

**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
AIR PERMITS PROGRAM**

**TECHNICAL ANALYSIS REPORT**  
for  
Air Quality Control Minor Permit AQ0945MSS04

ConocoPhillips Alaska Inc.  
Alpine Satellite Drill Pad CD5

**REVISIONS TO MINOR PERMIT AQ0945MSS01 REVISION 2**

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## 1. INTRODUCTION

This Technical Analysis Report (TAR) provides the Alaska Department of Environmental Conservation's (Department's) basis for issuing Minor Source Air Quality Control Permit AQ0945MSS04 to ConocoPhillips Alaska, Inc. (CPAI) for a portable oil and gas operation (POGO) at Alpine Satellite Drill Pad CD5. CPAI requested Minor Permit AQ0945MSS04 under 18 AAC 50.508(6) in order to revise the terms and conditions of a previously established Title I permit (Minor Permit AQ0945MSS01 Revision 2).<sup>1</sup>

CPAI provided a long list of requested changes to Minor Permit AQ0945MSS01 Revision 2. In summary, CPAI asked the Department to:

- Update the emissions unit (EU) identification and description for the production heater;
- Add clarifying language regarding the portable flare and the associated operational restrictions – including the fuel gas restrictions;
- Incorporate additional monitoring, recording and reporting (MR&R) methods for various limits; and
- Make numerous editorial corrections and updates throughout the permit.

The Department is rescinding Minor Permit AQ0945MSS01 Revision 2 and issuing an entirely new permit, Minor Permit AQ0945MSS04, because this is the cleanest approach for incorporating the numerous changes. This approach also allowed the Department to incorporate additional updates to the permit language, such as the revised standard permit condition for emission fees that the Department promulgated in August 2016.

### 1.1 Stationary Source Description

Alpine Satellite Drill Pad CD5 (CD5) is an existing stationary source located on Alaska's North Slope within the Colville River Unit. CPAI operated CD5 under Minor Permit AQ0945MSS01 Revision 2 and Minor Permit AQ0945MSS03 at the time they submitted permit applications AQ0945MSS04 and AQ0945MSS05. Minor Permit AQ0945MSS01 Revision 2 authorized CPAI to construct and operate a 20 million Btu per hour (MMBtu/hr) indirect gas-fired production heater and a 577 MMBtu/hr portable flare. The permit also lists three drill rigs (Doyon 19, Doyon 141 and Doyon 15) that CPAI could use for well construction activities under the premise that only one of the three drill rigs would operate at CD5 at any given time. Minor Permit AQ0945MSS03 allowed CPAI to operate multiple drill rigs under a more restrictive set of ambient air conditions.

### 1.2 Minor Permit AQ0945MSS01 Project Description

The Department is providing the following summary of the project description for Minor Permit AQ0945MSS01 Revision 2 since it is carrying forward the project authorization into Minor Permit AQ0945MSS04.<sup>2</sup> The summary is based on the TAR for Minor Permit AQ0945MSS01

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<sup>1</sup> The Department is also processing another permit application for Alpine Satellite Drill Pad CD5 submitted by CPAI under 18 AAC 50.508(6) for a revision to Minor Permit AQ0945MSS03. The Department is issuing a separate permit decision for that request (which is identified as application AQ0945MSS05).

<sup>2</sup> The Department is providing the summary of the previous project description for informational purposes only. The conditions that the Department carried forward without revision into Minor Permit AQ0945MSS04 are not subject to public comment.

since the Department did not reissue the TAR with the subsequent Revision 1 and Revision 2 permit revisions.

The Department received CPAI's application for developing CD5 on September 9, 2005. CPAI requested authorization for permanent operations, drilling and well maintenance activities, and temporary construction activities, at CD5. The application predated the minor permit requirements in 18 AAC 50.502(c)(2)(A) for portable oil and gas operations, but it did trigger the minor permit requirements under 18 AAC 50.502(c)(1) for a new stationary source. The project also required a minor permit under 18 AAC 50.508(5) since CPAI requested Owner Requested Limits (ORLs) to:

- avoid the need for a Title V permit;
- avoid the stationary source being classified as a Prevention of Significant Deterioration (PSD) major source, and
- avoid the minor permit requirements for sulfur dioxide (SO<sub>2</sub>) under 18 AAC 50.502(c)(1).

