



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Four Penn Center – 1600 John F Kennedy Blvd
Philadelphia, Pennsylvania 19103-2852

Report Title: Clean Air Act Inspection of Blue Racer Natrium LLC
Inspection Date(s): March 21, 2023 – March 22, 2023
Regulatory Program(s): Title V, SIP, NSPS
Company Name: Blue Racer Midstream, LLC
Facility Name: Natrium Extraction and Fractionation Processing Plant
Facility Location: 14786 Energy Road
Proctor, WV 26055
Latitude: 39.7586 **Longitude:** -80.8595
County/Parish: Marshall County
AFS Number: WV00005100142
Permit Number: R30-05100142-2020
NAICS Code: 211112, 211130 **SIC:** 1321
Unique Project #: 3E23CA094A

Facility Representatives: **Point of Contact**

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See Attachment 2 for sign-in sheet showing all attendees.

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Signature	Bruce Augustine	Date
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Supervisor

Signature	Kristen Hall	Date
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I. Introduction

The United States Environmental Protection Agency (EPA) conducted a Clean Air Act (CAA) inspection at Blue Racer Midstream LLC's Natrium Processing Facility ("Natrium" or "the Facility") to verify compliance with applicable State and Federal regulations. The West Virginia Department of Environmental Protection (WVDEP) was notified of the inspection on February 22, 2023, via email. On March 16, 2023, EPA notified the Facility of the planned inspection via phone and email. EPA emailed a list of records for review to Jill Thornberry, prior to the inspection (see Attachment 1). EPA did not conduct a record review onsite and Blue Racer agreed to provide records at a later date.

A. Summary of the Facility

The Facility is located at 14786 Energy Road, Proctor WV. Construction commenced at the Facility in February 2012 and the first plant came online in May 2013. It was originally owned by Dominion, then was owned by a joint venture between Dominion and Caiman Energy (Blue Racer), and since approximately 2018 it has been owned by Blue Racer Midstream, LLC without Dominion. Blue Racer Midstream is headquartered in Dallas, TX and currently has operations in Eastern Ohio and West Virginia. The Facility operates as a cryogenic and fractionation gas processing facility and is capable of processing up to 200 MMscf of raw natural gas per day at each of their 4 cryogenic plants. The Facility receives nearly all its natural gas and combined natural gas liquids (NGLs) by pipeline from the area's natural gas well pads and compressor stations. Natrium also receives NGL via truck from another facility in Ohio. The incoming natural gas is de-watered using mole sieve dehydrators. The natural gas stream is then routed to one of four cryogenic plants rated at 200MMscf/day each to remove natural gas (methane) from NGL. The liquids which have been separated from the gas are sent to NGL storage before going to one of two fractionation plants rated at 65,000 bbl/day each¹. The Facility uses each of the fractionation plants to fractionate NGLs into distinct products (ethane, propane, butane, iso-butane, and natural gasoline). The finished products are stored on-site in either pressurized storage tanks or atmospheric storage tanks until they can be shipped off-site. Depending on the component, they can be shipped off-site by railcar, truck, pipeline, or barge. Some other processes which can create air emissions on-site are various heaters, ethane amine regenerators, glycol dehydration units, material storage tanks, product loading/unloading, and engines. The Blue Racer Natrium Facility operates 24 hours a day and 7 days week with approximately 70-75 full-time equivalent employees. Blue Racer Midstream, LLC operates compressor stations, a pump facility and related piping, but does not operate any well pads.

The Blue Racer Natrium Facility received a Title V major source permit (R30-05100142-2020) from WVDEP issued on April 14, 2020, with minor modifications being issued on April 20, 2021, and May 26, 2022.

¹ Blue Racer stated that Frac 1 is operating at 38,000 barrel/day while Frac2 is operating at 24,000-30,000 barrel/day.

