



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 8**

1595 Wynkoop Street  
Denver, CO 80202-1129  
Phone 800-227-8917  
[www.epa.gov/region8](http://www.epa.gov/region8)

Ref: 8P-AR

Mr. Bob Georgius  
Operations Manager  
Merit Energy Company  
1501 Stampede Ave. #9010  
Cody, Wyoming 82414

Re: Merit Energy Company, Circle Ridge Tank Battery, Synthetic Minor New Source Review Permit Application

Dear Mr. Georgius:

On December 27, 2013, the U.S. Environmental Protection Agency Region 8 received an existing true minor source registration for the Circle Ridge Tank Battery (Circle Ridge), in accordance with the registration program for minor sources in Indian country at 40 CFR 49.160. On May 17, 2016, the EPA received an application from Marathon Oil Corporation (Marathon) requesting a synthetic minor new source review (SMNSR) permit for Circle Ridge, under the provisions of the Tribal Minor New Source Review (MNSR) Permit Program at 40 CFR 49.153(a)(3) and 49.158, to replace the existing source registration. The initial SMNSR application requested a permit to establish legally and practicably enforceable emission limits and reduce the potential to emit (PTE) of air pollutants at the facility below major source thresholds. On February 2, 2017, the EPA received notification that the owner and operator of the facility had changed to Merit Energy Company (Merit). The EPA received subsequent updates to the SMNSR application on November 15 and December 8, 2017, in response to requests for additional information. The EPA's Eric Wortman also held phone conversations on November 2, November 16, November 20, December 18, 2017 and March 12, 2018, with Michelle Koch, Merit's Regulatory and Government Affairs contact.

The EPA has reviewed the information in Merit's application and subsequent application updates (originally submitted by former owner/operator Marathon) requesting a SMNSR permit for Circle Ridge, located on Indian country lands within the Wind River Indian Reservation. In the December 8, 2017 application update, Merit indicated that the recycle compressor operating at the facility should be considered inherent to the process. If the recycle compressor is inherent process equipment (part of the physical and operational design of a facility), rather than control equipment, the source could incorporate the emissions reduction efficiencies of this equipment when calculating its PTE without the need to make those reductions legally and practicably enforceable. Based on our review of the information provided by Merit, the EPA agrees with Merit's conclusion that the recycle compressor operating at the facility is inherent process equipment. A more detailed analysis is included as an enclosure to this letter.

Thus, the emissions reductions from the recycle compressor can be accounted for in calculating the source's PTE for air pollutants, for the purposes of determining the applicability of Clean Air Act (CAA) permitting requirements. Please note the views expressed in this letter are based on the information provided by Merit on the current operations at the Circle Ridge facility and are specific to the recycle compressor. If Merit determines this information is inaccurate or incomplete, the EPA will need to evaluate the updated information. The EPA's conclusions may only be used to inform Merit's own analysis of the applicability of CAA permitting requirements and shall not be considered an applicability determination by the EPA that any CAA major source permitting requirements do not apply. Additionally, any future physical change or change in the method of operation at the facility should be evaluated for potential applicability to CAA permit programs.

This letter does not apply to equipment at other facilities, which must be evaluated separately on a source-specific, case-by-case basis to determine the applicable permitting and other regulatory requirements. Sources should consult with the appropriate permitting authority with any questions about specific equipment at their facilities.

After you have considered the conclusions in this letter, please let us know whether you believe that any updates to or withdrawal of Merit's pending SMNSR permit application are appropriate. If you have any questions concerning this letter, please contact Eric Wortman at (617) 918-1624.

Sincerely,

MONICA MATHEWS-  
MORALES

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Monica Mathews-Morales  
Director, Air Program  
Office of Partnerships and Regulatory Assistance

Enclosure

cc: Clint Wagon, Chairman, Eastern Shoshone Tribe  
Roy Brown, Chairman, Northern Arapaho Tribe  
Dean Goggles, Environmental Director, Environmental Program, Northern Arapaho Tribe  
Ryan Ortiz, Director Natural Resources, Environmental Program, Northern Arapaho Tribe  
Phoebe Wilson, Administrative Assistance, Eastern Shoshone Business Council  
Michelle Koch, Regulatory and Government Affairs Professional, Merit Energy Company

## Enclosure

### Introduction

The applicability of CAA requirements to a source, including major source permitting requirements, is often determined based on the PTE of the stationary source, equipment or activities being evaluated. In the case of Circle Ridge, the determination as to whether equipment is air pollution control equipment or inherent to the process affects the PTE calculations used in determining whether particular CAA requirements apply to the facility. The definition of PTE<sup>1</sup> at 40 CFR 49.152(d) states the following:

*Potential to emit means the maximum capacity of a source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is enforceable as a practical matter. Secondary emissions, as defined at §52.21(b)(18) of this chapter, do not count in determining the potential to emit of a source.*

### Prior EPA Analyses of Whether Equipment is Air Pollution Control Equipment or Process Equipment

The EPA has previously addressed whether specific equipment or activities at a stationary source can be treated as part of the source's physical or operational design for purposes of calculating a facility's PTE, or whether it should instead be treated as air pollution control equipment in those calculations. For example, the EPA analyzed this question for exhaust conditioners used in tool operations in the semiconductor industry in a November 27, 1995, letter from David S. Solomon, Acting Group Leader for EPA's Integrated Implementation Group, to Timothy J. Mohin, Government Affairs Manager for the Intel Government Affairs Office (the Intel letter). The letter is available at <https://www.epa.gov/sites/production/files/2015-07/documents/proequip.pdf>.

The Intel letter says, in part:

*For purposes of determining a source's [PTE], it is necessary to calculate the effect of air pollution control equipment. ... There are, however, situations for which case-by-case judgments are needed regarding whether a given device or strategy should be considered as air pollution control equipment, or as an inherent part of the process.*

The letter goes on to describe three (3) questions that the EPA believes should be considered in making such case-by-case judgments as to whether certain devices or practices should be treated as pollution controls or as inherent to the process. Specifically:

1. *Is the primary purpose of the equipment to control air pollution?*
2. *Where the equipment is recovering product, how do the cost savings from the product recovery compare to the cost of the equipment?*
3. *Would the equipment be installed if no air quality regulations are in place?*

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<sup>1</sup> See also 40 CFR 52.21(b)(4) (definition of PTE under the Prevention of Significant Deterioration [PSD] Permit Program that applies to permits for a new major source or major modification issued under the EPA's PSD permitting authority).

The Intel letter further states that “[i]f the answers to these questions suggest that equipment or practices should be considered an inherent part of the process, then the effect of the equipment or practices can be taken into account in calculating [PTE] regardless of whether enforceable limitations are in effect.” Intel letter at 2.

The EPA has cited the criteria identified in the Intel letter in other documents when evaluating whether equipment at a source is inherent to the process.<sup>2,3,4</sup> Similar to those other case-specific determinations, the EPA is using the same criteria to evaluate the specific circumstances associated with Circle Ridge to determine whether the recycle compressor can be treated as part of the source’s physical or operational design for purposes of calculating the facility’s PTE, or whether it should instead be treated as air pollution control equipment.

### **Circle Ridge: Current Process Description**

Circle Ridge is an oil and gas production facility. The following process description is based on the EPA’s review of information provided by Merit. Production from oil and natural gas wells in the area is delivered to Circle Ridge through six inlet free-water knockouts. From the free-water knockouts, the oil and natural gas emulsion is sent to three heater treaters for secondary separation of the gas, oil and produced water. The produced water that is separated from the free-water knockouts and heater treaters is routed to a 10,000 barrel (bbl) produced water skim tank. Oil that is separated out of the heater treaters is sent to a 400 bbl crude oil run tank before it is routed to a lease-activated custody transfer unit and then to the oil sales pipeline. Produced gas that is flashed off of the heater treaters is routed to a recycle compressor before being sent to a gas injection system for use in enhanced oil recovery (EOR). Vapors from the 10,000 bbl skim tank and crude oil run tank are collected by a vapor recovery unit and routed through the recycle compressor to the gas injection system for use in EOR.

The recycle compressor is used to capture produced gas for injection, along with purchased nitrogen, for EOR in a process called double displacement. Produced gas is vented to the atmosphere during recycle compressor down time. If gas injection is unavailable or the recycle compressor is not operational, pressure in the line will build and relieve to the flare at a backpressure valve. There is no readily available way to divert the gas stream from the flare to the atmosphere other than via a backpressure condition (i.e., there is no manual bypass valve to divert gas away from the flare). Due to the double displacement process, the produced gas in the field is nitrogen rich and the heating value is insufficient to burn in the onsite flare without the addition of significant amounts of supplemental gas. It is operationally difficult to supply additional gas to reliably sustain the flare due to the remote location, winter conditions and onsite storage logistics.

