

OPERATION AND MAINTENANCE PLAN

SI Group Energy, LLC

423 Old Drifton Road

Monticello, Florida 32344

Facility ID No. 0650001

Air Construction Permit

Permit No. 0650001-009-AC

(Revised 09/04/08)

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Operation and Maintenance Plan

Operation and Maintenance (O&M) Plan provides reasonable assurance that the facility can be effectively operated and maintained. Routine maintenance of the equipment will be performed as needed to assure proper operation. The facility shall be operated to control fugitive dust, particulate emission, opacity compliance and CO emission. Plant maintenance supplies will be stored in approved areas.

General Facility-Wide Requirements

There are certain Specific Conditions associated with the Operations and Maintenance of the S I Group Energy LLC Power Generating Facility. These conditions will be met by operating the Facility within the allowable range. The allowable conditions are as follows:

A.1. Capacity: The boiler hourly steam production shall not exceed 90,000 pounds at 450 psig and 750 degree F. Except for the compliance testing, steam production is based on daily production divided by boiler operating time exclusive of periods of startup time and shutdown. However this rate may be further limited based on the rate during stack testing. Records of hourly steam production will be kept.
[Rules 62-4.160(2) and 62-210.200(PTE), F.A.C.]

A.3. Hours of Operation: The hours of operation for this emissions unit shall not exceed 4,700 hours per consecutive 365 day rolling period until successful completion of construction, passing emissions testing and receiving Department approval. After Department approval, the hours of operation for this emissions unit shall not exceed 8,100 hours per consecutive 365 day rolling period. Records of hours of operation shall be kept. [Rule 62-4.160(2), 62-210.200(PTE), and Source Obligation – 62-212.400(12)(B), F.A.C., and Permit Application received September 15, 2006]

A.4. The minimum pressure drop across the wet scrubber shall be four (4) inches of water or other Department approved range. Records of pressure drop shall be kept.

A.5. Carbon Monoxide: Carbon Monoxide (CO) emissions during normal operations (not including startup, shutdown or malfunction emissions) shall not exceed 100 pounds per hour, 30 day rolling average and 235 tons per year, consecutive 365-day rolling total.

A.6. Particulate Matter: Particulate matter emissions shall not exceed 0.2 pounds per MMBtu heat input of carbonaceous fuel, plus 0.1 pounds per MMBtu heat input of fossil fuel.

A.7. Visible Emissions: Visible emissions shall not exceed 30 percent opacity except 40 percent opacity is permissible for no more than two minutes in any one hour.

Annual Plant Testing

A.12. Evaluation of Wet Venturi Scrubber: Prior to or in conjunction with conducting the annual compliance testing, the permittee shall obtain the services of an engineer experienced in the evaluation of pollution devices to perform an inspection of the venturi wet scrubber and provide a written condition of the interior of the scrubber (i.e, ash build up, erosion, structural condition, etc.) along with recommendations for maintenance or repair as deemed appropriate.

A.13. Visible Emissions: Test shall be conducted for visible emissions in accordance with DEP Method 9, incorporated in Chapter 62-297, F.A.C. The VE test shall be conducted during one of the PM test runs.

A.14. Particulate Emissions: Three consecutive test runs shall be conducted in accordance with EPA Methods 1, 2, 3, and 5. Fuel samples will be collected during the test periods and sent to an independent lab to obtain heat value.

A.15. Carbon Monoxide: Tests for carbon monoxide shall be conducted in accordance with EPA Method 10. [Rule 62-297.401, F.A.C.]

A.24. Pertinent operating parameters of the boiler, emissions control equipment and electrical production shall be monitored and recorded. The following parameters and associated frequencies are the minimum required. The Department may add to this list when deemed necessary to assure good combustion practices. (Refer to Boiler Process Log and Daily Operating Report)

Hourly: Steam rate, steam temperature and steam pressure, percent excess air and electric power generated and CO CEMS hourly average.

Every Six Hours: Scrubber water flow rate and scrubber venturi pressure drop.

Daily: Boiler operating hours, the number of startup and shutdowns, the fuel deliveries will be in accordance with the most recently approved Fuel Management Plan and daily CO emissions utilizing the CO CEMS. These calculations will be used to verify compliance with the CO emissions limit.

Waste Management

A.28. Ash Management: The carbonaceous fuel-fired boiler ash shall be managed in accordance with the recently approved Ash Management Plan. Annual sampling and testing of the boiler ash for copper, chromium and arsenic shall be accomplished during the annual compliance testing of the boiler.