The Blue Racer Midstream, LLC Facility is classified as a major source for Carbon Monoxide (CO), Nitrogen Oxides (NO_x), and Volatile Organic Compounds (VOCs). The Facility is subject to, or potentially subject to the following federal regulations:

- 40 CFR Part 60, Subpart Db: Industrial-Commercial-Institutional Steam Generating Units;
- 40 CFR Part 60, Subpart Dc: Small Industrial-Commercial-Institutional Steam Generating Units;
- 40 CFR Part 60, Subpart Kb: Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which construction, reconstruction, or modification commenced after July 23, 1984;
- 40 CFR Part 60, Subpart KKK: Equipment Leaks of VOC from Onshore Natural Gas Processing Plants for which construction, reconstruction, or modification commenced after January 20, 1984, and on or before August 23, 2011;
- 40 CFR Part 60, Subpart NNN: Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations;
- 40 CFR Part 60, Subpart OOOO: Crude Oil and Natural Gas Production, Transmission and Distribution for which construction, reconstruction, or modification commenced after August 23, 2011, and on or before September 18, 2015;
- 40 CFR Part 60, Subpart OOOOa: Crude Oil and Natural Gas Facilities for which construction, reconstruction, or modification commenced after September 18, 2015;
- 40 CFR Part 60, Subpart IIII: Stationary Compression Ignition Internal Combustion Engines;
- 40 CFR Part 60, Subpart JJJJ: Stationary Spark Ignition Internal Combustion Engines;
- 40 CFR Part 61: Asbestos inspection and removal;
- 40 CFR Part 63, Subpart HH: Oil and Natural Gas Production Facilities MACT;
- 40 CFR Part 63, Subpart ZZZZ: Stationary Reciprocating Internal Combustion Engines; and
- 40 CFR Part 82, Subpart F: Ozone depleting substances.

B. Inspection Opening Conference

At approximately 8:45AM on March 21, 2023, EPA inspectors arrived at the Facility for a CAA Inspection. After completing the required safety video, related quiz and a hot work permit for non-intrinsically safe devices, EPA inspectors conducted an opening conference starting at 9:50AM. Blue Racer Midstream, LLC was represented by Ken Seaver, Jill Thornberry, Jeff Walzer, Ryan Nicholson, John Neuhart, John Jones, Roger Clegg, Sean Adkins (telephonically), Steve Postlethwait, and Michael Jones. BrandSafway, who conducts Blue Racer's Leak Detection and Repair (LDAR) program, was also present and was represented by Shay Black and Ruby Drew (telephonically). Also, Denton McDerment from WVDEP/DAQ was present. EPA inspectors, Bruce Augustine and Dean DeLuca, presented their credentials and explained the purpose of the visit was to conduct a CAA inspection to determine compliance with their permit and any applicable regulations and that EPA would utilize a Forward Looking Infrared (FLIR)

Model GF320 camera, a Toxic Vapor Analyzer (TVA) and a digital camera. Additionally, EPA informed the facility representatives of their right to claim any confidential business information (CBI). At that time, Blue Racer representatives did not claim any photos or documentation as CBI.

