



COMPLIANCE GUIDE

STANDARD OF PERFORMANCE

FOR

CRUDE OIL AND NATURAL GAS PRODUCTION, TRANSMISSION AND DISTRIBUTION

(40 CFR 60, SUBPART 0000)

May 20, 2014



DIVISION OF COMPLIANCE ASSISTANCE

DCA.KY.GOV

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Environmental regulations can be confusing, and complying with those regulations takes time and resources. The Division of Compliance Assistance (DCA) Environmental Compliance Assistance Program (ECAP) works with individuals, businesses and organizations to provide a broad range of services that increase environmental knowledge, improve regulatory compliance and enhance the quality of Kentucky's environment and communities.

INTRODUCTION

The oil and natural gas industry includes a wide range of operations and equipment, from wells to natural gas gathering lines and processing facilities, to storage vessels, and transmission and distribution pipelines. The New Source Performance Standard (NSPS) for Crude Oil and Natural Gas Production, Transmission, and Distribution (40 CFR 60, Subpart 0000) covers different activities, equipment, and facilities within this industry sector related to [hydraulically fractured wells](#).

While the NSPS is equipment/activity-specific, air permitting by the Ky. Division for Air Quality (DAQ) is based on facility-wide emissions. This means that emissions from all equipment, facilities and activities at a source must be evaluated. The following document focuses on requirements for **natural gas drilling** and **storage vessels at oil and natural gas sites** defined in the NSPS and how those relate to DAQ permitting. Please review the NSPS if you have other affected facilities at your site not discussed here, including centrifugal compressors, reciprocating compressors, pneumatic controllers, and sweetening units at onshore natural gas processing plants, which may be subject to this subpart.

The information contained in this document is offered only to inform and assist the public and the regulated community. The information may not apply to every situation. Nothing contained is intended to constitute legal advice or to replace or alter any requirement of statute or regulation or other legally binding requirement. If there exists a discrepancy or conflict between the information contained in this document and applicable statutes, regulations or other legally binding requirement, then such statute, regulation or other legally binding requirement supersedes. For the full disclaimer, visit <http://eec.ky.gov/Pages/disclaimer.aspx>.

SECTION 1: DRILLING OPERATIONS (NATURAL GAS ONLY)

Natural gas wells that are **hydraulically fractured** in Kentucky and commenced construction, modification or reconstruction after August 23, 2011 must comply with notification, recordkeeping, reporting, and control requirements. These requirements do not apply to wells in which hydraulic fracturing is not involved.

- | | | |
|--|--|---|
| 1. Are you hydraulically fracturing a natural gas or oil and natural gas well? | <input type="checkbox"/> Yes
You must meet the requirements below and proceed to Section 2 . | <input type="checkbox"/> No
You do not have any <u>drilling</u> requirements under this rule pertaining to the respective well, but proceed to Section 2 . |
| 2. Are you hydraulically fracturing an oil well only? | <input type="checkbox"/> Yes
You do not have any <u>drilling</u> requirements under the rule, but may have storage vessel requirements in Section 2 . | <input type="checkbox"/> No
See requirements for drilling natural gas wells. |

1(A) NOTIFICATIONS

Submit the Flowback Notification form two days prior to **well completion**. The form ([DEP5034](#)) can be found at dep.ky.gov/formslibrary/pages/default.aspx under 'Division: Air Quality' > Program: Compliance Assistance.'

Completed notifications should be mailed to:

Kentucky Division for Air Quality
Emissions Inventory Section
Program Planning and Administration Branch
200 Fair Oaks Lane, 1st Floor
Frankfort, Kentucky 40601



1(B) CONTROL MEASURES

Owners or operators must reduce emissions from hydraulically fractured natural gas wells **prior to January 1, 2015**, by using a **completion combustion device** during flowback, unless combustion is a safety hazard¹ or is prohibited by state or local regulations.

Owners or operators of **wildcat, delineation** or **low-pressure** hydraulically fractured natural gas wells **on or after January 1, 2015**, must reduce emissions from these wells by using a **completion combustion device** during flowback, unless there is a safety hazard or it is prohibited by other state or local regulations.

¹ Situations in which combustion is a safety hazard include those that may result in a fire hazard or explosion, or where high heat emissions from a completion combustion device may negatively impact tundra, permafrost or waterways.

