COMPLIANCE GUIDE

STANDARDS OF PERFORMANCE
FOR
CRUDE OIL AND NATURAL GAS PRODUCTION, TRANSMISSION AND DISTRIBUTION
(40 CFR 60, SUBPART OOOO)

July 8, 2014

DIVISION OF COMPLIANCE ASSISTANCE
DCA.KY.GOV
800-926-8111 ENVHELP@KY.GOV

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 Standards (NSPS) for Crude Oil and Natural Gas Production, Transmission, and Distribution (40 CFR 60, Subpart OOOO) covers different activities, equipment, and facilities within this industry sector related to **hydraulically fractured wells** and surface equipment associated with oil, condensate and natural gas production, transmission and distribution.

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 well completions** and **storage vessels at crude oil and natural gas sites** as defined in 40 CFR 60, Subpart OOOO and how applicability of the subpart relates to DAQ permitting. Please review 40 CFR 60, Subpart OOOO for 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.

SECTION 1: DRILLING OPERATIONS (NATURAL GAS ONLY)

A hydraulically fractured well **principally for the production of natural gas** in Kentucky and which have 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 well principally for the production of natural gas?	☐Yes You must meet the requirements below and proceed to Section 2.	☐No You do not have any well completion requirements under this rule pertaining to the respective well, but proceed to Section 2.
2.	Are you hydraulically fracturing an oil well only?	☐Yes You do not have any well completion requirements under the rule, but may have storage vessel requirements in Section 2.	☐No See requirements for well completion operations for natural gas wells.

1(A) NOTIFICATIONS

☐ Submit the Flowback Notification at least two days prior to **well completion**. The Flowback Notifications shall include:

- ☐ Contact information for the owner or operator;
- ☐ Anticipated date of the well completion operation;
- ☐ API well number;
- ☐ 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; and
- ☐ Planned date of the beginning of flowback.

Submit the Flowback Notification to Kentucky and EPA Region IV.

KENTUCKY DIVISION FOR AIR QUALITY

Submit a Flowback Notification on form DEP5034. This form can be found at dep.ky.gov/formslibrary/pages/default.aspx under 'Division: Air Quality' > Program: Compliance Assistance.' Completed notifications are to 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

ENVIRONMENTAL PROTECTION AGENCY, REGION IV

Submit a complete Flowback Notification, with the contents indicated above, to the following e-mail address: r4wellcompletion@epa.gov.

1(B) CONTROL MEASURES

Hydraulically fractured wells principally for the production of natural gas have a general duty to maximize resource recovery and minimize release to the atmosphere during flowback and subsequent recovery.

☐ Owners or operators must reduce emissions from wells that are hydraulically fractured principally for the production of natural gas occurring **prior to January 1, 2015**, by using a **completion combustion device** during flowback, unless combustion is a safety hazard[1] or is prohibited by state or local regulations.

☐ Owners or operators of wildcat, delineation or low-pressure wells that are hydraulically fractured principally for the production of natural gas occurring **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.

☐Owners or operators must capture the gas from wells that are hydraulically fractured principally for the production of natural gas occurring **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.
  - If the above are not feasible, you must capture and direct flowback emissions to a completion combustion device.
- All salable quality gas must be routed to the gas flow line **as soon as practicable**.

1(C) RECORDKEEPING

Maintain a ***daily log*** of records for each affected facility **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. Records for well completion operations should include:

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

[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.*

☐ Records identifying the *well completion operation* for each natural gas well affected facility. ***Daily logs*** and records shall include:

- ☐ 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;
- ☐ API well number;
- ☐ Duration[2] of flowback;
- ☐ Duration[2] of recovery to the flow line (if applicable);
- ☐ Duration[2] of combustion (if applicable);
- ☐ Duration[2] 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).

Digital photographs may be provided in lieu of the records described for the daily log. Retain the records of the digital photograph as specified in **40 CFR 60.5410(a)(4)**.

