



September 21, 2018  
L-2018-173  
10 CFR 50.36

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555-0001

Re: Turkey Point Units 3 and 4  
Docket Nos. 50-250 and 50-251  
Wastewater Permit Number FL0001562  
Request for Use and Approval of Polyacrylic Acid Pilot Program - Notification

In accordance with Section 3.2.3 of the Turkey Point Units 3 and 4 Environmental Protection Plan (Appendix B of Facility Operating Licenses DPR-31 and DPR-41), Enclosure 1 provides a copy of the request for approval to use polyacrylic acid (Optisperse PWR6600) as an iron oxide dispersant in the Units 3 and 4 steam generators. The polyacrylic acid will be added continuously as a maintenance supplement during normal operation and periodically during the refueling outages.

On August 30, 2018, the Florida Department of Environmental Protection issued approval to use the dispersant Optisperse PWR6600 in the Units 3 and 4 steam generators for a trial period of 6 months beginning upon initial treatment. In accordance with Section 3.2.2 of the Turkey Point Units 3 and 4 Environmental Protection Plan (Appendix B of Facility Operating Licenses DPR-31 and DPR-41), Enclosure 2 provides a copy of the approval.

Should there be any questions, please contact Mr. Robert Hess, Turkey Point Licensing Manager, at 305-246-4112.

Sincerely,

A handwritten signature in black ink that reads 'A. Coffey' with a stylized flourish. Below the signature, the initials 'FOA' are written in a smaller font.

Robert Coffey  
Regional Vice President – Southern Region  
Turkey Point Nuclear Plant

Enclosures

cc: USNRC Regional Administrator, Region II  
USNRC Senior Resident Inspector, Turkey Point Plant

COO1  
NRR

**ENCLOSURE 1 TO**

**L-2018-173**

Enclosure 1 to L-2018-173  
FPL Request to Use Optisperse PWR6600 [e:mail dated 8/23/2018]

From: Pandya, Meghna Sent: Thu 8/23/2018 9:34 AM  
To: Harris, Marc (Marc.Harris@dep.state.fl.us)  
Cc: Frank Wall (Frank.wall@dep.state.fl.us); Hbx, Ron; Shea, Eric M  
Subject: FPL Turkey Point Nuclear - Polyacrylic acid/optisperse PWR6600 approval request

Message: Attachment 5 Optisperse PWR6600 GE product.pdf (85 KB) Attachment 2 Optisperse PWR 6600- polyacrylic acid.pdf (768 KB) Attachment 3 Chemical Fact Sheet - EPA 749.docx (19 KB)

Marc,

FPL Turkey Point Nuclear Plant is requesting an approval to use small amounts of polyacrylic acid (Optisperse PWR6600) as an Iron Oxide Dispersant in the Unit 3 & 4 Steam Generators. Please see the attached SDS and Fact sheet for the proposed chemical. The polyacrylic acid will be added continuously as a maintenance supplement during normal operation and periodically during the refueling outages. Please see below table showing additional dosage details. Note that FPL St. Lucie plant currently uses the referenced chemical, and it has been approved previously for a one time use at Turkey Point as well. Let me know if you have any questions regarding the request or if we need to do anything else to get the chemical usage approved.

Name	Purpose	Dosage	Frequency	Concentration in the effluent
Poly Acrylic Acid- Optisperse PWR6600	Iron Oxide Dispersant	< 20 ppb	Continuous between outages	ranging from 0.4 ppb to 1.7
Poly Acrylic Acid- Optisperse PWR6600	Iron Oxide Dispersant	< 1 ppm	During Outages only	ranging from 0.4 ppb to 1.7

We greatly appreciate your assistance in getting this matter resolved.

Sincerely,

Meghna Pandya  
Environmental Specialist  
Florida Power & Light Company | Environmental Services  
700 Universe Blvd (JES/JB)  
Juno Beach, FL 33408  
Office: 561-691-3074  
[Meghna.Pandya@fpl.com](mailto:Meghna.Pandya@fpl.com)

CHEMICALS IN THE ENVIRONMENT: ACRYLIC ACID (CAS NO. 79-10-7)  
prepared by  
OFFICE OF POLLUTION PREVENTION AND TOXICS  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
September 1994

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Chemicals can be released to the environment as a result of their manufacture, processing, and use. EPA has developed information summaries on selected chemicals to describe how you might be exposed to these chemicals, how exposure to them might affect you and the environment, what happens to them in the environment, who regulates them, and whom to contact for additional information. EPA is committed to reducing environmental releases of chemicals through source reduction and other practices that reduce creation of pollutants.