The requested restrictions were:

- limit the hydrogen sulfide (H<sub>2</sub>S) content of the fuel gas to 200 parts per million by volume (ppmv);
- limit the sulfur content of the diesel fuel to 0.11 percent by weight;
- limit the volatile organic compound (VOC) emissions during well flow back operations on existing wells to 80 tons per year (tpy); and
- limit the fuel consumed by the rig camp engines to 400,000 gallons per year (gal/yr).<sup>3</sup>

The Department imposed each of the requested restrictions in Minor Permit AQ0945MSS01. The Department carried these restrictions forward into Minor Permit AQ0945MSS01 Revision 1 and Minor Permit AQ0945MSS01 Revision 2.

CPAI's application triggered the minor permit requirements under 18 AAC 50.502(c)(1) for oxides of nitrogen (NO<sub>x</sub>). CPAI was therefore required to demonstrate compliance with the annual average nitrogen dioxide (NO<sub>2</sub>) Alaska Ambient Air Quality Standard (AAAQS), per 18 AAC 50.540(c)(2)(A). The Department provided its findings regarding CPAI's ambient demonstration in a November 15, 2005 memorandum, *Review of CPAI CD5 Ambient Assessment*, which the Department included as Exhibit B of the TAR. The Department concluded that the following conditions are needed to protect the annual NO<sub>2</sub> AAAQS:

1. Used uncapped exhaust stacks with vertical outlets for the production heater and drill rig engines (the stacks may have flapper valve rain covers, but no cap design that hinders the vertical momentum of the exhaust.); and
2. For the portable flare, limit the operation to 130 million standard cubic feet per year (MMscf/yr).

The Department included the above ambient air conditions in Minor Permit AQ0945MSS01, and the subsequent Minor Permit AQ0945MSS01 Revision 1, and Minor Permit AQ0945MSS01 Revision 2.

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<sup>3</sup> CPAI originally requested a fuel use limit of 438,000 gal/yr for the rig camp engines. They lowered the requested limit to 400,000 gal/yr on November 5, 2005 to provide a greater compliance margin with the 100 tpy Title V permit threshold.

### 1.3 Minor Permit AQ0945MSS04 Project Description

CPAI itemized the requested changes to Minor Permit AQ0945MSS01 Revision 2 in Section 8 of the Stationary Source Identification Form that they submitted as part of their permit application. They stated, “Except as noted below, the proposed changes will not have any effect on A) emissions, B) other permit terms, C) any underlying ambient demonstration, and D) compliance monitoring ([the list of elements in 18 AAC 50.540(k)(3) for minor permit applications submitted under 18 AAC 50.508(6)]).” The exceptions regard other permit terms or compliance monitoring.

## 2. EMISSIONS SUMMARY AND PERMIT APPLICABILITY

CPAI is not requesting an emissions increase in association with Minor Permit AQ0945MSS04. However, they did ask the Department to update the assessable emissions in Minor Permit AQ0945MSS01 Revision 2 since the Department no longer includes nonroad engine (NRE) emissions in the calculation because NREs are not part of the stationary source.

Table 1 shows the potential to emit (PTE) for the stationary source authorized under Minor Permit AQ0945MSS04, rounded to the nearest ton, along with the total assessable emissions used to calculate the annual emission fee. Assessable emissions are the sum of the emissions of each individual regulated air pollutant for which the stationary source has the potential to emit in quantities of 10 tpy or greater. As previously noted, NRE emissions are not included in the assessable emission tally. The assessable PM emissions are listed as zero tpy since the total PTE is less than 10 tpy.

**Table 1: Assessable Emissions (tpy)**

	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM	VOC	Total
PTE	93	60	23	4	88	268
Assessable Emissions	93	60	23	0	88	264

## 3. DEPARTMENT FINDINGS

Based on the review of the application, the Department finds that:

1. CPAI requested a minor permit under 18 AAC 50.508(6) in order to revise the terms and conditions of a previously issued Title I permit (Minor Permit AQ0945MSS01 Revision 2).
2. CPAI’s request does not change the PTE for the stationary source. The permit application therefore does not trigger the minor permit requirements under 18 AAC 50.502(c)(3) or 18 AAC 50.502(c)(4).
3. CPAI’s application for a minor permit contains the information required under 18 AAC 50.540.