The recycle compressor unit is monitored by a Supervisory Control and Data Acquisition (SCADA) system. In the event of failure, the SCADA system registers an alarm and sends an automated call out to

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<sup>2</sup> See EPA letter from Richard Long, EPA Region 8, to Jim Hawke, OMG Americas Apex Operations, dated January 31, 2002. Determination of Whether Particulate Matter Collection Devices at OMG Apex Operations are Air Pollution Control Equipment or Process Equipment.

<sup>3</sup> See EPA letter from William Harnett, EPA Integration Division, to Edward Herbert III, National Ready Mixed Concrete Association, dated July 10, 2002. Available online at: <https://www.epa.gov/sites/production/files/2015-07/documents/readymix2.pdf>.

<sup>4</sup> See EPA letter from Carl Daly, EPA Region 8, to Robert Whisonant, Marathon Oil Company, dated August 15, 2011. Request for Additional Information for Steamboat Butte Operations.

on-call production maintenance personnel to investigate and make necessary repairs. Total repair time is dependent on the nature of the malfunction, historically ranging from minutes for a computer or electronic malfunction to hours for power outages or mechanical issues.<sup>5</sup>

## **Analysis**

1. *Is the primary purpose of the recycle compressor to control air pollution?*

Answer: No. Based on the EPA's review of information provided by Merit, the recycle compressor is used at the facility to capture produced gas from production equipment for injection, along with purchased nitrogen, for EOR in a process called double displacement. This secondary recovery process provides additional reservoir pressure to boost field production as the natural pressure of the production zone has declined and continues to decline over time. Circle Ridge began the EOR process in 2014 to boost oil production.

2. *Where the equipment is recovering product, how do the cost savings from the product recovery compare to the cost of the equipment?*

Answer: The recycle compressor unit routes produced gas to the gas injection system for EOR. Based on the EPA's review of information provided by Merit, even though production at Circle Ridge is possible without EOR, the EOR process significantly increases oil production in the field with estimated additional revenue measured in the millions of dollars. The cost of the recycle compressor system is less than \$50,000 and the associated cost savings (expressed in additional revenue) are orders of magnitude higher than the cost of the system. When the recycle compressor is inoperable, casing pressures in the wells rise, resulting in a noticeable decrease in total oil production. Merit indicated that without the recycle compressor and subsequent gas injection EOR process, field production and throughput at the facility would eventually decline to pre-EOR levels. Although Merit has not studied this issue to determine if the cessation of EOR would render field production economically infeasible, the recycle compressor was installed to support EOR. Merit has indicated that it would be cost prohibitive to cease gas injection for EOR in favor of nitrogen injection only, which would require purchases of additional nitrogen.

3. *Would the equipment be installed if no air quality regulations are in place?*

Answer: Yes. Based on the permit application provided by Merit, Circle Ridge is not subject to any air quality regulations requiring the use of a control device for produced gas-related emissions, and the EPA is not aware of any air quality regulations that would have required installation of the recycle compressor at the Circle Ridge facility. As noted above, the recycle compressor was installed at the facility to provide gas for EOR, along with purchased nitrogen.

## **Conclusion**

The EPA has reviewed information provided by Merit regarding its recycle compressor at the Circle Ridge facility. Based on this review, the EPA believes the information provided by Merit indicates that the recycle compressor was installed to capture produced gas for injection for EOR. Current production

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<sup>5</sup> Merit stated that between December 1, 2016, and November 15, 2017, the flare has only operated during a portion of 4 days for a maximum of 1.1% of total annual operating time due to the downtime of vapor recovery equipment.

operations at the facility capture the produced gas for beneficial reuse in a cost-effective gas injection process to boost field product recovery and reduce emissions that Merit would otherwise likely voluntarily flare. Additionally, the permit application provided by Merit indicates that the equipment at the facility is not subject to any air quality regulations that require the use of a control device. As a result, the EPA agrees with Merit's conclusion that the recycle compressor at the Circle Ridge facility is inherent to the process and should not be treated as a control device for purposes of PTE calculations. Therefore, the emission reductions from the recycle compressor can be accounted for in calculating the source's PTE for air pollutants emitted by the facility for the purposes of determining the applicability of major source permitting requirements under the CAA.

The views expressed herein are specific to the recycle compressor at the Circle Ridge facility. This review does not apply to equipment at other facilities, which must be evaluated separately on a source-specific, case-by-case basis to determine the applicable permitting and other regulatory requirements. Sources should consult with the appropriate permitting authority with any questions about specific equipment at their facilities.