Owners or operators must capture the gas from hydraulically fractured natural gas wells **on or after January 1, 2015** and make it available for use or sale, which they can do through the use of **reduced emissions completions**, also known as green completions. Reduced emissions completions may include:

- During flowback...
 - Route the recovered liquids into one or more storage vessels or re-inject the recovered liquids into the well or another well, and route the recovered gas into a gas flow line or collection system;
 - Re-inject the recovered gas into the well or another well;
 - Use the recovered gas as an on-site fuel source; or
 - Use the recovered gas for another useful purpose that a purchased fuel or raw material would serve, with no direct release to the atmosphere.
 - All salable quality gas must be routed to the gas flow line **as soon as practicable**.
 - If the above are not feasible, you must capture and direct flowback emissions to a completion combustion device.

1(C) RECORDKEEPING

You must maintain a ***daily log*** of records for each affected **well completion operation** conducted **during the initial compliance period**. The initial compliance period begins upon initial startup of well completion and ends no later than one year after the initial startup date. The initial compliance period may be less than one full year. All records required by this subpart must be maintained either onsite or at the nearest local field office for at least 5 years.

Maintain a copy of each Flowback Notification submission (see Section 1(A)).

Maintain records identifying each ***well completion operation*** for each natural gas well affected facility. ***Daily logs*** and records should include:

- Location of the well;
- API well number;
- Duration² of flowback;
- Duration² of recovery to the flow line (if applicable);
- Duration² of combustion (if applicable);
- Duration² of venting (if applicable);
- Reasons for venting in lieu of capture or combustion (if applicable); and
- Records of deviations in cases where well completion operations with hydraulic fracturing were not performed in compliance (if applicable).

You may use a **digital photograph** in lieu of the records described here, but you must retain the records of the digital photograph as specified in **40 CFR 60.5410(a)(4)**.

Maintain records for each natural gas well facility for which you ***claim an exception*** to using a completion combustion device. Records should include:

- Location of the well;
- API well number;
- Specific exception claimed;
- Starting date and ending date for the period the well operated under the exception; and

² Duration shall be specified in ***hours*** of time.

- Explanation of why the well meets the claimed exception.
- Maintain a copy of each annual report submitted, as described below in 1(D).

1(D) REPORTING

Submit an annual report containing the records described for each well completion operation, claims of exception and affected storage vessels (as applicable), in addition to those items below.

- Company name and address of the affected facility;
- An identification of each affected facility being included in the annual report;
 - Affected facilities identified in the annual report may include drilled natural gas wells, Group 1 and 2 storage vessels and additional affected facilities identified by the rule but not addressed in this guidance. Separate annual reports may be filed for each affected facility.
- Beginning and ending dates of the reporting period; and
- Certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

The report is due no later than **90 days** after the end of the **initial compliance period**. Subsequent annual reports are due no later than the same date each year as the initial annual report. If you own or operate more than one affected facility at the same source location, you may submit one annual report for multiple facilities provided all information is included for each affected facility.

- The same source location is identified by an Agency Interest number issued to the location by Ky. Department for Environmental Protection after submission of the Flowback Notification.

The annual report can be submitted electronically to the Division for Air Quality at <https://dep.gateway.ky.gov/eForms/Default.aspx?FormID=34>. Complete the agency/site information, who is submitting the report and upload the annual report under Type of Document Submitted: Other and entitle it '40 CFR 60, Subpart 0000 Annual Report.'

SECTION 2: POST-DRILLING OPERATIONS (OIL & NATURAL GAS)

Post-drilling operations include the establishment and operation of storage vessels and additional processing equipment. The processing equipment may have additional regulatory requirements. Each storage vessel that has the potential to emit Volatile Organic Compounds (VOCs) may have requirements based on construction date. Storage vessels that have the potential to emit VOCs include, but are not limited to, those for condensate and crude oil storage. You must determine the group for each storage vessel you have at your well site.

Group 1 storage vessel means a storage vessel for which construction, modification or reconstruction has commenced after August 23, 2011, and on or before April 12, 2013.

Group 2 storage vessel means a storage vessel for which construction, modification or reconstruction has commenced after April 12, 2013.

1. Does your well site have any of the following?
 Reciprocating compressors
 Centrifugal compressors
 Pneumatic controllers
 Dehydration units
 Sweetening units
 Reciprocating Internal Combustion Engines (RICE)
 Yes
Submit a Minor Source Registration or air permit application.³
 No
Go to question #2.
2. Does your well site have storage vessels (tanks) onsite that have the potential to emit VOCs?
See [Assessing My Storage Vessel Emissions](#).
 Yes
Go to question #3.
 No
Assess if other activities at your site would require submittal of a Minor Source Registration or air permit application.³
3. For each storage vessel, does it have the potential to emit 6 tons or more of VOCs?
See [Assessing My Storage Vessel Emissions](#).
 Yes
Comply with the requirements in Section 2(A) through 2(D).
 No
The total emissions from each storage vessel may trigger the submittal of a Minor Source Registration or air permit application, even if this NSPS does not apply.³



³ The Division of Compliance Assistance (DCA) is available to provide recommendations and assistance with Minor Source Registrations and air permit applications. If you are a business with 100 or fewer employees, independently owned, and a small business as defined by the Small Business Administration and NOT a major source of air emissions, DCA can assist you in completing air permit applications at no cost to your facility. Call 800-926-8111 or e-mail envhelp@ky.gov.

