

New York State Department of Environmental Conservation

Division of Environmental Remediation

Remedial Bureau E, 12th Floor

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Joe Martens
Commissioner

April 16, 2014

Mr. Thomas Van Vranken
Environmental Manager
Norlite LLC
628 So. Saratoga Street
Cohoes, New York 12047

RE: Minor Permit Modification of Hazardous Waste Management Permit
Norlite LLC, NYSDEC Permit No. 4-0103-16/16
EPA ID No. NYD080469935

Dear Mr. Van Vranken:

The New York State Department of Environmental Conservation (NYSDEC) has completed review and hereby approves the minor permit modification to replace the flue gas flow meter for LWAK 1 with the Optical Flow Sensor (OFS-2000) Optical Scintillation technology.

This permit modification is based on your minor permit modification request dated March 25, 2014. This is a minor modification in accordance with Part 373.1-7(c)(12)(iii).

Please note the conditions of this permit modification request:

1. The LW/AK 1 flue gas flow rate shall be monitored by the new optical scintillation technology of the OFS-2000.
2. The OFS limit shall be 38,000 scfm, and an alarm shall be established at 37,500 scfm.
3. The basis will be an hourly rolling average, and shall be an A WFCO condition, to have the hazardous wastes cut off if the limit is exceeded in accordance with Module V of the Part 373 Permit.
4. This will begin on or before April 22, 2014. The Permittee will notify the Department in writing once the OFS has been brought online to be used as the sole determinant of flue gas flow rate monitoring.
5. The Permittee will take comparative data using the sole flue gas flow rate measurement device (OFS-2000) and the former FCI technology for a period of 12 months, from April 1, 2014 to March 31, 2015. This information should be submitted to the Department in two 6-month packages shortly after the conclusion of each semi-annual comparison period. The data should include the raw data,

similar to the March 28, 2014 submission format, as well as HRA values taken hourly throughout the period.

6. The Permittee shall commence work on the installation of the OFS optical scintillation technology on LWAK 2 immediately.
7. When the OFS on LWAK 2 is installed and operational, the Permittee shall test the unit, and provide the RATA results to the Department.
8. The Permittee will do a comparative study of the OFS and FCI technologies at LWAK 2 for at least one month. The results of that study are to be submitted to the Department in a format similar to the March 28, 2014 comparative data submission, as well as HRA values taken hourly throughout the period.
9. Concurrently with the comparative report submission detailed in (8) above, or soon thereafter, the Permittee should submit a permit modification request for the OFS on LWAK 2 to be used as the sole flue gas flow rate monitor.
10. Norlite will submit to the Department by May 16, 2014, an updated Drawing No. NY003-5002-1, from Attachmet D of the permit.

Permit pages reflecting the changes from your requested modification include Module V Pages 10-12; Attachment H Pages H-1 to 15; Section F Figure F-1; Attachment D Pages D-3 and addition of Page D-42a; and Attachment D, Appendix D-1, Pages 006, 007, 021A, 042 and 043. Please replace these pages in your copy of the permit with the enclosed modified pages. Under 6 NYCRR Part 373-1.7(e), Norlite is required to notify all persons on the facility mailing list of the modification. Please provide this office a copy of your notification for our records.

If you have any questions, please contact me at (518) 402-9814.

Sincerely,



Thomas J. Killeen, P.E.
Chief, RCRA Permitting Section

Enclosure

ec: D. Gardell
D. Lates
J. Quinn, Region 4
J. Hadersbeck, Region 4
N. Baker, Region 4, DEP
A. Everett, USEPA, Region 2
W. Palomino, USEPA, Region 2

