

**Derenzo and Associates, Inc.**

*Environmental Consultants*

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September 8, 2006

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SEP 14 2006

BUREAU OF AIR REGULATION

Mr. Doug Neeley  
Chief Air Toxics and Monitoring Branch, Region 4  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
Atlanta Federal Center  
61 Forsyth Street, SW  
Atlanta, GA 30303-3104

Subject: Seminole Energy, L.L.C.  
Geneva, Florida  
Gas Treatment System Monitoring and SSM Plan

Dear Mr. Neeley:

Derenzo and Associates, Inc. is submitting to USEPA Region 4 on behalf of Seminole Energy, L.L.C. (Seminole Energy) a Gas Treatment System Monitoring and SSM Plan for its landfill gas (treated gas) electricity generation facility that will be located in Geneva, Seminole County, Florida.

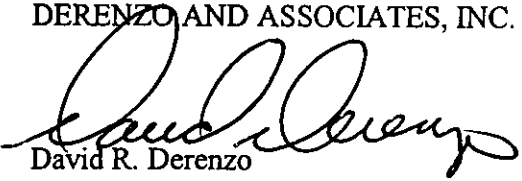
The FDEP is reviewing a PSD permit application for the construction of a landfill gas fueled electricity generation facility (Seminole Energy at the Osceola Road Solid Waste Management Facility) and requested that the Gas Treatment System Monitoring and SSM Plan for the Seminole Energy operations be submitted to USEPA Region 4 for its review and approval.

40 CFR §60.765(d) of the MSW Landfill NSPS specifies that if a device other than an open flare or an enclosed combustor is used as the control system for landfill gas emissions, then information is to be prepared describing the operation of the control device, the operating parameters that indicate proper performance and appropriate monitoring procedures. The MSW Landfill NESHAP requires owners of affected facilities to document standard procedures for equipment startup and shutdown and develop procedures for responding to equipment malfunctions.

Please contact me if you have questions of require additional details.

Sincerely,

DERENZO AND ASSOCIATES, INC.

  
David R. Derenzo  
Services Director

c: Bill Owen, Seminole Energy  
Syed Arif, FDEP

**Municipal Solid Waste Landfill Gas Collection and Control System**

**Gas Treatment System Monitoring  
And  
Startup, Shutdown, and Malfunction Plan**

*Prepared in accordance with the:*

**National Emission Standards for Hazardous Air Pollutants  
40 C.F.R. §63.6(e)(3)**

*Prepared for:*

**Facility:** Seminole Energy, L.L.C.

**Address:** Seminole Energy, L.L.C.  
1930 E. Osceola Road  
Geneva, Florida 32732

**Date:** September 7, 2006

This document identifies the procedures for conducting startups, shutdowns or addressing malfunctions of the landfill gas treatment system associated with the Seminole Energy, L.L.C. landfill gas to energy facility subject to this plan in a timely and safe manner.

Revision: 0  
Revision Date: \_\_\_\_\_  
Issuance Date: \_\_\_\_\_  
Revised By: \_\_\_\_\_

**1.0 Purpose**

The purpose of the Gas Treatment System Monitoring and Startup, Shutdown and Malfunction (SSM) Plan that is presented in this document is to establish appropriate monitoring, operating and malfunction response procedures for the landfill gas treatment system that is operated at Seminole Energy, L.L.C. (Seminole Energy), which is located at the Osceola Road Solid Waste Management Facility in Geneva, Seminole County, Florida.

This plan has been developed in accordance with provisions of the Municipal Solid Waste (MSW) Landfill New Source Performance Standards (NSPS, 40 CFR Part 60, Subpart WWW) and the MSW Landfill National Emissions Standards for Hazardous Air Pollutants (NESHAP, 40 CFR Part 63, Subpart AAAA).

40 CFR §60.765(d) of the MSW Landfill NSPS specifies that if a device other than an open flare or an enclosed combustor is used as the control system for landfill gas emissions, then information is to be prepared describing the operation of the control device, the operating parameters that indicate proper performance and appropriate monitoring procedures. The MSW Landfill NESHAP requires owners of affected facilities to document standard procedures for equipment startup and shutdown and develop procedures for responding to equipment malfunctions.

A copy of the up-to-date Gas Treatment System Monitoring and Startup, SSM Plan (original and subsequent revisions/addendums) will be kept on file at Seminole Energy for the entire length of time the facility is in operation.