2(A) NOTIFICATION

□ Within the initial annual report, identified in Section 2(D) of this guidance, submit notification identifying each **Group 1 storage vessel** affected facility. You must include the location of the storage vessel, in latitude and longitude coordinates in decimal degrees to an accuracy and precision of five (5) decimals of a degree using the North American Datum of 1983.

- Example: Lat 38.21595; Lon -84.86706

2(B) CONTROL MEASURES

All storage vessels subject to the NSPS must control VOC emissions by 95 percent **or** meet the alternative emissions limits that allow the owner/operator to demonstrate that emissions from a storage vessel have dropped to less than 4 tons per year of VOCs without emission controls.

Compliance must be re-evaluated on a monthly basis.

Group 1 storage vessel affected facility must demonstrate initial compliance by April 15, 2015, except as otherwise provided in the rule.

Group 2 storage vessel affected facility must demonstrate initial compliance by April 15, 2014, or within 60 days after startup, whichever is later.

Control VOC emissions by 95 percent

- Use a control device to reduce emissions from the storage vessel affected facility.
 - Proposed EPA list of certified equipment
<http://www.epa.gov/airquality/oilandgas/pdfs/20130903list.pdf>
- Conditions:
 - Certified control equipment may be removed after 12 consecutive months in which the *uncontrolled* actual VOC emissions have remained less than 4 tpy. Once control equipment is removed, continue keeping monthly records to verify actual VOC emissions.

Alternative emission limit (<4 tpy)

- Demonstrate, *on a monthly basis*, that uncontrolled actual emissions are less than 4 tpy
 - See assessing my storage vessel emissions ([Appendix B](#)).
- Conditions:
 - If emissions increase (at or above the 4 ton-per-year limit), owners/operators have 30 days to meet the 95 percent reduction requirement.
 - If emissions increase (at or above the 4 ton-per-year limit), is associated with the fracture or refracture of a well supplying the storage vessel, owners/operators must meet the 95 percent control limit as soon as liquids from the fractured or refractured well are routed to the storage vessel.

2(C) RECORDKEEPING

You must maintain a log of records for each affected storage vessel. All records required by this subpart must be maintained either onsite or at the nearest local field office for at least 5 years. The location data shall be given in latitude and longitude coordinates in decimal degrees to an accuracy and precision of five (5) decimals of a degree using the North American Datum of 1983.

- Maintain records identifying each affected storage vessel. Records should include:
 - Documentation identifying each storage vessel, including location, for which construction, modification or reconstruction commenced during the reporting period and the date of occurrence;
 - Documentation of the VOC emission rate determination;
 - See [Appendix B: Assessing My Storage Vessel Emissions](#).
 - Records of deviations that occurred during the reporting period;
 - Notification identifying each Group 1 storage vessel affected facility in the initial annual report;
 - Statement that you have met the control requirements outlined for your storage vessels;
 - Documentation of any storage vessel that is removed from service during the reporting period;
 - Documentation of any storage vessels for which operation resumes during the reporting period; and
 - Copies of any performance tests conducted in accordance with [40 CFR 60.5413](#).



2(D) REPORTING

Submit an annual report containing the records described for each well completion operation, claims of exception and affected storage vessels (as applicable), in addition to those items below.

- Company name and address of the affected facility;
- An identification of each affected facility being included in the annual report;
 - Affected facilities identified in the annual report may include drilled natural gas wells, Group 1 and 2 storage vessels and additional affected facilities identified by the rule but not addressed in this guidance. Separate annual reports may be filed for each affected facility.
- Beginning and ending dates of the reporting period; and
- Certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

The report is due no later than **90 days** after the end of the **initial compliance period**. Subsequent annual reports are due no later than the same date each year as the initial annual report. If you own or operate more than one affected facility at the same source location, you may submit one annual report for multiple facilities provided all information is included for each affected facility.

- The same source location is identified by an Agency Interest number issued to the location by Ky. Department for Environmental Protection after submission of the Flowback Notification.

The annual report can be submitted electronically to the Division for Air Quality at <https://dep.gateway.ky.gov/eForms/Default.aspx?FormID=34>. Complete the agency/site information, who is submitting the report and upload the annual report under Type of Document Submitted: Other and entitle it '40 CFR 60, Subpart 0000 Annual Report.'