Reasonable Assurance

A30. Venturi Scrubber Water Quality Control: The ash sediment in the pond shall be checked no less than weekly to assure a clearance of at least one foot (12") between the ash and the scrubber ponds spillway. The western pond will be used as a settling basin for the fly ash while the eastern pond will be used to uptake clean water for the scrubber. When the ash level gets within one (12 inches) of the spillway the plant shall be shut down for a long weekend (3 days) for cleaning. The scrubber ponds shall be maintained and operated in accordance with this Specific Condition and the procedures contained in the most recently approved Scrubber Pond Procedures.

A.31. The Venturi scrubber water flow meter and pressure drop meter shall be maintained in accordance with the manufacturers recommended schedule. (Manuals on file in control room)

A copy of the current Air Construction Permit (Permit No. 0650001-009-AC) will be kept in the office and will be used for reference for all compliance issues that are not listed in the O&M Plan.

Plant Chain Of Command

Plant Owner	Jim Witte	SI Group Energy, LLC
Plant Manager	Bill Stafford	Prime Energy Group Inc.
Plant Operator		Prime Energy Group Inc.
Auxiliary Operator		Prime Energy Group Inc.
Fuel Handler		Prime Energy Group Inc.
	Office	Cell
Jim Witte	518.347.4445	518.376.1290
Larry Kendrick	678.660.3000	678.458.4084
Bill Stafford	850.997.5395	850.294.3746

Plant Hours of Operations

The Plant will operate continuously as needed.

The Plant will be down for maintenance during periods of low demand.

The above down time dates may be adjusted to keep the CO emissions to 235 tons/year.

The projected operating hours for the Facility is 8,100 hrs/yr.

A year to date report will be used to track the plant operating hours. Information from the monthly operating report will be used to generate this report.

The Plant Log Book will have the plant startup time and the plant shutdown time entered each day and the Boiler Process Log will have the running hours for each day.

The Plant can only operate 8,100 hrs/year under their current permit.

Records

The following records will be kept in the plant.

1. Daily Boiler Operating Logs.
2. Daily Turbine Operating Logs.
3. Fuel Received Log
4. Weigh tickets for all wood fuel received.
5. Instrument calibration records.
6. Daily operating report.
7. Weekly operating report.
8. Monthly operating report
9. Year to Date Operating Report.
10. Ash Removal Log.
11. Fuel Rejected Log.
12. Current copy of Air Permit.
13. CO data from CEMS unit and quarterly reports sent to DEP.
14. Copy of current Compliance Test.
15. Lab test on boiler ash for Copper, Chromium and Arsenic.
16. Lab test for fuel BTU content.
17. Scrubber water flow and pressure drop.
18. Copy of yearly AOR.
19. Current copy of the O & M Plan.
20. Plant logbook.
21. Scrubber Pond Silt Level
22. Wet Scrubber Inspection Report

Normal Operations

With plant Startup Procedures performed and plant on line and operating, constant observation of the plant equipment is required.

The Plant Operator will record all boiler readings every hour on the Boiler Process Log and all electrical every two hours on the Turbine/Generator Log (except electric power generated will be recorded every hour – Specific Condition A.24).

The Plant Operator will be responsible for operating the facility in a safe manner and in compliance with the operating permit.

All boiler readings will be recorded on the Boiler Process Log every hour and turbine/generator reading will be recorded every two hours on the Turbine/Generator Log.

Visual monitoring of all of the plant operations will be on a constant basis and adjustment will be made as needed to insure proper plant efficiency and permit compliance.

The following checks will be performed every hour:

1. Boiler ash drops emptied.
2. Check cooling tower water level, maintain 3" freeboard in basin
3. Check hotwell level, maintain 2' level in sight glass.
4. Visual inspection of ID fan, FD fan and OFA fan for unusual noise and dust leaks.
5. Operation of fuel feed system for blockage or for problems with bearings, laces or drive belts.
6. Ash auger system checked for proper operation.
7. Rotary seal valves for blockage or broken chains.
8. Process well for proper operation (water leaks or unusual noise).

The Operator will receive the fuel bucket count and bucket weights from the Fuel Handler. The Operator will log the fuel weights and bucket counts in the Daily Boiler Process Log.

Minor Plant Operating Problems

During the plant operations, problems occur that can cause upsets in the plant operations. The common problems are as follows;

1. Broken chain on one of the rotary seal valves.
2. Broken drive belt on one of the ash augers.
3. Loss of one of the three screw feeders (feeder plugged or broken drive belt).
4. Loss of the fuel handling system (broken drive belt of plugged conveyor).
5. Generator tripped because of voltage swing or power factor swing (usually caused by line switching by Progress Energy).

When problems 1 thru 4 occur, start lowering the generator load to maintain header pressure and start repairing the problem.

Monitor stack opacity and adjust airflow to maintain lowest readings.

If the problem is not repaired in a short period of time and the header pressure continues to fall, lower the generator load to 2 megawatts.

If header pressure continues to fall before the problem is corrected, start shutdown procedures.