**2.0 Facility and General Process Information**

Landfill gas generated at the Osceola Road Solid Waste Management Facility (which is the source of the fuel used by Seminole Energy) is collected using a system of wells, gas headers and blowers, which have been installed and are operated by the landfill owner Seminole County (Facility Identification Number (I.D. No.) 1170084. The Osceola Road Solid Waste Management Facility has been issued Title V Air Operation Permit Renewal No. 1170084-003-AV by the Florida Department of Environmental Protection, Department of Air Resource Management (FDEP-DARM), which has an expiration date of August 30, 2007.

Seminole Energy has a contract with Seminole County (Osceola Road Solid Waste Management Facility) to use the collected landfill gas for use as fuel to power six identical reciprocating internal combustion (IC) engine and electricity generator sets. The electricity that is generated by Seminole Energy is sold to Florida Power & Light under a power purchase agreement for distribution to the local grid.

The landfill gas produced by the Osceola Road Solid Waste Management Facility is

treated prior to being used as fuel in the Seminole Energy electricity generation processes. The United States Environmental Protection Agency (USEPA) has issued regulatory clarifications that define treated landfill gas as "landfill gas processed in a treatment system that filters, de-waters, and compresses the gas."

The gas received from the Osceola Road Solid Waste Management Facility is initially de-watered in knockout tanks that are located upstream of the Seminole Energy landfill gas treatment system where portions of the condensate in the landfill gas are removed.

After the initial knockout tank de-watering, the landfill gas is treated in equipment and processes operated by Seminole Energy that consists of:

1. A primary filter vessel that contains a coalescing filter, which is designed to remove particles in the gas stream that are 1.0 micron ( $\mu\text{m}$ ) and larger. Condensate collected by this coalescing filter falls to the bottom of the vessel where it is immediately transferred by gravity feed to a sump that transfers the liquid back to the landfill for processing.
2. Gas blowers (up to four separate blowers) for compression of the de-watered landfill gas.
3. An air-to-gas cooler to reduce the temperature of the gas (which is heated by the blower during gas compression).
4. A polishing filter vessel that contains a coalescing filter, which is designed to remove particles that are 1.0  $\mu\text{m}$  and larger. Condensate collected by this coalescing filter falls to the bottom of the vessel where it is immediately transferred by gravity feed to the sump that transfers the liquid back to the landfill for processing.

### **3.0 Gas Treatment System Monitoring**

Based on the design of the Seminole Energy landfill gas treatment system, the following equipment and process components will be continuously monitored and manually recorded daily to verify that the system is operating properly:

- **Primary filter vessel differential pressure:** The pressure drop across the primary coalescing filter (inlet and outlet of the gas flow through the vessel) is continuously monitored with a pressure differential switch. The existence of large differential pressures (dP) indicates that the filter is wet, loaded with particulate matter or significant accumulation of condensate is present in the vessel. The dP at the primary coalescing filter (vacuum side of blower) should be equal to or less than 2 pounds per square inch differential (psid).

The primary filter typically operates without any noticeable condensate accumulation (no water is typically present in the vessel).

If the pressure drop across the primary coalescing filter is observed to be greater than 2 psid, the filter will be replaced and/or investigations will be performed to evaluate potential malfunctions of upstream landfill gas de-watering equipment.

- **Polishing filter vessel differential pressure:** The pressure drop across the polishing coalescing filter (inlet and outlet of the gas flow through the vessel) is continuously monitored with a pressure differential switch. Large differential pressures (dP) indicate that the filter is wet or loaded with particulate matter and should be replaced. The dP at the polishing filter (pressure side of blowers and downstream of the gas cooler) should be equal to or less than 3 psid.

If the pressure drop across the polishing coalescing filter is greater than 3 psid, the filter will be replaced.

#### Replacement coalescing filter specifications

The replacement filters will be of comparable design for critical air or gas service applications where high-efficiency removal of oil or water droplets and particulate solids is required. Seminole Energy uses LG Liquid and Gas Coalescing Cartridges that are rated for 50 psid and 30 inches in length and 3.25 inches in diameter. The filters are rated for particulate matter removal to 1.0  $\mu\text{m}$  and the nominal filter area is approximately 9.6  $\text{ft}^2$ .

- **Blower discharge pressure (gas compression):** The pressure of the gas in the treatment system is continuously monitored with a pressure switch that is located after (downstream) of the polishing filter vessel. The landfill gas treatment system (blowers) should be operated so that the minimum pressure observed at the specified monitoring location is at least 0.5 pounds per square inch gauge (0.5 psig). Pressures measured after the polishing filter vessel that are less than 0.5 psig are an indication of problems with the gas compression system.