APPENDIX A: DEFINITIONS

The following are frequently referenced definitions within this guidance. For additional definitions that apply to the subpart, see [40 CFR 60.5430](#).

Completion combustion device means any ignition device, installed horizontally or vertically, used in exploration and production operations to combust otherwise vented emissions from completions. (A flare is not a completion combustion device; see definition for flare.)

Delineation well means a well drilled in order to determine the boundary of a field or producing reservoir.

Flare means a thermal oxidation system using an open (without enclosure) flame. Completion combustion devices as defined in this section are not considered flares.

Flowback means the process of allowing fluids to flow from a natural gas well following a treatment, either in preparation for a subsequent phase of treatment or in preparation for cleanup and returning the well to production. The flowback period begins when material introduced into the well during the treatment returns to the surface immediately following hydraulic fracturing or refracturing. The flowback period ends with either well shut in or when the well is producing continuously to the flow line or to a storage vessel for collection, whichever occurs first.

Hydraulic fracturing or refracturing means the process of directing pressurized fluids containing any combination of water, proppant, and any added chemicals to penetrate tight formations, such as shale or coal formations, that subsequently require high rate, extended flowback to expel fracture fluids and solids during completions.

Hydraulic refracturing means conducting a subsequent hydraulic fracturing operation at a well that has previously undergone a hydraulic fracturing operation.

Low pressure gas well means a well with reservoir pressure and vertical well depth such that 0.445 times the reservoir pressure (in psia) minus 0.038 times the vertical well depth (in feet) minus 67.578 psia is less than the flow line pressure at the sales meter.

Reduced emissions completion (green completions) means a well completion following fracturing or refracturing where gas flowback that is otherwise vented is captured, cleaned, and routed to the flow line or collection system, re-injected into the well or another well, used as an on-site fuel source, or used for other useful purpose that a purchased fuel or raw material would serve, with no direct release to the atmosphere.

Storage vessel means a tank or other vessel that contains an accumulation of crude oil, condensate, intermediate hydrocarbon liquids, or produced water, and that is constructed primarily of nonearthen materials (such as wood, concrete, steel, fiberglass, or plastic) which provide structural support.

Well completion means the process that allows for the flowback of petroleum or natural gas from newly drilled wells to expel drilling and reservoir fluids and tests the reservoir flow characteristics, which may vent produced hydrocarbons to the atmosphere via an open pit or tank.

Well completion operation means any well completion with hydraulic fracturing or refracturing occurring at a gas well affected facility.

Well site means one or more areas that are directly disturbed during the drilling and subsequent operation of, or affected by, production facilities directly associated with any oil well, gas well, or injection well and its associated well pad.

Wildcat well means a well outside known fields or the first well drilled in an oil or gas field where no other oil and gas production exists.

APPENDIX B: ASSESSING MY STORAGE VESSEL EMISSIONS

Production rate and corresponding storage vessel throughputs are based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline of October 15, 2013 for Group 1 storage vessels and by April 15, 2014, or 30 days after startup (whichever is later) for Group 2 storage vessels.

A storage vessel with a throughput of less than 20 barrels of oil OR less than 1 barrel of condensate per day, will not trigger applicability of this subpart. If the well produces oil and condensate or if it is suspected that a storage vessel above the throughput guidelines does not trigger applicability, **you may submit alternative calculations** using [EPA TANKS](#) or other methodology. The calculations should be submitted on the Minor Source Registration form for review by DAQ staff.

Answer the following for *individual storage vessel* applicability to the NSPS and DAQ registration/permitting implications. Does the *individual storage vessel* have a **daily** throughput capacity of...

- | | | |
|--------------------------------|--|---|
| A. ...20 barrels of crude oil? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| B. ...1 barrel of condensate? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| | You must assess the <u>individual</u> storage vessel emissions for applicability <i>and</i> submit a Minor Source Registration to DAQ. | Your storage vessel does not trigger applicability of the NSPS, but you must keep appropriate records on throughput analysis. |

If the site has more than one storage vessel or crude oil and condensate storage vessels, you must assess your combined storage vessel emissions and applicability. Submit a Minor Source Registration to DAQ if your combined storage vessel emissions are 10 tons or greater.

You must also determine if there are additional sources of emissions that would trigger applicability of the subpart or submittal of a Minor Source Registration or air permit application ([See Section 2, Question 1](#))

Instances in which multiple storage vessels or additional air emission sources exist at the same site, a source-wide analysis of potential air emissions will need to be assessed to determine applicability of Minor Source Registration or air permitting requirements with DAQ. The facility may be required to submit a registration/permit application even if the NSPS does not apply.