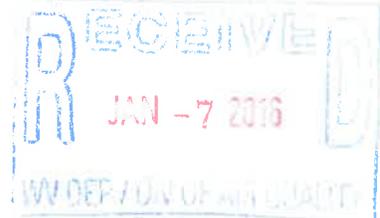




Cranberry Pipeline Corporation
A Cabot Oil & Gas company

I.D. No. 029-00045 Reg. PD14-003
Company Cranberry Pipeline Corporation
Facility: Martin's Branch Station IV
Initials WTEW

January 6, 2016



William F. Durham, Director
West Virginia Department of Environmental Protection
Division of Air Quality
601 57th Street
Charleston, West Virginia 25304

Re: Permit Determination Request- Martin's Branch Station

Dear Director Durham,

Cranberry Pipeline Corporation is submitting for your consideration the attached Permit Determination Application for the Martin's Branch Station. The facility revision consists of installing a 1.5 MMBTU/HR natural gas fired line heater.

On December 3, 2015, Mr. William T. Rothwell II, P.E. issued a permit needed letter for this site under determination number PD15-092. After reviewing the basis of the determination with Mr. Rothwell it became apparent that the grandfathered engine emissions that were identified at the site were evaluated as new equipment. As a result, Cranberry Pipeline Corporation would like to request the determination application, attached, be reevaluated with respect to the line heater being the only new piece of equipment added to the facility. This is in light of the clarification being communicated to Mr. Rothwell that the grandfathered engine emissions were included only to show the site was remaining exempt from Title V applicability since.

If you have any questions please contact me at (304) 347-1642 or by e-mail at brody.webster@cabotog.com

Sincerely,

M. Brody Webster, CSP
North Region Manager, Safety & Environment

Cc: Jesse Hanshaw, SLR
File

North Region
900 Lee Street East, Suite 1500
Charleston, WV 25301
Office: 304-347-1600

Entire Document
NON-CONFIDENTIAL



west virginia department of environmental protection

Division of Air Quality
601 57th Street, S.E.
Charleston, WV 25304

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

December 3, 2015

Randy Spencer
EHS Manager
Cranberry Pipeline Corporation.
900 Lee Street
Charleston, WV 25301

Re: Permit Applicability Determination
Martin's Branch Station
Determination No. PD15-092
Plant ID No. 039-00045

Dear Mr. Spencer:

It has been determined that a permit will be required under 45CSR13 for your proposed installation of a 1.5 MMBtu/hr natural gas fired pipeline heater at the above referenced facility. This determination is based on information included with your permit determination form (PDF) received on October 26, 2015, which indicates that the increase in emissions will exceed two (2) lbs/hr or five (5) tons/year of total Hazardous Air Pollutants (HAPs); six (6) lbs/hour and ten (10) TPY of any regulated pollutant; or, trigger a substantive requirement of a state air quality regulation.

The appropriate application forms which need to be completed can be obtained from the WVDEP website at <http://www.dep.wv.gov>. Submit the completed forms, \$1,000.00 permit application fee, and any other applicable fees to the above address. If you should have questions concerning which forms are needed, or have trouble downloading, please call the Permitting Secretary at (304) 926-0475. Please address this matter as soon as possible to ensure expediency of the permit review process.

Should you have any questions, please contact the undersigned engineer at (304) 926-0499 ext. 1211.

Sincerely,

A handwritten signature in blue ink that reads "William T. Rothwell II".

William T. Rothwell II, P.E.
Engineer

Promoting a healthy environment.



October 2, 2015

William F. Durham
Director
WVDEP, Division of Air Quality
601 – 57th Street
Charleston, West Virginia 25304

Re: Permit Determination Request- Martin's Branch Station

Dear Director,

SLR International Corporation, on behalf of Cranberry Pipeline Corporation, is submitting for your consideration the attached Permit Determination Application for the Martin's Branch Station. The facility revision consists of installing a 1.5 MMBTU/HR natural gas fired line heater.

If you have any questions please contact me at (304) 545-8563 or by e-mail at jhanshaw@slrconsulting.com

Sincerely,

A handwritten signature in blue ink that reads "Jesse Hanshaw". The signature is fluid and cursive, written over a light blue horizontal line.

Jesse Hanshaw, P.E.
Principal Engineer
SLR International Corporation

Cc Randy Spencer- Cranberry Pipeline Corporation



global environmental solutions

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation

Martin's Branch Station

Sissonville, West Virginia

Permit Determination

SLR Ref: 116.00400.00132

October 2015



global environmental solutions

Permit Determination
Martin's Branch Station
Sissonville, West Virginia

Prepared for:

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation
900 Lee Street, East
Suite 1500
Charleston, West Virginia 25301

This document has been prepared by SLR International Corporation. The material and data in this permit application were prepared under the supervision and direction of the undersigned.

A handwritten signature in blue ink, appearing to read "Michelle Nottingham".

Michelle Nottingham
Project Scientist

A handwritten signature in blue ink, appearing to read "Jesse W. Hanshaw".