II. Site Activity/Process Description

As mentioned earlier, Blue Racer started operations as a midstream facility in 2013 to fractionate natural gas and NGL's produced through unconventional (horizontal) well drilling in the area into distinct products (ethane, propane, butane, iso-butane, and natural gasoline). The Facility currently receives approximately 450,000,000scf of natural gas via pipeline at a pressure of 400-500psi. The excess water is removed from the gas stream and the pressure is increased to 1000psi. The excess water is sent to produced water storage tank onsite. As mentioned earlier, the site operates four cryogenic plants to remove methane and ethane from the received NGL's and is currently permitted for seven cryogenic plants. Blue Racer representatives stated that Cryo Plant 3 is not operating and only Cryo Plants 1, 2, and 4 are operating because of product demand. In addition, they indicated that Cryo Plant 1 came online while the Facility was under prior ownership while Cryo Plants 2-4 came online after Blue Racer Midstream acquired the Facility. Methane and ethane removed in the cryogenic plants is sent out of the facility via the C-151 pipeline. Each cryogenic plant has a regenerative heater to raise the temperature of the gas stream and are fired using natural gas. NGL removed in the cryogenic plants are sent to one of the two fractionation plants. Each of the fractionation plants is equipped with a de-ethanizer, de-propanizer, de-butanizer, and de-isobutanizer to remove the individual products from the NGL stream. The de-ethanizers are equipped with an amine treatment system to strip off any CO₂ and water from the ethane stream. The system uses heat from the cryogenic plant regenerative heater. Fractionation Train 1 (Frac 1) was built by previous owners of the Facility while Fractionation Train 2 (Frac 2) was built by Blue Racer Midstream. Once the products are separated in the fractionation plants they are sent to storage: Pressurized spheres (Propane, Butane, Iso-Butane) or tanks (Natural gasoline). Finished products are shipped from the Facility by the following methods: Propane (Rail, Barge, Truck); Butane (Pipeline, Rail); Natural Gasoline (Barge, Rail, Truck); Iso-butane (Rail).

Vapors from the process that are generated through normal operation or upset conditions are routed to one of two vapor recovery units (VRUs). The VRUs compress the vapors and return them to the process for further processing. The VRUs do not vent to the atmosphere. Examples of emission sources that vent to the VRUs include: a barge operation for natural gasoline; railcars for propane, butane, natural gasoline, or iso-butane; trucks for natural gasoline; and pipeline distribution for butane.

Under normal operating conditions, when the pressure in the header to the VRU is at or below nine (9) psi, the VRUs collect all gases and return them to the process. This volume of gas is

monitored and recorded. The VRUs are treated as part of the process and not as control devices. When Nine (9) psi is exceeded, the vapor stream is routed to the plant flare system. The flare is a set of non-assisted ground flares located within an enclosure with a single inlet line equipped with a flow meter to record the volume of gasses combusted. The new ground flare was installed in approximately 2015 and replaced a larger steam assisted flare.

Cryo Plant 1 and Frac 1 utilize a hot oil heater, that is rated at 214MMbtu/hr, to provide process heat and maintain temperatures in the process towers. The heater combusts residue gas and is equipped with a continuous emission monitoring system (CEMS) to constantly monitor and record NO_x emissions. In addition, there are 18 additional heaters at the site ranging from 9.7-61.58MMBtu/hr used at the cryogenic and fractionation plants. Each of these heaters combusts residue gas and most are equipped with low-NO_x burners as an emission control.

The Leak Detection and Repair (LDAR) program at the Facility is conducted for Blue Racer Natrium by a third party, BrandSafway, who has employees dedicated to this site. BrandSafway began conducting LDAR monitoring at this site in November 2016. LDAR monitoring is conducted at nearly the entire facility² and includes the monitoring of over 128,000³ components (valves, pumps, connectors). Blue Racer indicated that the LDAR components located in Cryo Plants 3 and 4 are certified low-emission valves and that some valves in Frac 2 are also low-emission technology. The facility stated they internally decided to move to Subpart OOOOa requirements, and this transition was completed at the end of June 2022, making the most recent semi-annual reporting period⁴ the first period with all components falling under these regulations. The component identification and tagging effort for the upgrade to NSPS OOOOa was conducted by BrandSafway. Blue Racer Midstream is currently utilizing the following monitoring frequencies: Valves (Quarterly); Pumps (Monthly); Connectors (Annual). Blue Racer's management of change process requires the facility to notify their LDAR contractor whenever process changes are made that may affect components in the LDAR program. Blue Racer representatives also indicated that new components placed into VOC service are monitored within 30 days.

When a leak is detected, BrandSafway stated their process is to tag the leaking component and inform Blue Racer's operations who would then take responsibility for repairs.