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#### WHAT IS ACRYLIC ACID, HOW IS IT USED, AND HOW MIGHT I BE EXPOSED?

Acrylic acid is a colorless, corrosive liquid. It occurs naturally, being produced by several species of marine algae and in the stomach of sheep. It is produced in very large amounts (1.1 billion pounds in 1991) by four companies in the United States. US demand for acrylic acid is increasing at a rate of 4 to 5 percent per year. The largest users of acrylic acid are companies that make acrylic esters and resins, chemicals added to protective surface coatings and adhesives. The fastest growing use of acrylic acid is in the production of superabsorbent polyacrylic acid polymers. Companies also use acrylic acid to make oil treatment chemicals, detergent intermediates, and water treatment chemicals.

Exposure to acrylic acid can occur in the workplace or in the environment following releases to air, water, land, or groundwater. Acrylic acid enters the body when breathed in with contaminated air or when consumed with contaminated food or water. It can also be absorbed through skin contact. It does not remain in the body due to its removal in expired air and in urine.

#### WHAT HAPPENS TO ACRYLIC ACID IN THE ENVIRONMENT?

Acrylic acid evaporates when exposed to air. It dissolves when mixed with water. Most direct releases of acrylic acid to the environment are to underground sites or to air. Once in air, acrylic acid breaks down to other chemicals. Microorganisms that live in water and in soil can also break down acrylic acid. Because it is a liquid that does not bind well to soil, acrylic acid that makes its way into the ground can move through the ground and enter groundwater. Plants and animals are not likely to store acrylic acid.

#### HOW DOES ACRYLIC ACID AFFECT HUMAN HEALTH AND THE ENVIRONMENT?

Effects of acrylic acid on human health and the environment depend on how much acrylic acid is present and the length and frequency of exposure. Effects also depend on the health of a person or the condition of the environment when exposure occurs.

Breathing acrylic acid vapors for short periods of time irritates the human respiratory system. Direct contact with liquid acrylic acid irritates the skin and eyes.

Human health effects associated with breathing or otherwise consuming small amounts of acrylic acid over long periods of time are not known. Laboratory studies show that repeat exposure to acrylic acid vapor damages the lining of the nose of animals. The acrylic acid industry has recently completed several animal studies in response to an EPA request for testing. Acrylic acid causes reduced birth weight in pups of animals consuming acrylic acid in drinking water. These studies report no other adverse effects on the reproductive system or on the development of the fetus of animals.

Acrylic acid by itself is not likely to cause environmental harm at levels normally found in the environment. Acrylic acid can contribute to the formation of photochemical smog when it reacts with other volatile organic carbon substances in air.

WHAT EPA PROGRAM OFFICES REGULATE ACRYLIC ACID, AND UNDER WHAT LAWS IS IT REGULATED?

EPA OFFICE	LAW	PHONE NUMBER
Pollution Prevention & Toxics	Toxic Substances Control Act	(202) 554-1404
	Emergency Planning and Community Right-to-Know Act (EPCRA)	
	Regulations (Sec. 313)	(800) 424-9346
	Toxics Release Inventory data	(202) 260-1531
Air	Clean Air Act	(919) 541-0888
Solid Waste & Emergency Response	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)/	
	Resource Conservation and Recovery Act / EPCRA (Sec. 304/311/312)	(800) 424-9346

A technical support document can be requested from the TSCA Assistance Information Service, (202) 554-1404.

WHAT OTHER FEDERAL AGENCIES OR GROUPS CAN I CONTACT FOR INFORMATION ON ACRYLIC ACID?

AGENCY/GROUP	PHONE NUMBER
American Conference of Governmental Industrial Hygienists	(513) 742-2020
Consumer Product Safety Commission	(301) 504-0994
Food and Drug Administration	(301) 443-3170
National Institute for Occupational Safety and Health (NIOSH)	(800) 356-4674

# OptiSpense\* PWR6600

## Dispersant for Secondary Side of PWR Nuclear Steam Generators

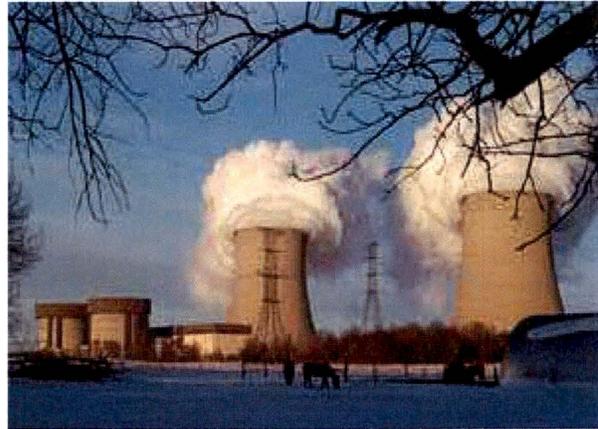
OptiSpense\* PWR6600 is designed to:

- Reduce the accumulation of iron oxide corrosion products on the tube and other internal surfaces of Pressurized Water Reactor (PWR) secondary cycle steam generators
- Enable operating cost savings due to extension or deferral of off-line cleaning procedures required to periodically remove generator corrosion product inventory
- Improve the long-term reliability of PWR steam generators by reducing the potential for thermally-activated corrosion due to concentration of corrosive species under metal oxide deposits
- Lower the potential for long-term losses in steam generator thermal performance due to excessive accumulation of metal oxide deposits on tube surfaces

### Description and Use

OptiSpense PWR6600 is a patented, high-performance polymeric dispersant designed to minimize iron corrosion product accumulation and fouling in the secondary cycle steam generators of recirculating, pressurized water reactors (PWRs). This product has been synthesized and formulated to meet the stringent specifications and purity requirements required by the nuclear industry, and to provide optimum activity for control of iron oxide fouling on steam generator tubes and internal surfaces in the secondary side of recirculating PWRs.

The accumulation of corrosion products, which consist primarily of iron oxide, can negatively impact the efficiency, reliability and cost of operation and maintenance in the secondary side steam generators in recirculating PWRs.



Iron and other metal oxide corrosion products deposit preferentially on boiling heat transfer surfaces (e.g., generator tubes), and their accumulation can over time reduce the thermal efficiency of the steam generator. Corrosion product deposits can also interfere with efficient operation of the generators by creating thermal-hydraulic instabilities through the blockage of tube supports.

In addition, accumulations of corrosion products can result in a corrosive condition in occluded areas beneath deposits on tubes and in the crevices formed by tube-to-tube support plates due to the concentration of species aggressive to the generator tube and support plate metallurgy.

OptiSpense PWR6600 has undergone extensive research testing, as well as field evaluations in commercial, recirculating PWR steam generators under an EPRI-managed qualification program.



Find a contact near you by visiting [www.ge.com/water](http://www.ge.com/water) and clicking on "Contact Us".  
\* Trademark of General Electric Company, may be registered in one or more countries.

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## **Typical Applications**

OptiSpurse PWR6600 is designed for addition to the feedwater of secondary cycle recirculating PWR steam generators to control iron oxide accumulation in the generator, and to maximize oxide removal via the blowdown.

## **Treatment and Feeding Requirements**

Detailed dispersant application guidelines and implementation procedures have been developed by EPRI, and should be reviewed in detail by plant chemistry and operations personnel who are planning to implement the application of OptiSpurse PWR6600 for iron oxide control in their secondary side steam generators.

Your GE Water and Process Technologies representative is available to consult and assist you in design and implementation of an OptiSpurse PWR6600 feed system.

## **Evaluation**

The principal method of efficacy evaluation is the determination of iron rejection rates from the secondary steam generators both with and without use of OptiSpurse PWR6600.

## **Safety Precautions**

A Material Safety Data Sheet (MSDS) containing physical properties data and detailed safety information for this product is available by contacting your GE representative.

A Certificate-Of-Analysis (COA) detailing the required product purity specifications, and actual batch analysis, will be provided with each product delivery.



# Material Safety Data Sheet

Issue Date: 03-NOV-2010  
Supercedes: 08-MAR-2010

## OPTISPERSE PWR6600

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### 1 Identification

Identification of substance or preparation  
OPTISPERSE PWR6600

Product Application Area  
Internal boiler water treatment

Company/Undertaking Identification  
GE Betz, Inc.  
4636 Somerton Road  
Trevose, PA 19053  
T 215 355-3300, F 215 953 5524

Emergency Telephone  
(800) 877-1940

Prepared by Product Stewardship Group: T 215-355-3300 Prepared on: 03-NOV-2010

### 2 Hazard(s) identification

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#### EMERGENCY OVERVIEW

##### WARNING

May cause moderate irritation to the skin. Absorbed by skin. Severe irritant to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable

Odor: Slight; Appearance: Colorless To Light Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

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#### POTENTIAL HEALTH EFFECTS

##### ACUTE SKIN EFFECTS:

Primary route of exposure; May cause moderate irritation to the skin. Absorbed by skin.