Operating Parameters (measured by instrument tag #s provided in Appendix D-17 of Attachment D)	Averaging Period	Alarm Set-point	Automatic Waste Cutoff Limit ²	Monitoring/ Recording Frequency	Calibration Frequency
Hazardous Waste (LLGF) feed rate, gpm ¹	HRA ¹	9.0 gpm (HRA ¹)	>10.3 gpm (HRA ¹)	Monitor Continuously ³ & record HRA every minute	Monthly
Off- Specification used Oil, Waste Fuel A, B feed rate (when co-fired with HW), gpm	HRA ¹	HRA Limit shall be set for each certified tank to comply with the feed rate limits of total chlorine, metals & Btu in condition (C) above.	HRA Limit shall be set for each certified tank to comply with the feed rate limits of total chlorine, metals & Btu in condition (C) above.	Monitor Continuously ³ & record HRA ¹ every minute	Monthly
Kiln Back-end Temp. (°F) Minimum Maximum	HRA ¹ HRA ¹	910 1010	< 896 > 1030	Monitor Continuously ³ & record HRA every minute	Monthly
Stack gas Carbon Monoxide, ppm @ 7% O ₂ , dry ⁵	HRA ¹	60 400	>100 white burning LLGF >500 white burning Waste Fuel A or Off-specification used oil in absence of LLGF (see condition D(1))	Monitor Continuously ³ & record HRA every minute	Daily calibration Quarterly CE Test. Annual Performance Specification Test as per Appendix 49 of 6 NYCRR Subpart 374-1.

Operating Parameters (measured by instrument tag #s provided in Appendix D-17 of Attachment D)		Averaging Period	Alarm Set-point	Automatic Waste Cutoff Limit ²	Monitoring/ Recording Frequency	Calibration Frequency
Stack gas Oxygen (dry) %		HRA ¹	None	None	Monitor Continuously ³ & record HRA every minute	Daily calibration Quarterly CE Test. Annual Performance Specification Test as per Appendix 49 of 6 NYCRR Subpart 374-1.
Stack gas flow rate wet scfm	LWAK #1t@ optical flow sensor	HRA ¹	37,500	>38,000	Monitor Continuously ³ & record HRA every minute	Weekly visual inspection and cleanup. Annual Relative Accuracy test as per Performance Specification 6, 40 CFR Part 60, Appendix B.
Stack gas flow rate wet scfm	LWAK #1t@ FCI	HRA ¹	None	Monitor Only	Monitor Continuously ³ & record HRA every minute	Monthly visual inspection. Quarterly clean up. Annual Relative Accuracy test as per Performance Specification 6, 40 CFR Part 60, Appendix B.
Stack gas flow rate wet scfm	LWAK #2	HRA ¹	44,500	>45,000	Monitor Continuously ³ & record HRA every minute	Monthly visual inspection. Quarterly clean up. Annual Relative Accuracy test as per Performance Specification 6, 40 CFR Part 60, Appendix B.
Kiln (i.e. Hood) pressure, "wg		INST ³	-0.08	>-0.05	Monitor Continuously ³ & record maximum reading in a minute every minute ⁷	Monthly
Baghouse ⁴ pressure drop, "wg		HRA ¹	< 5.6	< 5.1	Monitor Continuously ³ & record HRA every minute	Monthly
Scrubber Water Re-circulation rate, gpm		HRA ¹	194	< 180	Monitor Continuously ³ & record HRA every minute	Monthly calibration. Annual calibration by outside contractor.
Heat exchanger outlet temperature (°F)		HRA ¹	448	> 453	Monitor Continuously ³ & record HRA every minute	Monthly
Inlet Temperature to Baghouse, °F		HRA ¹	390	>400		Monthly

Operating Parameters (measured by instrument tag #s provided in Appendix D-17 of Attachment D)	Averaging Period	Alarm Set-point	Automatic Waste Cutoff Limit ²	Monitoring/Recording Frequency	Calibration Frequency
Shale feed rate, tph	HRA ¹	21.0 (HRA1)	>22 ⁵ (HRA ¹)	Monitor Continuously ³ & record HRA every minute	Monthly
Lime feed rate, lb/hr	HRA ¹	< equivalent of 3.3 lb/hr of lime per lb/hr chlorine feed	< equivalent of 3.2 lb/hr of lime per lb/hr chlorine feed	Monitor Continuously ³ & record HRA every minute	Monthly
Re-circulation tank pH	HRA ¹	8.2	<7.9	Monitor Continuously ³ & record HRA every minute	Monthly
Ventruri Pressure, drop, "wg	HRA ¹	3.5"	< 2.9"	Monitor Continuously ³ & record HRA every minute	Monthly
Ducon scrubber pressure drop "wg	HRA ¹	2.0"	< 1.5"	Monitor Continuously ³ & record HRA every minute	Monthly
Scrubber water blow down, gpm	HRA ¹	17	< 16.2	Monitor Continuously ³ & record HRA every minute	Monthly calibration. Annual calibration by outside contractor.
LLGF Line pressure, psig	HRA ¹	40	< 35	Monitor Continuously ³ & record HRA every minute	Monthly
LLGF atomization pressure, psig	HRA ¹	60	< 52	Monitor Continuously ³ & record HRA every minute	Monthly