Jesse W. Hanshaw P.E.
Principal Engineer

CONTENTS

APPLICATION FOR PERMIT DETERMINATION

ATTACHMENTS

- ATTACHMENT A AREA MAP
- ATTACHMENT B PROCESS FLOW DIAGRAM
- ATTACHMENT C PROCESS DESCRIPTION
- ATTACHMENT D SUPPORTING DOCUMENTS
- ATTACHMENT E SUPPORTING CALCULATIONS

APPLICATION FOR PERMIT DETERMINATION

Permit Determination

**Martin's Branch Station
Sissonville, West Virginia**

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation
900 Lee Street East, Suite 1500
Charleston, West Virginia 25301



WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY
601 57th Street, SE
Charleston, WV 25304
Phone: (304) 926-0475
www.dep.wv.gov/daq

**PERMIT DETERMINATION FORM
(PDF)**

FOR AGENCY USE ONLY: PLANT I.D. # 039-00045
PDF # 16-003 PERMIT WRITER: WTEG

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):

Cranberry Pipeline Corporation

2. NAME OF FACILITY (IF DIFFERENT FROM ABOVE):

Martin's Branch Meter Station

3. NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CODE:

211111

4A. MAILING ADDRESS:

102 3rd Street
Glasgow, West Virginia 25086

4B. PHYSICAL ADDRESS:

0.17 miles onto Geraint Rd. Sissonville, WV

5A. DIRECTIONS TO FACILITY (PLEASE PROVIDE MAP AS ATTACHMENT A):

From the Interstate 77 Northbound take exit 111 for Tupper's Creek Rd. toward WV 29, turn left onto Walker Dr. continue onto Call Rd. travel approximately 1.2 miles. Turn Right onto Sissonville Dr. for 1.2 miles. Turn left on WV-622 S for 1.2 miles. Turn left onto Geraint Road facility is located on the left.

5B. NEAREST ROAD:
Martin's Branch Rd.

5C. NEAREST CITY OR TOWN:
Sissonville

5D. COUNTY:
Kanawha

5E. UTM NORTHING (KM):
4257989.85

5F. UTM EASTING (KM):
440467.20

5G. UTM ZONE:
17

6A. INDIVIDUAL TO CONTACT IF MORE INFORMATION IS REQUIRED:
Jesse Hanshaw

6B. TITLE:
Principal Engineer

6C. TELEPHONE:
304-545-8563

6D. FAX:
N/a

6E. E-MAIL:
jhanshaw@slrconsulting.com

7A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY ONLY):

039-00045

7B. PLEASE LIST ALL CURRENT 45CSR13, 45CSR14, 45CSR19 AND/OR TITLE V (45CSR30) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR AN EXISTING FACILITY ONLY):

N/a

7C. IS THIS PDF BEING SUBMITTED AS THE RESULT OF AN ENFORCEMENT ACTION? IF YES, PLEASE LIST:

N/a

8A. TYPE OF EMISSION SOURCE (CHECK ONE):

- NEW SOURCE ADMINISTRATIVE UPDATE
 MODIFICATION OTHER (PLEASE EXPLAIN IN 11B)

8B. IF ADMINISTRATIVE UPDATE, DOES DAQ HAVE THE APPLICANT'S CONSENT TO UPDATE THE EXISTING PERMIT WITH THE INFORMATION CONTAINED HEREIN?

YES NO

9. IS DEMOLITION OR PHYSICAL RENOVATION AT AN EXISTING FACILITY INVOLVED? YES NO

10A. DATE OF ANTICIPATED INSTALLATION OR CHANGE:

ASAP

10B. DATE OF ANTICIPATED START-UP:

ASAP

11A. PLEASE PROVIDE A DETAILED PROCESS FLOW DIAGRAM SHOWING EACH PROPOSED OR MODIFIED PROCESS EMISSION POINT AS ATTACHMENT B.

11B. PLEASE PROVIDE A DETAILED PROCESS DESCRIPTION AS ATTACHMENT C.

12. PLEASE PROVIDE MATERIAL SAFETY DATA SHEETS (MSDS) FOR ALL MATERIALS PROCESSED, USED OR PRODUCED AS ATTACHMENT D. FOR CHEMICAL PROCESSES, PLEASE PROVIDE A MSDS FOR EACH COMPOUND EMITTED TO AIR.

Clarification to only new equipment
made by Jose Hanahan, 1-6-16
SLR International Corp.

13A. REGULATED AIR POLLUTANT EMISSIONS:

⇒ FOR A NEW FACILITY, PLEASE PROVIDE PLANT WIDE EMISSIONS BASED ON THE POTENTIAL TO EMIT (PTE) FOR THE FOLLOWING AIR POLLUTANTS INCLUDING ALL PROCESSES.

⇒ FOR AN EXISTING FACILITY, PLEASE PROVIDE THE PROPOSED CHANGE IN EMISSIONS BASED ON THE PTE OF ALL PROCESS CHANGES FOR THE FOLLOWING AIR POLLUTANTS.

PTE FOR A GIVEN POLLUTANT IS TYPICALLY BEFORE AIR POLLUTION CONTROL DEVICES AND IS COLLECTED BASED ON THE MAXIMUM DESIGN CAPACITY OF PROCESS EQUIPMENT.

