

**STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

IN RE: FLORIDA POWER & LIGHT COMPANY)
MARTIN COAL GASIFICATION/)
COMBINED CYCLE PROJECT,)
PA89-27F)
MARTIN COUNTY, FLORIDA)

OGC CASE NO. 00-1324

DEP 0 0-0 8 53

FINAL ORDER MODIFYING CONDITIONS OF CERTIFICATION

On February 20, 1991, the Governor and Cabinet, acting as the Siting Board, issued a final order approving certification of Florida Power & Light Company's (FPL) Martin Coal Gasification/ Combined Cycle Facility (Martin CG/CC). That certification order approved the construction and operation of a natural gas/oil fired combined cycle facility and associated facilities to be located in Martin County, Florida.

On February 18, 2000, FPL filed a request for a modification to the Conditions of Certification to allow the construction and operation of two (2) simple cycle, natural gas fired, combustion turbines as peaking Units A & B each 170 MW totaling 340 MW pursuant to section 403.516(1), F.S. On June 9, 2000, the Department issued a revised Technical Evaluation and Preliminary Determination, Intent to Issue Air Construction Permit for the two units, PSD-FL-286. On June 13, 2000, Public Notice of Intent to Issue Air Construction Permit was published in the Stuart News. The Petitioner has requested that the Conditions of Certification be modified to conform to the June 9, 2000, Draft Air Construction Permit. Additionally, the Department proposes and the petitioner concurred that the conditions should be updated to reflect current rule citations.

Copies of the request to modify were sent to all parties to the original proceeding on February 17, 2000. On July 7, 2000, Notice of Intent to Issue Proposed Modification of Power Plant Certification was published in the Florida Administrative Weekly. On June 30, 2000, all parties to the original proceeding were furnished with Notice of Intent to Issue Proposed Modification of Power Plant Certification. The notices specified that all parties to the original certification proceeding have 45 days from the issuance of the notice by mail to such party's last address of record in which to object to the requested modification. Failure of any of the parties to file a response constitutes a waiver of objection to the requested modification. The notices further specified that any person who is not already a party to the certification proceeding and whose substantial interest is affected by the requested modification has 30 days from the date of publication of the public notice to object in writing. If no objections are received, then a Final Order approving the modification shall be issued by the Department. If objections are raised and agreement cannot be subsequently reached, then pursuant to §403.516(1)(c), F.S., the applicant may file a petition for modification seeking approval for those portions of the request for modification to which written objections were timely filed. No written objection to the proposed modifications has been received by the Department.

Accordingly, in the absence of any timely objection,

IT IS ORDERED:

The proposed modifications to the Conditions of Certification are hereby approved. Pursuant to section 403.516(1)(b), F.S., the Department hereby modifies the Conditions of Certification for the Martin CG/CC Project as follows:

I. GENERAL

A. Definitions

The meaning of the terms used herein shall be governed by the definitions contained in Chapters 403, 378, 373, and 253, Florida Statutes and any regulation adopted pursuant thereto and the statutes and regulations of any agency. In the event of any dispute over the meaning of a term used in these conditions which is not defined in such statutes or regulations, such dispute shall be resolved by reference to the most relevant definition contained in any other state or federal statute or regulation or, in the alternative, by the use of the commonly accepted meaning as determined by the Department of Environmental Protection. As used herein:

1. "Application" shall mean the Site Certification Application for the Martin Coal Gasification/ Combined Cycle Project, and peaking units 8A and 8B as supplemented.

2. No change.

3. ~~"DNR" shall mean the Florida Department of Natural Resources.~~ 4. "Emergency conditions" shall mean urgent circumstances involving potential adverse consequences to human life or property as a result of weather conditions or other calamity, and necessitating new or replacement gas pipeline, transmission lines, or access facilities.

5. ~~4.~~ "Feasible" or "practicable" shall mean reasonably achievable considering a balance of land use impacts, environmental impacts, engineering constraints, and costs.

6. ~~5.~~ ~~"FGFWFC"~~ "FFWCC" shall mean the Florida ~~Game and Freshwater Fish and~~ Wildlife Conservation Commission.

~~7.~~ 8. "Permittee" shall mean Florida Power and Light company (FPL).

~~8.~~ 7. "Power plant" shall mean the electric power generating equipment and appurtenances to be constructed on the Martin site in Martin County, as generally depicted in the Application.

~~9.~~ 8. "Project" shall mean the Martin Coal Gasification/Combined Cycle Project (CG/CC) and all associated facilities, including: the power plant, peaking Units 8A and 8B, coal and limestone handling and related facilities, the cooling pond, gas pipeline, transmission line and related facilities. The project consists of three phases. Phase I involves natural gas-fired, combined cycle Units 3 and 4 with distillate fuel oil as backup and an associated natural gas pipeline and transmission line upgrade. Phase II involves combined-cycle Units 5 and 6 fueled by onsite coal gasification facilities, with distillate fuel oil and natural gas as backup. Phase III consists of coal gasification facilities for Units 3 and 4.

~~10.~~ 9. "SFWMD" shall mean the South Florida Water Management District.

~~11.~~ 10. "ISO" shall mean International Organization for Standardization, ISO 3977-1978(E) standard conditions for gas turbines = 14.7 psia, 150C, relative humidity 60%.

B. Applicable Rules

The construction and operation of the Martin CG/CC Project shall be in accordance with all applicable provisions of at least the following regulations of DEP:

~~Chapters 17-2, 17-4, 17-25, 17-256, 17-274, 17-302, 17-312, 17-650, 17-660, and 17-701, 62-4, 62-17, 62-256, 62-296, 62-297, 62-301, 62-302, 62-531, 62-532, 62-550, 62-555, 62-560, 62-600, 62-601, 62-604, 62-610, 62-620, 62-621, 62-650, 62-660, 62-701, 62-762, 62-767, 62-769, 62-770, 62-814, 62-699, and 62-25,~~ Florida Administrative Code (F.A.C.) or their successors as they are renumbered.

II. AIR

The construction and operation of Martin CG/CC Project shall be in accordance with all applicable provisions of Chapters ~~17-2,~~ 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C. In

addition to the foregoing, the project shall comply with the General Requirements, Testing Requirements, Records and Reports requirements of PSD Permit-FL-286, as may be subsequently modified, and the following conditions of certification as indicated.

(The following emission limitations and conditions in paragraph II.A. reflect final BACT determinations for Units 3 and 4 firing natural gas and oil. Emission limitations and conditions concerning phases II and III of the project ~~are~~ were preliminary based on information furnished by the Permittee in order to support certification of ultimate site capacity and shall be determined finally upon review of supplemental applications.)

A. No change

B. Emissions and Controls for CTs 8A and 8B

1. NSPS Requirements: Each combustion turbine shall comply with all applicable requirements of 40 CFR 60, adopted by reference in Rule 62-204.800(7)(b), F.A.C.

2. Combustion Turbines: The permittee is authorized to install, tune, operate and maintain two new General Electric Model PG7241(FA) combustion turbines with electrical generator sets, each designed to produce a nominal 170 MW of electrical power. [Applicant Request; Design]

3. Permitted Capacity: The heat input rates (HHV) to each combustion turbine shall not exceed the following: Normal Gas Firing:

(a) 1860 mmBTU per hour with a compressor inlet air temperature of 35° F and producing a maximum 182 MW.

(b) Gas Firing With Power Augmentation (Steam Injection): 1800 mmBTU per hour of natural gas with a compressor inlet air temperature of 59° F and producing a maximum 180 MW.

(c) Gas Firing With Peaking: 1920 mmBTU per hour with a compressor inlet air temperature of 35° F and producing a maximum 190 MW.

(d) Distillate Oil Firing: 2008 mmBTU per hour with a compressor inlet air temperature of 35° F and producing a maximum 191 MW.

The heat input rates are based on the higher heating values (HHV) of 23,127 BTU/lbm for natural gas and 19,490 BTU/lbm for distillate oil. The permittee shall provide the manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Heat input rates will vary depending upon ambient conditions and the combustion turbine characteristics. Compliance shall be determined by data compiled from the automated gas turbine control system. This data may be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Design; Rule 62-210.200(PTE), F.A.C.]

4. Simple Cycle Operation Only: Each combustion turbine shall operate only in simple cycle mode. This restriction is based on the permittee's request, which formed the basis of the CO and NOx BACT determinations and resulted in the emission standards specified in this permit. Specifically, the CO and NOx BACT determinations eliminated several control alternatives based on technical considerations due to the elevated temperatures of the exhaust gas as well as costs related to operation as peaking units. Any request to convert these units to combined cycle operation or increase the allowable hours of operation shall be accompanied by a revised CO and NOx BACT analysis and the approval of the Department through a permit modification in accordance with Chapters 62-210 and 62-212, F.A.C. Note: The results of this analysis may validate the initial BACT determinations or result in the submittal of a full PSD permit application, new control equipment, and new emissions standards. [Applicant Request; Rules 62-210.300 and 62-212.400, F.A.C.]

5. Allowable Fuels: Each combustion turbine shall be designed and tuned for a primary fuel of pipeline-quality natural gas containing no more than 1 grain of sulfur per 100 dry standard cubic feet of gas. As a backup fuel, each combustion turbine may be fired with low sulfur No. 2 distillate oil (or a superior grade) containing no more than 0.05% sulfur by weight. No other fuels are authorized by this permit. It is noted that both limitations are much more

stringent than the sulfur dioxide limitation in 40 CFR 60, NSPS Subpart GG and assures compliance with regulations 40 CFR 60.333 and 60.334 of this subpart. The permittee shall demonstrate compliance with the fuel sulfur limits by keeping the records specified in this permit. [Application; Rule 62-210.200(PTE), F.A.C.]

6. Alternate Gas Firing Methods of Operation

(a) Power Augmentation Mode: In accordance with the manufacturer's recommendations, steam may be injected into each combustion turbine when firing natural gas to provide additional peaking power during periods of high electrical power demand. Each unit shall not exceed 400 hours of power augmentation during any consecutive 12 months. To qualify as "power augmentation mode", the combustion turbine must operate at a load of 95% or greater than that of the manufacturer's maximum base load rate adjusted for the compressor inlet air conditions. Prior to activating and after deactivating the power augmentation mode, the operator shall log the date, time, and new mode of operation. Power augmentation when firing distillate oil is prohibited.

(b) High Temperature Peaking Mode: In accordance with the manufacturer's recommendations, each combustion turbine may be operated in a high temperature peaking mode when firing natural gas to provide additional power during periods of peak electrical power demands. Peaking is achieved through the automated gas turbine control system by allowing slightly higher exhaust temperatures, calculating a new combustion reference temperature for the peak load, and adjusting the fuel distribution between the fuel nozzles to maintain lean pre-mix firing. During the transfer from base load to peak load and during peak load operation, each unit will remain in the per-mix steady state mode. Each unit shall not exceed 60 hours of peaking during any consecutive 12 months. To qualify as "peaking mode", the combustion turbine must operate at a load of 95% or greater than that of the manufacturer's maximum base load rate adjusted for the compressor inlet air conditions. Prior to activating and after deactivating the peaking mode, the operator shall log the date, time, and new mode of operation. Peaking when firing distillate oil is prohibited.

Rules 62-4.070(3) and 62-212.400, F.A.C.(BACT)]

7. Restricted Operation

(a) Gas Firing: Each combustion turbine shall fire no more than 5,902,588,000 standard cubic feet of natural gas during any consecutive 12 months (equivalent to 3390 hours per year at the maximum firing rate for a compressor inlet air temperature of 59° F).

(b) Oil Firing: Each combustion turbine shall fire no more than 7,358,350 gallons of distillate oil during any consecutive 12 months (equivalent to 500 hours per year at the maximum firing rate for a compressor inlet temperature of 59° F). If oil is fired, the natural gas consumption limit shall be reduced by 118 standard cubic feet of gas for every gallon of distillate oil fired.

The permittee shall install, calibrate, operate and maintain a monitoring system for each combustion turbine to measure and accumulate the quantity of fuel and hours of operation for each method of operation. [Applicant Request; Rules 62-212.400(BACT) and 62-210.200(PTE), F.A.C.]

8. Operating Procedures: The Best Available Control Technology (BACT) determinations established by this permit rely on "good operating practices" to minimize emissions. Therefore, all operators and supervisors shall be properly trained to operate and maintain the combustion turbines and pollution control systems in accordance with the guidelines and procedures established by the manufacturer. The training shall include good operating practices as well as methods of minimizing excess emissions. [Applicant Request; Rules 62-4.070(3) and 62-212.400(BACT), F.A.C.]

9. Automated Control System: In accordance with the manufacturer's recommendations, the permittee shall install, calibrate, tune, operate, and maintain a SpeedtronicTM automated gas turbine control system for each unit. Each system shall be designed and operated to monitor and control the gas turbine combustion process and operating parameters including, but not limited to: air/fuel distribution and staging, turbine speed, load conditions, exhaust temperatures, heat input, and fully automated startup and shutdown. [Design; 62-212.400(BACT), F.A.C.]

10. DLN Combustion Technology: In accordance with the manufacturer's recommendations, the permittee shall install, tune, operate and maintain the General Electric dry low-NOx combustion system (DLN 2.6 or better) to control NOx emissions from each gas turbine. [Design; Rule 62-212.400(BACT), F.A.C.]