4. CPAI is maintaining the previously established operational limits to protect air quality. They therefore did not need to revise the underlying ambient demonstration.
5. The SO<sub>2</sub> and NO<sub>x</sub> ORLs established in Minor Permit AQ0945MSS01 Revision 2 did not include emission limits as required under EPA guidance. The Department has therefore corrected this oversight by inserting the applicable potential emissions as the emission limits associated with the operational limits.
6. The EU identification must be limited to three characters in order to interface with EPA's source test database (ICIS-Air). The Department therefore could not use CPAI's requested value for the production heater (CD5-U-305007). The Department instead created a "Tag Number" column in Table A and inserted the requested value as the tag number. The Department also created one to two digit EU designations (ranging from 5 – 38) for all EUs listed in Tables A and B. (The Department previously assigned 1 – 4 to the EUs listed in Minor Permit AQ0945MSS03.)
7. Rescinding Minor Permit AQ0945MSS01 Revision 2 eliminates the need for revising or rescinding individual conditions within Minor Permit AQ0945MSS01 Revision 2. Minor Permit AQ0945MSS04 therefore does not identify the individual conditions within Minor Permit AQ0945MSS01 Revision 2 that CPAI highlighted for revision in their permit application.
8. Where applicable, the Department used the standard permit condition language adopted under 18 AAC 50.346 rather than CPAI's proposed language, since CPAI did not state why an emission unit-specific or stationary source-specific condition more adequately meets the requirements of 18 AAC 50.

## **4. PERMIT REQUIREMENTS**

18 AAC 50.544 describes the elements the Department must include in a minor permit for each type of permit classification. This section of the TAR describes the general requirements, along with the requirements for permit applications classified under 18 AAC 50.508(6).

### **4.1 General Requirements for all Minor Permits**

As required by 18 AAC 50.544(a), Minor Permit AQ0945MSS04 includes:

- Identification of the stationary source, the project, the Permittee, and contact information;
- Requirements to pay fees in accordance with 18 AAC 50.400 through 50.499;
- Standard permit conditions from 18 AAC 50.345; and
- Conditions to protect ambient air quality (which the Department pulled forward from Minor Permit AQ0945MSS01 Revision 2).

### **4.2 Requirements for Minor Permits Classified Under 18 AAC 50.508(6)**

As required under 18 AAC 50.544(h), Minor Permit AQ0945MSS04 includes terms and conditions as necessary to ensure that the Permittee will construct and operate the stationary source in accordance with 18 AAC 50. The Department therefore carried forward the unaltered terms and conditions of Minor Permit AQ0945MSS01 Revision 2 into Minor Permit

AQ0945MSS04, as well as the terms and conditions modified through this permitting action. The modified conditions are summarized below in Table 2.

**Table 2 – Minor Permit AQ0945MSS01 Revision 2 Conditions Revised By Minor Permit AQ0945MSS04**

<b>AQ0945MSS01 Revision 2 Condition No.</b>	<b>Description of Requirement</b>	<b>AQ0945MSS04 Condition No.</b>	<b>How Condition was Revised</b>
Cover Page	Permit identification	Cover Page	<ul style="list-style-type: none"> <li>• Dropped the previously provided information that is not required under 18 AAC 50.544(a)</li> <li>• Updated the introductory language</li> </ul>
Throughout Permit	N/A	Throughout Permit	<ul style="list-style-type: none"> <li>• Corrected “emission unit” to “emissions unit”</li> <li>• Used the EU abbreviation where possible</li> <li>• Inserted the newly developed EU designations to enhance clarity</li> <li>• Removed the hyphen from “non-road engine” in order to match the regulatory spelling in 18 AAC 50.990(63)</li> <li>• Clarified that “other” monitoring techniques approved by the Department must be approved in writing</li> </ul>
2.1	Flare Emissions monitoring & recording	2.1	<ul style="list-style-type: none"> <li>• Relocated the gas volume estimation technique from Condition 6.2e to Condition 2.1 (see permit application and Condition 6.2e discussion)</li> <li>• Added clarifying language and made minor editorial revisions</li> </ul>
2.3	Flare Emissions reporting	2.3	Clarified that the required report is for the reporting period
None	Excess Emissions	2.4	Added a previously overlooked requirement to report a flare exceedance
4 - 6	ORLs	4 - 6	Added subtitles to clarify the purpose of the various ORLs
4 – 5	ORLs	4 – 5	Added the previously overlooked SO <sub>2</sub> and NO <sub>x</sub> emission limits, per EPA guidance
4	SO <sub>2</sub> ORL	4	<ul style="list-style-type: none"> <li>• Made editorial revisions to enhance clarity</li> <li>• Added additional MR&amp;R provisions per CPAI request</li> </ul>