When the problem has been corrected, use Startup Procedures to bring plant back on line.

Always remember, the plant has to be operated safely and in compliance at all times.

If item 5 occurs and the generator is taken off line for any reason, secure feeders and stabilize boiler.

Lower turbine speed to 3600 rpm, reset 86 lockout, align generator voltage with grid, close generator breaker and bring load up on generator.

Turn feeders on and level out boiler.

Monitor stack opacity and maintain lowest reading.

Major Plant Operating Problems

These problems would be any of the following;

1. Ruptured boiler tube.
2. ID fan failure.
3. FD fan failure.
4. OFA fan failure.
5. Boiler feedwater pump failure.
6. Loss of ash auger motor.
7. Loss of rotary seal valve motor.
8. Loss of cooling tower pump.
9. Loss of turbine/generator oil pressure.
10. Vibration increase in the turbine/generator bearings or increase in oil temperature.

If problems 1 thru 7 occur, the following Shutdown Procedures will be followed;

1. Secure all three feeders.
2. Secure all fans on the boiler.
3. Lower generator load to 1 megawatts and open generator breaker.
4. Trip turbine and start steam lube oil pump (electric pump can be used if steam is not available).
5. Secure fuel handling system.
6. Bring water level in boiler to +2 on Eye Hye.
7. Secure the remainder of the plant operating equipment.

IF problems 8 thru 10 occur, the following Shutdown Procedures will be followed;

1. Secure all three feeders.
2. Lower generator load to 1 megawatts and open generator breaker.

3. Trip turbine and start steam lube oil pump (electric lube oil pump can be used if steam is not available).
4. Use Shutdown Procedures to shut down the boiler and the rest of the plant.

When the problem has been identified and repairs have been completed, Plant Startup Procedures will be used to bring the plant back on line.

Plant Log Book

A Plant Log Book will be kept in the control room. The log will be used to enter information pertaining to the daily operations of the plant.

Examples are as follows:

1. 0650 Boiler infeed conveyor plugged, 0705 conveyor clear
2. 1000 hrs Grates cleaned.
3. 1100 hrs #3 feeder plugged-lower load to stabilize boiler header.
4. 1125 hrs #3 feeder clear-raised load
5. 1145 #1 softener 0 hard, #2 softener in standby.
6. Plant down at 1400 hrs ID fan problems.

These entries will help the oncoming shift as to what has happened during the shift and what needs to be done on their shift.

Monitoring of scrubber water flow, scrubber pressure drop and scrubber pond silt level will be performed.

The scrubber water flow and scrubber pressure drop will be recorded every hour on the Boiler Process Log. This will enable the operator to monitor the readings more closely (Specific Condition A.24 states every 6 hours).

The scrubber pond silt level will be checked every week to assure a clearance of at least one foot (12 inches) between the ash and the scrubber ponds spillway.
(Specific Condition A.30.)

The silt level will be recorded in the Scrubber Pond Silt Log and will be kept in the Control Room.

Trouble shooting:

When there is a decrease in the scrubber water flow, the spray nozzles will be cleaned and the return line will be checked for proper flow.

If the scrubber pressure drop begins to decrease, remove the lines from the gauge and make sure that gauge reads "O". If not, use adjustment screw to reset to "O".

While lines are loose, blow both lines with compressed air (pressure not to exceed 30 psig).

Reconnect lines and observe reading.

If reading is still low, need to clean spray nozzles.

During plant outages, the spray nozzles will be removed, inspected for wear (replaced if needed) cleaned and reinstalled.

The water lines on the scrubber flow meter will be removed, inspected for build up and the screens will be cleaned.

The manufacturer recommends annual cleaning and calibration of the units. Manuals are on file in the control room for this purpose. Calibration will be done yearly and cleaning will be performed during the two plant outages during the year and records will be maintained in the office (Specific Condition A31.).

Weekly Maintenance:

All of the following equipment will be greased weekly with three shot of Hi-Temp grease and the oil level in certain equipment will be checked.

1. Fuel return conveyor
2. Fuel distribution conveyor
3. Boiler infeed conveyor.
4. Disc screen
5. Reclaimer out feed conveyor
6. Reclaimer
7. Condensate pumps
8. ID fan
9. FD fan
10. OFA fan
11. Ash augers
12. Oil level in cooling tower fans
13. Oil level in cooling tower pump
14. Oil level in boiler feedwater pump
15. Oil level in process well
16. Screen outfeed conveyor
17. Fines conveyor
18. Fuel screen
19. Hopper outfeed conveyor
20. Fuel Hopper Chain Bearings

A lubrication chart will be kept in the control room showing the correct type of lubricant for each piece of equipment.

A weekly lube checklist will be used and kept in the maintenance file.

Routine Maintenance

Routine plant maintenance will be performed during the time of low demand..