11. Tuning: Prior to the initial emissions performance tests for each gas turbine, the DLN 2.6 combustors and automated gas turbine control systems shall be tuned to optimize the reduction of CO, NOx, and VOC emissions. Thereafter, each system shall be maintained and tuned in accordance with the manufacturer's recommendations to minimize these pollutant emissions. During tuning sessions, each combustion turbine shall be tuned for CO and NOx emissions performance of 9.0 ppmvd corrected to 15% oxygen or better. The permittee shall provide at least 5 days advance notice prior to any tuning session. [Design; Rule 62-212.400(BACT), F.A.C.]

12. Carbon Monoxide (CO)

a. Gas Firing, Normal: When firing natural gas under normal operating conditions, CO emissions from each combustion turbine shall not exceed 32.0 pounds per hour and 9.0 ppmvd corrected to 15% oxygen based on a 3-hour test average conducted at base load.

b. Gas Firing With Power Augmentation: When firing natural gas and injecting steam to provide power augmentation, CO emissions from each combustion turbine shall not exceed 47.0 pounds per hour and 15.0 ppmvd corrected to 15% oxygen based on a 3-hour test average conducted at base load or higher.

c. Distillate Oil Firing: When firing low sulfur distillate oil as a backup fuel, CO emissions from each combustion turbine shall not exceed 68.0 pounds per hour and 20.0 ppmvd corrected to 15% oxygen based on a 3-hour test average conducted at base load.

The permittee shall demonstrate compliance with these standards by conducting performance tests in accordance with EPA Method 10 and the requirements of this permit. [Rule 62-212.400(BACT), F.A.C.]

13. Nitrogen Oxides (NOx)

a. Gas Firing, Normal: When firing natural gas under normal operating conditions, NOx emissions from each combustion turbine shall not exceed 66.0 pounds per hour and 9.0 ppmvd corrected to 15% oxygen based on a 3-hour test average conducted at base load. In addition, NOx emissions shall not exceed 10.0 ppmvd corrected to 15% oxygen based on a 3-hour block average for data collected from the NOx continuous emissions monitor.

b. Gas Firing With Power Augmentation: When firing natural gas and injecting steam to provide power augmentation, NOx emissions from each combustion turbine shall not exceed 82.0 pounds per hour and 12.0 ppmvd corrected to 15% oxygen based on a 3-hour test average conducted at base load or higher. In addition, NOx emissions shall not exceed 12.0 ppmvd corrected to 15% oxygen based on a 3-hour block average for data collected from the NOx continuous emissions monitor.

c. Gas Firing With Peaking: When firing natural gas with high temperature peaking, NOx emissions from each combustion turbine shall not exceed 105.0 pounds per hour and 15.0 ppmvd corrected to 15% oxygen based on a 3-hour test average conducted at peak load. In addition, NOx emissions shall not exceed 15.0 ppmvd corrected to 15% oxygen based on a 3-hour rolling average for data collected from the NOx continuous emissions monitor.

d. Distillate Oil Firing: When firing low sulfur distillate oil as a backup fuel, NOx emissions from each combustion turbine shall not exceed 334.0 pounds per hour and 42.0 ppmvd corrected to 15% oxygen based on a 3-hour test average conducted at base load. In addition, NOx emissions shall not exceed 42.0 ppmvd corrected to 15% oxygen based on a 3-hour block average for data collected from the NOx continuous emissions monitor.

NOx emissions are defined as oxides of nitrogen measured as NO₂. The permittee shall demonstrate compliance by conducting performance tests and emissions monitoring in accordance with EPA Methods 7E, 20, and the requirements of this permit. [Rule 62-212.400(BACT), F.A.C.; 40 CFR 60.332]

14. Particulate Matter (PM/PM10) and Sulfur Dioxide (SO₂)

a. *Particulate Matter*: When firing natural gas under any method of operation, particulate matter emissions from each combustion turbine shall not exceed 9.0 pounds per hour based on a 3-hour test average conducted at base load. When firing distillate oil, particulate matter emissions from each combustion turbine shall not exceed 17.0 pounds per hour based on a 3-hour test average conducted at base load

b. *Fuel Specifications*. Emissions of PM, PM10, and SO₂ shall be limited by the use of pipeline-quality natural gas containing no more than 1 grain per 100 standard cubic feet as the primary fuel and restricted use of No. 2 distillate oil (or a superior grade) containing no more than 0.05% sulfur by weight as a backup fuel. The fuel specifications are work practice standards established as BACT limits for PM, PM10, and SO₂ emissions. The permittee shall demonstrate compliance with the fuel sulfur limits by maintaining the records specified in this permit. [Rule 62-212.400(BACT), F.A.C.; 40 CFR 60.333]

c. *VE Standard*. When firing natural gas or distillate oil, visible emissions from each combustion turbine shall not exceed 10% opacity, based on a 6-minute average. The visible emissions limits are work practice standards established as BACT limits for PM and PM10 emissions. The permittee shall demonstrate compliance with these standards by conducting tests in accordance with EPA Method 9 and the performance testing requirements of this permit. [Rule 62-212.400(BACT), F.A.C.]

15. Volatile Organic Compounds (VOC)

a. *Gas Firing With or Without Power Augmentation*: When firing natural gas, VOC emissions shall not exceed 3.0 pounds per hour and 1.5 ppmvw based on a 3-hour test average conducted at base load.

b. *Distillate Oil Firing*: When firing distillate oil, VOC emissions shall not exceed 7.5 pounds per hour and 3.5 ppmvw based on a 3-hour test average conducted at base load.

The VOC standards are established as PSD-synthetic minor limits. VOC emissions shall be measured and reported in terms of methane. The permittee shall demonstrate compliance with these standards by conducting tests in accordance with EPA Methods 25, 25A and the

performance testing requirements of this permit. Optional testing in accordance with EPA Method 18 may be conducted to account for the actual methane fraction of the measured VOC emissions. [Design; Rule 62-4.070(3), F.A.C.]

16. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation, power augmentation, or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction, shall be prohibited. All such emissions shall be included in the calculation of the 3-hour averages to demonstrate compliance with the continuous NOx emissions standard. [Rule 62-210.700(4), F.A.C.]

17. Excess Emissions Allowed: For each combustion turbine, excess NOx and visible emissions during startup, shutdown, and documented malfunction shall be allowed, providing:

a. Operators employ best operational practices to minimize the amount and duration of excess emissions.

b. Operation below 50% of base load shall not exceed 120 minutes during any calendar day.

c. During startup and shutdown, visible emissions excluding water vapor shall not exceed 20% opacity for up to ten, 6-minute observation periods during any calendar day. Data for each observation period shall be exclusive for the ten periods.

d. During all startups, shutdowns, and malfunctions, the NOx CEM shall monitor and record NOx emissions. For each calendar day, up to two 1-hour monitoring averages may be excluded from the continuous NOx compliance demonstration for each combustion turbine due to excess NOx emissions resulting from startup, shutdown, and documented malfunction. For excess NOx emissions due to malfunction, the permittee shall notify the Compliance Authority within (1) working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident.

e. If the permittee provides at least 5 days advance notice prior to tuning in accordance with the manufacturer's recommendations, up to three 1-hour monitoring averages

may be excluded from the continuous NOx compliance demonstration for each gas turbine due to excess NOx emissions resulting from tuning. Note: It is expected that no more than two tuning sessions would occur each year. [Design; Rule 62-210.700(1) and (5); rule 62-4.130, F.A.C.]

18. Unconfined Particulate Emissions: During the construction period, unconfined particulate matter emissions shall be minimized by dust suppressing techniques such as covering and/or application of water or chemicals to the affected areas, as necessary. [Rule 62-296.320(4)(c), F.A.C.]

19. Circumvention: The permittee shall not circumvent the air pollution control equipment or allow the emission of air pollutants without this equipment operating properly. [Rule 62-210.650, F.A.C.]

20. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by fire, wind or other cause, the permittee shall notify the Compliance Authority as soon as possible, but at least within one working day, excluding weekends and holidays. The notification shall include: pertinent information as to the cause of the problem; steps being taken to correct the problem and prevent future recurrence; and, where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with the conditions of this permit or the regulations. [Rule 62-4.130, F.A.C.]

~~B.~~ C. No change

III. SURFACE WATER DISCHARGES

Discharges into surface waters of the state during construction and operation of the project shall be in accordance with applicable provisions of Chapters ~~17-4, 17-302, 17-650, and 17-660~~ 62-4, 62-160, 62-302, 62-601, 62-650, and 62-660, F.A.C., DEP Permit No. FL0030988-002-IW1S and the following Conditions of Certification:

A. Plant Effluents and Receiving Body of Water.

For discharges made from the Martin CG/CC Project, the following conditions shall apply:

1. - 6. No change.

7. The Permittee shall monitor the cooling pond at the condenser-cooling water intake for the following parameters in the manner prescribed:

Parameter	Monitoring Requirements	
	Measurement Frequency	Sample Type
Total Dissolved Solids	1/quarter	grab
Turbidity (NTU)	1/quarter	grab
Ammonia Nitrogen	1/quarter	grab
Ammonia (un-ionized)	1/quarter	grab
Arsenic	1/quarter	grab
Chloride	1/quarter	grab
Copper	1/quarter	grab
Iron	1/quarter	grab
Lead	1/quarter	grab
Nitrite	1/quarter	grab
Nitrate	1/quarter	grab
Mercury	1/quarter	grab
pH	1/quarter	grab
Zinc	1/quarter	grab
Temperature	1/quarter	grab
Ortho-phosphorus	1/quarter	grab

Total Phosphorus	1/quarter	grab
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The results of the monitoring shall be submitted to DEP's Southeast District Office in West Palm Beach within 15 days following the end of the sampling period. If any of the above parameters should reach 80% of the Class III water quality criteria as contained in Chapter 17-302, F.A.C., the Permittee shall notify DEP. DEP may then require sampling on a monthly basis in the cooling pond, the St. Lucie Canal, and L-65 Canal. The Permittee shall maintain a summary of the results in the form of a yearly average for the life of the project.

8. a. The Permittee shall monitor any discharge from the cooling pond at OSN 001 in the following manner:

Parameter	Monitoring Requirements
Flow (quantity and duration)	by calculation during discharge
Temperature*	2/day — during discharge — meter
Total Dissolved Solids	1/week — during discharge — grab
Ammonia Nitrogen (mg/l)	1/week — during discharge — grab
Ammonia (un-ionized)	1/week — during discharge — calc.
Turbidity (NTU)	1/week — during discharge — grab
Chloride (mg/l)	1/week — during discharge — grab
Copper (mg/l)	1/week — during discharge — grab
Iron (mg/l)	1/week — during discharge — grab
Lead (mg/l)	1/week — during discharge — grab
Mercury (ug/l)	1/week — during discharge — grab
Dissolved Oxygen (mg/l)	1/week — during discharge — grab
pH (S.U.)	1/week — during discharge — grab
Sodium (mg/l)	1/week — during discharge — grab
Nitrite (mg/l)	1/week — during discharge — grab
Nitrate (mg/l)	1/week — during discharge — grab

Ortho-phosphorus (mg/l)	1/week—during discharge—grab
Total Phosphate (mg/l)	1/week—during discharge—grab
Sulfate (mg/l)	1/week—during discharge—grab
Zinc (mg/l)	1/week—during discharge—grab

* Temperature should be measured at OSN 001, the discharge canal, and the St. Lucie canal in such a manner as to determine compliance with Condition III.A.3. During periods of discharge from the cooling pond to the discharge canal for the purpose of gate testing at OSN 001, the intake pumps shall be operated in such a manner as to maximize recycling of discharged water back to the cooling pond.

b. The Permittee shall monitor any discharge from OSNs 002 and 003 in the following manner:

Parameter	Monitoring Requirement
Flow (quantity)	1/month—metered
Temperature	1/month—metered
Total Dissolved Solids	1/month—grab
Ammonia Nitrogen (mg/l)	1/month—grab
Ammonia (un-ionized)	1/month—calculated
Turbidity (NTU)	1/month—grab
Chloride (mg/l)	1/month—grab
Iron (mg/l)	1/month—grab
Lead (mg/l)	1/month—grab
Mercury (ug/l)	1/month—grab
Dissolved Oxygen (mg/l)	1/month—grab
pH (S.U.)	1/month—metered
Sodium (mg/l)	1/month—grab

Nitrite (mg/l)	1/month—grab
Nitrate (mg/l)	1/month—grab
Ortho-phosphorus (mg/l)	1/month—grab
Total Phosphorus (mg/l)	1/month—grab
Sulfate (mg/l)	1/month—grab
Zinc (mg/l)	1/month—grab

9. Chemical-Metal Cleaning—Metal cleaning wastes shall be treated prior to discharge to the cooling pond. Such discharges shall be limited and monitored at OSN-008 by the Permittee as specified below:

Effluent Characteristic	Discharge Limits Instantaneous-Max	Monitoring Requirements	
		Measurement Frequency	Sample Type
Flow—m ³ /day (MGD)	1.0 mg/l	1/month	calc.
Copper, Total	1.0 mg/l	1/month	grab
Iron, Total	1.0 mg/l	1/month	grab
Oil and Grease	20.0 mg/l	1/month	grab
Total Suspended Solids	100.0 mg/l	batch	grab

Chemical metal cleaning wastes shall mean process equipment cleaning including, but not limited to, boiler tube cleaning. Waste treated and discharged via this OSN shall not include any stream for which an effluent guideline has not been established (40 CFR Part 423) for total copper and total iron at the above levels.