This site also has a portion of its operations located directly across the street: the truck loading/unloading operation; the raw inlet gas pipelines; the slug catching operation; and the pigging operation. Any emissions from the pigging operation are routed to the flare header. Blue

² Monitoring is not conducted at components not in VOC or HAP service (i.e., components in residue gas, fuel gas or amine service).

³ This includes approximately 18,000 valves and 110,000 connectors.

⁴ This report was submitted in January 2023.

Racer stated they have the capability to conduct pigging within the main portion of their plant, as opposed to across the road, but is not likely to be used there again.

The opening conference concluded at 11:40AM.

III. Observations

EPA inspectors were led on a walkthrough of the Facility at 12:40PM by Jill Thornberry, Ken Seaver, Jeff Walzer of Blue Racer Natrium, LLC⁵, Shay Black of BrandSafway, and Denton McDerment of WVDEP were also present for the walkthrough. EPA inspectors noted photos would be taken during the Facility walkthrough (Attachment 3). The walkthrough started on the afternoon of March 21 and continued March 22.

Prior to initiating the walkthrough on March 21, the EPA inspectors turned on the FLIR camera and allowed it to cool down prior to conducting observations. The first part of the walkthrough consisted of monitoring for fugitive hydrocarbon emissions using the FLIR camera. During this day's inspection, it was approximately 60°F with no precipitation and only scattered cloud cover. The FLIR camera was used to observe the top of the flare enclosure and there were emissions detected exiting the enclosure which occurred at about 12:40PM. When the inspection team arrived at the flare viewing window, we were able to observe two lit flares.

The inspection team then proceeded to the railcar loading section of the Facility. Blue Racer indicated that there were not any railcars being loaded during this time, but a short walkthrough was completed using the FLIR camera to check for leaks.

The inspection team proceeded to Frac 1 to conduct additional monitoring with the FLIR camera. Frac 1 was operating at the time of the inspection. Blue Racer Midstream representatives stated that they are monitoring in their LDAR program the connector plugs on fin fans (process coolers). They treat this as connectors in the LDAR program.

The two flare VRUs were observed. One of the VRU's was out of service for maintenance. The produced water tank adjacent to the VRU's was observed as was the NGL inlet condensate stabilizer. The EPA inspection team climbed to the top of one of the propane spheres and natural gasoline tank 802 to conduct additional observations with the FLIR camera.

After completing the walkthrough with the FLIR camera, EPA turned on the Thermo TVA2020⁶ for warm-up and calibration. After calibrating the Thermo TVA, the EPA inspection team commenced LDAR monitoring in the truck loading area. Trucks were actively loading and unloading product during the monitoring. EPA monitored 56 components in this area and detected four leaks. Each of the leaks was confirmed by the BrandSafway contractor. The

⁵ Additional process operators and representatives from Blue Racer joined the walkthrough at various points.

⁶ Serial No. 202022116280.

inspection team then proceeded to the adjacent inlet area to continue LDAR monitoring. The inspection team concluded monitoring at 4:28PM.

Following the walkthrough portion, the inspection team re-convened in the office to review EPA's document request from March 16, 2023 and discuss any questions regarding the request. This concluded the first day of the inspection and EPA exited the facility at 5:07PM.

At 8:46AM on March 22, 2023, EPA inspectors returned to the Facility to commence the second day of the inspection. In addition to EPA and Denton McDerment from WVDEP/DAQ, Blue Racer Midstream, LLC was represented on the second day by Jill Thornberry, Jeff Walzer, and Ryan Nicholson. BrandSafway was also represented by Shay Black. EPA and Blue Racer representatives discussed the rail loading operation. The loading supervisor, Derek Wagnell, stated they load railcars at approximately 350 gallons/minute, but it varies depending on the number of railcars being loaded and that most railcars hold about 33,000 gallons. There are thirty rail loading racks at the facility and the Facility has scheduled four propane, three isobutane, three mixed butane, and eight natural gasoline railcars that day.