1. Hourly Rolling Average (HRA) is a average of immediately preceding 60 one minute average values. The permittee shall ignore periods of time when one minute average values are not available for calculating HRA. When one minute average values become available again, the first one minute average value is added to the previous 59 values to calculate the HRA.
2. The permittee shall operate the LWAKs with the functioning system that immediately and automatically cuts off the LLGF when: a) the values for operating parameters exceed their limits of the "Automatic Waste Cutoff limit" column in the table of condition D(3) above b) the process monitoring instrument (including CO & O2 monitors)

SECTION H

NORLITE'S TRAINING REQUIREMENTS

This section includes a description of Norlite's training program, and an outline of both introductory and continuing training programs to prepare employees to operate and maintain this facility in a safe and compliant manner.

All employees working within the plant will undergo initial, specialized, specific and annual training programs, depending upon their job positions. This will be accomplished via classroom, hands-on, and specific on-the-job training, to ensure compliance with 373-2.2 (h) (1) (i), as it is relevant to their positions. Supervisors and managers will attend training sessions on proper handling and management of hazardous waste materials. A qualified instructor, as per 373-2.2 (h) (1) (ii) will conduct all training programs. Training sessions are designed to cover safety, compliance and health procedures related to activities and procedures at this facility, and follow the requirements of 29CFR, 30CFR, 40CFR, 49CFR, and 373-2.2 (h) (1) (iii), as they apply to the Norlite facility.

All plant employees, supervisors, and managers will attend 24-Hour Initial Training within 6 months of their hire date as per 373-2.2 (h) (2). Until training is completed, the employee will not work unsupervised. All plant employees will participate in annual 8-hour refresher training. This is updated annually to cover new regulations, procedures and other relevant information and to provide new ways to present materials in accordance with 373-2.2 (h) (3).

Several plant employees will be trained in response to fires, explosions, spills, and groundwater remediation and contamination. These individuals will only respond after training is completed. Each will be trained at the appropriate level of response and will participate in refresher training.

Each department will conduct job specific training for each employee. Each employee will go through job specific training under direction of their supervisor and/or an experienced employee. This is documented on individual training outlines, meeting the requirements of 373-2.2 (h) (4) (iv).

Norliteás training outline and description in accordance with 373-2.2 (h) (4) (iii) is included in Attachment 1. Records that training has been completed will be maintained on file in the training records for at least three years after termination of the employee, in accordance with 373-2.2 (h) (5).

Records, including job title, name, position, job description, education, qualifications, and duties will be maintained at the facility. Job titles and job duties are included in Attachment 2.

ATTACHMENT 1, SECTION H
CURRENT TRAINING CURRICULUM
DESCRIPTION OF TRAINING

Orientation A 20-minute videoa overview of basic plant operations and safety regulations. Completed during the first day of employment. A requirement for all individuals working at the facilitya

24-Hour Initial Classroom and practical training covering safety and regulatory requirements for working within a mining and a TSD/RCRA facility. This is conducted prior to working without direct supervision and is a conducted only upon initial employment.

Initial

Supervisory Classroom and practical training to be given after 24-hour initial training. It is designed for supervisory personnel to ensure compliance with RCRA regulations, including compliance, emergency response, and review of the contingency plan.

Emergency

Response

Classroom and practical training designed to prepare individuals to properly report and handle releases of hazardous materials. A refresher is completed annually.