10. Storm Water Runoff—During construction and operation, discharge from the storm water runoff collection system from a storm event less than the once in ten year, twenty four hour storm shall meet the following limits and shall be monitored at OSNs 005, 009, 010, and 011 by a grab sample once per discharge, but not more often than once per week:

Effluent	Discharge Limits	Monitoring
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Characteristic	Instantaneous Maximum	Freq.	Type
Flow (MGD)	Report	1/week	calc.
TSS (mg/l)	50	1/week	grab
pH	6.0-8.5	1/week	grab
Oil and Grease (mg/l)	Report	1/month	grab

a. During plant operation, necessary measures shall be used to settle, filter, treat or absorb silt containing or pollutant laden storm water runoff to limit the suspended solids to 50 mg/l or less at OSN 005 during rainfall periods less than the 10-year, 24-hour rainfall.

b. Control measures shall consist at the minimum of filters, sediment traps, barriers, berms or vegetative planting. Exposed or disturbed soil shall be protected as soon as possible to minimize silt, and sediment laden runoff. The pH shall be kept within the range of 6.0 to 8.5 in the discharge to the discharge canal.

c. Special consideration must be given to the control of sediment laden runoff resulting from storm events during the construction phase. Best management practices erosion controls should be installed early during the construction period so as to prevent the transport of sediment into surface waters which would result in water quality violations and DEP enforcement action. Revegetation and stabilization of disturbed areas should be accomplished as soon as possible to reduce the potential for further soil erosion. Should construction phase runoff pose a threat to the water quality of state waters, additional measures such as treatment of impounded runoff or the use of turbidity curtains (screens) in on-site impoundments shall be implemented.

11. Steam System Blowdown: Blowdown discharge from the steam electric generating system to the cooling pond shall be limited and monitored at OSN 007 as specified below:

Effluent Characteristics	Discharge Limits	Monitoring Requirements	
		Sample Type	Measurement Frequency
TSS	Daily Maximum 100	grab	1/month
Oil and Grease	20	grab	1/month
Flow	--	calc.	1/month

12. Construction dewatering

a. Discharge of construction dewatering to the cooling pond from OSN-005 shall be limited and monitored as specified below:

Effluent Characteristics	Discharge Limits	Monitoring Requirements	
		Measurement Frequency	Sample Type
Flow—m ³ /day (MGD)	—	daily	Totalizer Calc.
Turbidity (NTU)	—	1/week	Grab
TSS—mg/l	50.0	1/week	Grab
PH	6.0—9.0	1/week	Grab

b. Project discharge descriptions: Dewatering water at outfall 005 includes all surficial aquifer groundwater extracted during all excavation construction on site for the purpose of installing structures, equipment, etc. Discharges to the cooling pond shall be at a location to be depicted on an appropriate engineering drawing to be submitted to DEP and SFVMD. The Permittee shall report to DEP the date that construction dewatering is expected to begin at least one week prior to the commencement of dewatering.

13. Domestic Waste Treatment Plant: Plans and specifications for the proposed domestic waste treatment plant to be constructed with Units 3 and 4 shall be submitted to the DEP Southeast District Office at least 90 days prior to start of construction of that facility for review and approval. The effluent from the domestic waste treatment plant shall be monitored at OSN 006 and shall meet the following limits:

a. Such discharges shall be limited and monitored as specified below:

Effluent Characteristic	Discharge Limits		Monitoring Requirements	
	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow (MGD)	report	report	1/month	recorder
Five day BOD	30.0	62.0	1/quarter	grab
TSS	30.0	62.0	1/quarter	grab

b. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored one/month on a grab sample.

~~e. There shall be no discharge of floating solids or visible foam in other than trace amounts.~~

~~d. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): domestic waste treatment plant effluent prior to combination with any other waste stream or discharge to the cooling pond.~~

~~14. Combined Cycle Wastewater Treatment System. During the period beginning on the effective date and lasting through expiration, the Permittee is authorized to discharge from OSN 007 combined cycle wastewater treatment system effluent to the cooling pond.~~

~~a. Such discharges shall be limited and monitored by the Permittee as specified below:~~

Effluent Characteristics	Discharge Limits		Monitoring Requirements	
	Daily Avg.	Daily Max	Measurement Frequency	Sample Type
Flow (MGD)	report	report	1/month	recorder
Oil and Grease (mg/l)	15.0	20.0	1/month	grab
Total Suspended Solids (mg/l)	30.0	110.0	1/month	grab

~~b. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored one/month on a grab sample.~~

~~e. There shall be no discharge of floating solids or visible foam in other than trace amounts.~~

~~d. Discharge of hydrazine in boiler blowdown is authorized without limitation or monitoring requirements.~~

~~e. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): wastewater treatment system effluent prior to combination with any other waste stream or discharge to the cooling pond.~~

7. The permittee is authorized to discharge from Outfall D-001-Cooling Pond Overflow to the St Lucie Canal. This outfall includes, or will include at a future date, discharges from Internal Outfalls I-004, I-006, I-007, I-008, I-009, I-010, I-011, I-012, I-013 and non-contact cooling water from Units 1-6 to the Plant Intake /Discharge Canal then to St. Lucie Canal.

a. Such discharges shall be limited and monitored by the permittee as specified

below:

<u>EFFLUENT</u> <u>CHARACTERISTIC</u>	<u>DISCHARGE</u> <u>LIMITATIONS</u>		<u>MONITORING</u> <u>REQUIREMENTS</u>		
	<u>Daily</u> <u>Maximum</u>	<u>Monthly</u> <u>Average</u>	<u>Measurement</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>	<u>Sample</u> <u>Point</u>
<u>Flow (Quantity and Duration),</u> <u>MGD</u>	<u>Report</u>	<u>N/A</u>	<u>1/Day of</u> <u>Discharge</u>	<u>Calculation</u>	<u>EFF-1</u>
<u>Temperature</u>	<u>92.0</u> <u>See k. below</u>	<u>N/A</u>	<u>2/Day of</u> <u>Discharge</u>	<u>Grab</u>	<u>EFF-</u> <u>1</u>
<u>Total Residual Chlorine (TRC),</u> <u>mg/l</u>	<u>Report</u> <u>See l. below</u>	<u>N/A</u>	<u>1/Day of</u> <u>Discharge</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Specific Conductance, :mhos/cm</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Dissolved Oxygen, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>PH, Standard Units</u>	<u>Report</u>		<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Phosphorous (as P), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Ortho-phosphate (as P), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Oil & Grease, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Ammonia (as N), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Un-ionized Ammonia, mg/l</u>	<u>Report</u> <u>See c below</u>	<u>N/A</u>	<u>1/Week</u>	<u>Calculation</u>	<u>EFF-1</u>
<u>Total Nitrogen (as N), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Nitrite (as N), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Nitrate (as N), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>

(III.A.7.a. CONTINUED)

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Total Recoverable Arsenic, mg/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Recoverable Cadmium, :g/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Recoverable Chromium, ug/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Recoverable Copper, :g/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Recoverable Mercury, :g/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Recoverable Zinc, :g/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Recoverable Lead, :g/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Recoverable Iron, mg/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Recoverable Selenium, :g/l</u>	<u>Report</u>	<u>Report</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Hardness (as CaCO₃), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Chlorides, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Sodium, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Sulfate, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Suspended Solids, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Total Dissolved Solids, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>
<u>Turbidity, NTUs</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>EFF-1</u>

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
<u>EFF-1</u>	<u>Nearest accessible point after final treatment, but prior to mixing with the receiving water.</u>
<u>EFF-1A</u>	<u>At the edge of a mixing zone in the Intake/ Canal which extends 400 meters from the spillway gates and that point to the intake structure.</u>

b. The maximum water surface elevation in the cooling pond shall be used to as an indicator for discharge. Authorization for operation of the maximum water surface level has been given by the South Florida Water Management District.

c. Effluent samples for pH and temperature (grab) shall be taken simultaneously with each total ammonia grab sample. Un-ionized ammonia shall be calculated in accordance with Table I (attached). All measured values for pH, temperature, and total ammonia used to calculate an un-ionized ammonia value shall be reported as an attachment to the Discharge Monitoring Report (DMR). All calculated un-ionized ammonia values shall be reported on the attachment. The daily maximum value for un-ionized ammonia for each reporting period shall be reported on the DMR.

d. This discharge is permitted only in cases caused by extreme or cumulative rainfall in excess of a 24-hour rainfall event with a probable recurrence interval of once in 10 years, where unavoidable to prevent loss of life, severe property damage, or damage to the physical integrity of the cooling pond or its structures and twice each year to test emergency release gates. The permittee will notify the Southeast District Office two weeks prior to a scheduled gate test.

e. In the event an unscheduled discharge occurs the permittee shall inform the Florida Department of Environmental Protection (FDEP) Southeast District Office by telephone as soon as practicable, but in no case later than 48 hrs after the discharge occurs. The permittee shall also provide the FDEP with the following information, in writing within ten (10) days of the discharge: (1) a description and cause of the discharge; and (2) the period of discharge, including exact dates and times; and the anticipated time the discharge is expected to continue.

f. The permittee shall take all reasonable steps to minimize any adverse impact to

navigable waters resulting from the discharge, including such monitoring as necessary to determine the environmental impact of the discharge.

g. Monitoring is required only when there is a discharge from Outfall D-001, except that internal monitoring is required whether or not a discharge occurs.

h. There shall be no discharge of floating solids or visible foam in other than trace amounts or a visible sheen.

i. The facility will sample at least once a year and/or prior to, but not more than two weeks before, releasing cooling pond water during a spillway gate test. This data shall be provided to the Southeast District Office upon request for review and will be reported on a DMR to be submitted in January following the discharge(s). The cooling pond shall be sampled near the spillway at mid-depth for all parameters listed in part III.A.7.a. above. If any of the above parameters approach within 10% of the Class III fresh water criteria contained in Chapter 62-302 of the Florida Administrative Code the permittee shall operate the cooling pond intake pumps in such a manner to maximize recycling of the discharged water back to the cooling pond.

j. If any of the above parameters reach 80% of the Class III fresh water criteria contained in Chapter 62-302 of the Florida Administrative Code the permittee shall notify the Department within 60 days of the sampling event and submit a report within 120 days documenting the facility's ability to comply with water quality standards.

k. The cooling pond discharge shall comply with the following requirements at the edge of the approved 400 meter mixing zone. Discharge temperature shall not be more than 5.0 EF higher than the ambient (natural) temperature in the St. Lucie Canal and shall not exceed 92.0 EF. At all times and under all conditions of stream flow, the discharge temperature shall be controlled so that at least two-thirds (2/3) of the width of the discharge canal's surface remains at ambient (natural) temperature. Further, no more than one-quarter (1/4) of the cross-section of the discharge canal at a traverse perpendicular to the flow shall be heated by the discharge. All thermal limits shall apply at the edge of the approved mixing zone. The permittee shall operate

in accordance with the thermal monitoring plan submitted to the EPA on November 23, 1993. A copy of the plan should be kept on site for inspection by the DEP.

1. Monitoring requirements for TRC are not applicable if chlorine has not been added to the non-contact cooling water systems of any electric generating unit or to the non-contact cooling water of any coal gasification facility during the previous 30 days.