If the pressure of the gas in the treatment system monitored after the polishing filter vessel is less than 0.5 psig, an investigation of the equipment will be performed and corrective actions implemented.

- **Air-to-gas cooler outlet temperature:** The temperature of the gas in the treatment system is continuously monitored with a temperature switch that is located after (downstream) of the polishing filter vessel. The landfill gas treatment system (air-to-gas cooler) should be operated so that the maximum temperature observed at the specified monitoring location is equal to or less than 130°F. Gas temperatures

measured after the polishing filter vessel that are greater than 130°F are an indication of problems with the operation of the air-to-gas cooler.

If the temperature of the gas in the treatment system monitored after the polishing filter vessel is greater than 130°F, an investigation of the air-to-gas cooler will be performed and corrective actions implemented.

- **Gas Treatment System monitoring and recordkeeping:**

Monitoring

The pressure drop across the primary and polishing coalescing filters are each continuously monitored with separate pressure differential switches.

The pressure of the gas in the treatment system is continuously monitored with a pressure switch located after the polishing filter vessel.

The temperature of the gas in the treatment system is continuously monitored with a temperature switch located after the polishing filter vessel.

If the set points (as specified in the previous text) of any of the pressure drop, pressure or temperature switches are reached, an automated system sounds an in-plant alarm (to notify on-site plant operators) and initiates a phone system that calls the on-duty operator (the plant has 24 hours per day, seven day per week coverage) during periods when an operator is not on-site.

Recordkeeping

The in-charge plant operator is required to maintain daily records of appropriate system operations and will manually record the times that any of the specified alarms are observed or phone call notifications of alarms are received and all appropriate gas treatment system corrective actions.

40-Startup Standard Operating Procedure

“Startup means the setting in operation of an affected source or portion of an affected source for any purpose.” (40 CFR §63.2)

The standard operating procedure for the startup of the landfill gas treatment system is to:

1. Ensure that no unsafe conditions are present.
2. Contact, prior to startup, the Seminole Energy in charge Plant Operator.

# Seminole Energy

## APPENDIX A

Startup / Shutdown / Malfunction Report Forms and Documents

Startup/Shutdown/Malfunction Report Form

Section 1 - All Events

List all affected piece(s) of equipment: _____						
Type of Event	Military Time		Duration (hours)	Event Code (see back of form)	SOP* Followed?	
	Date/Time Start	Date/Time End			Yes	No**
<input type="checkbox"/> Startup						
<input type="checkbox"/> Shutdown						
<input type="checkbox"/> Malfunction					Complete Section 2 Below	

\* Standard Operating Procedure (SOP) for Flare Startups (Manual & Automatic) and Shutdowns are provided in SSM Plan

\*\*If SOP in SSM Plan was not followed, notify personnel on contact list immediately.

Section 2 - Malfunction Events Only

Step	Corrective Action Procedures for All Malfunctions	☑ Check one of the following for each step:	
		Procedure completed	Procedure Not Applicable
1.	Determine if landfill gas is being released to the air (can you smell landfill gas, or measure/detect gas flow?).	<input type="checkbox"/>	
2.	If landfill gas is being released to the air, notify personnel on "Contact List".	<input type="checkbox"/>	<input type="checkbox"/>
3.	Determine if the malfunction is causing an unsafe operating condition (air entering landfill or piping, smoking, vibration, or other problem), which may harm people, the environment or the landfill gas control equipment.	<input type="checkbox"/>	
4.	If unsafe operating condition exists, or landfill gas is being released to the air, stop (if possible) landfill gas flow.	<input type="checkbox"/>	<input type="checkbox"/>
5.	If Control device or other system component is shutdown due to Step 4, follow Shutdown SOP and Complete Section 1 - "Shutdown".	<input type="checkbox"/>	<input type="checkbox"/>
6.	Determine if other personnel/resource (qualified technician, electrician, consultant or other) are needed for malfunction diagnosis.	<input type="checkbox"/>	
7.	If additional personnel needed, notify qualified personnel: ? Record Contact Name: ? Record Contact Date: ? Record Contact Time: ? Contact site representative with information recorded here.	<input type="checkbox"/>	<input type="checkbox"/>
8.	Start malfunction diagnosis.	<input type="checkbox"/>	
9.	Determine if other resources are needed to fix the malfunction (qualified technician, electrician, contractor, on-site resources, manufacturer's representative, or other).	<input type="checkbox"/>	
10.	If additional resources needed, contact qualified resource: ? Record Contact Name: ? Record Contact Date: ? Record Contact Time: ? Contact site representative with information recorded here.	<input type="checkbox"/>	<input type="checkbox"/>
11.	Fix the malfunction.	<input type="checkbox"/>	
12.	Once the malfunction is fixed, re-start the system per SOP if it had been shut down, and record start-up times and dates in Section 1 of this form.	<input type="checkbox"/>	<input type="checkbox"/>
13.	Record date that malfunction occurred, date that malfunction was repaired, and total time that system was out of service in Section 1 of this form.	<input type="checkbox"/>	
14.	Sign this form and place it in the Start-up, Shutdown, Malfunction file.	<input type="checkbox"/>	
15.	If the procedures listed above were not followed, notify personnel on contact list immediately.	<input type="checkbox"/>	<input type="checkbox"/>