Standard

Operating

Procedures

Classroom and practical training covering standard operating procedures (SOP's) relevant to the job titles and duties. This is conducted during initial training and will be updated as needed.

CPR/First- Aid

Classroom and practical training covering CPR and first aid for personnel responding to a medical emergency. Refresher training is conducted every two years or as required.

8-Hour Refresher

8-hour classroom and practical training serving as a "refresher" to 24-hour initial training. Basic safety procedures are reviewed in addition to covering any new regulations or

procedures. This is completed annually.

DOT

Classroom training covering proper labeling, handling, shipping, and transportation of hazardous materials. Refresher training is given annually.

ATTACHMENT 2, SECTION H
JOB TITLES AND DUTIES

The job descriptions and related information as outlined below pertain only to the use and handling of LLGF. Each position requires the performance of additional duties not related to the use and handling of LLGF. These additional duties are not covered in the following job descriptions.

Records of the requisite skill, education, and qualifications of the person(s) filling the position are maintained at Norlite's office.

I. Plant Manager

A. Job Description

1. Responsible for all of Norlite's Operations
2. Supervises the development and technical support of the LLGF Program
3. Supervises Section Managers
4. Interact with regulatory agencies and technical consultants
5. Member of Safety and BMP Committees
6. Keep abreast of regulatory changes
7. Emergency Coordinator

- B. Training Requirements: Orientation, 24-Hour Initial, Initial Supervisory, Emergency Response, SOP's, CPR/First-Aid, Refresher Training, DOT, On-the-job training, Operator Training

II. Plant Engineer

A. Job Description

1. Supervises or performs professional engineering for the LLGF Program
2. Researches and provides specifications for replacement and new facility equipment
3. Writes and/or reviews technical engineering reports
4. Interprets and applies federal, state, and local laws when applying professional engineering principles and practices
5. Emergency Coordinator

- B. Training Requirements: Orientation, 24-Hour Initial, Initial Supervisory, Emergency Response, SOP's, CPR/First-Aid, Refresher, DOT, On-the-job training.

IIIa Environmental Manager

A. Job Description

1. Coordinate all environmental compliance activities
2. Keep abreast of regulatory changes
3. Member of Safety and BMP Committees
4. Interacts with regulatory agencies and technical consultants
5. Assists with safety and regulatory training
6. Emergency Coordinator

B. Training Requirements: Orientation, 24-Hour Initial, Initial Supervisory, Emergency Response, SOP's, CPR/First-Aid, DOT, On-the-job training, Optical Flow Sensor operation and cleaning training.

IV. Safety Manager

A. Job Description

1. Coordinates and maintains overall facility safety programs
2. Coordinates training of all personnel with regards to hazardous waste operations
3. Maintains personnel training records
4. Coordinates medical surveillance program

5. Member of Safety and BMP Committees

6. Emergency Coordinator

B. Training Requirements: Orientation, 24-Hour Initial, Initial Supervisory, Emergency Response, SOP's, CPR/First-Aid, Refresher, DOT, On-the-job training.

V. Maintenance Manager

A. Job Description

1. Develop and implement a preventative maintenance plan

2. Planning, organizing, and directing plant maintenance and repair work

3. Supervise plant technicians

4. Inspects and evaluates mechanical and electrical components of facility

B. Training Requirementsa Orientation, 24-Hour Initial, Initial Supervisory, Emergency Response, SOP's, CPR/First-Aid, Refreshera On-the-job training.

VI. Kiln Supervisor

A. Job Description

1. Supervise Kiln Field Operatorsa Burner Operatorsa Wastewater Treatment Plant Operator, and Mechanics

2. Member of Safety and BMP Committees
 3. Conducts daily inspections of Fuel Farm and Kiln areas
 4. Completes security checks of facility
 5. Designated Emergency Contact
- B. Training Requirements: Orientation, 24-Hour Initial, Initial Supervisory, Emergency Response, SOP's, CPR/First-Aid, Refresher, DOT, On-the-job training.