8. The permittee is authorized to discharge from Outfalls D-002 and D-003 – Point Sources of Cooling Pond Seepage and Surface Runoff associated with industrial activity to the East Perimeter Ditch to the Plant Intake/Discharge Canal to St. Lucie Canal and to L-65 Canal respectively.

a. Such discharges shall be limited and monitored by the permittee as specified below:

	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
<u>EFFLUENT CHARACTERISTIC</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow, MGD</u>	<u>Report</u>	<u>Report</u>	<u>1/week</u>	<u>Totalizer</u>	<u>EFF-3, 4, 5</u>
			<u>1/year</u>	<u>Totalizer</u>	<u>EFF-6, 7</u>
<u>TemperatureE F</u>	<u>92.0</u>	<u>N/A</u>	<u>2/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Month</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Specific Conductance, :mhos/cm</u>	<u>1275</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Dissolved Oxygen, mg/l</u>	<u>5.0 Minimum</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>PH, Standard Units</u>	<u>See b. below</u>		<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5, 6, 7</u>
<u>Total Phosphorous (as P), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Ortho-phosphate (as P), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Oil & Grease, mg/l</u>	<u>5.0</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3,4, 5,</u>
			<u>1/Quarter</u>	<u>Grab</u>	<u>EFF- 6, 7</u>
<u>Total Ammonia (as N), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Quarter</u>	<u>Grab</u>	<u>EFF-6, 7</u>

<u>Un-ionized Ammonia, mg/l</u>	<u>0.02</u> <u>See I.A.2.h</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Month</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Nitrogen (as N), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Nitrite (as N), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Nitrate (as N), mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>

(IIIA.8.a. CONTINUED)

	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
<u>EFFLUENT CHARACTERISTIC</u>	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measuremen t Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Total Recoverable Arsenic, mg/l</u>	<u>0.05</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/6Months</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Recoverable Cadmium, ug/l</u>	<u>See footnote below¹</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/6Months</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Recoverable Chromium, ug/l</u>	<u>See footnote below¹</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/6 Months</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Recoverable Copper, ug/l</u>	<u>See footnote below¹</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/6 Months</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Recoverable Mercury, ug/l</u>	<u>0.012</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Recoverable Zinc, ug/l</u>	<u>See footnote below¹</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Recoverable Lead, ug/l</u>	<u>See footnote below¹</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Recoverable Iron, mg/l</u>	<u>1.0</u> <u>4.8</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Quarter</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Recoverable Selenium, ug/l</u>	<u>5.0</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Quarter</u>	<u>Grab</u>	<u>EFF-6, 7</u>

¹ Pursuant to 62-302.510(4), Florida Administrative Code all metals shall be reported as the total recoverable fraction. The maximum values are calculated based on the total hardness of the receiving stream.

a. The allowable daily maximum limit for cadmium shall be calculated as follows: $Cd < e^{(.07852[\ln H]-3.49)} : g/l.$

b. The allowable daily maximum limit for copper shall be calculated as follows: $Cu < e^{(.08545[\ln H]-1.465)} : g/l.$

c. The allowable daily maximum limit for lead shall be calculated as follows: $Pb < e^{(1.273[\ln H]-4.705)} : g/l.$

d. The allowable daily maximum limit for zinc shall be calculated as follows: $Zn < e^{(.08473[\ln H]+0.7614)} : g/l.$

e. The allowable daily maximum limit for chromium shall be calculated as follows: $Cr < e^{(.0819[\ln H]+1.561)} : g/l.$

(LA.8.a. Continued)

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Total Hardness, mg/l as</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3,4,5,</u>
<u>Chlorides, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Sodium, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Sulfate, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Suspended Solids, mg/l</u>	<u>100.0</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5,</u>
			<u>1/6 Months</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Total Dissolved Solids, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>
<u>Turbidity, NTUs</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>EFF-3, 4, 5</u>
			<u>1/Year</u>	<u>Grab</u>	<u>EFF-6, 7</u>

b. The pH shall not be less than 6.0 nor greater than 8.5 Standard Units.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts nor shall the effluent cause a visible sheen on the waterbody.

d. Monitoring of discharges to Barley Barber Swamp and the Northwest Mitigation Area will consist of representative monitoring points (sumps) as indicated below.

e. For Outfall D-002, flow shall be the cumulative flows from weirs at Outfalls D-02B, D-02C, D-02D; and pH shall be a summary of individual values from Outfalls D-02B, C and D.

f. For Outfall D-003, flow shall be a weekly totalized value from sumps 15 through 20 and 24 through 26. Temperature shall be a summary of individual values from D-03D and D-03E. pH shall be a summary of individual values from D-03D (sump 18 only), and E sump 24 and combined discharge from sumps 25 and 26. Additional monitoring shall be at sumps 18 and 25 with the exception of iron which will be monitored at sump 17 (when discharging) and sump 25. If sump 17 is not discharging sump 18 and 25 will be monitored. Flow data from each sump also shall be maintained in a form so that cumulative flow to D-03D (sum of sumps 15 through

20), and D-03E (sum of sumps 24 through 26) can be reported individually (monthly, quarterly, and annual basis), if so requested.

g. Should Total Suspended Solids exceed 50 mg/l, the permittee shall document the source of the exceedance.

h. Effluent samples for pH and temperature (grab) shall be taken simultaneously with each total ammonia grab sample. Un-ionized ammonia shall be calculated in accordance with Table I (attached). All measured values for pH, temperature, and total ammonia used to calculate an un-ionized ammonia value shall be reported as an attachment to the Discharge Monitoring Report (DMR). All calculated un-ionized ammonia values shall be reported on the attachment. The daily maximum value for un-ionized ammonia for each reporting period shall be reported on the DMR.

i. At the request of the permittee any of the above test site parameters may be reduced after a period of two years from the permit issuance date, with prior approval of the Department.

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
<u>EFF-3</u>	<u>At Outfall from Weir "a" (D-02B)</u>
<u>EFF-4</u>	<u>At Outfall from Weir "b" (D-02C)</u>
<u>EFF-5</u>	<u>At Outfall from Weir "c" (D-02D)</u>
<u>EFF-6</u>	<u>At Outfall from Sumps 15-20 (D-03D), Sump 18 (for iron sampling, sump 17 if discharging)</u>
<u>EFF-7</u>	<u>At Outfall from Sumps 24-26 (D-03E), Sump 25</u>

9. The permittee is authorized to discharge from Internal Outfall I-004 –Units 1 and 2 Wastewater Treatment System Effluent (includes low volume wastes and nonchemical metal cleaning waste) to cooling Pond.

a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow, MGD</u>	<u>Report</u>	<u>Report</u>	<u>1/Month</u>	<u>Calculati on</u>	<u>INT-8</u>
<u>Oil & Grease, mg/l</u>	<u>20.0</u>	<u>15.0</u>	<u>1/Month</u>	<u>Grab</u>	<u>INT-8</u>
<u>Total Suspended Solids, mg/l</u>	<u>100.0</u>	<u>30.0</u>	<u>1/6 Months</u>	<u>8- hour Composit e</u>	<u>INT-8</u>
<u>PH, Standard. Units</u>	<u>See item b. below.</u>		<u>1/Month</u>	<u>Grab</u>	<u>INT-8</u>

b. The pH shall not be less than 6.0 nor greater than 9.0 Standard Units.

c. Discharge of hydrazine in boiler blowdown and in plant lay-up waters is authorized without limitations or monitoring requirements.

d. There shall be no discharge of floating solids or visible foam in other than trace amounts nor shall the effluent cause a visible sheen on the waterbody.

e. In order to provide continued assurance that the Plant Waste Treatment System (PWTS), in conjunction with further treatment in the cooling pond, is providing equivalent treatment for total iron, total copper, and other pollutants in Nonchemical Metal Cleaning Waste (NCMCW), the permittee shall annually evaluate the treatment provided by the PWTS during a

typical NCMCW treatment period. Each analysis shall be representative of one or more of the various NCMCW components (i.e. economizer hopper wash, dust collector wash, boiler fireside wash air preheater wash, or stack wash). Analyses shall include soluble and total copper, manganese, iron and zinc in the final effluent and the total quantity and average concentration of each of the above metals (both soluble and total) produced in the final effluent. Sampling, analysis and evaluation at internal points in the treatment process may be included at the permittee's discretion. Results shall be submitted annually, no later than December 31st of each year. In the event that the Department finds that the data do not support continuation of the equivalency determination, the Department may require additional testing or appropriately modify the permit.

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
<u>INT-8</u>	<u>Wastewater treatment system discharge prior to combination with any other waste stream or to the cooling pond.</u>

10. The permittee is authorized to discharge from Outfall D-005 –Site Runoff during construction and operation D-05A (runoff from Units 1 and 2); D-05E (Ponds D1, E, F and G); D-05B (Ponds 5B1 and 5B2); D-05C (Runoff from undeveloped areas) D-05D (Pond D2) to East Perimeter Ditch thence to the St. Lucie Canal.

a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow, MGD</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Calculation</u>	<u>EFF-9, 10, 11, 12</u>
<u>Oil & Grease, mg/l</u>	<u>No visible sheen</u>		<u>1/6 Months</u>	<u>Grab</u>	<u>EFF-9, 10, 11, 12</u>
<u>Total Suspended Solids, mg/l</u>	<u>50.0</u>	<u>N/A</u>	<u>1/6 Months</u>	<u>Grab</u>	<u>EFF- 9, 10, 11, 12</u>
<u>Turbidity, NTUs</u>	<u>Report</u>	<u>N/A</u>	<u>1/6 Month</u>	<u>Grab</u>	<u>EFF- 9, 10, 11, 12</u>
<u>PH, Standard. Units</u>	<u>See item b. below.</u>		<u>1/Month</u>	<u>Grab</u>	<u>EFF- 9, 10, 11, 12</u>

b. The pH shall not be less than 6.0 nor greater than 8.5 Standard Units.

c. Runoff from Outfall D-05C which is uncontaminated by the construction activities or wastes or runoff associated with plant processes is permitted without monitoring requirements.

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
EFF- 9, 10, 11, 12	Point of discharge from D-05A, D-05E, D-05B, and D-05D respectively prior to any mixing with any other waste stream or the East Perimeter Ditch prior to mixing with any other waste stream or the St. Lucie Canal.

11. The permittee is authorized to discharge from INTERNAL OUTFALLS I-06A AND I-06B DOMESTIC WASTE TREATMENT PLANT EFFLUENTS to the Cooling Pond from Units 1 and 2 and from Units 3-6, respectively.

a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT</u> <u>CHARACTERISTIC</u>	<u>DISCHARGE</u> <u>LIMITATIONS</u>		<u>MONITORING</u> <u>REQUIREMENTS</u>		
	<u>Average</u>	<u>Single Sample</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow (MGD)</u>	<u>0.01 Annual Avg.</u>	<u>N/A</u>	<u>5 days/week</u>	<u>Flow meters</u>	<u>INT- 13, 14</u>
<u>5 Day Carbonaceous Biochemical Oxygen Demand, 20EC, (CBOD5), mg/l</u>	<u>20 Annual Avg.</u> <u>25 Monthly Avg.</u> <u>40 Weekly Avg.</u>	<u>60 Max</u>	<u>Monthly</u>	<u>Grab</u>	<u>INT- 13, 14</u>
<u>Total Suspended Solids, mg/l</u>	<u>20 Annual Avg.</u> <u>30 Monthly Avg.</u> <u>45 Weekly Avg.</u>	<u>60 Max</u>	<u>Monthly</u>	<u>Grab</u>	<u>INT- 13, 14</u>
<u>Fecal Coliform Bacteria</u>	<u>See condition e. below</u>		<u>Monthly</u>	<u>Grab</u>	<u>INT- 13, 14</u>
<u>Total Residual Chlorine (TRC), mg/l</u>	<u>N/A</u>	<u>0.5 Min</u>	<u>5 days/week</u>	<u>Grab</u>	<u>INT- 13, 14</u>
<u>pH, Standard Units</u>	<u>See condition c below</u>		<u>5 days/week</u>	<u>Grab</u>	<u>INT- 13, 14</u>

b. Additionally the influent to the sewage plant shall be monitored as specified below:

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
	<u>Annual Average</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow (MGD)</u>	<u>0.01</u>	<u>N/A</u>	<u>5 days/week</u>	<u>Elapsed</u>	<u>INF- 1, 2</u>
<u>5 Day Carbonaceous Biochemical Oxygen Demand, 20EC (CBOD5), mg/l</u>	<u>N/A</u>	<u>Report</u>	<u>Monthly</u>	<u>Grab</u>	<u>INF- 1, 2</u>
<u>Total Suspended Solids, mg/l</u>	<u>N/A</u>	<u>Report</u>	<u>Monthly</u>	<u>Grab</u>	<u>INF- 1, 2</u>

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
<u>INF- 1</u>	<u>Influent to sewage plant (For Units 1 and 2). The influent pump station of the newly constructed treatment plant.</u>
<u>INF- 2</u>	<u>Influent to sewage plant (For Units 3 and 4). The influent pump station of the treatment plant.</u>
<u>INT-13</u>	<u>Effluent holding tank after filtration in the treatment plant.(for units 1 and 2)</u>
<u>INT-14</u>	<u>Effluent pipe to the cooling pond exiting from the existing treatment plant (for Units 3 and 4)</u>

c. The pH shall not be less than 6.0 nor greater than 9.0 Standard Units.

d. A flow meter or elapsed time meters on pumps shall be used to measure flow and calibrated at least annually [62-601.200 (17) and .500(6), 12/24/96] [for both influent and effluent]

e. The arithmetic mean of the monthly fecal coliform values collected during an annual period shall not exceed 200 per 100 ml of effluent sample. The geometric mean of the fecal coliform values for a minimum of 10 samples of effluent, each collected on a separate day during a period of 30 consecutive days (monthly), shall not exceed 200 per 100 ml of sample. When 10 or more samples are taken, no more than 10 percent of the samples collected during a period of 30 consecutive days shall exceed 400 fecal coliform values per 100 ml of sample. Any one sample shall not exceed 800 fecal coliform values per 100 ml of sample. [62-600.440(4)(c).