<b>AQ0945MSS01 Revision 2 Condition No.</b>	<b>Description of Requirement</b>	<b>AQ0945MSS04 Condition No.</b>	<b>How Condition was Revised</b>
5	NO <sub>x</sub> ORL	5	<ul style="list-style-type: none"> <li>Made editorial revisions to enhance clarity</li> <li>Added additional MR&amp;R provisions per CPAI request</li> </ul>
None	Fuel consumption under NO <sub>x</sub> ORL	5.6	Added a previously overlooked requirement to report a fuel consumption exceedance
6.2c	VOC estimation techniques for well maintenance activities	6.2c	Added the ProMax® technique per CPAI request
6.2e	VOC estimation technique for flare	2.1	Moved a modified version of the language to the flare limit provisions under Condition 2
6.3	VOC estimation reporting requirement	6.3	<ul style="list-style-type: none"> <li>Clarified that the required report is for the reporting period</li> <li>Clarified that the 12-month estimate should also be provided in the report</li> </ul>
7	NSPS Subpart Dc Monitoring	7	Changed the recording period from each day to each calendar month, as allowed under 40 CFR 60.48c(g)(2)
9	Visible Emissions requirement	9	Revised the wording to match the current regulatory requirement. Made minor editorial revisions to enhance clarity.
10	Particulate Matter limit	10	Corrected typographical errors and made minor editorial revisions to enhance clarity
12 – 13	Emission Fees	12 - 13	<ul style="list-style-type: none"> <li>Used the current standard permit condition (SPC) I language (revised May 18, 2016)</li> <li>Corrected the assessable potential to emit (dropped the NRE emissions from the total)</li> </ul>
None	Annual Compliance Fee	14	Added the requirement to pay an annual compliance fee (which is required for stationary sources not subject to Title V permitting)
14	Certification	15	Revised the wording to match the current version of 18 AAC 50.345(j)
18.2 – 18.3	Excess Emissions and Permit Deviation	19.2	Consolidated the excess emission and permit deviation requirements and updated



<b>AQ0945MSS01 Revision 2 Condition No.</b>	<b>Description of Requirement</b>	<b>AQ0945MSS04 Condition No.</b>	<b>How Condition was Revised</b>
	Reports		the URLs for the Department’s online forms
19	Operating Reports	20	<ul style="list-style-type: none"> <li>Used the current SPC VII language (revised May 18, 2016)</li> <li>Revised the quarterly report due dates as requested by CPAI (SPC VII allows this type of revision)</li> </ul>
None	Annual Affirmation	21	Added the annual affirmation as required under 18 AAC 50.544(d)
Table A	CD5 Emissions Unit Inventory	Table A	<ul style="list-style-type: none"> <li>Replaced the EU designations with numerical values</li> <li>Added a “Tag Number” column/entries</li> <li>Revised the descriptions per CPAI request</li> <li>Added a clarification regarding the heater capacity, per CPAI request</li> <li>Made editorial revisions to the notes</li> </ul>
Table B	Drill Rig Emissions Unit Inventory	Table B	<ul style="list-style-type: none"> <li>Added a column and entries for an EU designation</li> <li>Updated the descriptions and rated capacities of the Doyon 19 units, per CPAI request</li> <li>Added table notes per CPAI request</li> </ul>

## 5. PERMIT ADMINISTRATION

CPAI may operate in accordance with Minor Permit AQ0945MSS04 upon issuance.