VIIa Lab Manager

- A. Job Description
 1. Responsible for all laboratory operations
 2. Communicates with all departments within the facility and scheduling of laboratory responsibilities
 3. Supervises Lab Technicians
 4. Member of Safety and BMP Committees
- B. Training Requirementsa Orientation, 24-Hour Initial, Initial Supervisory, Emergency Response, SOP's, CPR/First-Aid, Refresher, DOT, On-the-job training.

VIIIa Lab Technician

- A. Job Description

1. Provides all analytical support for the lab
 2. Daily maintenance and cleaning of lab instrumentation
- B. Training Requirementsa Orientation, 24-Hour Initial, Emergency response, SOP's, Refresher, DOT, On-the-job training.

IX. Fuel Farm Manager

- A. Job Description
1. Supervises LLGF unloading/transfer operations
 2. Coordinates drum processing activities
 3. Responsible for overall housekeeping activities in Fuel Farm area
- B. Training Requirementsa Orientation, 24-Hour Initial, Initial Supervisory, Emergency Response, SOP's, CPR/First-Aid, Refresher, On-the-job training.

X. Fuel Farm Technician

- A. Job Description
1. Responsible for collecting samples of LLGF for lab analysis
 2. Conducts LLGF unloading and transfer operations

- B. Training Requirements: Orientation, 24-Hour Initial, Emergency Response, SOP's, Refresher, DOT, On-the-job training.

XIe Kiln Field Operator

- A. Job Description
 - 1. Assist Burner Operator with kiln operations
 - 2. Daily maintenance of kiln equipment
- B. Training Requirements: Orientation, 24-Hour Initial, Emergency Response, SOP's, Refresher, DOT

XII. Burner Operator

- A. Job Description
 - 1. Responsible for kiln operating within all parameters of Automatic Waste Feed Cut Off System (AWFCO)
 - 2. Responsible for production of lightweight aggregate
- B. Training Requirements: Orientation, 24-Hour Initial, Emergency response, SOP's, Refresher, DOT, On-the-job training.

XIII. Wastewater Treatment Plant Operator

- A. Job Description

1. Monitors and operates the Wastewater Treatment Facility
 2. Performs repairs to related piping and pumping systems
 3. Conducts routine chemical analysis of wastewater
- B. Training Requirements Orientation, 24-Hour Initial, Emergency Response, SOP's, Refresher, DOT, On-the-job training.

XIV. Mechanic

- A. Job Description
1. Maintain, repair, and overhaul facility equipment.
- B. Training Requirements Orientation, 24-Hour Initial, Emergency Response, SOP's, Refresher, On-the-job training.

XV. Runner

- A. Job Description
1. Maintain stockroom to ensure adequate supply of replacement equipment
 2. Provide support in getting materials needed for plant activities
- B. Training Requirements Orientation, DOT, On-the-job.

XVI. I&E (Instrumentation and Electrician)

A. Job Description

1. Maintain, calibrate, repair if possible or replace electrical equipment or instrumentation important to the kiln and Fuel Farm operations
2. Has specific training related to the operation and cleaning of the Optical Flow Sensor used to monitor stack gas flow rate.

B. Training Requirements Orientation, 24-Hour Initial, SOP's, Refresher, DOT, On-the-job training, Optical Flow Sensor Operation and Cleaning.