12/24/96].

f. A minimum of 0.5 mg/l total residual chlorine must be maintained for a minimum contact time of 15 minutes based on peak hourly flow. [62-600.440(40(b), 12, 24-96]

g. Influent samples shall be collected so that they do not contain digester supernatant or return activated sludge, or any other plant process recycled waters. [62-601.500(4), 12-24-96]

h. During the period of operation authorized by this permit, the domestic wastewater facilities shall be operated under the supervision of an operator(s) certified in accordance with Chapter 61E12-41, F.A.C. In accordance with Chapter 62-699, F.A.C., this facility is a Category III Class D facility and, at a minimum, operators with appropriate certification must be on site as follows:

A Class D or higher operator for 3 nonconsecutive visits/week. The lead operator must be a Class D operator, or higher. [62-620.630(3), 12-24-96][62-699.310, 5-20-92][62-610.462, 1-9-96]

i. A certified operator shall be on call during periods the plant is unattended. Daily checks of the plant shall be performed by the permittee or the permittee's representative or agent 5 days per week. On those days when the facility is not staffed by a certified operator, the permittee shall ensure that Flow, in conduit or through treatment plant, pH, Total Chlorine Residual (For Disinfection) are monitored in accordance with part I.A.5 of this permit. [62-699.311(1), 5-20-92]

j. The application to renew the domestic wastewater portion of this permit shall include an updated capacity analysis report prepared in accordance with Rule 62-600.405, F.A.C. [62-600.405(5) 12-24-96]

k. The application to renew the domestic wastewater portion of this permit shall include a detailed operation and maintenance performance report prepared in accordance with Rule 62-600.735, F.A.C. [62-600.735(1), 12-24-96]

12. The permittee is authorized to discharge from Internal Outfall I-007– Combined Cycle Wastewater Treatment System Effluent (includes only combined cycle process wastewater) to cooling Pond.

a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow, MGD</u>	<u>Report</u>	<u>Report</u>	<u>1/Month</u>	<u>Recorder</u>	<u>INT-15</u>
<u>Oil & Grease, mg/l</u>	<u>20.0</u>	<u>15.0</u>	<u>1/Month</u>	<u>Grab</u>	<u>INT-15</u>
<u>Total Suspended Solids, mg/l</u>	<u>100.0</u>	<u>30.0</u>	<u>1/ 6Months</u>	<u>8- hour Composit e</u>	<u>INT-15</u>
<u>PH, Standard. Units</u>	<u>See item b. below.</u>		<u>1/Month</u>	<u>Grab</u>	<u>INT-15</u>

b. The pH shall not be less than 6.0 nor greater than 9.0 Standard Units.

c. During any period in which demineralizer regeneration waste is discharged from the neutralization tank directly to monitoring point I-007 without further treatment, samples for total suspended solids analysis shall be taken at the neutralization tank effluent and /or after combination with the wastewater treatment system effluent of not less than one representative grab sample during each day of such discharge to demonstrate compliance with limitations in Part I.A.6.a.

d. There shall be no discharge of floating solids or visible foam in other than trace amounts.

e. Discharge of hydrazine in Heat Recovery Steam Generator (HRSG) blowdown

and in plant lay-up waters is authorized without limitations or monitoring requirements.

f. There shall be no discharge of wastes from the coal gasification facilities via this outfall.

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
<u>INT-15</u>	<u>Wastewater treatment system effluent discharge prior to combination with any other waste stream discharge to the cooling pond.</u>

13. The permittee is authorized to discharge from Internal OUTFALL I-008 – Metal Cleaning Waste Pretreatment Facility (Units 3-6 and A and B) effluent to the Cooling Pond via Internal Outfall I-007.

a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>			<u>MONITORING REQUIREMENTS</u>		
	<u>Monthly Total</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow, MGD</u>	<u>Report</u>	<u>Report</u>	<u>N/A</u>	<u>Continuous</u>	<u>Recorder</u>	<u>INT-16</u>
<u>Oil & Grease, mg/l</u>	<u>N/A</u>	<u>15.0</u>	<u>20.0</u>	<u>1/Day</u>	<u>Composite</u>	<u>INT-16</u>
<u>Total Suspended Solids, mg/l</u>	<u>N/A</u>	<u>30.0</u>	<u>100.0</u>	<u>1/Day</u>	<u>Composite</u>	<u>INT-16</u>
<u>Total Recoverable Copper, mg/l</u>	<u>N/A</u>	<u>1.0</u>	<u>1.0</u>	<u>1/Day</u>	<u>Composite</u>	<u>INT-16</u>
<u>Total Recoverable Iron, mg/l</u>	<u>N/A</u>	<u>1.0</u>	<u>1.0</u>	<u>1/Day</u>	<u>Composite</u>	<u>INT-16</u>
<u>Batches</u>	<u>Report</u>	<u>N/A</u>	<u>Report</u>	<u>1/Batch</u>	<u>Logs</u>	<u>INT-16</u>

b. Metal cleaning wastes shall mean any waste water resulting from cleaning (with or without the use of chemical cleaning compounds) any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, air preheater cleaning and stack cleaning and preoperational cleaning and rinse waters where chemical cleaning agents are used (does not include preoperational cleaning wastes where only water is used)

c. There shall be no combination of waste streams for co-treatment in this outfall unless all such waste streams meet the requirements of part III.A.13.b.

d. Any metal cleaning wastes disposed of off site shall be disposed of in an environmentally acceptable manner and in compliance with all applicable Federal and State Regulations. Details of such disposal shall be provided to the Department not less than 30 days prior to any proposed metal cleaning waste disposal off site.

e. Notwithstanding the requirements in part III.A.13.b. above, at such time as the permittee has demonstrated that certain chemical metal cleaning compounds from Units 1 and 2 can be burned in the operating boilers of Units 1 and/or 2 in a manner that will assure compliance with the limitations in part III.A.13.a above. The permittee may request that burning of the same wastes from Units 3-6 and Units A and B be allowed in the boilers of Unit 1 and/or 2. Such burning shall not be allowed except if specifically authorized by air permits.

f. Except for chemical cleaning operations in which CITRO- SOLV, EDTA or an equivalent cleaner is used and the Chemical Metal Cleaning Waste (CMCW) is burned in an operating unit, there shall be no discharge of CMCW to any waste stream which ultimately discharges to waters of the State.

After the initial use of each cleaning product (including CITRO-SOLV), the permittee shall determine the flow of CMCW produced and monitor the effluent for a range of heavy metals, including total and dissolved iron, copper, nickel, and zinc, prior to and during discharge. Samples shall be taken after final treatment but prior to mixing with any other waste stream. This is to assure that metals are not being discharged in excess of the guideline limitations and the previous equivalency determination.

This assessment shall occur once during the term of the permit. Results shall be submitted with the next DMR following the month in which the analysis was conducted.

g. There shall be no discharge of wastes from the coal gasification facilities via this outfall.

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
<u>INT-16</u>	<u>Metal Cleaning Waste Treatment Facility effluent prior to mixing with any other waste stream or discharge to the Cooling Pond. Batches shall be reported only if wastes are treated in discrete batches.</u>

14. The permittee is authorized to discharge from Internal Outfall I-009 – Coal, Limestone and Sulfur Handling Area Runoff and Outfall I-010 - Slag Handling Storage Area Runoff (includes; Outfall I-011 – Slag Test Cell Leachate; and Outfall I-012 – Slag Test Cell Runoff) to the Cooling Pond.

a. Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow, MGD</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Recorder or calculation</u>	<u>INT- 17, 18</u>
<u>Oil & Grease, mg/l</u>	<u>Report</u>	<u>N/A</u>	<u>1/Month</u>	<u>Grab</u>	<u>INT- 17, 18</u>
<u>Total Suspended Solids, mg/l</u>	<u>50.0²</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>INT-17, 18</u>
<u>pH, Std. Units</u>	<u>See item b. below.</u>		<u>1/Week</u>	<u>Grab</u>	<u>INT- 17, 18</u>

b. The pH shall not be less than 6.0 nor greater than 9.0 Standard Units.

c. Monitoring of all batch discharges which bypass the treatment facility shall be monitored once per batch.

¹ Applicable to any discharge up to the flow resulting from a 24-hr rainfall event with a probable recurrence interval of once in ten years (10Y24H). However, this exclusion for rainfall in excess of the 10Y24H is applicable only if the individual pond (1) has no low-level discharge point which allows discharge during filling, and (2) volume is adequate to contain the total quantity of rainfall water equal to the 10Y24H on the total area (including the area of the pond itself) tributary to the Pond using a runoff coefficient of 1.0 plus all accumulated silt. Records to demonstrate compliance with these requirements shall be

d. Not less than two years prior to the expected first receipt of coal on site or the last reapplication for this permit prior to expected first receipt of coal on site, whichever is earlier, the permittee shall submit a revised estimate of effluent characteristics for all rainfall related runoff and leachate sources included in part III.A.8., based on most recent information relating to specific coal gasification technology and coal supply planned for use at this site. Expected changes to cooling pond and seepage water (D-001, D-002 and D-003) characteristics from those presently estimated shall also be provided. Additional or revised limitations and/or monitoring requirements may be imposed for each runoff related waste source, treatment facility discharges, and/or Outfalls D-001, D-002, and/or D-003, subsequent to July 1, 2000.

e. Except for non-contact cooling water and as specifically authorized for outfalls I-009 through I-012, there shall be no discharge of pollutants from the coal gasification facilities to any waste stream which is routed to the cooling pond or to the waters of the state.

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
<u>INT-17, 18</u>	<u>Point of discharge from each discharge/treatment system (Outfall I-009 and I-010 respectively) prior to mixing with any other waste stream or discharge to the Cooling Pond</u>

15. During the period beginning on the issuance date of this permit and lasting through the expiration date, the permittee is authorized to discharge from Internal Outfall I-013 - Construction Dewatering Water discharged to cooling Pond.

a. Such discharges shall be limited and monitored by the permittee as specified below:

maintained on site . Rainfall data shall be reported for any period (s) of discharge in excess of the 10Y24H if the exclusion is invoked.

<u>EFFLUENT CHARACTERISTIC</u>	<u>DISCHARGE LIMITATIONS</u>		<u>MONITORING REQUIREMENTS</u>		
	<u>Daily Maximum</u>	<u>Monthly Average</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	<u>Sample Point</u>
<u>Flow, MGD</u>	<u>Report</u>	<u>N/A</u>	<u>1/Day</u>	<u>Totalizer or Calculation</u>	<u>INT-19</u>
<u>Total Suspended Solids, mg/l</u>	<u>50.0</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>INT-19</u>
<u>Turbidity, NTUs</u>	<u>Report</u>	<u>N/A</u>	<u>1/Week</u>	<u>Grab</u>	<u>INT-19</u>
<u>PH, Standard. Units</u>	<u>See item b. below.</u>		<u>1/Week</u>	<u>Grab</u>	<u>INT-19</u>

b. The pH shall not be less than 6.0 nor greater than 9.0 Standard Units.

<u>Sample Point</u>	<u>Description of Monitoring Location</u>
<u>INT-19</u>	<u>Point of discharge prior to mixing with any other waste stream or discharge to the Cooling Pond.</u>

15.16. The water quality monitoring requirements above may be modified by DEP to resolve any conflicts with water quality monitoring requirements of the final NPDES permit.

B. - C. No change

IV. SOUTH FLORIDA WATER MANAGEMENT DISTRICT

A. No Change

B. Water Use Conditions

1. General

a. Water Shortage Compliance. In the event of a declared water shortage, the Permittee must comply with any water withdrawal reductions or monitoring requirements ordered by SFWMD in accordance with the Water Shortage Plan, Chapter 40E-21, F.A.C.

~~b. Impacts on Existing Legal Uses. The Permittee shall be responsible for mitigating any adverse impacts on existing legal uses caused by the ground and/or surface water withdrawals authorized by this Certification. If adverse impacts occur, or are imminent, SFWMD reserves the right to curtail withdrawal rates pursuant to the enforcement provisions of Condition IV.A.1.j. of these conditions. The adverse impacts can include:~~

~~(1) A reduction in well water levels that impairs the ability of an adjacent well to produce water (an adjacent well may be a domestic well, lawn irrigation well, public water supply well etc.);~~

~~(2) A significant reduction in water levels in an adjacent water body such as a lake, pond, wetland, or canal system;~~

~~(3) Saline water intrusion or induction of pollutants into the water supply of an adjacent water user, resulting in a significant reduction in water quality; and/or~~

~~(4) A change in water quality that causes impairment or loss of use of a well or water body.~~

b. Impacts on Existing Legal Uses. The Permittee shall mitigate any adverse impact on existing legal uses caused by the ground water withdrawals authorized by this Certification. When adverse impacts occur or are imminent, the SFWMD reserves the right to curtail future withdrawal rates pursuant to the enforcement provisions of Condition A.1.j of these conditions. The adverse impacts can include:

(1) A reduction in well water levels that impairs the ability of an adjacent well, including a domestic well, lawn irrigation well, or public water supply well, to produce by 10% or greater;

(2) A significant reduction in water levels in an adjacent water body such as a lake, pond, wetland, or canal system that impairs the ability to produce water by 10% or greater;

(3) Saline water intrusion or induced movement of pollutants into the water supply of an adjacent water user, resulting in a significant reduction in water quality; and/or

(4) A change in water quality caused by the Permittee that results in significant impairment or loss of use of a well or water body.