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

- ☐ 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;
- ☐ API well number;
- ☐ Specific exception claimed;
- ☐ Starting date and ending date for the period the well operated under the exception; and
- ☐ Explanation of why the well meets the claimed exception.

☐ Maintain a copy of each annual report submitted, as described in Section 3: Annual Reporting.

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

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

Post-drilling operations include the establishment and operation of storage vessels and additional processing equipment. Additional processing equipment may have additional regulatory requirements within 40 CFR 60, Subpart OOOO, not addressed in this guidance.

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. Continue reading and go to question #2 for storage vessels.[3]	☐No Continue reading and go to question #2 for storage vessels.

A storage vessel that contains an accumulation of crude oil, condensate, intermediate hydrocarbon liquids, or produced water, has the potential-to-emit 6 ton_{VOC}/year or more and has been constructed, modified or reconstructed after the applicability date is subject to the rule. There are two classification dates, or groups, for storage vessels.

☐***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.

2.	Does your well site have **any** storage vessels (tanks) onsite that have the potential-to-emit VOCs? See *Assessing My Storage Vessel Emissions*.	☐Yes Go to question #3.	☐No	If you answer NO, assess if activities at your site would require submittal of a Minor Source Registration or air permit application.[3] Total source-wide potential emissions may trigger air permitting requirements even if 40 CFR 60, Subpart OOOO does not apply.
3.	Do you have a ***Group 1*** or ***Group 2*** storage vessel that contains an accumulation of crude oil, condensate, intermediate hydrocarbon liquids or produced water?	☐Yes Go to question #4.	☐No	
4.	Does your Group 1 or Group 2 storage vessel have the potential-to-emit ***6 ton_{VOC}/year or more***? See *Assessing My Storage Vessel Emissions*.	☐Yes Comply with the requirements in Section 2(A) through 2(C) and Section 3.	☐No	

[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 3 of this guidance, submit notification identifying each ***Group 1 storage vessel*** affected facility. Each subsequent annual report shall include all ***Group 2 storage vessels***. 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 Group 1 and Group 2 storage vessels that have the potential-to-emit 6 ton_{VOC}/year or more are subject to 40 CFR 60, Subpart OOOO. Storage vessels subject to the rule must control VOC emissions by 95.0 percent or meet the alternative emissions limits that allow the owner/operator to demonstrate that actual uncontrolled emissions from a storage vessel have dropped to less than 4 ton_{VOC}/year. ***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 95.0 PERCENT

- Use a control device to reduce emissions from the storage vessel affected facility.
  - EPA list of control devices http://www.epa.gov/airquality/oilandgas/implement.html
- Requirements:
  - Review the regulation for additional requirements in determining initial compliance with covers and closed vent systems (40 CF 60.5411), control devices (40 CFR 60.5412), and performance testing (40 CFR 60.5413) used to comply with the emission standards for storage vessels. Meet continuous compliance requirements (40 CFR 60.5415(e)) for storage vessels for which you are using a control device or routing emission to a process to meet the emissions reduction requirement.
- Conditions:
  - Control equipment may be removed after 12 consecutive months in which the *uncontrolled actual* emissions have remained less than 4 ton_{VOC}/year. Once control equipment is removed, continue keeping monthly records to verify actual uncontrolled VOC emissions. If VOC emissions increase at or above 4 tons per year, the 95.0 percent reduction requirement must be achieved (see Alternative Emission Limit: Conditions below).

ALTERNATIVE EMISSION LIMIT

- Demonstrate that *uncontrolled actual* emissions are less than 4 ton_{VOC}/year. The demonstration must be made **monthly**.
  - Monthly demonstration is suggested to be in the form of a 12-month rolling total in which the current month is summed with the preceding eleven months to identify actual emissions for a 12-month period.
  - See assessing my storage vessel emissions (Appendix B).