A list of repairs will be generated from plant operating problems and schedule from equipment manufacturers.

A complete inspection and repairs will be made to all fans, plant ductwork, conveyor system, boiler refractory, and cooling tower equipment.

Boiler related instrumentation will be calibrated and records kept on file.

The under grate area of the boiler will be cleaned and the pinholes in the grates will be cleaned.

A list of all equipment repairs will be made and kept on file

Electrical switchgear starters and lugs will be checked and panels vacuumed.

Oil level in all gear reducers will be checked and filled to proper level.

Oil will be changed in both air compressors.

Exciter armature will be cleaned and brushes will be checked and replaced if needed.

Generator armature will be cleaned and brushes will be checked and replaced if needed.

Turbine oil reservoir will be emptied, cleaned and refilled to proper oil level.

Turbine/Generator bearings will be checked for proper clearance and replaced if needed.

Turbine condenser will be inspected for tube buildup and cleaned if needed.

Other routine repairs will be performed as needed.

A qualified Engineer will inspect the venturi section of the wet scrubber each year for wear and proper operation. The Engineers will issue a report of his findings and what repairs deemed necessary to maintain the unit in proper operation and in compliance with current permit (Specific Condition A.12). The repairs will be performed and the Equipment Repair Sheet will be attached to the report and kept on file in the office.

Spare Parts

A certain amount of spare parts will be kept in the parts storage area.

These spare parts consist of the following:

1. Drive belts for the fuel system conveyors
2. Drive belt for screw feeders
3. Drive belts for ash augers
4. Spare #80 chain and master links for chain on disc screen
5. Various size fuses for electrical equipment
6. Rotating assembly for scrubber pump
7. Drive belts for scrubber pump
8. Spare drive motor for ash augers
9. Extra set of belt laces
10. Screwed pipe fittings ½" thru 2"
11. Assortment of bolts and nuts

Other parts such as bearings, conveyor belting, electric motors, turbine/generator parts, etc, will be obtained from outside venders.

A partial Vender list is:

1. Applied Industrial Technologies
2. Bearings and Drives
3. Besco Inc.
4. Smith Electric Motors
5. Morris Petroleum
6. Mid-South Instruments, Inc.
7. McBurney Corporation
8. Fru-Con
9. GE Betz
10. Hydrochem

Fuel

The plant will receive wood fuel between the hours of 0730 and 1900 hrs.

The receiving and handling of the plant fuel will comply with our current Fuel Control Plan and with our current Air Construction Permit No.0650001-009-AC (copy of permit is on file in the plant office).

The fuel will be weighed, dumped and stored in the wood yard.

Each load will be inspected to see that the fuel meets out requirements. If the fuel contains anything other than wood, the load be rejected and returned to the Vender.

The rejected load will be entered on our Fuel Rejected Log. The Vender will be notified of the rejection and told that the next time this happen, we will no longer take fuel shipments from them.

The fuel will be entered on the Fuel Received Log.

The Fuel Received Log will be totaled each week. The log and weigh tickets will be filed together and kept on file.

Random samples of the wood fuel will be gathered and sent to an independent lab to determine the BTU value of the fuel. The results will be kept on file in the office.

The Fuel Handler will count the number of buckets of fuel that is added to the system on each shift and give the count to the Operator.

The Fuel handler will weigh two buckets of fuel during the shift and give the weigh tickets to the Operator.

The bucket count and bucket weights will be used to calculate the daily fuel consumption for the Plant.

Water Treatment

Cooling Tower water:

An Aqua Slim flex S4T Controller will be used to control the ph and the conductivity of the cooling tower water.

The controller will add sulfuric acid to control the Ph, chlorine to control biological growth and AE3155 to hold the solids in suspension in the water.

The controller will blow the cooling tower down to keep the conductivity between 1500 and 1800 ppm.

Daily tests will be performed to check levels. Test results will be kept in the plant.

MSDS sheets for the above chemicals will be kept in the Control Room.

All employees (who handle the chemicals) will read the MSDS sheets and wear the proper protective equipment, when working around or handling the chemicals.

Boiler Feedwater

All boiler feedwater will be processed through a resin bed water softener and a salt brine solution will be used in the regeneration process to soften the water.

Weekly safety meetings will be held and all safety related issues will be addressed and minutes kept in office file.

Employee Training

The operators at the plant are currently trained to operate the facility properly and in compliance with the current Air Permit. They will be given a copy of the O&M manual and will be required to read and understand the plan. The Plant Manager will supply them with answers to all of their questions.

The Operators will have access to manuals and technical information on the plant equipment available for their use.

When the Plant starts updating the equipment, the equipment manufacturers will supply training to all Plant employees.

All new employees will be issued a hard hat, safety glasses, and proper gloves needed to perform their required job.