POLLUTANT	HOURLY PTE (LB/HR)	YEARLY PTE (TON/YR) (HOURLY PTE MULTIPLIED BY 8760 HR/YR) DIVIDED BY 2000 LB/TON
PM	0.12 0.02	0.54 0.049
PM ₁₀	0.12 0.09	0.54 0.367
VOCs	4.47 0.01	19.58 0.035
CO	125 0.13	5.46 0.541
NO _x	9.37 0.15	41.02 0.644
SO ₂	0.01 0.001	0.01 0.004
Pb	NA 0.01	NA 0.012
HAPs (AGGREGATE AMOUNT)	0.23 0.01	1.02 0.012
TAPs (INDIVIDUALLY)*	NA	NA
OTHER (INDIVIDUALLY)*	NA	NA

* ATTACH ADDITIONAL PAGES AS NEEDED

13B. PLEASE PROVIDE ALL SUPPORTING CALCULATIONS AS ATTACHMENT E.

CALCULATE AN HOURLY AND YEARLY PTE OF EACH PROCESS EMISSION POINT (SHOWN IN YOUR DETAILED PROCESS FLOW DIAGRAM) FOR ALL AIR POLLUTANTS LISTED ABOVE INCLUDING INDIVIDUAL HAP'S (LISTED IN SECTION 112(b) OF THE 1990 CAAA), TAP'S (LISTED IN 45CSR27), AND OTHER AIR POLLUTANTS (E.G. POLLUTANTS LISTED IN TABLE 45-13A OF 45CSR13, MINERAL ACIDS PER 45CSR7, ETC.).

14. CERTIFICATION OF DATA

I, (TYPE NAME) ATTEST THAT ALL THE REPRESENTATIONS CONTAINED IN THIS APPLICATION, OR APPENDED HERETO, ARE TRUE, ACCURATE, AND COMPLETE TO THE BEST OF MY KNOWLEDGE BASED ON INFORMATION AND BELIEF AFTER REASONABLE INQUIRY, AND THAT I AM A RESPONSIBLE OFFICIAL** (PRESIDENT, VICE PRESIDENT, SECRETARY OR TREASURER, GENERAL PARTNER OR SOLE PROPRIETOR) OF THE APPLICANT.

SIGNATURE OF RESPONSIBLE OFFICIAL: _____



TITLE: EHS Manager

Date: 10 / 2 / 15

** THE DEFINITION OF THE PHRASE 'RESPONSIBLE OFFICIAL' CAN BE FOUND AT 45CSR13, SECTION 2.23.

NOTE: PLEASE CHECK ENCLOSED ATTACHMENTS:

ATTACHMENT A ATTACHMENT B ATTACHMENT C ATTACHMENT D ATTACHMENT E

RECORDS ON ALL CHANGES ARE REQUIRED TO BE KEPT AND MAINTAINED ON-SITE FOR TWO (2) YEARS.

THE PERMIT DETERMINATION FORM WITH THE INSTRUCTIONS CAN BE FOUND ON DAQ'S PERMITTING SECTION WEB SITE:

www.dep.wv.gov/daq

ATTACHMENT A

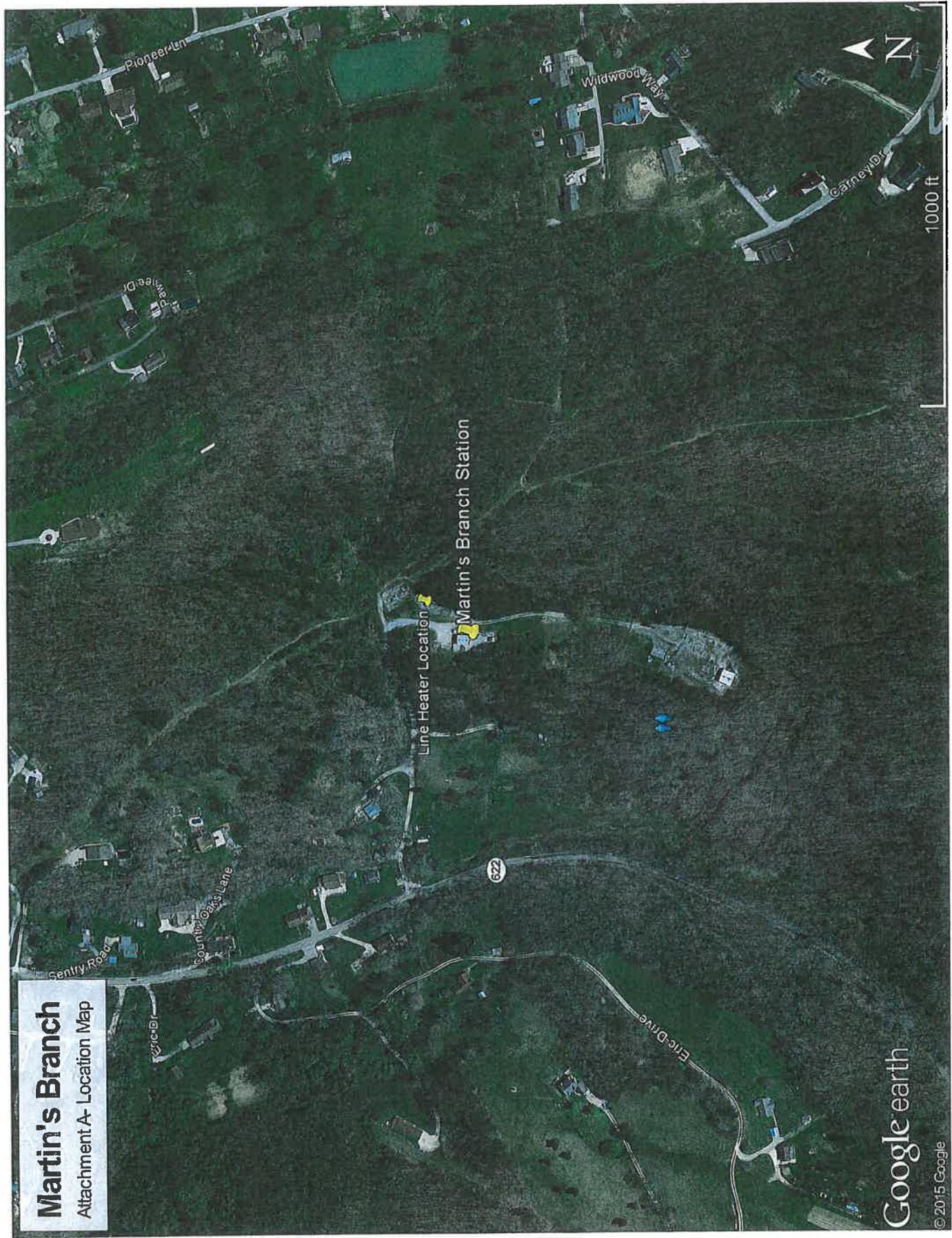
AREA MAP

Permit Determination

**Martin's Branch Station
Sissonville, West Virginia**

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation
900 Lee Street East, Suite 1500
Charleston, West Virginia 25301

Martin's Branch
Attachment A- Location Map



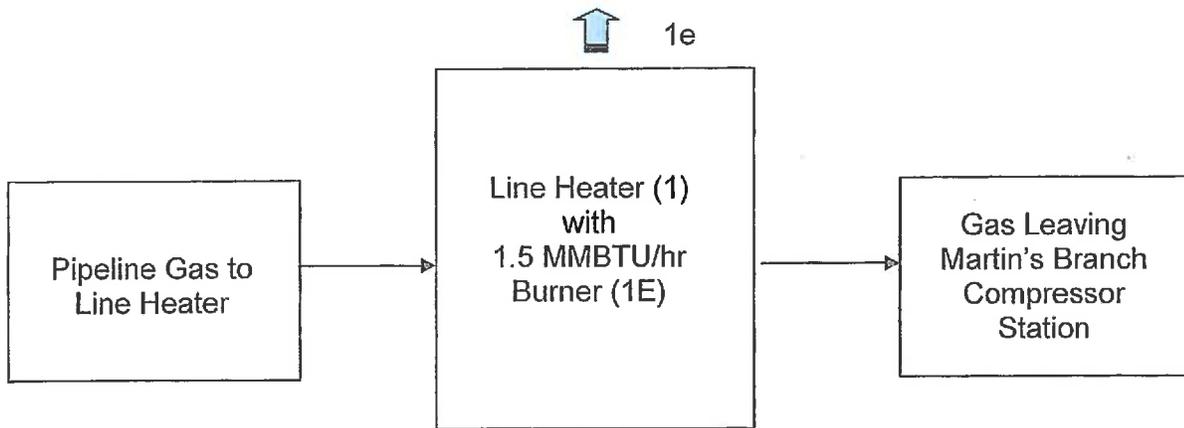
ATTACHMENT B

PROCESS FLOW DIAGRAM

Permit Determination

Martin's Branch Station
Sissonville, West Virginia

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation
900 Lee Street East, Suite 1500
Charleston, West Virginia 25301



	Permit Determination – Attachment B Cranberry Pipeline Corporation Martin's Branch Station Kanawha County, West Virginia
Process Flow Diagram 09/29/2015	Job No: 116.00400.00132

ATTACHMENT C
PROCESS DESCRIPTION

Permit Determination

**Martin's Branch Station
Sissonville, West Virginia**

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation
900 Lee Street East, Suite 1500
Charleston, West Virginia 25301

PROCESS DESCRIPTION

Cabot Oil and Gas is proposing to install a new 1.5 MMBtu/hr line heater at its existing Martin's Branch compressor station. This station was built in 1972 and operated under Title V operating permit number R30-03900045-1996. However, after the 1350 hp Cooper Bessemer engine was removed from service the site was taken out of the Title V major source program. This was documented within a November 17, 2004 letter from DAQ Director John Benedict to Cabot Oil and Gas President Thomas Liberatore.

Due to the new heater being adjacently located to the existing compressor station the entire site wide emissions were evaluated for completeness as part of this determination application. The site's existing equipment consist of a 400 hp Cooper Bessemer compressor engine, a 100 bbl pipeline liquids tank and a 35 bbl engine oil tank.