~~e. Impacts On Existing Off Site Land Uses. The Permittee shall be responsible for mitigating any adverse impacts on existing off site land uses as a consequence of the groundwater and/or surface water withdrawals authorized y this Certification. If increased withdrawals cause an adverse impact on existing land uses, SFWMD reserves the right to curtail future withdrawal rates pursuant to the enforcement provisions of condition IV.A.1.j. of these conditions. Adverse impacts can include:~~

~~(1) A significant reduction in water levels in an adjacent water body such as a lake, pond, wetland, or canal system;~~

~~(2) Land collapse or subsidence caused by a reduction in water levels;~~

~~(3) Damage to crops and other vegetation, causing financial harm to the landowner; and/or~~

~~(4) Damage to the habitat of rare, endangered or threatened species.~~

c. Impacts On Existing Off Site Land Uses. The Permittee shall mitigate any adverse impacts on existing off-site land uses that are a consequence of the groundwater withdrawals authorized by this Certification. If increased withdrawals cause an adverse impact on existing land uses, the SFWMD reserves the right to curtail future withdrawal rates pursuant to the enforcement provisions of Condition A.1.j of these conditions. Adverse impacts can include:

(1) A significant reduction in water levels in an adjacent water body, including impoundments, to the extent that the designed function of the water body is impaired;

(2) Land collapse or subsidence caused by a reduction in water levels;
and/or

(3) Damage to crops and other types of vegetation.

d. Impacts to Natural Resources. The Permittee shall mitigate any adverse impacts to natural resources as a consequence of the groundwater withdrawals authorized by this Certification. When adverse impacts occur, or are imminent, the SFWMD reserves the right to curtail future withdrawal rates pursuant to the enforcement provisions of Condition A.1.j of these conditions. Adverse impacts can include:

- (1) A reduction in ground water levels that results in significant lateral movement of the fresh water/salt water interface;
- (2) A reduction in water levels that adversely impacts the hydroperiod of protected wetland environments;
- (3) A significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond;
- (4) Induced movement or induction of pollutants into the water supply resulting in a significant reduction in water quality; and/or
- (5) Harm to the natural system including damage to habitat for rare or endangered species.

d-e. Well System Operation. At any time, if there is an indication that the well casing, valves, or controls associated with an on site well system leak or have become inoperative, the Permittee shall be responsible for making the necessary repairs or replacement to restore the well system to an operating condition acceptable to SFWMD. Failure to make such repairs shall be cause for requiring that the well be filled and abandoned in accordance with the procedures outlined in Chapter 40E-3 (Water Wells), F.A.C.

2. Site Specific Standards Design Requirements

a. Authorized Daily Withdrawals. This Certification authorizes a maximum daily withdrawal of 7.92 MGD from the Lake City Limestone Portion of the Lower Floridan Aquifer for processing and related industrial water demands, a maximum daily withdrawal of 0.067 MGD from the surficial aquifer for potable water demands, and a continued maximum daily withdrawal of 518.40 MGD from the St. Lucie Canal (C-44) as provided in the June 14, 1983, Revised Permit Agreement Between SFWMD and FPL to supplement evaporation, seepage and cooling losses from the on site cooling pond upon build out of Units 3, 4, 5 and 6. This Certification also ~~authorities~~ authorizes, on an interim basis, a maximum withdrawal of 2.9 MGD from the on-site cooling pond for the processing and related industrial water demands of Units 3 and 4 until such time as Units 5 and 6 are constructed and operational or the withdrawals authorized by this Certification are modified pursuant to Condition IV B.2.e, whichever occurs first.

b. - d. No change

e. Modification of Authorized Withdrawals. By June 13, 2003, and every ten years thereafter, unless extended by mutual agreement between the Permittee and SFWMD, the Permittee shall submit to the SFWMD a report on the project's consumptive water use which contains the information required by Chapter 40E-2, F.A.C., as in effect at that time. Within 90 days after receipt of the report, SFWMD shall evaluate the information, and issue a written notification to ~~DER~~ DEP and the Permittee as to whether the maximum annual withdrawals of water for consumptive use authorized by this Certification remains in compliance with the provisions of Chapter 373, F.S., and Chapter 40E-2, F.A.C., as in effect at that time. If the notification indicates that the withdrawals are not in compliance with those provisions, it shall recommend possible alternatives for bringing the withdrawals into compliance or otherwise meeting the minimum consumptive water use needs of the certified project. If mutual agreement cannot be reached within 180 days after issuance of the written notification on whether the maximum annual withdrawals of water for consumptive use remain in compliance, then the written notification shall be immediately referred to the Division of Administrative Hearings

(DOAH) for resolution in accordance with the procedural provisions of Sections 403.516(l)(c) and 120.57, F.S. (1989). In any proceeding conducted pursuant to this Condition of Certification, SFWMD shall demonstrate that the authorized water uses are no longer longer consistent with SFWMD's nonprocedural criteria. The Permittee shall then demonstrate its entitlement to maintaining the authorized water uses by showing that the authorized water use is consistent with the nonprocedural criteria of SFWMD for such water uses or that a variance or other relief is warranted. The ~~hearing officer~~ administrative law judge shall submit a recommended order to the Siting Board on whether the authorized water uses should be modified. The Siting Board shall then enter a final order on the matter, which order will constitute final agency action.

3. No change

C. Surface Water Management Conditions

1. - 2. - No change

3. Additional Information Requirements

a. - d. - No change

~~e. Surface Water Quality Monitoring Program. Within three months of issuance of this Certification, the Permittee shall submit for review by SFWMD a surface water quality monitoring program which monitors all discharges from the surface water management system for this Project into the eastern perimeter ditch and any other off site water body. SFWMD and the Permittee may jointly agree to vary the parameters and monitoring schedule below in an effort to conform with the other water quality monitoring requirements of other regulatory agencies.~~

~~(1) This plan shall include the following parameters and monitoring schedule:~~

~~MONITOR TYPE AND SCHEDULE PARAMETERS~~

~~A. General (Every Other Month) Dissolved Oxygen, pH, Turbidity, Specific Conductance, Chemical Oxygen Demand, Total Suspended Solids, and Alkalinity.~~

~~B. Organics (Semi Annual) Total Organic Carbon, Oil and Grease, Detergents, EPA Methods 601 and 602.~~

~~Metals (Semi Annual) Aluminum, Antimony, Beryllium, Cadmium, Copper, Cyanide, Iron, Lead, Mercury, Nickel, Selenium, Silver, and Zinc.~~

~~(2) Water quality samples shall be taken at the above noted locations in accordance with the above schedule during periods of discharge. The Permittee shall provide such data to SFWMD as volumes of water discharged, including total volume discharged during the days of samplings and total discharges from the property or into surface waters of the state. A laboratory certified by the State of Florida shall be responsible for all water quality analyses under B. and C. in (1) above. Reports shall be submitted to SFWMD on a semiannual basis. Initial sampling results shall be reported to SFWMD no later than six months following the issuance of this Certification.~~

(3). SFWMD will evaluate monitoring requirements following two years of data collection and make a determination as to whether the discharge degrades receiving waters and conforms to state water quality standards as defined in Chapter 17-3, F.A.C. If the water

quality analyses show little or no change, and it is determined that there is minimal contaminant potential, the monitoring program may be modified to reduce the sampling schedule and/or parameters. If water quality problems develop, SFWMD reserves the right to seek a modification of this Certification to require more frequent sampling and more thorough analyses in order to provide assurances that the discharges will not cause additional off site water quality impacts.

e. Surface Water Quality Sampling and Monitoring. Surface water quality sampling and monitoring data shall be collected and analyzed in accordance with applicable DEP and EPA criteria. The monitoring results shall be reported to the SFWMD at the intervals specified in the applicable FDEP Conditions of Certification.

f. No change

D. Environmental Conditions

1. No change

2. Additional Information Requirements

a. - b. No change

c. ~~Transmission Line~~ Transmission Line and Fuel Pipeline Mitigation Pipeline Plan. Prior to the commencement of construction of any portion of the proposed transmission line and fuel pipeline, a mitigation plan to offset any wetland impacts associated with that portion of the transmission line or pipeline must be submitted to the SFWMD for a determination of compliance with the non-procedural requirements of Chapters 40E-2, 40E4 and 40-E, F.A.C., including Appendix 7 (Isolated Wetland Rule) of the Basis of Review for Surface Water Management Permit Application within SFWMD. This plan shall include the following:

(1) - (6) No change

E. SFWMD Lands

No change

V. – XXXVII.

No change.

Any party to this Notice has the right to seek judicial review of the Order pursuant to Section 120.68, Florida Statutes (F. S.) by the filing of a Notice of Appeal, pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department Environmental Protection, Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, and by filing a copy of the Notice of Appeal, accompanied by the applicable filing fee, with the appropriate district court of appeal. The Notice of Appeal must be filed within 30 days of the date that this Final Order is filed with the Department of Environmental Protection.

DONE AND ENTERED this 21st day of August 2000, in Tallahassee, Florida.

**STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION**

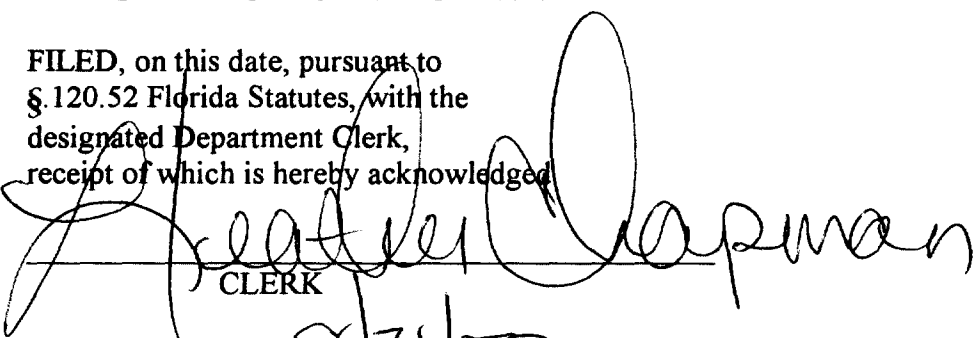


KIRBY B. GREEN, III
Deputy Secretary

Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000
Telephone: (850) 488-7131

FILING AND ACKNOWLEDGMENT:

FILED, on this date, pursuant to
§ 120.52 Florida Statutes, with the
designated Department Clerk,
receipt of which is hereby acknowledged



CLERK

8/21/00
DATE

CERTIFICATE OF SERVICE

I CERTIFY that a true and correct copy of the foregoing Final Order Modifying
Conditions of Certification was mailed to the following on this 21st day of Aug. 2000.

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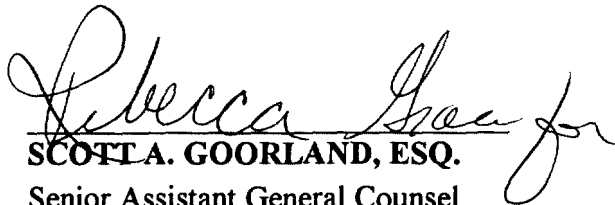
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**STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION**