Figure F-1 INSPECTION SCHEDULE

<u>AREA/EQUIPMENT</u>	<u>SPECIFIC ITEM</u>	<u>TYPES OF PROBLEMS</u>	<u>INSPECTION FREQUENCY</u>
Solids Mixing Tank (Solids Reprocessing Area)	Containment Area	Spalling, Cracks, Evidence of Leaks	Daily
	Piping and Fittings	Corrosion, Leaks, Deterioration	Daily
	Valves	Leaks, Packing Deterioration	Daily
Monitoring Equipment (Process)	LGF Flow Meter	Reading Malfunction	Daily
	Exit Gas Temperature	Reading Malfunction, Electrical Failure	Daily
	Flame/Material Temperature	Reading Malfunction, Electrical Failure	Daily
	Carbon Monoxide (CO)	Reading Malfunction, Detector Failure	Daily
	Oxygen (O2)	Reading Malfunction, Cell Failure	Daily
	Combustion Gas Velocity (ID Fan)	Electrical Failure, Fan Malfunction	Daily
	Atomization Air Pressure	Electrical Failure, Compressor Malfunction	Daily
	Venturi Water Flow	Electrical Failure, Pump Malfunction	Daily
	Scrubber Pressure Drop	Electrical Failure, Pump Malfunction, Plugging	Daily
	Combustion Air (Fan Amp)	Electrical Failure, Fan Malfunction	Daily
	Kiln Pressure (Gauge)	Reading Malfunction, Plugging, Loss of ID Fan	Daily
	Blowdown Flowrate (Rotometer)	Reading Malfunction, Float Sticking	Daily
	Stack Gas Flow Rate (Optical Flow Sensor)	Reading Malfunction, Lenses Dirty	Weekly

- (e) Operation with a Baghouse Module Removed For Maintenance
- (f) Maintenance of Scrubber and Baghouse System
- (g) Maintenance of Optical Flow Sensor for Stack Gas Flow Measurement

Norlite's process control computer(s) will be used to log all flow rate data for LLGF. The current report includes LLGF flow rate, both on a continuous (one minute average) and HRA basis

D-1 Description of Container Areas

The truck unloading/containment and container storage areas are shown in Drawings Nos. NY003-3008, NY003-3319 and NY003-2475-1.

The tanker staging area is used for staging waste tankers and trailers prior to unloading. This area is also used for "drop and hook" transfer station activities in compliance with § 372.3 (a) (6) and (7). This area is not used for transfer of drums between trucks. Truck-to-Truck drum transfers can only take place in unloading areas #1 and #2 or through the solids processing building as shown in Drawing NY003-2475-1.

In addition, drums are loaded and transported by truck for treatment, storage or disposal at other off-site permitted TSD facilities. Norlite therefore also functions as a transfer facility for facilitating movement of waste to other permitted treatment facilities. The types of transfer operations practiced by Norlite are covered in more detail in Norlite SOP #6-001, "TRANSFER STATION SCENARIOS PRACTICED AT NORLITE".

Maintenance of Optical Flow Sensor for Stack Gas Flow Measurement

The Optical Flow Sensor will be inspected and cleaned weekly by the I&E Department personnel, even if the unit is operating within normal range. The routine cleaning maintenance is required to ensure the unit remains in operation without upset or malfunction.

The cleaning of the unit is simple but must be done while the Kiln is not burning LLGF. The cleaning of the unit must occur while the kiln is burning a virgin fuel such as natural gas or off-specification used oil at a minimum. Cleaning of the unit involves opening the unit head and wiping the lens off with a clean cloth. Since the lenses are made of high grade quartz, there is little risk of scratching the lenses.

The rest of the Optical Flow Sensor system is solid state and requires no maintenance. Should a failure occur in one of the three circuit boards in the unit, the I&E Department has been trained to be able to troubleshoot which board is damaged and replace it with a spare board kept on-site.

A malfunction of the unit, caused by either dirty lenses or damaged circuit boards, will trigger the PLC to trigger an AWFCO and cause the kiln to come off of LLGF. The AWFCO valve will not open again until the Optical Flow Sensor fault has been cleared.