##### ACUTE EYE EFFECTS:

Severe irritant to the eyes.

##### ACUTE RESPIRATORY EFFECTS:

Mists/aerosols may cause irritation to upper respiratory tract.

**INGESTION EFFECTS:**

May cause gastrointestinal irritation with possible nausea, vomiting, headache, dizziness, unconsciousness and injury to the kidneys and liver. Small amounts aspirated during ingestion/vomiting may cause lung injury, possibly death.

**TARGET ORGANS:**

Prolonged or repeated exposures may cause toxicity to the liver, kidney, nervous system, and/or blood system.

**MEDICAL CONDITIONS AGGRAVATED:**

Not known.

**SYMPTOMS OF EXPOSURE:**

May cause redness or itching of skin, irritation, and/or tearing of eyes (direct contact).

### 3 Composition / information on ingredients

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

**HAZARDOUS INGREDIENTS:**

Cas#	Chemical Name	Range (w/w%)
141-43-5	MONOETHANOLAMINE Combustible; corrosive; irritant; CNS depressant; may cause liver and kidney toxicity; fetotoxic and developmental toxin in laboratory animals	7-13

### 4 First-aid measures

**SKIN CONTACT:**

URGENT! Wash thoroughly with soap and water. Remove contaminated clothing. Get immediate medical attention. Thoroughly wash clothing before reuse.

**EYE CONTACT:**

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

**INHALATION:**

If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

**INGESTION:**

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 2-8 fluid ounces (60-240 mL) of milk or water.

**NOTES TO PHYSICIANS:**

Aspiration into the lungs will result in chemical pneumonia and may be fatal.

## 5 Fire-fighting measures

### FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

### EXTINGUISHING MEDIA:

dry chemical, carbon dioxide, foam or water

### HAZARDOUS DECOMPOSITION PRODUCTS:

oxides of carbon and nitrogen, ammonia and volatile amines

### FLASH POINT:

> 200F > 93C P-M(CC)

## 6 Accidental release measures

### PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container.

Flush area with water. Wet area may be slippery. Spread sand/grit.

### DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

## 7 Handling and storage

### HANDLING:

Clean spill immediately. Wash contaminated skin promptly.

### STORAGE:

Shelf life = 720 days. Keep containers closed when not in use.

Protect from freezing. If frozen, thaw completely and mix thoroughly prior to use.

## 8 Exposure controls / personal protection

### EXPOSURE LIMITS

#### CHEMICAL NAME

#### MONOETHANOLAMINE

PEL (OSHA): . 3 PPM (6 MG/M3)

TLV (ACGIH): TWA = .3 PPM; STEL = 6 PPM

MISC: NIOSH REL = 3 PPM (8 MG/M3); NIOSH STEL = 6 PPM (15 MG/M3);

NIOSH IDLH = 30 PPM

#### ENGINEERING CONTROLS:

Adequate ventilation to maintain air contaminants below exposure limits.

#### PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

#### RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.

If air-purifying respirator use is appropriate, use organic vapor cartridges and any of the following particulate respirators: N95, N99, N100, R95, R99, R100, P95, P99 or P100.

**SKIN PROTECTION:**

gauntlet-type butyl gloves, chemical resistant apron-- Wash off after each use. Replace as necessary.

**EYE PROTECTION:**

splash proof chemical goggles, face shield

## 9 Physical and chemical properties

Spec. Grav. (70F, 21C)	1.063	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	30	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-1		
Viscosity(cps 70F, 21C)	133	% Solubility (water)	100.0

Odor		Slight
Appearance		Colorless To Light Yellow
Physical State		Liquid
Flash Point	P-M(CC)	> 200F > 93C
pH As Is (approx.)		8.5
Evaporation Rate (Ether=1)		< 1.00
Percent VOC:		15.0

NA = not applicable ND = not determined

## 10 Stability and reactivity

**CHEMICAL STABILITY:**

Stable under normal storage conditions.

**POSSIBILITY OF HAZARDOUS REACTIONS:**

No known hazardous reactions.

**INCOMPATIBILITIES:**

May react with strong oxidizers.

