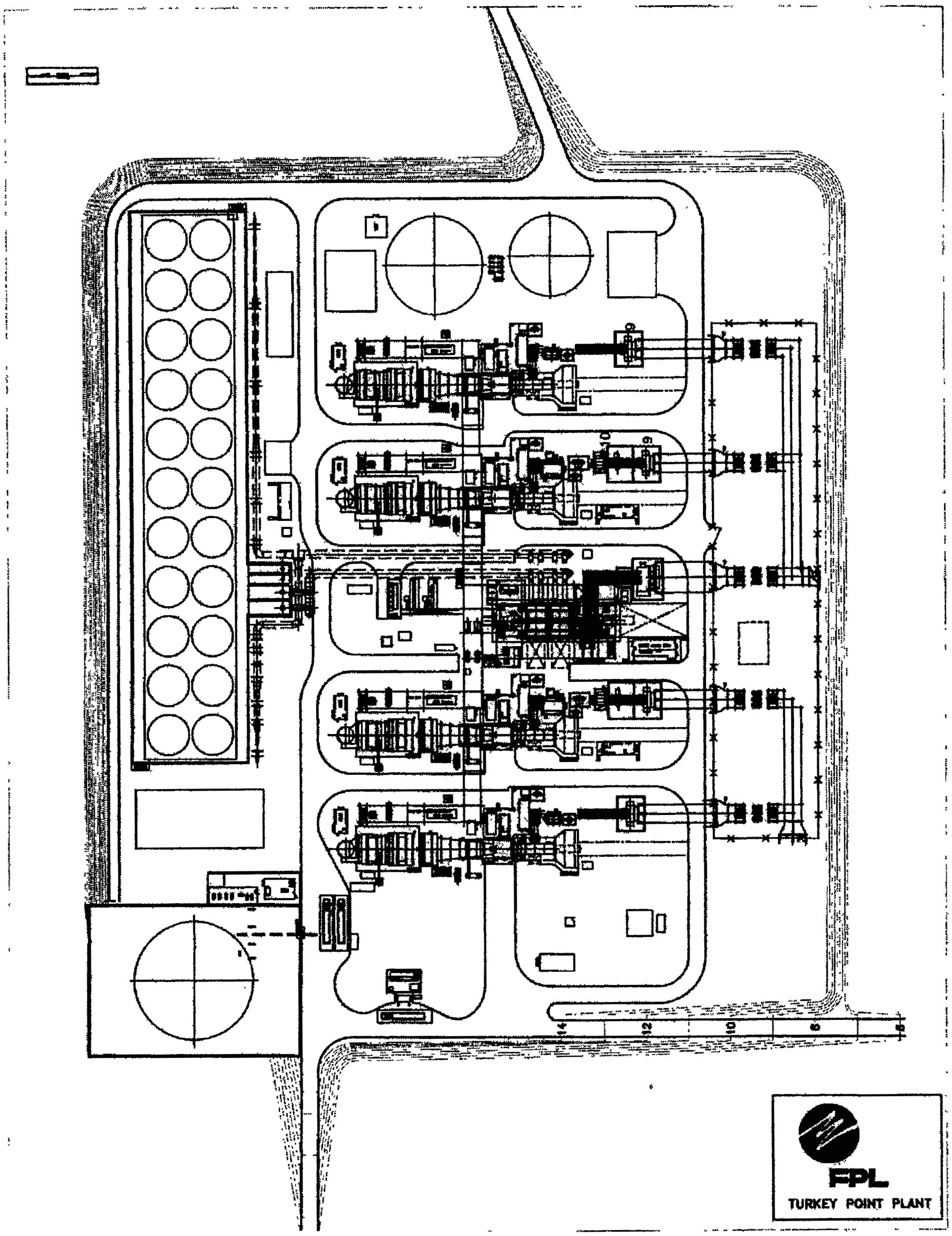


Exhibit No. ____
Document No. DNH-3
Page 1 of 1

Exhibit No. ____
Document No. DNH-4
Page 1 of 1

FOOTPRINT OR DRAWING OF
PROPOSED TURKEY POINT UNIT 5



TURKEY POINT UNIT 5 FACT SHEET

Generation Technology - "Four on One" (4x1) Combined Cycle Configuration:
- Four (4) GE 7FA Combustion Turbines w/ Inlet Foggers
- Four (4) Heat Recovery Steam Generators with Duct Burners and Selective Catalytic Reduction System for NO_x Control
- One (1) Single-Reheat Steam Turbine

Expected Plant Peak Capacity:

Summer (95°F / 50% RH)	1,144 MW
Winter (35°F / 60% RH)	1,181 MW

Projected Unit Performance Data:

Average Forced Outage Rate (EFOR)	1%
Average Scheduled Maintenance Outages	1 wk/yr (2% POF)
Average Equivalent Availability Factor (EAF)	97%
Base Average Net Operating Heat Rate @ 75°F / 60% RH	6,835 Btu/kWh (HHV)
Annual Fixed O&M – incremental (2007 dollars)	$3.57/kW-yr
Variable O&M – excluding fuel (2007 dollars)	$0.13/MWh

Fuel Type and Base Load Typical Usage @ 75°F:

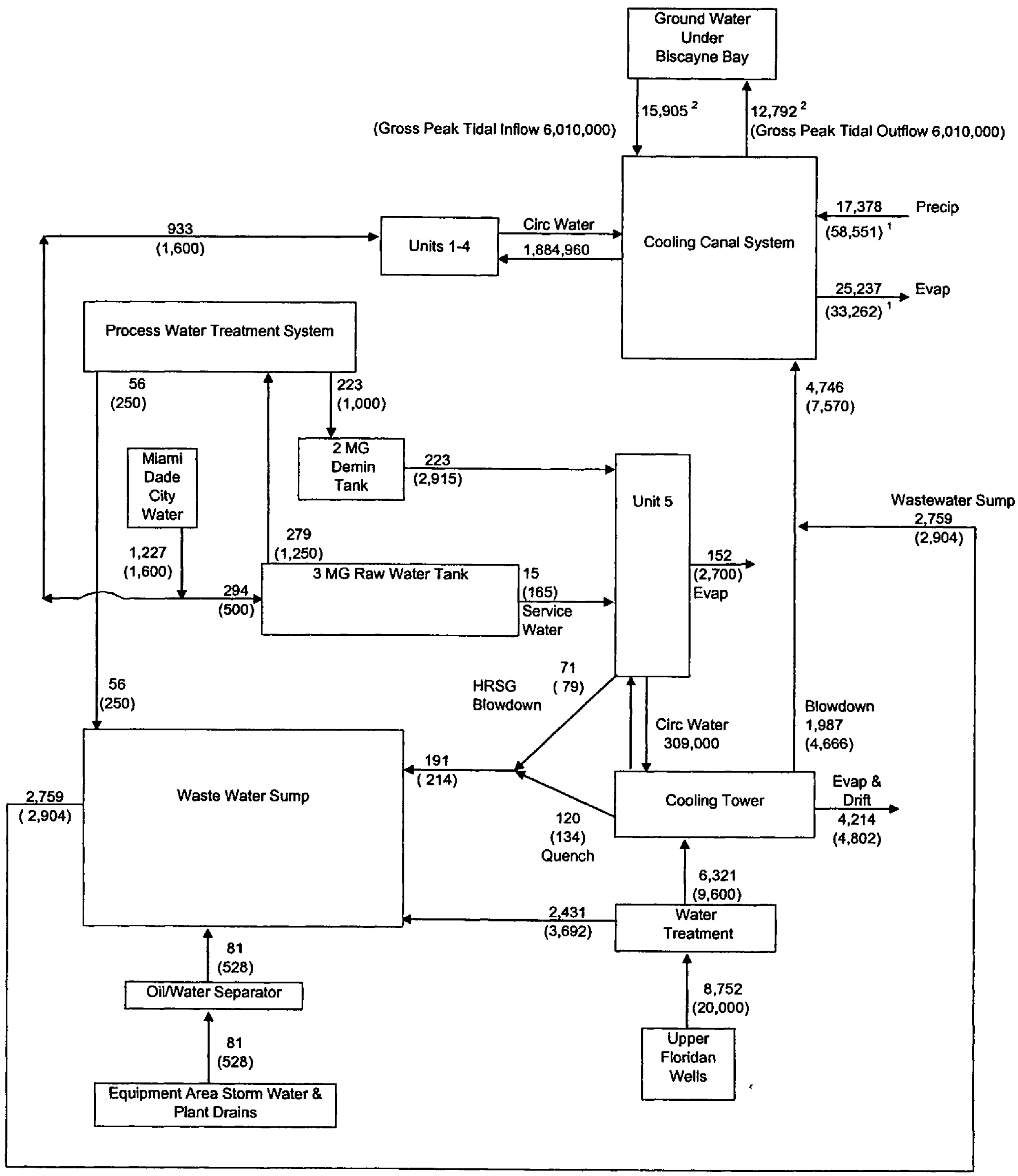
Primary Fuel	Natural Gas
Natural Gas Consumption	6,580,000 scf/hr
Backup Fuel	Light Oil
Light Oil Consumption	60,000 gal/hr

Expected Base Load Air Emissions Per Train @ 75°F:	**Natural Gas**	**Light Oil**
NO_x (@ 15% O_2)	2.5 ppmvd	10 ppmvd
CO	9 ppmvd	20 ppmvd
PM_{10}	10.9 lb/hr	17.6 lb/hr
SO_2	9.4 lb/hr	2.8 lb/hr

Water Balance:
- Annual average consumptive use for Turkey Point Unit 5 is approximately 18 MGD.
- Process wastewater recycled to cooling canal.

Linear Facilities:
- One (1) FGT gas lateral currently supplies the Turkey Point site.
- No light oil pipeline – light oil delivered to site by truck

OVERALL WATER BALANCE FOR THE TURKEY POINT SITE



Notes:
Average flows in gpm
Peak flows in gpm in parentheses
[1] Monthly peak values
[2] Net Average Flow

TURKEY POINT UNIT 5

EXPECTED CONSTRUCTION SCHEDULE

	Begin	End
Initiate sequence of HRSG orders (LNTP)	Nov 04	Dec 04
Initiate sequence of combustion turbine orders (LNTP)	Nov 04	Dec 04
Issue LNTP for steam turbines		Nov 04
Receive approvals necessary to begin construction		Feb 05
Site Prep & Foundations	Mar 05	Jan 06
Balance of Plant	Aug 05	Dec 06
Erect HRSGs	Feb 06	
Erect CTs	Apr 06	
Erect steam turbines	Apr 06	
Start-Up	Jan 07	May 07
Commercial operation		Jun 07

TURKEY POINT UNIT 5
PLANT CONSTRUCTION COST COMPONENTS
(2007 $ MILLION)

Power Block	$472.2
Transmission Interconnect and Integration	$26.4
FGT Infrastructure Upgrades	$29.9
AFUDC	$51.8
Total Plant Cost	$580.3