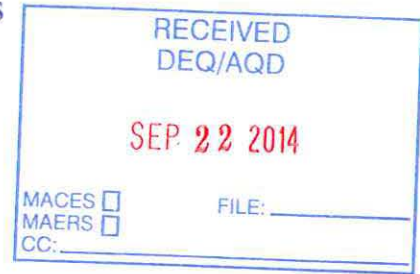




Otwell Mawby, P.C.
Consulting Engineers



September 18, 2014

Ms. Gloria Torello
Environmental Quality Analyst
MDEQ Air Quality Division
2100 West M-32
Gaylord, MI 49735-9282

**SUBJECT: RESPONSE TO AUGUST 21, 2014 AQD CORRESPONDENCE
VIOLATION NOTICE – JULY 21, 2014
TRENDELL ENERGY CORPORATION
SRN: N6150, MONTMORENCY COUNTY, MICHIGAN**

Dear Ms. Torello:

On behalf of Trendwell Antrim Inc. (formerly Trendwell Energy Corporation (Trendwell)), Otwell Mawby, P.C. (Otwell Mawby) is pleased to present our response to your August 21, 2014 correspondence pertaining to the Notice of Violation (NOV) issued by the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) at the SRN: N6150 (Vienna 31) site located in Montmorency County, Michigan.

Your letter asked that the following three points be addressed:

- provide a formula to calculate NO_x and CO emissions using “actual fuel used,” to the AQD for review;
- provide a the calculated values for NO_x and CO emissions using “actual fuel used”; and
- submit an updated Malfunction Abatement Plan (MAP) revised to include more frequent inspections of the catalyst element.

Formula to Calculate NO_x and CO Emissions

Upon further review, for the purposes of evaluating field emissions check data, we concur with the formula presented in AQD’s July 21, 2014 letter:

Emissions (TPY) = fuel usage (MMCF) x control efficiency (%) x manufacturer’s emission factor (lb/MMCF) / 2000 lbs/ton.

Please note, for the purpose of MAERS, we will continue to use the manufacturer specifications for emissions factors and the MDEQ-AQD guidance (Fact Sheet Number 9845) for catalyst control efficiencies.

Calculated NOx and CO Emissions

Otwell Mawby calculated current emissions using an actual fuel rate equal to the current annual average (September 2013 through August 2014), using control efficiencies established in the Exterran Field Check per the MAP (8/6/2014, provided as Attachment A), and conservatively using the manufactured supplied emission factor (MAERS emission factor) as follows:

- $\text{NO}_x = 42.962 \text{ MMCF} \times 0.016 \times 2,194.17 \text{ lb/MMCF} / 2,000 \text{ lbs/ton} = 0.75 \text{ tons/year}$
- $\text{CO} = 42.962 \text{ MMCF} \times 0.025 \times 2,278.56 \text{ lb/MMCF} / 2,000 \text{ lbs/ton} = 1.22 \text{ tons/year}$

Updated Malfunction Abatement Plan (MAP)

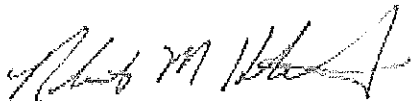
MDEQ-AQD has requested an updated MAP to include more frequent inspections of the catalyst. Per the existing MAP the catalyst is to be inspected in accordance with Table 4 of the MAP. The checks performed and frequency of each include: temperature (daily), differential pressure (monthly), emissions (12 to 18 months), and maintenance (12 to 18 months).

Part of the past issue involved the catalyst seal, which is part of the Maintenance inspection to be performed at 12 to 18 month intervals. This frequency will be reduced to a once/12-month (annual) basis. Table 4 of the PM-MAP has been revised to reflect this change, a copy of which is provided as Attachment B to this letter.

We trust that the information provided herein appropriately addresses the NOV and that the violation is no longer considered in effect. If you have any questions or concerns regarding this or any other matter, please do not hesitate to contact us.

Sincerely,

OTWELL MAWBY, P.C.