**DECOMPOSITION PRODUCTS:**

oxides of carbon and nitrogen, ammonia and volatile amines

## 11 Toxicological information

Oral LD50 RAT:	>2,000 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>2,000 mg/kg
NOTE - Estimated value	

## 12 Ecological information

**AQUATIC TOXICOLOGY**

Daphnia magna 48 Hour Static Renewal Bioassay

LC50= 1250; No Effect Level= 687 mg/L

Fathead Minnow 96 Hour Static Bioassay with 48-Hour Renewal

0% Mortality= 2000 mg/L

Mysid Shrimp 96 Hour Static Renewal Bioassay

LC50= 2640; No Effect Level= 1000 mg/L

Sheepshead Minnow 96 Hour Static Renewal Bioassay

No Effect Level= 8000 mg/L

**BIODEGRADATION**  
No Data Available.

## 13 Disposal considerations

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :  
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

## 14 Transport information

Transportation Hazard: Not Applicable  
DOT: Not Regulated

DOT EMERGENCY RESPONSE GUIDE #: Not applicable  
Note: Some containers may be DOT exempt, please check BOL for exact container classification  
IATA: Not Regulated

IMDG: Not Regulated

## 15 Regulatory information

**TSCA:**  
All components of this product are included on or are in compliance with the U.S. TSCA regulations.  
**CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):**  
No regulated constituent present at OSHA thresholds  
**NSF Registered and/or meets USDA (according to 1998 Guidelines):**  
Registration number: Not Registered  
**SARA SECTION 312 HAZARD CLASS:**  
Immediate(acute);Delayed(Chronic)  
**SARA SECTION 302 CHEMICALS:**  
No regulated constituent present at OSHA thresholds  
**SARA SECTION 313 CHEMICALS:**  
No regulated constituent present at OSHA thresholds

### CALIFORNIA REGULATORY INFORMATION

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):**  
No regulated constituents present  
**MICHIGAN REGULATORY INFORMATION**

No regulated constituent present at OSHA thresholds

## 16 Other information

HMIS vII

CODE TRANSLATION

Health	2	Moderate Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	D	Goggles, Face Shield, Gloves, Apron

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
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MSDS status:	24-JAN-2007		** NEW **
	08-MAR-2010	4, 8	24-JAN-2007
	03-NOV-2010	7	08-MAR-2010

**ENCLOSURE 2 TO**

**L-2018-173**



## FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Rick Scott  
Governor

Carlos Lopez-Cantera  
Lt. Governor

Noah Valenstein  
Secretary

August 30, 2018

SENT BY EMAIL TO:  
([meghna.pandya@fpl.com](mailto:meghna.pandya@fpl.com))

Ms. Meghna Pandya  
Environmental Specialist  
Florida Power & Light Company (FPL)  
700 Universe Blvd. (GTA/JB)  
Juno Beach, Florida 33408

Re: Florida Power & Light Company  
Turkey Point Power Plant  
NPDES Permit No. FL0001562  
6 Month Trial Approval

Dear Ms. Pandya:

The Florida Department of Environmental Protection (Department) has reviewed your request dated August 23, 2018 requesting authorization for use of the dispersant Optisperse PWR6600 for treatment of Units 3 and 4. The Department has determined that this activity would qualify as a minor modification to the operation of the Turkey Point Power Plant pursuant to Rule 62-620.200(24), Florida Administrative Code (F.A.C.), and can be authorized by a permit revision pursuant to Rule 62-620.325(2), F.A.C.

This letter authorizes a trial period of 6 months beginning upon initial treatment. Attachment 1 outlines specific requirements to follow during the 6-month trial period beginning with initial use. Upon completion of the trial period, the Department will determine whether to approve the use of Optisperse PWR6600 by minor permit revision, based upon a review of the results.

Please provide three copies, or an electronic copy, of the testing results to the Industrial Wastewater Program in Tallahassee ([epost.bwfrw@dep.state.fl.us](mailto:epost.bwfrw@dep.state.fl.us)). If you have any questions, please contact Frank Wall or me at (850)245-8589.

Sincerely,

A handwritten signature in black ink, appearing to read "MHarris".

Marc Harris, P.E.  
Environmental Administrator  
Power Plant NPDES Permitting  
Industrial Wastewater Program

MH/fw

Attachment

cc: Kent Edwards, DEP ([kent.edwards@dep.state.fl.us](mailto:kent.edwards@dep.state.fl.us))

**Attachment**

1. The feed concentration of Optisperse PWR6600 shall be monitored and shall be less than or equal to 10 ppb for daily use, and less than or equal to 1 mg/l during outages.
2. Monitoring for nutrients at CCS stations 1-7 as required by the Turkey Point Annual Monitoring Report shall be sampled and reported on a monthly basis. Sampling and monitoring for chlorophyll *a* at the same CCS stations shall also be conducted on a monthly basis. All results including a trend analysis for each parameter shall be submitted to the Department within 30 days following each sampling event.