- Conditions:
  - If emissions increase (at or above the 4 ton_{VOC}/year limit), owners/operators have 30 days to meet the 95.0 percent reduction requirement.
  - If emissions increase (at or above the 4 ton_{VOC}/year limit), is associated with the fracture or re-fracture of a well supplying the storage vessel, owners/operators must meet the 95.0 percent control limit as soon as liquids from the fractured or re-fractured 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 potential emissions of 6 ton_{VOC}/year or more, 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 and Group 2 storage vessel affected facility in the annual reports;

☐ 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.

☐ Maintain a copy of each annual report submitted, as described in Section 3: Annual Reporting.

SECTION 3: ANNUAL REPORTING

Contents of each annual report shall include the records described for each 40 CFR 60, Subpart OOOO affected facility. These affected facilities may include *well completion operations* (including claims of exception) and *Group 1* and *Group 2 storage vessels* with 6 ton_{VOC}/year or more potential emissions (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 hydraulically fractured wells for the production of natural gas, Group 1 and 2 storage vessels and additional affected facilities identified by the rule but not addressed in this guidance.[4] 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.
☐Records described for each affected facility.

If you own or operate more than one affected facility ***at the same source location***, you may submit one annual report for multiple affected 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 or registration/permit application.)

SECTION 3(A) INITIAL ANNUAL REPORT

The initial annual report is due no later than ***90 days*** after the end of the **initial compliance period**.

- If the affected facility compliance period began Oct. 15, 2012 then the annual report is due no later than Jan. 13, 2014 for the prior Oct. 15 through Oct. 15 period.
- If the affected facility compliance period began upon start-up, the annual report is due no later than 90 days after the end of one year.
    - For well completion operations only, the initial compliance period ends no later than 2 years after the initial startup date and may be less than one full year.

SECTION 3(B) SUBSEQUENT ANNUAL REPORTS

Subsequent annual reports are due no later than the same date each year as the initial annual report for all sources and affected facilities.

- For Kentucky permitted sources, the 40 CFR 60, Subpart OOOO annual reports may coincide with Title V reporting requirements or indicated under emission point reporting requirements on the source's issued permit.

[4] Each 40 CFR 60 Subpart OOOO affected facility has individual requirements; not all 40 CFR 60 Subpart OOOO affected facilities are addressed in this guidance.

SECTION 3(C) SUBMISSION OF ANNUAL REPORTS

The initial annual report and subsequent annual reports shall be submitted to the Division for Air Quality electronically or through mail. For subsequent annual reports at permitted sources, view the source's permit conditions for submission instruction. Registered sources may continue to submit to the locations below.

Submit the Annual Reports to Kentucky and EPA Region IV.

KENTUCKY DIVISION FOR AIR QUALITY

Annual Reports shall be submitted to Kentucky electronically or by mail.

Submit electronically 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 OOOO Annual Report.'

Submit via mail to:

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

ENVIRONMENTAL PROTECTION AGENCY, REGION IV

Submit via mail to:

- Air, Pesticides and Toxics Management Division
  Attn: Beverly Banister, Director
  US EPA Region 4, Atlanta Federal Center
  61 Forsyth Street, S.W.
  Atlanta, GA 30303–8960

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.

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 maximum average daily throughput of less than 20 barrels of oil or less than 1 barrel of condensate per day will likely be less than 6 ton_{VOC}/year and not trigger applicability of this subpart. In addition to throughput, emissions are impacted by temperature and pressure of the separator prior to the storage vessel, storage vessel size and characteristics, and the vapor pressure of liquids entering the storage vessel. These variables may cause a storage vessel with less than 20 barrels of oil or less than 1 barrel of condensate per day to have potential emissions of 6 ton_{VOC}/year or more. Utilize an accepted model or calculation methodology, such as EPA TANKS, to identify potential emissions from a storage vessel. Submit calculations with the Minor Source Registration or permit application for review by DAQ staff.

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

A.	…20 barrels of crude oil?	☐Yes	☐No
B.	…1 barrel of condensate?	☐Yes Assess the individual storage vessel emissions for applicability *and* submit a Minor Source Registration to DAQ.	☐No The storage vessel likely does not trigger applicability of the NSPS, but you must keep appropriate records on throughput analysis and emission calculations.

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.