All new employees hired will receive a plant orientation and a safety orientation on all of the plant rules and regulations from the Plant Manager, have a copy of the Plant O&M manual and will be assigned to a shift for his training.

The new employee will receive training from the Plant Operator, Auxiliary Operator and the Fuel Handler.

The Plant Manager will oversee the training and will test the new employee from time to time to monitor their progress.

Attachments

1. Daily Operating Report
2. Weekly Operating Report
3. Monthly Operating Report
4. Year To Date Operating Report
5. Ash Removal Log
6. Fuel Received Log
7. Fuel Rejected Log
8. Boiler Process Log
9. Turbine Generator Log
10. Sample Weigh Ticket
11. Weekly Lube Sheet
12. Equipment Repair Sheet
13. Plant Downtime Sheet
14. Scrubber Pond Silt Level Log
15. Wet Scrubber Inspection Report

Daily Operating Report

Date

Total Operating Hours

Total Generating Hours

Megawatts Generated

Fuel Burned

Fuel Received

Average Megawatts/hr

Burn Rate/Megawatt

Weekly Operating Report

Week of

Total Operating Hours

Total Generating Hours

Megawatts Generated

Fuel Burned

Fuel Received

Average Megawatts/hr

Burn Rate/Megawatt

Monthly Operating Report

Month

Total Operating Hours

Total Generating Hours

Megawatts Generated

Fuel Burned

Fuel Received

Average Megawatts/hr

Burn Rate/Megawatt

		SI Group Energy LLC						
		Year to Date Operating Report						
Year								
Operating Hours								
	January	Week 1	Week 2	Week3	Week 4	Week 5	Total	
	February							
	March							
	April							
	May							
	June							
	July							
	August							
	September							
	October							
	November							
	December							
		Total Operating Hours						
Generating Hours								
	January	Week 1	Week 2	Week3	Week 4	Week 5	Total	
	February							
	March							
	April							
	May							
	June							
	July							
	August							
	September							
	October							
	November							
	December							
		Total Generating Hours						
Fuel Usage								
	January							
	February							
	March							
	April							
	May							
	June							
	July							
	August							
	September							
	October							
	November							
	December							
		Total Fuel Usage						

[illegible]

423 Old Drifton Road, Monticello FL.

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SI GROUP ENERGY BOILER PROCESS LOG

DATE _____

Time	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
Supr. Pr. PSI																									
Supr. Hr. Temp. (F)																									
Steam Flow lbs/hr																									
FW Valve % Open																									
Feed Water Temp. (F)																									
Drum Level																									
DA Pressure Psi																									
DA Temp. deg F																									
DA Level																									
FW Pressure Psi																									
F.D. Outlet "wa																									
Undergrate Air "wa																									
Overfire Air "wa																									
Distribution Air "wa																									
Distribution Damper %																									
Furnace Draft "wa																									
Boiler Gas Outlet "wa																									
Dust Collector Out "wa																									
Air Heater Outlet "wa																									
I.D. Damper % open																									
Boiler Gas Out Temp.																									
A.H. Gas Outlet Temp.																									
A.H. Air Outlet Temp.																									
Wood Feeder Screw #1																									
Wood Feeder Screw #2																									
Wood Feeder Screw #3																									
Scrubber Flow (GPM)																									
Scrubber Pres. Drop "wg																									
Scrubber Pond Silk Level																									
Scrubber Pond Level																									
Vacuum Pump Tank Level																									
Cooling Tower Basin Level																									
CO ppm																									
O2 %																									

SUB-STATION READINGS

TIME	A.M. METER	Out	In
KWH (Del)	#1		
KOH (Del)	#2		
KWH (Rec)	#3		
KOW (Rec)	#4		
Demand Reading (kwh)	#5		
Demand Reading (koh)	#6		

Softer #1																										
Softer #2																										
Softer #3																										
Fuel Deck Hydraulic Tank Level #1																										
Fuel Deck Hydraulic Tank Level #2																										
Fuel Deck Hydraulic Tank Level #3																										

1st Shift Bucket Ct.																										
2nd Shift Bucket Ct.																										
3rd Shift Bucket Ct.																										
Total Ct.																										

Bucket Wht. #1																										
Bucket Wht. #2																										
Bucket Wht. #3																										
Bucket Wht. Avg.																										
Total Wht.																										

Overage Bucket Ct. #1																										
Overage Bucket Ct. #2																										
Overage Bucket Ct. #3																										
Total Overage Bucket Ct.																										

COMMENTS:

Overage Bucket Wht. #1																										
Overage Bucket Wht. #2																										
Overage Bucket Wht. #3																										
Total Overage Bucket Wht.																										