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TABLE I

Table I

1/5

Percent Un-ionized Ammonia in Aqueous Ammonia Solution

Temperature: Degrees Celcius

pH	5.5000	6.0000	6.5000	7.0000	7.5000	8.0000	8.5000	9.0000	9.5000	10.0000
6.0000	0.0130	0.0136	0.0141	0.0147	0.0153	0.0159	0.0166	0.0172	0.0179	0.0186
6.1000	0.0164	0.0171	0.0178	0.0185	0.0192	0.0200	0.0208	0.0217	0.0225	0.0235
6.2000	0.0206	0.0215	0.0224	0.0233	0.0242	0.0252	0.0262	0.0273	0.0284	0.0295
6.3000	0.0260	0.0270	0.0282	0.0293	0.0305	0.0317	0.0330	0.0344	0.0357	0.0372
6.4000	0.0327	0.0340	0.0354	0.0369	0.0384	0.0400	0.0416	0.0432	0.0450	0.0468
6.5000	0.0412	0.0429	0.0446	0.0464	0.0483	0.0503	0.0523	0.0544	0.0566	0.0589
6.6000	0.0518	0.0539	0.0562	0.0585	0.0608	0.0633	0.0659	0.0685	0.0713	0.0741
6.7000	0.0652	0.0679	0.0707	0.0736	0.0766	0.0797	0.0829	0.0862	0.0897	0.0933
6.8000	0.0821	0.0855	0.0890	0.0926	0.0964	0.1000	0.1040	0.1090	0.1130	0.1170
6.9000	0.1030	0.1080	0.1120	0.1170	0.1210	0.1260	0.1310	0.1370	0.1420	0.1480
7.0000	0.1300	0.1350	0.1410	0.1470	0.1530	0.1590	0.1650	0.1720	0.1790	0.1860
7.1000	0.1640	0.1700	0.1770	0.1850	0.1920	0.2000	0.2080	0.2160	0.2250	0.2340
7.2000	0.2060	0.2140	0.2230	0.2320	0.2420	0.2520	0.2620	0.2720	0.2830	0.2940
7.3000	0.2590	0.2700	0.2810	0.2920	0.3040	0.3160	0.2390	0.3420	0.3560	0.3700
7.4000	0.3260	0.3390	0.3530	0.3680	0.3830	0.3980	0.4140	0.4310	0.4480	0.4660
7.5000	0.4100	0.4270	0.4440	0.4620	0.4810	0.5010	0.5210	0.5420	0.5630	0.5860
7.6000	0.5160	0.5370	0.5590	0.5820	0.6050	0.6290	0.6550	0.6810	0.7080	0.7360
7.7000	0.6480	0.6750	0.7020	0.7310	0.7600	0.7910	0.8230	0.8560	0.8900	0.9250
7.8000	0.8150	0.8480	0.8830	0.9190	0.9550	0.9940	1.0300	1.0700	1.1200	1.1600
7.9000	1.0200	1.0700	1.1100	1.1500	1.2000	1.2500	1.3000	1.3500	1.4000	1.4600
8.0000	1.2900	1.3400	1.3900	1.4500	1.5100	1.5700	1.6300	1.6900	1.7600	1.8300
8.1000	1.6100	1.6800	1.7500	1.8200	1.8900	1.9600	2.0400	2.1200	2.2100	2.2900
8.2000	2.0200	2.1000	2.1900	2.2800	2.3700	2.4600	2.5600	2.6600	2.7600	2.8700
8.3000	2.5300	2.6300	2.7400	2.8500	2.9600	3.0800	3.2000	3.3200	3.4500	3.5800
8.4000	3.1700	3.2900	3.4200	3.5600	3.7000	3.8400	3.9900	4.1500	4.3100	4.4700
8.5000	3.9500	4.1100	4.2700	4.4400	4.6100	4.7900	4.9700	5.1600	5.3600	5.5600
8.6000	4.9300	5.1200	5.3200	5.5300	5.7400	5.9600	6.1800	6.4200	6.6600	6.9100
8.7000	6.1300	6.3600	6.6100	6.8600	7.1200	7.3900	7.6600	7.9500	8.2400	8.5400
8.8000	7.5900	7.8800	8.1800	8.4800	8.8000	9.1200	9.4600	9.8000	10.2000	10.5000
8.9000	9.3700	9.7200	10.1000	10.5000	10.8000	11.2000	11.6000	12.0000	12.5000	12.9000
9.0000	11.5000	11.9000	12.4000	12.8000	13.3000	13.7000	14.2000	14.7000	15.2000	15.7000
9.1000	14.1000	14.6000	15.1000	15.6000	16.1000	16.7000	17.2000	17.8000	18.4000	19.0000
9.2000	17.1000	17.7000	18.3000	18.9000	19.5000	20.1000	20.8000	21.4000	22.1000	22.8000
9.3000	20.6000	21.3000	22.0000	22.7000	23.4000	24.1000	24.8000	25.6000	26.3000	27.1000
9.4000	24.6000	25.4000	26.2000	27.0000	27.7000	28.6000	29.4000	30.2000	31.0000	31.9000
9.5000	29.2000	30.0000	30.9000	31.7000	32.6000	33.5000	34.4000	35.3000	36.2000	37.1000
9.6000	34.1000	35.1000	36.0000	36.9000	37.8000	38.8000	39.7000	40.7000	41.6000	42.6000
9.7000	39.5000	40.5000	41.4000	42.4000	43.4000	44.4000	45.3000	46.3000	47.3000	48.3000
9.8000	45.1000	46.1000	47.1000	48.1000	49.1000	50.1000	51.1000	52.1000	53.1000	54.0000
9.9000	50.8000	51.9000	52.9000	53.9000	54.8000	55.8000	56.8000	57.8000	58.7000	59.7000
10.0000	56.6000	57.6000	58.5000	59.5000	60.5000	61.4000	62.3000	63.3000	64.2000	65.1000

Table I

2/5

Percent Un-ionized Ammonia in Aqueous Ammonia Solution

Temperature: Degrees Celcius

pH	10.5000	11.0000	11.5000	12.0000	12.5000	13.0000	13.5000	14.0000	14.5000	15.0000
6.0000	0.0194	0.0201	0.0209	0.0218	0.0226	0.0235	0.0244	0.0254	0.0264	0.0274
6.1000	0.0244	0.0254	0.0264	0.0274	0.0285	0.0296	0.0307	0.0319	0.0332	0.0345
6.2000	0.0307	0.0319	0.0332	0.0345	0.0358	0.0373	0.0387	0.0402	0.0418	0.0434
6.3000	0.0386	0.0402	0.0418	0.0434	0.0451	0.0469	0.0487	0.0506	0.0526	0.0546
6.4000	0.0487	0.0506	0.0526	0.0547	0.0568	0.0590	0.0613	0.0637	0.0662	0.0687
6.5000	0.0612	0.0637	0.0662	0.0688	0.0715	0.0743	0.0772	0.0802	0.0833	0.0865
6.6000	0.0771	0.0801	0.0833	0.0866	0.0900	0.0935	0.0972	0.1010	0.1050	0.1090
6.7000	0.0970	0.1010	0.1050	0.1090	0.1130	0.1180	0.1220	0.1270	0.1320	0.1370
6.8000	0.1220	0.1270	0.1320	0.1370	0.1430	0.1480	0.1540	0.1600	0.1660	0.1720
6.9000	0.1540	0.1600	0.1660	0.1730	0.1790	0.1860	0.1940	0.2010	0.2090	0.2170
7.0000	0.1930	0.2010	0.2090	0.2170	0.2260	0.2350	0.2440	0.2530	0.2630	0.2730
7.1000	0.2430	0.2530	0.2630	0.2730	0.2840	0.2950	0.3070	0.3190	0.3310	0.3440
7.2000	0.3060	0.3180	0.3310	0.3440	0.3570	0.3710	0.3860	0.4010	0.4160	0.4320
7.3000	0.3850	0.4000	0.4160	0.4330	0.4490	0.4670	0.4850	0.5040	0.5230	0.5430
7.4000	0.4840	0.5040	0.5230	0.5440	0.5650	0.5870	0.6100	0.6330	0.6580	0.6830
7.5000	0.6090	0.6330	0.6580	0.6840	0.7100	0.7380	0.7670	0.7960	0.8270	0.8590
7.6000	0.7660	0.7960	0.8270	0.8590	0.8930	0.9270	0.9630	1.0000	1.0400	1.0800
7.7000	0.9620	1.0000	1.0400	1.0800	1.1200	1.1600	1.2100	1.2600	1.3000	1.3500
7.8000	1.2100	1.2600	1.3000	1.3600	1.4100	1.4600	1.5200	1.5800	1.6400	1.7000
7.9000	1.5200	1.5800	1.6400	1.7000	1.7700	1.8300	1.9000	1.9800	2.0500	2.1300
8.0000	1.9000	1.9700	2.0500	2.1300	2.2100	2.3000	2.3800	2.4800	2.5700	2.6700
8.1000	2.3800	2.4700	2.5700	2.6700	2.7700	2.8700	2.9800	3.1000	3.2100	3.3300
8.2000	2.9800	3.0900	3.2100	3.3400	3.4600	3.5900	3.7300	3.8700	4.0100	4.1600
8.3000	3.7200	3.8600	4.0100	4.1600	4.3200	4.4800	4.6500	4.8200	5.0000	5.1800
8.4000	4.6400	4.8200	5.0000	5.1900	5.3800	5.5800	5.7800	5.9900	6.2100	6.4400
8.5000	5.7700	5.9900	6.2100	6.4400	6.6800	6.9200	7.1700	7.4300	7.7000	7.9700
8.6000	7.1600	7.4200	7.7000	7.9800	8.2600	8.5600	8.8600	9.1800	9.5000	9.8300
8.7000	8.8500	9.1700	9.5000	9.8400	10.2000	10.5000	10.9000	11.3000	11.7000	12.1000
8.8000	10.9000	11.3000	11.7000	12.1000	12.5000	12.9000	13.4000	13.8000	14.3000	14.7000
8.9000	13.3000	13.8000	14.3000	14.7000	15.2000	15.7000	16.3000	16.8000	17.3000	17.9000
9.0000	16.2000	16.8000	17.3000	17.9000	18.5000	19.0000	19.6000	20.2000	20.9000	21.5000
9.1000	19.6000	20.2000	20.9000	21.5000	22.2000	22.8000	23.5000	24.2000	24.9000	25.6000
9.2000	23.5000	24.2000	24.9000	25.7000	26.4000	27.1000	27.9000	28.7000	29.5000	30.3000
9.3000	27.9000	28.7000	29.5000	30.3000	31.1000	31.9000	32.8000	33.6000	34.5000	35.3000
9.4000	32.7000	33.6000	34.5000	35.4000	36.2000	37.1000	38.0000	38.9000	39.8000	40.8000
9.5000	38.0000	38.9000	39.8000	40.8000	41.7000	42.6000	43.6000	44.5000	45.5000	46.4000
9.6000	43.5000	44.5000	45.5000	46.4000	47.4000	48.3000	49.3000	50.3000	51.2000	52.2000
9.7000	49.3000	50.2000	51.2000	52.2000	53.1000	54.1000	55.0000	56.0000	56.9000	57.8000
9.8000	55.0000	56.0000	56.9000	57.9000	58.8000	59.7000	60.7000	61.6000	62.5000	63.3000
9.9000	60.6000	61.5000	62.5000	63.4000	64.3000	65.1000	66.0000	66.8000	67.7000	68.5000
10.0000	66.0000	66.8000	67.7000	68.5000	69.3000	70.2000	71.0000	71.7000	72.5000	73.3000

Table 1
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Percent Un-ionized Ammonia in Aqueous Ammonia Solution

Temperature: Degrees Celsius

pH	15.5000	16.0000	16.5000	17.0000	17.5000	18.0000	18.5000	19.0000	19.5000	20.0000
6.0000	0.0284	0.0295	0.0306	0.0318	0.0330	0.0343	0.0356	0.0369	0.0383	0.0397
6.1000	0.0358	0.0372	0.0386	0.0401	0.0416	0.0431	0.0448	0.0465	0.0482	0.0500
6.2000	0.0451	0.0468	0.0486	0.0504	0.0523	0.0543	0.0564	0.0585	0.0607	0.0629
6.3000	0.0567	0.0589	0.0611	0.0635	0.0659	0.0684	0.0709	0.0736	0.0763	0.0792
6.4000	0.0714	0.0741	0.0769	0.0799	0.0829	0.0860	0.0893	0.0926	0.0961	0.0997
6.5000	0.0898	0.0933	0.0968	0.1010	0.1040	0.1080	0.1120	0.1170	0.1210	0.1250
6.6000	0.1130	0.1170	0.1220	0.1270	0.1310	0.1360	0.1410	0.1470	0.1520	0.1580
6.7000	0.1420	0.1480	0.1530	0.1590	0.1650	0.1720	0.1780	0.1850	0.1920	0.1990
6.8000	0.1790	0.1860	0.1930	0.2000	0.2080	0.2160	0.2240	0.2320	0.2410	0.2500
6.9000	0.2250	0.2340	0.2430	0.2520	0.2620	0.2720	0.2820	0.2920	0.3030	0.3150
7.0000	0.2840	0.2940	0.3060	0.3170	0.3290	0.3420	0.3550	0.3680	0.3810	0.3960
7.1000	0.3570	0.3700	0.3840	0.3990	0.4140	0.4300	0.4460	0.4630	0.4800	0.4980
7.2000	0.4490	0.4660	0.4830	0.5020	0.5210	0.5400	0.5610	0.5820	0.6030	0.6260
7.3000	0.5640	0.5860	0.6080	0.6310	0.6550	0.6790	0.7050	0.7310	0.7580	0.7860
7.4000	0.7090	0.7360	0.7640	0.7930	0.8230	0.8540	0.8860	0.9190	0.9530	0.9880
7.5000	0.8910	0.9250	0.9600	0.9660	1.0300	1.0700	1.1100	1.1500	1.2000	1.2400
7.6000	1.1200	1.1600	1.2100	1.2500	1.3000	1.3500	1.4000	1.4500	1.5000	1.5600
7.7000	1.4100	1.4600	1.5100	1.5700	1.6300	1.6900	1.7500	1.8200	1.8800	1.9500
7.8000	1.7600	1.8300	1.9000	1.9700	2.0400	2.1200	2.2000	2.2800	2.3600	2.4400
7.9000	2.2100	2.2900	2.3800	2.4700	2.5600	2.6500	2.7500	2.8500	2.9500	3.0600
8.0000	2.7700	2.8700	2.9700	3.0800	3.2000	3.3100	3.4400	3.5600	3.6900	3.8200
8.1000	3.4600	3.5800	3.7200	3.8500	3.9900	4.1400	4.2900	4.4400	4.6000	4.7600
8.2000	4.3100	4.4700	4.6300	4.8000	4.9800	5.1500	5.3400	5.5300	5.7200	5.9200
8.3000	5.3700	5.5600	5.7600	5.9700	6.1800	6.4000	6.6300	6.8600	7.1000	7.3400
8.4000	6.6700	6.9100	7.1500	7.4000	7.6600	7.9300	8.2000	8.4900	8.7700	9.0700
8.5000	8.2500	8.5400	8.8400	9.1400	9.4600	9.7800	10.1000	10.5000	10.8000	11.2000
8.6000	10.2000	10.5000	10.9000	11.2000	11.6000	12.0000	12.4000	12.8000	13.2000	13.7000
8.7000	12.5000	12.9000	13.3000	13.8000	14.2000	14.7000	15.1000	15.6000	16.1000	16.6000
8.8000	15.2000	15.7000	16.2000	16.7000	17.2000	17.8000	18.3000	18.9000	19.5000	20.0000
8.9000	18.4000	19.0000	19.6000	20.2000	20.8000	21.4000	22.0000	22.7000	23.3000	24.0000
9.0000	22.1000	22.8000	23.5000	24.1000	24.8000	25.5000	26.2000	27.0000	27.7000	28.4000
9.1000	26.4000	27.1000	27.8000	28.6000	29.4000	30.1000	30.9000	31.7000	32.5000	33.3000
9.2000	31.1000	31.9000	32.7000	33.5000	34.4000	35.2000	36.1000	36.9000	37.8000	38.6000
9.3000	36.2000	37.1000	38.0000	38.8000	39.7000	40.6000	41.5000	42.4000	43.3000	44.2000
9.4000	41.7000	42.6000	43.5000	44.4000	45.4000	46.3000	47.2000	48.1000	49.0000	49.9000
9.5000	47.3000	48.3000	49.2000	50.2000	51.1000	52.0000	52.9000	53.9000	54.8000	55.7000
9.6000	53.1000	54.0000	55.0000	55.9000	56.8000	57.7000	58.6000	59.5000	60.4000	61.3000
9.7000	58.8000	59.7000	60.6000	61.5000	62.3000	63.2000	64.1000	64.9000	65.7000	66.6000
9.8000	64.2000	65.1000	65.9000	66.8000	67.6000	68.4000	69.2000	70.0000	70.7000	71.5000
9.9000	69.3000	70.1000	70.9000	71.7000	72.4000	73.1000	73.9000	74.6000	75.3000	75.9000
10.0000	74.0000	74.7000	75.4000	76.1000	76.8000	77.4000	78.1000	78.7000	79.3000	79.9000