Date Form Filled Out: \_\_\_\_\_ Signature: \_\_\_\_\_



# Seminole Energy

## Event Codes

### *For Start-ups and Shutdowns*

*Startup: The setting in operation of an affected source or portion of an affected source for any purpose.*

*Shutdown: The cessation of operation of an affected source or portion of any source for any purpose.*

<u>Code</u>	<u>Event</u>
1	Maintenance
2	Suspected Collection System Malfunction
3	Suspected Control Device Malfunction
4	Suspected Continuous Monitoring System Malfunction (Temperature/Flow/Other)
5	Training
6	Gas System Construction/Expansion
7	Normal Backup Operation
99	Other(Describe) _____

### *For Malfunctions*

*Malfunction: Any sudden, infrequent and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.*

<u>Code</u>	<u>Event</u>
10	Automatic shutdown of control device by designed protective systems
11	Autodialer Callout
12	Shutdown alarms that result in the device not shutting down
13	Unalarmed shutdown
14	Control Device Smoking
15	Inspection identified malfunction
16	Loss of power - utility down
17	Loss of power - unknown
18	Damaged Well, Header or Lateral Piping
19	Leaks at wellheads, valves, flanges, test ports, seals, couplings, etc.
20	Condensate Knock-out Problems
21	Collection Piping Blockages
22	Problems due to Settlement
23	Loss of phase
24	Blower overload condition
25	Blower bearing failure
26	Broken belts (if belt-drive) or broken coupling (if direct-drive) in blower
27	Continuous Monitoring System Malfunction - Thermocouple
28	Continuous Monitoring System Malfunction - UV Scanner
29	Continuous Monitoring System Malfunction - Flow Monitor
30	Continuous Monitoring System Malfunction - Flow Recorder
31	Continuous Monitoring System Malfunction - Temperature Recorder
32	Act of God (i.e., lightning, wind, etc.)
99	Other(Describe) _____

**APPENDIX B**

**Startup / Shutdown / Malfunction Plan Deviation Report**

## Startup, Shutdown, and Malfunction Plan Deviation Report

Facility: \_\_\_\_\_ Date Form Completed: \_\_\_\_\_

Unit ID: \_\_\_\_\_

Event:  *check the appropriate box.*

Startup                       Shutdown                       Malfunction

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Duration: \_\_\_\_\_

Provide detailed explanation of the circumstance of the startup, shutdown, malfunction:

---

---

Provide description of corrective action:

---

---

Describe the reasons the Startup, Shutdown, Malfunction Plan was not adequate:

---

---

Describe proposed revisions to the Startup, Shutdown, Malfunction Plan:

---

---

Were any excess emissions and/ or parameter monitoring exceedances believed to have occurred during the event?  
 *check the appropriate box.*

Yes                       No

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

**Seminole Energy**

**Startup, Shutdown, and Malfunction Plan**

**Sample Semiannual Report Letter**  
**(All SSM Events in Compliance with the SSM Plan)**

**Seminole Energy**

**Startup, Shutdown, and Malfunction Plan**

Date

Air Agency Address

RE: Semiannual Startup, Shutdown, Malfunction (SSM) Plan Report  
XXXXXX Landfill  
Facility Title V Operating Permit No.  
Reporting Period: \_\_\_\_\_ to \_\_\_\_\_

Dear \_\_\_\_\_:

The XXXXXX Landfill is subject to the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (Landfill NESHAP – 40 CFR 63 Subpart AAAA). The NESHAP requires that a report be submitted on a semiannual basis, a report be submitted to the Administrator discussing the facility's compliance with the procedures in their SSM Plan, during SSM events (40 CFR 63.10(d)(5)).