FIRST SHIFT _____

SECOND SHIFT _____

THIRD SHIFT _____

DATE:

[illegible]

TIME	Exciter DC Amps	#1	In
Exciter DC Volts	#2	Out	
Generator AC K "Volts	#3		
F.P. A C K "Volts			
Power Factor			
Gen.			
A.C.			
Amps			
Gen. Megawatts			
n House Mtr.			
Gen. Mtr.			
Winding			
Temp.			
Gen.			
#1			
#2			
#3			
#4			
Gen. Air Box Temp.			
Oil Cooler			
Water Temp.			
Oil Cooler			
Oil Temp.			
VG Oil Pm. Psi			
Starting			
Oil Psi			
Thrust			
#1			
#2			
#3			
R.D.			
ing.			
lb.			
accum			
land Seal			
xtrac. PSI			
xhaust Temp.			
turbwell Level			
turbwell Temp.			
turbwell Wtr.			
emp.			
onds. Wtr.			
nds. Wtr.			
ressure			

SECOND SHIFT _____
THIRD SHIFT _____

FIRST SHIFT

WEIGHT TICKET

PRIME ENERGY, INC.
423 Old Drifton Rd.
Monticello, FL 32344

Delivered from _____ Date _____

Product _____ Truck _____

Signature _____

Ticket # Nº 1222

SI Group Energy, LLC **Weekly Lube Schedule**

Date _____

 Signature

The following Equipment will be lubed with three (3) shots of Hi-Temp Grease.
 Check the appropriate selection.

	Yes	No
Fuel Return Conveyor bearings	_____	_____
Distribution Conveyor Bearings	_____	_____
Boiler Infeed Conveyor Bearings	_____	_____
Disc Screen Bearings	_____	_____
Reclaimer Out feed Conveyor Bearings	_____	_____
Reclaimer Head Pulley Bearings	_____	_____
ID Fan Bearings	_____	_____
FD Fan Bearings	_____	_____
OFA Fan Bearings	_____	_____
Montgomery Hog Bearings	_____	_____
North Ash Auger Bearings	_____	_____
South Ash Auger Bearings	_____	_____
East Condensate Pump	_____	_____
West Condensate Pump	_____	_____
North Rotary Seal Valve	_____	_____
South Rotary Seal Valve	_____	_____

The following Equipment will have the oil level checked and oil added as needed
 (see lube chart for correct type).

North Cooling Tower Fan	_____	_____
South Cooling Tower Fan	_____	_____
Boiler Feedwater Pump	_____	_____
Oil Level in Cooling Pump	_____	_____
Oil Level in Process Well	_____	_____

Comments

SI Group Energy, LLC

Scrubber Pond Silt Level Log

Silt level will be recorded every two weeks and initialed by Operator.

A clearance of two feet must be maintained between the scrubber intake and the ash/sediment level in the pond (Specific Condition A.31).

	Silt level (ft-inches)	Operator
January 1, 2008	_____	_____
January 15, 2008	_____	_____
February 1, 2008	_____	_____
February 15, 2008	_____	_____
March 1, 2008	_____	_____
March 15, 2008	_____	_____
May 1, 2008	_____	_____
May 15, 2008	_____	_____
June 1, 2008	_____	_____
June 15, 2008	_____	_____
July 1, 2008	_____	_____
July 15, 2008	_____	_____
August 1, 2008	_____	_____
August 15, 2008	_____	_____
September 1, 2008	_____	_____
September 15, 2008	_____	_____
October 1, 2008	_____	_____
October 15, 2008	_____	_____
November 1, 2008	_____	_____
November 15, 2008	_____	_____
December 1, 2008	_____	_____
December 15, 2008	_____	_____

Wet Scrubber Inspection Report

Date inspected _____

The Wet Venturi Scrubber Inspection shall consist of the following (Specific Condition A.11):

Nozzles Cleaned Yes _____ No _____

Ash Buildup Yes _____ No _____ Buildup Cleaned Yes _____ No _____

Water Leaks Yes _____ No _____ Leaks Repaired Yes _____ No _____

Erosion of Metal Yes _____ No _____ Repairs Needed _____

Structural Condition Good _____ Needs Repair _____

Recommendations of repairs _____

Inspected By: _____

Company _____

SI Group Energy, LLC
Plant Startup Procedures

Section 1

SI Group Energy, LLC

Plant Startup Procedures

THESE PROCEDURES HAVE BEEN DEVELOPED TO AIDE IN THE STARTUP OF THIS FACILIY AND TO HELP KEEP THE CO LEVEL DURING THIS TIME TO A MINIMUM.

THE CO LEVEL MUST BE OBSERVED AND KEPT DOWN AT ALL TIMES. THIIIS CAN BE ACCOMPLISHED BY CLOSE MONITORING OF THE CO LEVEL AND THE O2 LEVEL.