The emissions from the engine were estimated using 2SLB factors from AP-42. Tank emissions were estimated to include flashing, working and breathing contributions assuming 5 bbl/day maximum throughput. The tank composition was assumed to be equivalent to that measured by pressurized liquid sampling during Cabot's Putnam B6 sampling study. The fugitive equipment leaks and truck loading contributions were also included in the facility wide totals for completeness.

The emissions from the line heater addition was found to be less than modification thresholds as defined in 45CSR13 and the site wide emissions remain below Title V major source thresholds defined within 45CSR30.

ATTACHMENT D
SUPPORTING DOCUMENTS

Permit Determination

**Martin's Branch Station
Sissonville, West Virginia**

Cranberry Pipeline Corporation
c/o Cabot Oil & Gas Corporation
900 Lee Street East, Suite 1500
Charleston, West Virginia 25301

Table 1. Annual Potential To Emit (PTE)
Cranberry Pipeline Corporation - Martin's Branch Station

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	HAPs	CO2e
Line Heater	0.049	0.367	0.367	0.004	0.644	0.541	0.035	0.012	768.323

Potential to Emit (PTE) Aggregated to Include Martin's Branch Compressor station

Source	PM	PM10	PM2.5	SO2	NOx	CO	VOC	HAPs	CO2e
Line Heater	0.049	0.367	0.367	0.004	0.644	0.541	0.035	0.012	768.323
Tanks							0.319		
Engine	0.489	0.489	0.489	0.007	40.376	4.916	1.528	1.005	1491.518
Fugitive Equipment Leaks							17.591		408.988
Fugitive Truck Loading							0.105		
Total Emissions (ton/yr)	0.538	0.856	0.856	0.011	41.021	5.458	19.579	1.018	2668.829
Total Emissions (lb/day)	2.948	4.692	4.692	0.062	224.770	29.904	107.284	5.576	14623.720
Total Emissions (lb/hr)	0.123	0.195	0.195	0.003	9.365	1.246	4.470	0.232	609.322

PTE Hazardous Air Pollutants

Source	*Benzene	*Ethylbenzene	*Toluene	Xylenes	*n-Hexane	Formaldehyde
Line Heater	0.000	0.000	0.000	0.000	0.012	0.000
Tanks	0.000	0.000	0.000	0.000	0.000	0.000
Engine	0.025	0.000	0.012	0.003	0.000	0.703
Total Emissions (ton/yr)	0.025	0.000	0.012	0.003	0.012	0.704
Total Emissions (lb/day)	0.135	0.001	0.067	0.019	0.064	3.855
Total Emissions (lb/hr)	0.006	0.000	0.003	0.001	0.003	0.161

**Table 2. Heater Rates and VOC/HAP Emissions
Cranberry Pipeline Corporation - Martin's Branch Station**

Pollutant	Emission Factor	Emissions (tons/year)
Criteria Pollutants		
PM/PM10/PM2.5	7.6 lb/MMcf (1)	0.049
SO ₂	0.6 lb/MMcf (1)	0.004
NOx	100 lb/MMcf (2)	0.644
CO	84 lb/MMcf (2)	0.541
VOC	5.5 lb/MMcf (1)	0.035
Hazardous Air Pollutants		
Arsenic	2.0E-04 lb/MMcf (3)	0.000
Benzene	2.1E-03 lb/MMcf (4)	0.000
Beryllium	1.2E-05 lb/MMcf (3)	0.000
Cadmium	1.1E-03 lb/MMcf (3)	0.000
Chromium	1.4E-03 lb/MMcf (3)	0.000
Cobalt	8.4E-05 lb/MMcf (3)	0.000
Dichlorobenzene	1.2E-03 lb/MMcf (4)	0.000
Formaldehyde	7.5E-02 lb/MMcf (4)	0.000
Hexane	1.8E+00 lb/MMcf (4)	0.012
Lead	5.0E-04 lb/MMcf (3)	0.000
Manganese	3.8E-04 lb/MMcf (3)	0.000
Mercury	2.6E-04 lb/MMcf (3)	0.000
Naphthalene	6.1E-04 lb/MMcf (4)	0.000
Nickel	2.1E-03 lb/MMcf (3)	0.000
PAH/POM	1.3E-03 lb/MMcf (4)	0.000
Selenium	2.4E-05 lb/MMcf (3)	0.000
Toluene	3.4E-03 lb/MMcf (4)	0.000
Total HAP	1.9E+00 lb/MMCF	0.012
Greenhouse Gas Emissions		
CO ₂	116.89 lb/MMBtu (5)	767.961
CH ₄	2.2E-03 lb/MMBtu (5)	0.014
N ₂ O	0.0 lb/MMBtu (5)	0.000
CO ₂ e ^(b)	-	768.323

Calculations:

(a) Annual emissions (tons/yr) = [Annual Usage (MMBtu/yr or MMCF/yr)] x [Number of Identical Heaters] x [Emission Factor (lb/MMBtu or lb/MMCF)] / [2,000 lb/ton]

Number of Heaters= 1
 Fuel Use (MMBtu/hr) = 1.5
 Hours of Operation (hr/yr)= 8760
 MMBtu/MMcf= 1020
 PTE Fuel Use (MMcf/yr) = 12.9

(b) CO₂ equivalent = [(CO₂ emissions)*(GWP_{CO2})]+[(CH₄ emissions)*(GWP_{CH4})]+[(N₂O emissions)*(GWP_{N2O})]
 Global Warming Potential (GWP)

CO ₂	1	(6)
CH ₄	25	(6)
N ₂ O	298	(6)

Notes:

- (1) AP-42, Chapter 1.4, Table 1.4-2. Emission Factors For Criteria Pollutants and Greenhouse Gases From Natural Gas Combustion, July 1998.
- (2) AP-42, Chapter 1.4, Table 1.4-1. Emission Factors For Nitrogen Oxides (Nox) and Carbon Monoxide(CO) From Natural Gas Combustion, July 1998.
- (3) AP-42, Chapter 1.4, Table 1.4-4. Emission Factors For Metals From Natural Gas Combustion, July 1998.
- (4) AP-42, Chapter 1.4, Table 1.4-3. Emission Factors for Speciated Organic Compounds from Natural Gas Combustion, July 1998.
- (5) Emission factors are from 40 CFR 98, Subpart C, Table C-1 and C-2.
- (6) Global Warming Potentials obtained from 40 CFR 98, Subpart A, Table A-1

**Table 3. Tank Emissions
Cranberry Pipeline Corporation - Martin's Branch Station**

Emission Unit	Tank Contents	Control Devices	Tank Throughput (bbls/day)	Flashing/Working/Breathing Em. Factor (lbs/bbls)		VOC Emissions (lbs/day)	VOC Emissions (lb/hr)	VOC Emissions (tons/yr)
T01	Produced Liquids	None	5	0.350	(1)	1.75	0.07	0.32

Note: This tank is filled by the liquids removed compressor suction pots.

Calculations:

Notes:

(1) Flashing/Working/Breathing losses calculated from pressurized liquid sample taken by FESCO and modeled using E+P Tanks 2.0
The sample was taken from the Putnam B6 site on 4-25-13 and is assumed to be representative worst case with respect to Hamon

**Table 4. Natural Gas Compressor Engine Data Sheet
Cranberry Pipeline Corporation - Martin's Branch Station**

Pollutant	Emission Factor	PTE (lb/hr)	PTE ^(a) (tons/yr)
Criteria Pollutants			
PM/PM10/PM2.5	3.84E-02 lb/MMBtu (1)	0.112	0.489
SO ₂	5.88E-04 lb/MMBtu (1)	0.002	0.007
NO _x	3.17E+00 lb/MMBtu (1)	9.218	40.376
CO	3.86E-01 lb/MMBtu (1)	1.122	4.916
VOC	1.20E-01 lb/MMBtu (1)	0.349	1.528
Hazardous Air Pollutants			
1,1,2,2-Tetrachloroethane	6.63E-05 lb/MMBtu (1)	1.93E-04	8.44E-04
1,1,2-Trichloroethane	5.27E-05 lb/MMBtu (1)	1.53E-04	6.71E-04
1,3-Butadiene	8.20E-04 lb/MMBtu (1)	2.38E-03	1.04E-02
1,3-Dichloropropene	4.38E-05 lb/MMBtu (1)	1.27E-04	5.58E-04
2-Methylnaphthalene	2.14E-05 lb/MMBtu (1)	6.22E-05	2.73E-04
2,2,4-Trimethylpentane	8.46E-04 lb/MMBtu (1)	2.46E-03	1.08E-02
Acetaldehyde	7.76E-03 lb/MMBtu (1)	2.26E-02	9.88E-02
Acrolein	7.78E-03 lb/MMBtu (1)	2.26E-02	9.91E-02
Benzene	1.94E-03 lb/MMBtu (1)	5.64E-03	2.47E-02
Carbon Tetrachloride	6.07E-05 lb/MMBtu (1)	1.77E-04	7.73E-04
Chlorobenzene	4.44E-05 lb/MMBtu (1)	1.29E-04	5.66E-04
Chloroform	4.71E-05 lb/MMBtu (1)	1.37E-04	6.00E-04
Ethylbenzene	1.08E-05 lb/MMBtu (1)	3.14E-05	1.38E-04
Ethylene Dibromide	7.34E-05 lb/MMBtu (1)	2.13E-04	9.35E-04
Formaldehyde	5.52E-02 lb/MMBtu (1)	1.61E-01	7.03E-01
Methanol	2.48E-03 lb/MMBtu (1)	7.21E-03	3.16E-02
Methylene Chloride	1.47E-04 lb/MMBtu (1)	4.27E-04	1.87E-03
Naphthalene	9.63E-05 lb/MMBtu (1)	2.80E-04	1.23E-03
PAH (POM)	1.34E-04 lb/MMBtu (1)	3.90E-04	1.71E-03
Styrene	5.48E-05 lb/MMBtu (1)	1.59E-04	6.98E-04
Toluene	9.63E-04 lb/MMBtu (1)	2.80E-03	1.23E-02
Vinyl Chloride	2.47E-05 lb/MMBtu (1)	7.18E-05	3.15E-04
Xylenes	2.68E-04 lb/MMBtu (1)	7.79E-04	3.41E-03
Total HAP		0.230	1.01
Greenhouse Gas Emissions			
CO ₂	116.98 lb/MMBtu (3)	340.18	1.49E+03
CH ₄	2.2E-03 lb/MMBtu (3)	6.41E-03	2.81E-02
N ₂ O	2.2E-04 lb/MMBtu (3)	6.41E-04	2.81E-03
CO ₂ e ^(b)	-	340.18	1491.52