Prior to initiating the walkthrough on March 22, the EPA inspectors calibrated the Thermo TVA 2020 using BrandSafway's calibration gasses. During this day's inspection, it was approximately 50°F with no precipitation and cloudy skies. The inspection team began LDAR monitoring in the railcar loading area at 10:10AM. After leaving the railcar loading area, the inspection team observed the flow meter to the flare. During the inspection, the total mass of gasses to the flare was 73,616,698 lbs with no current flow and the total volume was 943.81MMscf. However, while observing the meter the flow was alternating between approximately 550 lb/hr and 0 lbs/hr.

At 10:55AM, the inspection team proceeded to conduct LDAR monitoring at Frac 2 using the TVA. The team broke for lunch at 12:02PM and returned to the facility at 12:45PM.

At approximately 1:00PM on March 22, when the inspection team was preparing equipment, the flare could be audibly heard increasing operation. A large heat plume was visible above the flare enclosure and two FLIR videos of the plume were taken. Facility representatives stated the Cryo Plant 1 went down and that caused the flaring, however, the cause was not known at that time. Shortly thereafter, the inspection team reconvened in the conference room to review the CEMS data. The facility stated the CEMS is designed to compare compliance to the Subpart Db limits and will alarm for any exceedance of those standards. Blue Racer agreed to provide copies of the thirty day rolling average NO_x emissions for comparison with the NSPS Db and permit limits. In fact, the Facility NO_x limit is stricter than the NSPS Db limit.⁷ The following NO_x parameters were observed for the hot oil heater S001 during the review of CEMS data:

⁷ NSPS Db limit is 0.10 lb/MMBtu while Title V limit is 0.045 lb/MMBtu

Parameter	Observed	Limit
Fuel (gas)	104,462 scfh	225,571 scfh
Heat Input lb/MMBtu/hr	109.2	216.7
NO _x lb/hr	0.031	0.045

The instantaneous NO_x concentration observed was 22ppm. Blue Racer stated that fuel use is utilized as a substitute to calculate emissions when the CEMS is out of service. Blue Racer was also going to check if they calculate an annual capacity factor for the combustion units.

After exiting the conference room, the inspection team restarted the walkthrough of the plant and observed the CEMS shed for heater S001. The NO_x concentration at the shed was 16.7ppm. Two additional FLIR videos of the flare were also obtained at this time. At 2:02PM, the inspection team observed two fire pumps (952B and 952C). The hour meter was observed and the total hours for the two fire pumps were 277.4 and 242.08 hours, respectively. Both fire pumps operate for 30 minutes each week other than in emergency situations. At 2:15PM, the inspection team arrived the Cryo 2 plant. Four residue compressors and three inlet compressors were observed. The residue compressors are used to increase the pressure of natural gas leaving the Facility and entering the sales pipeline. The inlet compressors are used to increase the pressure of the gas entering the facility. All of the compressors at the Facility are electric and are therefore not subject to NSPS JJJJ or MACT ZZZZ. Three mole sieves and a turbo expander were observed in Cryo 2. Each of the cryogenic plants is equipped with three mole sieves and a turbo expander. The mole sieves are used to remove water from the gas stream while the turbo expander compresses the gas and acts as a refrigeration device. The gas from the turbo expander is sent to the de-ethanizers at the fractionation plants. The light ends from the de-ethanizer are sent to compression and the sales pipeline while the heavy ends from the bottom of the tower sent to the de-propanizer for additional processing.

At 3:02PM, the inspection team entered the plant operations control room. The inlet pressure to the plant from the inlet pipeline was 584psi and the Ohio Plant was sending 505 gallon/minute of NGL to the Facility. The flow rate of natural gas to the cryogenic plants at the time of the inspection totaled 501 MMSCF/day from the three cryogenic plants. The flow rate of NGL from the cryogenic plants to the fractionation plants was: 660gpm from Cryo 1, 386gpm from Cryo 2, and 360gpm from Cryo 4. The Facility was also feeding 530gpm of NGL into each de-ethanizer.

The walkthrough concluded at approximately 3:30PM and the EPA inspection team returned to the conference room.

IV. Records Review

EPA did not conduct records review onsite. Blue Racer provided limited records while onsite. Blue Racer did provide a copy of a facility plot plan while conducting the inspection. As

mentioned earlier, EPA and Blue Racer reviewed the records requested at the end of day on March 21 and EPA provided clarifications and adjusted timelines for the records requested. Blue Racer agreed to provide the remainder of the records requested within thirty (30) days⁸. In addition to the original records requested, EPA requested the following records while onsite:

1. The operational starting dates for each cryogenic unit;
2. The date each VRU commenced operation;
3. The date Blue Racer Midstream commenced operation of the Natrium Facility;
4. Flare flowrate on 3/21/2023 at 12:40PM and 3/22/2023 at 10:40AM and 1:00PM; and
5. Any documents related to the applicability of NSPS NNN.

V. Closing Conference

At 3:50PM, EPA inspectors, Denton McDerment of WVDEP, Blue Racer representatives (Jill Thornberry, Ryan Nicholson, Jeff Walzer, and Roger Clegg), Blue Racer representative on the phone (Sean Wilson, Sean Adkins, and Steve Lynch), and BrandSafway representatives Shay Black and Ruby Drew (telephonically) had a brief closing conference to ask additional questions and discuss observations. The EPA inspectors noted that the investigation is on-going, and any areas of concern identified in the final reports do not necessarily reflect a violation or deviation, rather, they are areas that will require further investigation. EPA also noted that they would issue an inspection report within in 60 days, with a copy to the State. EPA indicated that 161 valves were monitored via Method 21 using the TVA and two valve leaks were detected.⁹

Simultaneously, EPA will perform a detailed review of records and may have additional questions. EPA reiterated Blue Racer's right to claim any material as CBI and Blue Racer representatives stated that they were not claiming anything CBI at that time. The inspection concluded at 4:10PM.

The following have been identified as *potential* issues during the inspection. They are issues that require either further investigation by EPA or additional information or explanation by Blue Racer Natrium.

- During the inspection, potential excess emissions were observed using the FLIR camera from the top of the flare enclosure. Blue Racer's WVDEP permit requires the flare to achieve a VOC destruction and removal efficiency (DRE) of 98.0%. The potential exists the flare is undersized and/or not achieving the required DRE. EPA requested flare manufacturer data. See included FLIR videos in Attachment 4.
- During the inspection, Blue Racer indicated that the fractionation plants at the Facility are not subject to NSPS NNN. EPA indicated that other similar fractionation plants have

⁸ Blue Racer forwarded responsive documents to EPA via email on 4/21/23 and 5/4/23.

⁹ Two connector leaks were also detected and should be included in the Facility's leak program.

been determined to be subject to NSPS NNN and that NSPS NNN applicability has been included in previous multi-gas plant settlements. Blue Racer agreed to provide any relevant documents pertaining to NSPS NNN applicability and EPA is reviewing whether Blue Racer Natrium has processes which are applicable to NSPS NNN.

- EPA will conduct a review of the LDAR database provided by Blue Racer's third party LDAR contractor (BrandSafway) to determine if proper monitoring of affected components under NSPS OOOOa is being conducted. Additional questions may be generated by EPA as part of this review.
- NSPS KKK is listed as an applicable subpart in the existing Title V permit. The Facility has transitioned the entire site's LDAR program to the NSPS OOOOa regulations. References to NSPS KKK or NSPS OOOO should be removed from the permit.

VI. List of Attachments

- Attachment 1: Email correspondence to Jill Thornberry of records requested to review during inspection
- Attachment 2: Opening conference and closing conference sign-in sheets
- Attachment 3: Photo Log
- Attachment 4: FLIR Videos