ANY TIME THAT A CHANGE IN THE BOILER OPERATING SYSTEM IS MADE, THE CO LEVEL MUST BE MONITORED AND AIR ADJUSTMENTS MADE TO MAINTAIN THE LOWEST CO POSSIBLE.

The Plant Startup Procedures are as follows;

Cold Startup

Make a complete plant walk through to ensure all equipment is lined up and ready for service.

The walk through should cover the following;

1. Water softeners are on line and water is soft
2. DA tank is at proper operating level.
3. Air compressor oil level.
4. Boiler feed water pump oil level.
5. Process well oil level.
6. Dampers closed on ID fan and FD fan.
7. Check to ensure that all boiler manholes are closed.
8. Check fuel system for blockage
9. Check boiler grates.
10. Close boiler doors
11. Open steam vent, crossover vent and superheater vent.
12. Crack open superheater drains

When the above list is completed, dry wood may be placed on the grates inside number 2 door of the boiler.

Start scrubber pump, light fire and close boiler door.

Once a good fire has been obtained, start ID fan. Make sure that all employees are clear.

Start the OFA fan, FD fan, ash augers and rotary seal valves.

All fans should be started with minimum htz reading.

Open fans running speeds enough to obtain a $-0.15''$ to $-0.2''$ draft on the boiler. Remember too much draft causes fuel carryover and not enough draft causes a smothering effect on the fire.

Start the fuel system.

Start number 2 feeder and adjust speed to about 10% to 15%.

Monitor VE and CO reading and O₂ readings (adjust air as needed).

Observe fire and maintain a clean hot burn.

If the O₂ starts to change, start adjusting air to fuel ratio (add more air).

As the steam temperature and pressure starts to increase, leave feeder setting fixed until temperature and pressure level out.

When steam pressure reaches 25 Psig, close drum vents and crossover vent. Leave superheater drains cracked open. This procedure allows for flow through the tubes and for the removal of moisture or water from the superheater section of the boiler.

Monitor CO and adjust air as needed to maintain lowest reading. The O₂ reading should be between 6% and 8%.

Start raising boiler pressure to 100 Psig.

Start increasing the speed of number 2 feeder. Raise feeder speed to 15% to 20%.

Start alternating number 1 and number 3 feeder on and off at about 10% speed. Alternate each feeder on for about 1 minute and off for about 1 minute.

When the boiler pressure reaches 100 Psig, start turbine Lube Oil pump to heat up oil.

Hold at 100 Psig for about 30 minutes.

All 3 feeders can be left on at this time, unless the VE from the stack starts to increase. If the VE starts to increase, increase the airflow through the boiler.

The number 2 feeder adds fuel to number 2 zone in the boiler and also adds some fuel to number 1 and number 3 zones.

After 30 minutes, start raising boiler pressure to 410 Psig. This should be accomplished within 2 hours.

Check turbine oil temperature and pressure.

Check boiler pressure and CO.

Let boiler and VE readings settle down.

Close field circuit breaker for generator.

Adjust turbine speed (with governor) to 3602 RPM for synchronizing with utility.

Adjust voltage to 200 volts above utility. Example, if utility is at 14,000 volts, adjust generator to 14,200 volts.

With synroscope reading between 11 o'clock and 12 o'clock, close the generator breaker and raise generator load to 1.5 Megawatts.

Adjust power factor on generator to 0.9, close any remaining vents and check gland seal on turbine.

Boiler Master can be put into automatic at this time.

With boiler master in automatic, the fuel feed rate will change as the load is raised on the generator.

After a startup, all systems should be monitored very closely for the next hour to ensure normal operations.

When the boiler has settled down, generator load can be raised to the desired load.

The generator load should not be raised more than 1 Megawatt per 15 minute period, this interval is to avoid boiler pressure drop.

Open main extraction valve when the generator load is at 3.5 Megawatts.

Warm Startup

When the plant has been down for a short period of time, the same procedures are followed as for a cold startup.

When the boiler is hot and fuel is added, the steam pressure and steam temperature will climb at an accelerated rate.

SI Group Energy, LLC
Plant Shutdown Procedures

Section 2

SI Group Energy, LLC

Plant Shutdown Procedures

The Plant Shutdown Procedures have been developed to insure that the plant is shutdown in a correct and safe manner.

During the Plant Shutdown process, close observation of the CO level must be observed and air adjustments must be done to maintain the lowest readings possible.

The correct Shutdown procedures are as follows.

Close off the make up water to the cooling tower about two (2) hours prior to shutdown.

This will allow for the water level to decrease so when the pump is secure at shutdown, the level will remain below the top of the basin and not run over to the ground.

Continue operating the plant for 5 minutes after the hour of the scheduled shutdown time.