Kiln 1 Monitored Parameter

Monitored Parameter	Instrument Description	Span and Units of Measurement	Instrument Accuracy	Tag No. / Comments	Daily*/Monthly Calibration Procedure #
Kiln Combustion Chamber Pressure	Rosemount 1151 DP	-2.0 to 1.0 in. w.c.	± 0.1 in. w.c.	Tag# DPT-5203	Monthly OM 3-07A
LGF Flow Rate	Micromotion DL 100	0-20 gpm	± 0.2% of rate	Tag# MM-4301	Monthly OM 3-07F
LLGF Lance Atomizing Pressure	Rosemount 1151 DP	0-200 psi	± 0.1 psi	Tag# PT-9104	Monthly OM 3-07B
Kiln Back-End (Exit) Temperature	Rosemount 3044C	0-1400°F	± 0.18 °F	Tag# TT-4303	Monthly OM 3-07C
Heat Exchanger Exit Temperature	Rosemount 3044C	350-550 °F	± 0.18 °F	Tag# TT-4301	Monthly OM 3-07C
Baghouse Inlet Temperature	Rosemount 3044C	0-700 °F	± 0.18 °F	Tag# TT-4302	Monthly OM 3-07C
Venturi Differential Pressure	Rosemount 1151 DP	0-10 in w.c.	± 0.1 in. w.c.	Tag# DPT-4401	Monthly OM 3-07A
Scrubber Blowdown Rate	Fischer Porter 10D1475	0-50 gpm	± 0.5% of rate	Tag# FT-1508	Monthly OM 3-07D
Baghouse Differential Pressure	Rosemount 1151 DP	0-15 in w.c.	± 0.1 in. w.c.	Tag# DPT-4303	Monthly OM 3-07A
Scrubber Recirculation Rate	Fischer Porter 10D1475	0-250 gpm	± 0.5% of rate	Tag# FT-4403 A/B Redundant Instr.	Monthly OM 3-07D
Scrubber Liquid pH	Rosemount 2081 pH	0-14 pH units	± 0.02 pH units	Tag# 4401 A/B Redundant Instr.	Daily* OM 3-07G
Dry Sorbent (Lime) Feed Rate	AccuRate 602M	0-500 lb/hr	±2.0% of rate	Tag# Lime_Feed	Monthly OM 3-07I
Kiln Production Rate (Shale Feed Rate)	AccuRate MPC200	0-400tph	±0.25-1.0% of rate	Tag# AR-4301	Monthly OM 3-07H
Stack Oxygen Analyzers	Siemens/Cisco	0-25%	0.5% oxygen absolute difference	Tag#B7-066/067 Redundant Instr.	Daily* OM-307K
Stack Gas CO Concentration Corrected to 7% O ₂	Siemens/Cisco	0-200 and 0-3,000 ppm ^(a)	3% of span. ^(a)	Tag#B7-889/890 Redundant Instr.	Daily* OM-307K
Ducon Differential Pressure	Rosemount 1151 DP	0-10 in w.c.	± 0.1 in. w.c.	Tag# DPT-4402	Monthly OM 3-07A
LGF Feed Line Pressure	Rosemount 1151 DP	0-110 psi	± 0.1 psi	Tag# PT-9106	Monthly OM 3-07B
Used Oil Feed Rate	Micromotion DS101	0-20 GPM	±0.2% of rate	Tag# MM-4303	Monthly OM 3-07F

Kiln 1 Monitored Parameter

Flue Gas Flow Rate	Optical Scientific Inc. Model OF5 2000	0.1 to 40 m/s velocity	2% of reading Annual RATA	Tag# FT-5566	Annual RATA OM 3-07M
Temperature For Flue Gas Flow Rate	Rosemount 3044C	0-700 °F	± 0.18 °F	Tag#TT-5566	Monthly OM 3-07C
Pressure for Flue Gas Flow Rate	Rosemount 1151 DP	-15.0 to 0 in w.c.	± 0.1 in. w.c.	Tag#PT-5566	Monthly OM 3-07A
Flue Gas Flow Rate Comparison ^(b)	Fluid Components International, LLC Model GF90	0-86,000 wet scfm	Annual RATA	Tag#FT-5555	Annual RATA OM 3-07M

- (a) A 10,000 ppm default value is used when the 3,000 ppm span is exceeded.
 - (b) The FCI unit will remain in operation but not be tied to the AWFCO system. The FCI unit will provide comparison data against the Optical Flow Sensor.
- *Daily calibrations are done on the scrubber pH and carbon monoxide and oxygen units.



NORLITE, LLC

Policy Number: OM 3-07M

Effective Date: 6/14

Revision Date: 1/05, 2/05, 04/14

OPTICAL FLOW SENSOR

I. PURPOSE

Provide a consistent and reliable procedure for the Optical Flow Sensor.