Robert M. Koltuniak, P.E.
Principal/Project Manager

Attachment

Cc: Rick Sandtveit (TEC)
Danita Green (TEC)
Brian Keelean (AGS)
Project File (06-252)

ATTACHMENT A

EXTERRAN TEST REPORT 8/6/2014



ENGINE EMISSIONS ANALYSIS

Customer:	Trendwell	Engine CID:	3,928
Location:	Vienna 31	Engine RPM:	935
Unit:	952	BMEP Calc:	72
Serial Number:	49C00237	Amb Temp F:	86
Engine Model:	Caterpillar 399 T/A	Date of Test:	08/06/14
		Engine Timing:	26

DATA OBSERVED

ENGINE		CONVERTER	
NOx Observed - PPM	1,188	NOx Observed - PPM	19
CO Observed - PPM	11,300	CO Observed - PPM	286
O2 Observed - %	0.7		
Engine Horsepower	335		
Fuel Used - cu-ft/hr	5,044		
Fuel Analysis - BTU/cu-ft	785		

CALCULATED RESULTS

	g/BHP-Hr	lbs/hr	TPY
ENGINE NOx	6.85	5.06	22.17
ENGINE CO	39.63	29.27	128.22
CONVERTER NOx	0.11	0.08	0.35
CONVERTER CO	1.00	0.74	3.25

NOx CONVERSION	CO CONVERSION
98.4%	97.5%

RATIO:	NO	/	NO2
	98.7%	/	1.3%

Calculated results are derived from a series of emissions readings from the identified engine at the conditions listed. Test instrument reads NO and NO2 separately with NOx based on the combined

total and calculated as NO2. Concentrations in PPMv are given at the observed O2 levels with no correction factor made. Engine loading is confirmed using WPI proprietary software and / or driven equipment loading. Test instrument is spanned with known gas concentrations before each series of tests. Printout of the raw data is attached. Test instrument is an electro-chemical cell type. Method of calculation is per EPA Method 19 based on fuel usage and analysis.

Dan Kwapis

Service Technician

		lb/hr	g/BHP-Hr
PRE	NOx Lbs/Hr =	5.06	6.85
PRE	CO Lbs/Hr =	29.27	39.63
POST	NOx Lbs/Hr =	0.08	0.11
POST	CO Lbs/Hr =	0.74	1.00
	BMEP =	72.2	

DATA INPUT AREA	
Customer:	Trendwell
Location:	Vienna 31
Unit:	952
Engine Serial Number:	49C00237
Engine Model:	Caterpillar 399 T/A
Engine CID:	3,928
Engine RPM:	935
Ambient Temp - deg F:	86
Test Date - m/d/yr	08/06/14
Engine NO Observed - PPM:	1,172
Engine NO2 Observed - PPM:	16
Engine CO Observed - PPM:	11,300
Exhaust O2 Observed - %:	0.7
Engine Horsepower:	335
Fuel Flow - cu-ft/hr	5,044
Fuel Analysis - BTU/cu-ft	785
Converter NO Observed - PPM:	19
Converter NO2 Observed - PPM:	0
Converter CO Observed - PPM:	286
Engine Timing:	26

Permit Limits;

NOX 9.3 TPY | CO 19.4 TPY

Catalyst temps;

In; 935
Out; 1027
Diff; 92

Catalyst pressure;

In; 3.3
Out; 0
Diff; 3.3

Exhaust Flow

1728 cfm

O2 Target

na

Catalyst Model:

Miratech / EQ-701

ATTACHMENT B
CATALYTIC CONVERTER MONITORING AND
PREVENTATIVE MAINTENANCE SCHEDULE (9/16/2014)

Table 4
Catalytic Converter Monitoring and Preventative Maintenance Schedule
Trendwell Energy Corporation

Item	Activity	Equipment Status	Frequency
Catalyst	<u>Scheduled Maintenance:</u>	Off Line	Every 12 months of catalyst operating time or, in the event of an engine malfunction where fluids may have entered the catalyst.
	Vacuum and/or blow clean the catalyst face, clearing any fouling debris or ash build-up.		
	If the catalyst does not respond to annual cleaning, remove and replace insert. Send removed insert to manufacturer for factory cleaning and service. Purchase replacement insert for inventory.		
	Replace catalyst gaskets any time the catalyst insert is cleaned or the seal is broken for inspection or cleaning.		
Thermocouple	Check temperature read-outs with independent thermocouple.	On Line	As needed
	Clean or replace thermocouple within 5 days if not functioning properly. Normal operating range 0-1,300 degrees Fahrenheit.		
Catalyst	<u>Solution Replacement:</u> Replace catalyst insert solution to remove surface contamination.	Off Line	If catalyst not functioning properly after manufacturer cleaning, or in lieu of manufacturer cleaning.

Revised 9-16-2014