The actions taken at the facility during all SSM events, for the reporting period listed above, were consistent with the procedures listed in the SSM Plan at the facility.

During the reporting period listed above, there (were/were not any) revisions made to the SSM Plan at the facility. (If changes were made, state why – revised to reflect new equipment, new contact numbers, etc.).

If you have any questions regarding this Semiannual SSM Plan Report, please contact me at (List Phone Number).

Sincerely,

XXXXXXXXXXXXXXXXXX  
(NAME OF COMPANY/TITLE HERE)

**Seminole Energy**

**Startup, Shutdown, and Malfunction Plan**

**Sample Semiannual Report Letter**  
**(One or more SSM Events NOT in Compliance with the SSM Plan)**

Seminole Energy

**Startup, Shutdown, and Malfunction Plan**

Date

Air Agency Address

RE: Semiannual Startup, Shutdown, Malfunction (SSM) Plan Report  
XXXXXXXXXX Landfill  
Facility Title V Operating Permit No.  
Reporting Period: \_\_\_\_\_ to \_\_\_\_\_

Dear \_\_\_\_\_:

The Facility Name Landfill is subject to the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (Landfill NESHAP – 40 CFR 63 Subpart AAAA). The NESHAP requires that a report be submitted on a semiannual basis, a report be submitted to the Administrator discussing the facility's compliance with the procedures in their SSM Plan, during SSM events (40 CFR 63.10(d)(5)).

The actions taken at the facility during one or more SSM events, for the reporting period listed above, were not consistent with the procedures listed in the SSM Plan at the facility. However, the source did not exceed any of the emissions limitations in the Landfill NESHAP during these events. The attached table lists the information that must be submitted in the Semiannual SSM Plan Report in this instance.

During the reporting period listed above, there were \_\_\_\_\_ revisions made to the SSM Plan at the facility. (If changes were made, state why – revised to reflect new procedures to address non conforming event (mandatory), new equipment, new contact numbers, etc.).

If you have any questions regarding this Semiannual SSM Plan Report, please contact me at (List Phone Number).

Sincerely,

XXXXXXXXXX  
(NAME OF COMPANY/TITLE HERE)

Attachment: Description of all Malfunction Events





**Seminole Energy**

**Startup, Shutdown, and Malfunction Plan**

**Sample Immediate Notification Letter  
(SSM Events NOT in Compliance with the SSM Plan, and Facility Experienced  
Excess Emissions)**

Seminole Energy

Startup, Shutdown, and Malfunction Plan

Date

Air Agency Address

RE: XXXXXXXXX Landfill  
Facility Title V Operating Permit No.  
40 CFR 63 Subpart AAAAA – Landfill NESHAP  
Immediate Notification Report: Non-conforming SSM Event

Dear \_\_\_\_\_:

The XXXXXXXX Landfill is subject to the National Emissions Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills (Landfill NESHAP – 40 CFR 63 Subpart AAAAA). 40 CFR 63.10(d)(5) of the NESHAP requires that if actions taken at the facility during a startup, shutdown or malfunction (SSM) event are not consistent with the facility's SSM Plan, and the event results in excess emissions, the Agency must be notified verbally within 2 working days after the actions are taken. A letter must be written within 7 days of the event.

Please consider this letter as the required written report for the SSM event that occurred at the facility on (list date). As required by the NESHAP, a verbal notification was made to (give name of agency, person talked to) on (list date).

In accordance with the NESHAP, the following information is required in the letter report for this event:

***Record the actions taken for the event:*** Describe what occurred, what was done, and how it differed from the SSM plan actions.

***Describe excess emissions:*** Discuss the type of emission, and where it came from

**Revise the SSM plan within 45 days of the non-conforming event:**

Give a date by which the SSM plan will be revised.

If you have any questions regarding this Immediate Notification Report, please contact me at (List Phone Number).

Sincerely,

XXXXXXXXXX  
(NAME OF COMPANY HERE)

**Seminole Energy**

**APPENDIX C**

**Gas Treatment System Monitoring  
And  
SSM Plan Revision History**

**Startup, Shutdown, and Malfunction Plan**

**SSM Plan Revision History**

This SSM Plan will be amended if equipment or processes are added that are not covered under the plan or will be revised within 45 days of non-conforming events if the procedures described herein do not adequately address any malfunction or start-up/shutdown events that occur at the facility. A copy of the original plan and all revisions/addendums will be kept on file at the facility for at least five (5) years.

<b>Date of Revision</b>	<b>Reason For Revision</b>