II. SCOPE

Optical Flow Sensor

III. RESPONSIBILITIES

Compliance/I & E Department

IV. PROCEDURE

WEEKLY

- I. The Optical Flow Sensor will be visually inspected and the lenses cleaned each week.
 - a. Visually inspect electrical connections, enclosures, electrical cables and lenses for any signs of physical damage and/or deterioration.
 - b. Compare readings from control room to reading in field.

MONTHLY

- I. Each month the temperature probe and pressure sensor used in conjunction with the Optical Flow Sensor will be cleaned and calibrated.
 - a. Remove the temperature probe and pressure sensors and clean the units.
 - b. Look for any signs of damage and/or deterioration.
 - c. Conduct monthly calibrations following calibration procedure# OM 3-07C and OM-3-07A, respectively.

ANNUAL

- I. A RATA will be conducted on an annual basis for certification of the Optical Flow Sensor.
 - a. Certify instrument is in compliance.

NORLITE CORPORATION

INSTRUMENT CALIBRATION DATA SHEET

NAME: K1 Optical Flow Sensor Pressure

MFG: Rosemount

MODEL#: 2051 D/P -15" - 0" H₂O = 4-20 mA

SERIAL#: 0107062

TAG#: PT-5566

LOCATION: K1 by the CEM probes

TEST POINTS	IDEAL INPUT SIGNAL	ACTUAL INPUT SIGNAL	IDEAL OUTPUT	OUTPUT AS FOUND	OUTPUT AS LEFT	IDEAL INDICATOR	INDICATOR AS FOUND	INDICATOR AS LEFT
1	-15.00"H ₂ O	-15.00	4.00mA			-15.00"H ₂ O		
2	-11.25"H ₂ O	-11.25	8.00mA			-11.25"H ₂ O		
3	-7.50"H ₂ O	-7.50	12.00mA			-7.50"H ₂ O		
4	-3.75"H ₂ O	-3.75	16.00mA			-3.75"H ₂ O		
5	0.0"H ₂ O	0.0	20.00mA			0.0"H ₂ O		

CALIBRATION DATE:

INSTRUMENT TECHNICIAN:

TEST EQUIPMENT USED	MFG: TRANSMATION	SERIAL: 6599902/C19004
	MODEL: 1091/1091	CERTIFICATION DUE: 3/26/15 4/29/14
	MFG: TRANSMATION	SERIAL: 8467002
	MODEL: SD0312G	CERTIFICATION DUE: 5/31/14
	MFG: TRANSMATION	SERIAL: 97851101
	MODEL: SD0412G	CERTIFICATION DUE: 9/30/14

DRIFT ACCEPTANCE: 0 +/- 0.25" H₂O

COMMENTS:

NORLITE CORPORATION

INSTRUMENT CALIBRATION DATA SHEET

NAME: Kiln 1 Optical Flow Sensor Temperature

MFG: Rosemount

MODEL#: 3144 0-700 DEG.(F) = 4-20mA

SERIAL#: 0575505

TAG#: TT-5566

LOCATION: K1 by the CEM probes

TEST POINTS	IDEAL INPUT SIGNAL	ACTUAL INPUT SIGNAL	IDEAL OUTPUT	OUTPUT AS FOUND	OUTPUT AS LEFT	IDEAL INDICATOR	INDICATOR AS FOUND	INDICATOR AS LEFT
1	0 F	0	4.00mA			0 F		
2	175 F	175	8.00mA			175 F		
3	350 F	350	12.00mA			350 F		
4	525 F	525	16.00mA			525 F		
5	700 F	700	20.00mA			700 F		

CALIBRATION DATE:

INSTRUMENT TECHNICIAN:

TEST EQUIPMENT USED	MFG: TRANSMATION	SERIAL: 6540201
	MODEL: 1062 J/K	CERTIFICATION DUE: 1/31/15
	MFG: ROSEMOUNT	SERIAL:
	MODEL: 275	CERTIFICATION DUE: NONE
	MFG:	SERIAL:
	MODEL:	CERTIFICATION DUE:

DRIFT ACCEPTANCE: +/- 10F

COMMENTS:
