UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Inspection Date(s):	October 16, 2018
Regulatory Program(s):	SIP, NSPS
Company name:	EdgeMarc Energy Holdings
Facility Name:	Ursa Minor, Draco, Morrow, Lynx, Sculptor, and Cratty well pads
Facility Physical Locations:	See attachment 1 for details.
Mailing Address:	1800 Main Street, Suite 220 Canonsburg, PA 15317
County/Parish:	Butler County
Facility Contact:	Kay Thomas, Sr. Environmental/Compliance Specialist [HYPERLINK "mailto:kthomas@edgemarcenergy.com"], (412) 677-4071
Permit Number:	Exemption 38 (no permit number)
NAICS:	211111 for Crude Petroleum and Natural Gas Extraction
SIC:	1311 for Crude Petroleum and Natural Gas

Attendees:

Facility Representatives:

Kay Thomas, Sr. Environmental/Compliance Specialist, (412) 677-4071
Jeffery R. Dierdorf, HSE Director, (412) 564-1287
Kevin Eshbaugh, Production Manager
Bill King, Facilities Manger

EPA Inspectors:

Cary Secrest, US EPA Headquarters, 2242A, (202) 564-8661
James Riggs, US EPA Region III, 3AP20, (215) 814-2238

EPA Lead Inspector Signature/Date	**Cary Secrest**	**Date**
EPA Inspector Signature/Date	**James Riggs**	**Date**
Supervisor Signature/Date	**Amelie Isin**	**Date**

I. Introduction

The Environmental Protection Agency (EPA) targeted seven EdgeMarc Energy Holdings (EdgeMarc) well pads for a full compliance evaluation of the Clean Air Act (CAA) and to verify compliance with permitting requirements and applicable State and Federal regulations. The Pennsylvania Department of Environmental Protection (PADEP) was notified of the inspection, however they were not able to attend the inspection. On October 11, 2018, the EPA notified Kay Thomas of EdgeMarc by phone and email of the CAA inspection to be conducted on October 16, 2018.

A. Summary of the Facility-

EdgeMarc is a privately held company, headquartered in Canonsburg, PA, which employs around 50 people. EdgeMarc began operations in 2012. At the time of the inspection, six well pads are producing in Butler County, with the rest being shut in due to a recent natural gas pipeline explosion. According to information on their website[1], EdgeMarc has drilled 52 wells in Butler County, Pennsylvania and five (5) wells in Monroe County, Ohio.

EPA visited the Ursa Minor, Draco, Morrow, Lynx, Dorodo, Sculptor, and Cratty well pads. Each well pad is owned and operated by EdgeMarc and is located in Butler County, PA. These sites were selected for inspection because, along with natural gas, they produce and store natural gas liquid condensate on site. The wells at these sites were horizontally drilled and hydraulically fractured to extract natural gas from underlying shale gas plays. EdgeMarc operates these well pads under the North American Industrial Classification System code 21111 for crude petroleum and natural gas extraction. The well pads are subject to the requirements of either 40 CFR Part 60, Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which Construction, Modification or Reconstruction Commenced...August 23, 2011, and on or before September 18, 2015 or 40 CFR Part 60, Subpart OOOOa - Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015.

EdgeMarc has claimed that the Ursa Minor, Draco, Morrow, Lynx, Dorodo, and Cratty well pads have meet the requirements of the Pennsylvania Category No. 38 Exemption and therefore do not have state issued operating permits. The Category No. 38 Exemption demonstration and letter for the Sculptor well pad is due to the PADEP in December 2018 since the flowback phase had only recently began at the time of the inspection.

The Category No. 38 Exemption has the following criteria[2]:

Sources	Exemption Eligibility Criteria
Flowback	•Reduced Emission Completions (Green Completions) are required under 40 CFR Part 60, Subparts OOOO and OOOOa.

[1] http://www.edgemarcenergy.com/operations/

[2]Bhatt, Naishadh. "Overview and Implementation of Category No. 38 Exemption Criteria." PADEP, July 22, 2015, [HYPERLINK "http://files.dep.state.pa.us/Air/AirQuality/AQPortalFiles/Permits/gp/Exemption_38_Overview_Presentation_7-22-2015.pdf"]

Fugitive Leaks	•The entire well pad/facility is subject to a leak detection and repair (LDAR) program using a FLIR camera or other DEP- approved detection devices. • Initial inspection within 60 days after a well is put into production. • LDAR inspections must be conducted annually thereafter. • Leaks must be repaired within 15 day unless the facility shutdowns or ordering of replacement parts are necessary for repair of the leaks. • Leaks are considered repaired using either of the following criteria: -the methane (CH4) concentration is 2.5% or less and a VOC concentration of 500 PPM or less; -no visible leak is detected using an optical imaging camera; or -other DEP-approved detection methods.
Storage Tanks/Storage Vessels or other Equipment (e.g. truck load-out)	• Limit facility wide total VOC emissions to less than 2.7 tons per year. • If not, install controls capable of achieving VOC emission reduction of 95% or greater. • Owners or operators of storage tanks/storage vessels must comply with the Subparts OOOO and OOOOa requirements.
Non-road Engines	• Non-road engines are subject to the Tier 1-Tier 4 requirements specified in 40 CFR Part 89.
Flaring Activities	• Enclosed combustion device including an enclosed flare must be used for all permanent flaring operations. • Flaring operations must be designed and operated in accordance with 40 CFR § 60.18.
Stationary IC Engines	• Combined facility NOx emissions must be less than 100 lbs/hr, 1000 lbs/day, 2.75 tons per ozone season, and 6.6 tons per year on a 12-month rolling basis.

B. Inspection Opening Conference-

EPA Region III inspector James Riggs and EPA Office of Enforcement and Compliance Assurance inspector Cary Secrest met with EdgeMarc representatives at approximately 08:30 on October 16, 2018 for an announced inspection of well pads in Butler County, PA. Inspectors met with Kay Thomas, Sr. Environmental/Compliance Specialist, and Jeffery Dierdorf, HSE Director, of EdgeMarc. EPA inspectors explained that EdgeMarc was targeted for inspection as part of a national enforcement initiative investigating energy extraction operations. EPA inspectors further explained that any information gathered during the inspections would be treated as confidential business information (CBI) in accordance to EPA's CBI policy, but only if EdgeMarc made a claim of CBI. EdgeMarc did not claim any information as CBI during the opening conference. EPA inspectors explained that they would be using a FLIR optical gas imaging camera to look for any leaking components and to determine if flares were combusting

efficiently. An Ion Science PhoCheck Tiger Photo Ionization Detector (PID) – serial number T-106050 – was brought as well to verify and quantify any observed leaks.

As per the requirements of Exemption 38, EdgeMarc conducts annual LDAR monitoring using an approved optical gas imaging camera. This approved LDAR program is performed by a contract with Montrose Environmental. EdgeMarc also contracts HRP Associates to generate all reports and emissions calculations required by State and Federal regulations.

After a safety discussion, during which EdgeMarc provided four-gas meters for EPA use, the inspection team left the hotel lobby for the Ursa Minor well pad at 08:50.

II. Process Overview

The wells at each well pad were horizontally drilled and hydraulically fractured in order to extract natural gas and condensate from either the Marcellus or Utica shale play. Each well head has an associated gas processing unit (GPU). The GPUs are equipped with a glycol bath, auto choke, three-phase separator, and two Coriolis meters. The glycol bath raises the temperature of the well stream fluid which assists with fluid separation in the next steps. The auto choke controls the flow of well stream fluid into the GPU. The auto choke can be used to remotely or manually maintain the pressure in the well stream fluid. The three-phase separator uses gravity to separate condensate, natural gas, and process water based on the differences in density. The Coriolis meters are used to monitor the flow rate and density of fluids in the GPU outlet line.

After the GPU's, natural gas is sent through a glycol dehydrator. These units further remove moisture from the gas line before it enters the sales line and travels off-site. Emissions from the glycol dehydrator are vented to enclosed flares. Process water and condensate are stored onsite in 400 BBL fixed roof tanks. Tank emissions – mainly volatile organic compounds – are condensed by a Vapor Recovery Tower (VRT) and directed back into the tank. The portion of the tank emissions that aren't captured by the VRT are sent through a shared header line to an enclosed flare and combusted. EdgeMarc is required to operate the flares at 98% efficiency. The shared header line has a pressure relief valve (PRV) to prevent unsafe pressure conditions in associated piping and tanks. The PRV is set to 16 ounces per square inch. Each tank also has a thief hatch. These are used to take samples and to prevent unsafe pressure conditions in the tanks.

III. Plant Tour/Walkthrough

Ursa Minor Well Pad:

At 09:50, the inspection team arrived at the Ursa Minor well pad. There, they met with Bill King, Facilities Manager, and Kevin Eshbaugh, Production Manager. Ursa Minor well pad is located at 205 Whitmire Road, West Sunbury, Pennsylvania and includes eight (8) wells only one (1) of which (API #37-019-22325) was producing at the time of the inspection. There are three (3) process water tanks and three (3) condensate tanks on site. No leaks were observed at the wellheads, GPU's, tanks, or any associated piping. One leaked was observed in the piping associated with the flare and was repaired by EdgeMarc employee's during the inspection. The vapor recovery unit was observed to be operating at 542 degrees Fahrenheit. The inspection team left the Ursa Minor well pad at 10:44.

Draco Well Pad:

At 10:46, the inspection team arrived at the Draco well pad. Draco well pad is located at 160 Whitmire Road, West Sunbury, Pennsylvania and includes six (6) wells. This pad was shut in at the time of the inspection, meaning no wells were producing and no GPU's were in operation. There are three (3) process water tanks and three (3) condensate tanks on site. The tanks were approximately one fifth full and the flare was in operation. No emissions were observed from any sources on site. The inspection team left the Draco well pad at 11:05.

Morrow Well Pad:

At 11:15, the inspection team arrived at the Morrow well pad. Morrow well pad is located at 542 Boydstown Road, West Sunbury, Pennsylvania and includes two (2) wells, both of which (API# 37-19-22-75-00 and #37-019-022061-01) were operating during the inspection. There are two (2) process water tanks and two (2) condensate tanks on site. These tanks were approximately half full during the inspection. The flare pilot light was on during the inspection and the vapor recovery unit recorded a temperature of 165 degrees Fahrenheit. No leaks were observed at the wellheads, GPU's, tanks, or any associated piping. The inspection team left the Morrow well pad at approximately 11:35.

Lynx Well Pad:

At ll:39, the inspection team arrived at the Lynx well pad. Lynx well pad is located at 435 Boydstown Road, West Sunbury, Pennsylvania and includes nine (9) wells, two (2) of which (API# 37-019-22414-00 and #37-019-22405-00) were producing during the inspection. There are two (2) process water tanks and two (2) condensate tanks on site. These tanks were mostly empty during the inspection as they had been recently loaded out. The flare was in operation during the inspection and the vapor recovery unit was observed to be operating at 429 degrees Fahrenheit. No leaks were observed at the wellheads, GPU's, tanks, or any associated piping. The inspection team left the Lynx well pad at 12:10 and broke for lunch.

Dorodo Well Pad:

During the preparation for the inspections, EPA intended to visit the Dorodo well pad, however, the pad was discovered to be shut in. In addition, the access road was inaccessible due to construction. Therefore, the inspection team decided to skip the Dorodo well pad.

Sculptor Well Pad:

At 13:37, the inspection team arrived at the Sculptor well pad. Sculptor well pad is located at 875 Maple Furnace Road, Parker, Pennsylvania and includes twelve (12) wells, nine (9) of which (API#37-019-22666, #37-019-22665, #37-019-22669, #37-019-22668, #37-019-22670, #37-019-22671, #37-019-22672, #37-019-22674, and #37-019-22673) were producing during the inspection. There are two (2) process water tanks and two (2) condensate tanks on site. No leaks were observed at the tanks. This well pad was completed in July 2018 and still has

a fresh water impoundment on site. It was being emptied during the inspection. Downwind of the fresh water impoundment, the PID read approximately 20-70 parts per billion (ppb), however, no emissions were observed with the FLIR camera. Unlike other well pads, these well heads were equipped with sand separators which are used to remove sand particles and other solids from the well stream fluid prior to processing at the GPU's. No leaks were observed at the well heads. Also, unlike other well pads inspected, there are seven enclosed flares at this site. A leak was observed on a knockout pot associated with the largest flare. This leak, approximately 81 ppm, was visible with the FLIR camera and was isolated and fixed by EdgeMarc employees shortly after discovery. Another leak was observed on the piping associated with the glycol dehydrator. This leak, approximately 50 ppb, was pointed out to EdgeMarc employees, but not repaired during the inspection as the process was running and would have had to be taken down prior to repair. No other leaks were observed during the inspection. The inspection team left the Sculptor well pad at approximately 15:00.

Cratty Well Pad:

At 15:07, the inspection team arrived at the Cratty well pad. Cratty well pad is located at 295 Sandy Point Road, Emlenton, Pennsylvania and includes two (2) wells, both of which (API# 37-019-22076-01 and #37-019-22172-00) were producing during the inspection. There are two (2) process water tanks and two (2) condensate tanks on site. The flare was in operation and at an observed temperature of 590 degrees Fahrenheit. No leaks were observed at the wellheads, GPU's, tanks, or any associated piping. The inspection team began the closing conference for the day's activities at the Cratty well pad at 15:20.

IV. Records Review

EPA inspectors reviewed the first half 2018 LDAR monitoring reports for the Cratty, Dorado, Lynx, Morrow, and Ursa Minor well pads. No issues were noted. No other records were reviewed during the inspection.

V. Closing Conference

The closing conference took place at 15:20 at the Cratty Well Pad. In attendance were James Riggs, Cary Secrest, Kay Thomson, Jeffery Dierdorf, Bill King, and Kevin Eshbaugh. The inspection team covered EPA's CBI policy and asked if EdgeMarc would like to claim any information as such. EdgeMarc did not declare any information as CBI at the time of the closing conference. The inspection team thanked EdgeMarc for their time and left the facility.

VI. Areas of Concern

The inspection team did not note any areas of concern based on information obtained during the inspection. Any leaks that were noted during the inspection were promptly addressed by EdgeMarc employees.

VII. List of Attachments

Attachment 1: Well Pad Addresses

Attachment 2: Photo and Video Log

1. Ursa Minor Well Pad Sign
2. Draco Well Pad Sign
3. Morrow Well Pad Sign
4. Morrow Well 7BH Sign
5. Morrow Well 1MH Sign
6. Process Water and Condensate Tanks (400 BBL each) at Morrow Well Pad
7. Gas Processing Units (GPUs) at Morrow Well Pad
8. Enclosed Flare at Morrow Well Pad
9. Lynx Well Pad Sign
10. Lynx Well 17BH Sign
11. Lynx Well 3MH Sign
12. Tank Far with attached Vapor Recovery Tower (VRT) at Lynx Well Pad
13. Sculptor Well Pad Sign
14. Sand Separator at Sculptor Well Pad
15. Sculptor Well 2MH Sign
16. Sculptor Well 1MH Sign
17. Sculptor Well 3MH Sign
18. Sculptor Well 5MH Sign
19. Sculptor Well 7MH Sign
20. Sculptor Well 6MH Sign
21. Sculptor Well 8MH Sign
22. Sculptor Well 10MH Sign
23. Sculptor Well 9MH Sign
24. Enclosed Flares at Sculptor Well Pad
25. Process Water and Condensate Tanks (400 BBL) at Sculptor Well Pad
26. Cratty Well Pad Sign
27. Cratty Well 1MH Sign
28. Cratty Well 7BH Sign

Attachment 3: Video Log

0318 – Ursa Minor Well Pad Flare Combustor Stack
0319 – Morrow Well Pad Flare Combustor Stack
0320 – Lynx Well Pad Flare Combustor Stack
0321 – Sculptor Well Pad Flare Combustor Stack
0322 – Cratty Well Pad Flare Combustor Stack