On the hour of the scheduled shutdown, bring water level in the boiler to +3 on the Eye Hye

One minute before lowering load on the generator, raise the gland seal pressure (on the turbine) to 5 Psig.

Secure all 3 feeders (5 minutes after the hour).

Start lowering the load on the generator to 3 megawatts.

Observe the water level in boiler Eye Hye and maintain 0 to +2.

Observe CO reading and adjust air to maintain best readings.

Close extraction valve and lower load to 2 megawatts.

Adjust gland seal pressure on turbine to 3 Psig.

Lower the generator load below 1 megawatts.

Open the generator breaker and secure field circuit breaker.

Adjust power factor control to zero.

Open the steam turbine lube oil pump regulator to 30%.

Observe CO readings and make air adjustments as needed to maintain lowest reading.

Trip the turbine off line.

Close the Throttle Trip Valve.

Secure gland seal pressure to 0 Psig, and secure air injector system.

Open the drain valves on the screen and pre Throttle Trip Valve only.

Secure continuous blowdown valve on the boiler.

Raise the water level in the boiler to +6 on the boiler Hye Eye.

Secure boiler feedwater pump.

Secure cooling tower fans.

Secure vacuum pump and close off water.

Secure gland seal exhaustor and close off water.

Open belly drains on turbine.

When the turbine comes to a complete stop, start the electric oil pump.

Secure the main oil pump by adjusting the main lube oil pump regulator to 0%.

Check for proper oil circulation. Proper oil pressure should be 3-5 lbs on main gage.

Make sure that the oil return lines from #2 and #3 bearings on the turbine generator have a good oil flow back to oil reservoir.

Secure the main steam stop on the boiler.

Secure the saturated steam line on the boiler.

Turn off the cooling tower pump.

Close the discharge valve on the cooling tower pump.

Close the inlet valve to the turbine oil cooler.

Secure the FD fan.

Leave ID fan running at low speed to cool down boiler.

Secure the OFA fan.

Secure fuel system.

Clean the grates.

Secure ash augers and rotary seal valves.

Make plant tour and check for any possible fire or other problems.

Check water level on the boiler Eye Hye. If level is below +6, add water to bring the level back to +6.

Secure air compressor.

Turn off power to the cooling tower chemical controller.

Secure plant water booster pump.

Secure scrubber pump.

After the boiler has cooled down (boiler gas outlet temperature below 150 degrees) the ID fan can be secured. Leave boiler doors open to maintain draft through the boiler.

Make final tour of plant and check to see that all equipment is secure.

The only equipment running should be the process well.

SI Group Energy, LLC

Ash Management Plan

Section 4

SI Group Energy, LLC Ash Management Plan

1. Use only clean wood as defined in the SI Group Energy, LLC wood fuel plan.
2. Strictly adhere to the inspection procedures in the wood fuel plan.
3. The wood fuel is burned in a boiler. The boiler operator shall adjust fuel to air ratio to achieve the best complete burn with the least amount of emissions. The ash residue shall have as little unburned fuel as possible.
4. The bottom ash is primarily a sandy type of ash. The product is an excellent soil enhancement and would be given to local farmers for agricultural use.
5. The fly ash collected in the scrubber ponds as a result of the correct operation of the wet scrubber installed on the boiler exhaust is a finer type of ash product. While it is an excellent soil enhancement material, this ash would be given to the local nurseries for a potting soil additive.
6. Both the bottom and the fly ash will be tested on an annual basis. If SI Group Energy maintain the fuel quality and document that the ash products is benign there would be no requirement to weigh and document the disposal of the ash. This would allow SI Group Energy to continue our good neighbor policy and let the local farmers and nurseries have as little or as much of the ash as they need. SI Group Energy is very big on the good neighbor policy.

SI Group Energy, LLC

Fuel Management Plan

Section 5

SI Group Energy, LLC Fuel Control Plan

1. The fuel is restricted to clean wood containing no plastic or treated wood of any kind. The current wood fuel is tub ground trees, whole tree chips or mill residue. Present suppliers are Prime Energy, M.A Rigoni, Georgia Pacific, Agri Products, Stone Container and White Landscape.
2. The fuel is weighed and unloaded using SI Group Energy scales and hydraulic dump platform. Receipts for the fuel delivered are in Plant office.
3. Fuel shipments are accepted from 6:00 am until 8:00 pm seven days a week.
4. All fuel deliveries are inspected for foreign material. If the shipment is unacceptable, it will be rejected and loaded back on the truck that delivered it. If a supplier can not maintain a clean product they will not be allowed to deliver fuel to the plant.
5. If an unacceptable item is found at a later date, the item will be removed and placed in a proper container for proper disposal.
6. SI Group Energy, LLC will maintain a daily log to document the suppliers, fuel type, fuel weight and signature of the driver. These records will be available for inspection in the Plant office.