Calculations:

(a) Annual emissions (tons/yr) = [Emission Factor (lbs/MMBtu)] x [Hours of Operation (hrs/yr)] x [BSFC (cf/hr)] x [1/Heat Content (Btu/scf)] / [1,000,000 (BTU/MMBtu)] / [2,000 lb/ton] x [Number of engines]

Annual emissions (tons/yr) = [Emission Factor (g/kW-hr)]x[Power Output (kW)] x [Hours of Operation (hrs/yr)] x [Number of engines]x[1.10231131x10⁻⁶(ton/gram)]

Engine Power Output (kW) =	298.3	
Engine Power Output (hp) =	400.0	
Number of engines Operating at a Time =	1	
Fuel Throughput (cf/hr) =	2967	
BSFC (Btu/hp-hr) =	7,270	(2)
Heat Content Natural Gas(Btu/scf) =	980.0	(4)
PTE Hours of Operation =	8,760	

(b) CO₂ equivalent = [(CO₂ emissions)*(GWP_{CO2})]+[(CH₄ emissions)*(GWP_{CH4})]+[(N₂O emissions)*(GWP_{N2O})]
Global Warming Potential (GWP)

CO ₂	1	(5)
CH ₄	25	(5)
N ₂ O	298	(5)

Notes:

(1) AP-42, Chapter 3.2, Table 3.2-1. *Natural Gas-fired Reciprocating Engines (7100)*. Uncontrolled Emission Factors for 2-Stroke Lean-Burn Engines.

(2) Emission factors from **Manufacturer's** spec sheet of typical 2SLB for White Superior

(3) Emission factors are from 40 CFR 98, Subpart C, C-2.

(4) Default natural gas heat value

(5) Global Warming Potentials obtained from 40 CFR 98, Subpart A, Table A-1

**Table 5. Fugitive Leak Emissions
Cranberry Pipeline Corporation -Martin's Branch Station**

Pollutant	Emission Factor	PTE ^(a) Gas Service (tons/yr)
Valves	9.9E-03 lb/hr/source (1)	21.72
Low Bleed Pneumatic Valves	9.9E-03 lb/hr/source (1)	4.34
Flanges	8.6E-04 lb/hr/source (1)	4.52
Connector	4.4E-04 lb/hr/source (1)	2.32
Other Points in Gas Service	1.9E-02 lb/hr/source (1)	37.46
Total Gas Released	-	70.36
Total VOC Released (gas service)	(b)	17.59
Calculations:	CO2e	408.99

(a) Annual emissions (tons/yr) = [Emission Factor (lb/hr/source)] x [Number of Sources] x [Hours of Operation per Year] x [0.0005 tons/lb]

(b) Gas sample from Hamon gas analysis as worst case at 23 wt % VOC

Number of Components in Gas Service

Valves=	500	(2)
Low Bleed Pneumatic Valves=	100	(2)
Connectors=	1,200	(2)
Other Points in Gas Service =	200	(2)
 Maximum Hour of Operation =	 8,750	

(1) Emission factors from 1995 EPA Protocol for Equipment Leak Emission Estimates, Table 2-4 Oil and Gas Production

(2) Like kind site estimate from GP12.1 LDAR Count

**Table 6. Truck Loading (TL) VOC Emissions
Cranberry Pipeline Corporation -Martin's Branch Station**

Contents	Volume Transferred ^s	Loading Loss ^(a) (lb VOC/1000gal)	PTE VOC Emissions (lb/hr)	PTE VOC Emissions (ton/yr) ^(b)
Pipeline Liquids	76,650 gal/yr	3.659	0.032	0.105
Total			0.032	0.105

Calculations:

(a) Loading Loss (lbs/1000 gal) = 12.46x[Saturation Factor] x [True Vapor Pressure of Liquid Loaded (psia)] x[Molecular Weight of Vapors(lbs/lbmole)]/[Temperature of Bulk Liquid Loaded(*R)]

(b) Annual Emissions(tons/yr) = [Loading Loss (lb VOC/ 1000 gal)]*[Volume Transferred(gal/yr)]/1000/2000

	<u>Pipeline liquids</u>	
Saturation factor	0.60	Note ⁽¹⁾
Pvap (psia)	7.70	Note ⁽²⁾
Molecular Weight Vap (lb/lbmol)	33.37	Note ⁽²⁾
Bulk Liquid Temperature (F)	65.00	Note ⁽²⁾

Notes:

(1) AP-42 Section 5.2

(2) Putnam B6 Compressor Station Pressurized Separator Sampling and Emission Estimation Report, August 2013

(3) Annual rates based on maximum throughput of 5 bbls/d

CABOT OIL & GAS CORPORATION
MARTIN'S BRANCH COMPRESSOR STATION
ROCKY FORK COMPRESSOR STATION

2003 BOTH WERE TITLE V FACILITIES
IN 2004 BOTH WERE PLACED IN A NON-MAJOR SOURCE
OPERATING FEE PROGRAM

SEE THE (3) THREE LETTERS ATTACHED
DATED NOVEMBER 2004



west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304

Bob Wise, Governor
Stephane R. Timmermeyer, Cabinet Secretary
www.wvdep.org

November 17, 2004

Mr. Thomas Liberatore
Vice President, Appalachian Region
Cabot Oil & Gas Corporation
900 Lee Street East, Suite 500
Huntington Square
Charleston, WV 25301

Re: Martin's Branch Compressor Station
Kanawha County
R30-03900045-1996

Dear Mr. Liberatore:

With the information submitted on November 5, 2004 concerning the retirement of the Cooper GMV-H6 natural gas fired compressor engine and the supplemental information contained in your revised Certified Emission Statement Registration Form submitted on November 10, 2004, the Martin's Branch Compressor Station is no longer considered a major Title V source.

The Title V Operating Permit for this facility will be placed as inactive and the facility will now be placed in the 45CSR22 non-major source operating fee program. You will soon be receiving an application for a Rule 22 Certificate to Operate.

If you have questions concerning the Rule 22 fee program, please contact Ms. Jan Newton at 304.926.0499 ext. 1228.

Sincerely,

John A. Benedict,
Director

C: Jan Newton

Promoting a healthy environment.



Cabot Oil & Gas Corporation

November 8, 2004

Hand Delivered

Director
WVDEP - Division of Air Quality
601-57th Street
Charleston, WV 25304

Title V Permit Termination
Cabot Oil & Gas Corporation
Martin's Branch Compressor Station Plant I.D. 03-054-039-00025
Rocky Fork Compressor Station Plant I.D. 03-54-039-00219

Dear Director:

Per a telephone request from Mr. Jay Fedezak for certain supplemental information to its November 2, 2004 submission, this letter is again requesting Title V Permit Termination for Cabot Oil & Gas Corporation's Martin's Branch Compressor Station and Rocky Fork Compressor station, both located near Sissonville, West Virginia.

Accompanying this letter are Certified Emissions Statement (CES) Applicability Forms for both stations. When applicability was determined, in 1994, both stations were determined to be subject as a result of potential emissions of one or more criteria pollutants equal to, or greater than, 100 tons per year. The stations were not subject because of the potential to emit Hazardous Air Pollutants (HAP), applicability of a New Source Performance Standard (NSPS), applicability of a National Emission Standard for Hazardous Air Pollutants (NESHAP), nor applicability of Title IV. Further, none of these triggers has been met since that time.

Please be aware that the CES forms include emissions of formaldehyde, the largest single HAP. The HAP Total is for all identified HAPs.

Attached to this letter are documents, previously submitted, requesting the termination of the Title V permits for these two (2) stations. If you have any questions, or need any additional information, please contact Mr. Michael Goff at 304-347-1664.

Sincerely,

Thomas Liberatore
Vice President, Appalachian Region

Cc: Michael Goff, COGIC
Joe Morgan, FRSU

RECEIVED

NOV 11 2004

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SECTION III. SPECIFIC REQUIREMENTS

A. EMISSION POINTS AND POLLUTION CONTROL DEVICES

The following table provides a list of all sources of air pollutant emissions authorized to operate by this permit at the subject facility:

Source ID	Emission Point ID	Equipment Description	Design Capacity	Year Installed
#1	001-02	Reciprocating Engine/Integral Compressor; Cooper Bessemer GMV D-6; Serial # 45004	400 HP	1972
#2	001-03	Reciprocating Engine/Integral Compressor; Cooper Bessemer GMV H-6; Serial # 48366	1350 HP	1983
Dehy	001-04	TEG Dehydration Unit; Sivalls; Serial # 37496 Contains a reboiler.- Sivalls	2.5 MM ³ /hr 0.75 MMBtu/hr	1983
004	001-06	TEG Dehydrator Vent	N/A	N/A
Tank 001	001-07	Drip Tank No. 1; Above ground vertical fixed roof	4200 gallon	1972
Tank 002	001-08	Engine Oil Tank No. 1; Above ground vertical fixed roof	1470gallon	1972

B. INSIGNIFICANT ACTIVITIES LIST

The following is a list of all insignificant emission units or activities which may be operated at this facility: C.S.R. § 45-30-3.2.d

1. Air compressors and pneumatically operated equipment, including hand tools.
2. Any consumer product used in the same manner as in normal consumer use, provided the use results in a duration and frequency of exposure which are not greater than those experienced by consumers, and which may include, but not limited to, personal use items; janitorial cleaning supplies, office supplies and supplies to maintain copying equipment.
3. Bathroom/toilet vent emissions.
4. Brazing, soldering or welding equipment used as an auxiliary to the principal equipment at the source.
5. Combustion emissions from propulsion of mobile sources, except for vessel emissions from Outer Continental Shelf sources.
6. Combustion units designed and used exclusively for comfort heating that used liquid petroleum gas or natural gas as fuel.