Table I
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Percent Un-ionized Ammonia in Aqueous Ammonia Solution

Temperature: Degrees Celcius

pH	20.5000	21.0000	21.5000	22.0000	22.5000	23.0000	23.5000	24.0000	24.5000	25.0000
6.0000	0.0412	0.0427	0.0443	0.0459	0.0476	0.0493	0.0511	0.0530	0.0549	0.0569
6.1000	0.0518	0.0538	0.0557	0.0578	0.0599	0.0621	0.0644	0.0667	0.0691	0.0716
6.2000	0.0653	0.0677	0.0702	0.0727	0.0754	0.0782	0.0810	0.0839	0.0870	0.0901
6.3000	0.0821	0.0852	0.0883	0.0916	0.0949	0.0984	0.1020	0.1060	0.1090	0.1130
6.4000	0.1030	0.1070	0.1110	0.1150	0.1190	0.1240	0.1280	0.1330	0.1380	0.1430
6.5000	0.1300	0.1350	0.1400	0.1450	0.1500	0.1560	0.1620	0.1670	0.1730	0.1800
6.6000	0.1640	0.1700	0.1760	0.1830	0.1890	0.1960	0.2030	0.2110	0.2180	0.2260
6.7000	0.2060	0.2140	0.2220	0.2300	0.2380	0.2470	0.2560	0.2650	0.2750	0.2840
6.8000	0.2590	0.2690	0.2790	0.2890	0.3000	0.3100	0.3220	0.3330	0.3450	0.3580
6.9000	0.3260	0.3380	0.3510	0.3640	0.3770	0.3900	0.4050	0.4190	0.4340	0.4500
7.0000	0.4100	0.4250	0.4410	0.4570	0.4740	0.4910	0.5090	0.5270	0.5460	0.5660
7.1000	0.5160	0.5350	0.5550	0.5750	0.5960	0.6170	0.6400	0.6630	0.6870	0.7110
7.2000	0.6490	0.6730	0.6970	0.7230	0.7490	0.7760	0.8040	0.8330	0.8630	0.8940
7.3000	0.8150	0.8450	0.8760	0.9080	0.9410	0.9750	1.0100	1.0500	1.0800	1.1200
7.4000	1.0200	1.0600	1.1000	1.1400	1.1800	1.2200	1.2700	1.3100	1.3600	1.4100
7.5000	1.2900	1.3300	1.3800	1.4300	1.4800	1.5400	1.5900	1.6500	1.7100	1.7700
7.6000	1.6100	1.6700	1.7300	1.8000	1.8600	1.9300	2.0000	2.0700	2.1400	2.2200
7.7000	2.0200	2.1000	2.1700	2.2500	2.3300	2.4100	2.5000	2.5900	2.6800	2.7700
7.8000	2.5300	2.6300	2.7200	2.8200	2.9200	3.0200	3.1300	3.2400	3.3500	3.4700
7.9000	3.1700	3.2800	3.4000	3.5200	3.6400	3.7700	3.9000	4.0400	4.1800	4.3300
8.0000	3.9600	4.1000	4.2400	4.3900	4.5500	4.7000	4.8700	5.0300	5.2100	5.3800
8.1000	4.9300	5.1000	5.2800	5.4700	5.6600	5.8500	6.0500	6.2600	6.4700	6.6900
8.2000	6.1300	6.3400	6.5600	6.7900	7.0200	7.2500	7.5000	7.7500	8.0100	8.2700
8.3000	7.6000	7.8600	8.1200	8.3900	8.6800	8.9600	9.2600	9.5600	9.8800	10.2000
8.4000	9.3800	9.6900	10.0000	10.3000	10.7000	11.0000	11.4000	11.7000	12.1000	12.5000
8.5000	11.5000	11.9000	12.3000	12.7000	13.1000	13.5000	13.9000	14.4000	14.8000	15.3000
8.6000	14.1000	14.5000	15.0000	15.5000	15.9000	16.4000	16.9000	17.4000	17.9000	18.5000
8.7000	17.1000	17.6000	18.2000	18.7000	19.3000	19.8000	20.4000	21.0000	21.6000	22.2000
8.8000	20.6000	21.2000	21.8000	22.5000	23.1000	23.7000	24.4000	25.1000	25.7000	26.4000
8.9000	24.7000	25.3000	26.0000	26.7000	27.4000	28.2000	28.9000	29.6000	30.4000	31.1000
9.0000	29.2000	29.9000	30.7000	31.5000	32.3000	33.0000	33.8000	34.6000	35.5000	36.3000
9.1000	34.2000	35.0000	35.8000	36.6000	37.5000	38.3000	39.2000	40.0000	40.9000	41.7000
9.2000	39.5000	40.4000	41.2000	42.1000	43.0000	43.9000	44.8000	45.7000	46.5000	47.4000
9.3000	45.1000	46.0000	46.9000	47.8000	48.7000	49.6000	50.5000	51.4000	52.3000	53.2000
9.4000	50.9000	51.8000	52.7000	53.6000	54.5000	55.4000	56.2000	57.1000	58.0000	58.8000
9.5000	56.6000	57.5000	58.3000	59.2000	60.1000	60.9000	61.8000	62.6000	63.5000	64.3000
9.6000	62.1000	63.0000	63.8000	64.6000	65.5000	66.3000	67.1000	67.8000	68.6000	69.4000
9.7000	67.4000	68.2000	68.9000	69.7000	70.5000	71.2000	71.9000	72.7000	73.4000	74.0000
9.8000	72.2000	72.9000	73.7000	74.3000	75.0000	75.7000	76.3000	77.0000	77.6000	78.2000
9.9000	76.6000	77.2000	77.9000	78.4000	79.1000	79.7000	80.3000	80.8000	81.4000	81.9000
10.0000	80.5000	81.0000	81.6000	82.1000	82.6000	83.2000	83.6000	84.1000	84.6000	85.1000

Table 1
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Percent Un-ionized Ammonia in Aqueous Ammonia Solution

Temperature: Degrees Celcius

pH	25.5000	26.0000	26.5000	27.0000	27.5000	28.0000	28.5000	29.0000	29.5000	30.0000
6.0000	0.0589	0.0610	0.0632	0.0654	0.0678	0.0701	0.0726	0.0752	0.0778	0.0805
6.1000	0.0742	0.0768	0.0796	0.0824	0.0853	0.0883	0.0914	0.0946	0.0979	0.1010
6.2000	0.0933	0.0967	0.1000	0.1040	0.1070	0.1110	0.1150	0.1190	0.1230	0.1280
6.3000	0.1170	0.1220	0.1260	0.1300	0.1350	0.1400	0.1450	0.1500	0.1550	0.1600
6.4000	0.1480	0.1530	0.1590	0.1640	0.1700	0.1760	0.1820	0.1890	0.1950	0.2020
6.5000	0.1860	0.1930	0.2000	0.2070	0.2140	0.2210	0.2290	0.2370	0.2460	0.2540
6.6000	0.2340	0.2420	0.2510	0.2600	0.2690	0.2790	0.2890	0.2990	0.3090	0.3200
6.7000	0.2950	0.3050	0.3160	0.3270	0.3390	0.3510	0.3630	0.3760	0.3890	0.4020
6.8000	0.3710	0.3840	0.3970	0.4110	0.4260	0.4410	0.4560	0.4720	0.4890	0.5060
6.9000	0.4660	0.4830	0.5000	0.5170	0.5360	0.5540	0.5740	0.5940	0.6150	0.6360
7.0000	0.5860	0.6070	0.6280	0.6510	0.6740	0.6970	0.7220	0.7470	0.7720	0.7990
7.1000	0.7370	0.7630	0.7900	0.8180	0.8460	0.8760	0.9070	0.9380	0.9700	1.0000
7.2000	0.9260	0.9580	0.9920	1.0300	1.0600	1.1000	1.1400	1.1800	1.2200	1.2600
7.3000	1.1600	1.2000	1.2500	1.2900	1.3300	1.3800	1.4300	1.4800	1.5300	1.5800
7.4000	1.4600	1.5100	1.5600	1.6200	1.6700	1.7300	1.7900	1.8500	1.9200	1.9800
7.5000	1.8300	1.8900	1.9600	2.0300	2.1000	2.1700	2.2500	2.3200	2.4000	2.4800
7.6000	2.2900	2.3700	2.4600	2.5400	2.6300	2.7200	2.8100	2.9100	3.0100	3.1100
7.7000	2.8700	2.9700	3.0700	3.1800	3.2900	3.4000	3.5100	3.6300	3.7500	3.8800
7.8000	3.5900	3.7100	3.8400	3.9700	4.1000	4.2400	4.3800	4.5300	4.6800	4.8400
7.9000	4.4700	4.6300	4.7800	4.9400	5.1100	5.2800	5.4600	5.6400	5.8200	6.0100
8.0000	5.5700	5.7500	5.9500	6.1500	6.3500	6.5600	6.7800	7.0000	7.2200	7.4000
8.1000	6.9100	7.1400	7.3700	7.6200	7.8700	8.1200	8.3800	8.6500	8.9200	9.2100
8.2000	8.5400	8.8200	9.1100	9.4000	9.7000	10.0000	10.3000	10.7000	11.0000	11.3000
8.3000	10.5000	10.9000	11.2000	11.6000	11.9000	12.3000	12.7000	13.0000	13.4000	13.8000
8.4000	12.9000	13.3000	13.7000	14.1000	14.6000	15.0000	15.4000	15.9000	16.4000	16.8000
8.5000	15.7000	16.2000	16.7000	17.2000	17.7000	18.2000	18.7000	19.2000	19.8000	20.3000
8.6000	19.0000	19.6000	20.1000	20.7000	21.3000	21.8000	22.4000	23.0000	23.7000	24.3000
8.7000	22.8000	23.4000	24.1000	24.7000	25.4000	26.0000	26.7000	27.4000	28.1000	28.8000
8.8000	27.1000	27.8000	28.5000	29.2000	30.0000	30.7000	31.4000	32.2000	32.9000	33.7000
8.9000	31.9000	32.7000	33.4000	34.2000	35.0000	35.8000	36.6000	37.4000	38.2000	39.0000
9.0000	37.1000	37.9000	38.7000	39.6000	40.4000	41.2000	42.1000	42.9000	43.8000	44.6000
9.1000	42.6000	43.5000	44.3000	45.2000	46.1000	46.9000	47.8000	48.6000	49.5000	50.4000
9.2000	48.3000	49.2000	50.1000	50.9000	51.8000	52.7000	53.5000	54.4000	55.2000	56.1000
9.3000	54.0000	54.9000	55.8000	56.6000	57.5000	58.3000	59.2000	60.0000	60.8000	61.6000
9.4000	59.7000	60.5000	61.4000	62.2000	63.0000	63.8000	64.6000	65.4000	66.2000	66.9000
9.5000	65.1000	65.9000	66.7000	67.4000	68.2000	68.9000	69.7000	70.4000	71.1000	71.8000
9.6000	70.1000	70.8000	71.6000	72.3000	73.0000	73.6000	74.3000	75.0000	75.6000	76.2000
9.7000	74.7000	75.4000	76.0000	76.6000	77.3000	77.9000	78.5000	79.0000	79.6000	80.1000
9.8000	78.8000	79.4000	80.0000	80.5000	81.1000	81.6000	82.1000	82.6000	83.1000	83.6000
9.9000	82.4000	82.9000	83.4000	83.9000	84.3000	84.8000	85.2000	85.7000	86.1000	86.5000
10.0000	85.5000	85.9000	86.3000	86.8000	87.1000	87.5000	87.9000	88.3000	88.6000	89.0000