Oil and Gas Information Collection Request
Part 2. Detailed Facility Survey

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Introduction

This workbook contains the instructions and information collection forms used to collect information regarding processes, emission sources and controls used at existing oil and gas facilities. A brief description of each worksheet and their color-coded function is provided below along with basic instructions.

Worksheets

Name	Details
	INSTRUCTIONS
Intro	Overview of spreadsheets and general instructions
Acronyms	Provides listing of acronyms used in the sheets
Definitions	Provides definitions of key terms used on the sheets
	FACILITY LEVEL INFORMATION – *everyone should complete this section if your facility received a Part 2, Detailed Facility Survey request. You should review the definition of "facility" and any additional specific definitions that apply to you based on the industry segment to make sure the scope of operations that must be reported is understood before beginning to complete the survey. You should only complete a separate worksheet form for each separate facility that selected for this Part 2 survey. Well operators, complete this form only for well site facilities that contain wells that were identified for this Part 2 survey, but include information for all wells (and other equipment) at that well site facility.*
Facility	This form should be completed first as this information may be used in other sheets.
	Section 1. Provide the parent company information requested
	Section 2. Provide the facility contact and operating information requested
	Section 3. Provide results for most recent gas sampling event. For natural gas processing facilities, provide inlet (feed) gas composition and outlet gas composition.
	CONTROL DEVICE INFORMATION – *complete this sheet only for organic emissions control devices (flares, combustors, vapor recovery units, etc.; see definition) present at the facility.*
ControlDevice	This form should be completed second as the control device ID's entered in this sheet may be used in other sheets.
	Section 1. Provide the number of organic emission control devices at the facility
	Section 2. Provide the operating information requested for each control device. If emissions source test were conducted in the past 5 years, "attach source test report:" means that you will submit a copy of the test report within eGGRT system for this ICR.
	Section 3. Provide the cost information requested for each control device.
	EMISSION SOURCE-SPECIFIC INFORMATION – *complete these sheets only if the source or equipment is present at the facility required to complete this Part 2 survey. You must provide information regarding each source or equipment present at the facility regardless of whether the equipment is rented, leased, or separately owned. Generally* ***these forms should be completed with information readily available without additional testing except as noted in the underlined instructions below****.*
ProdnWells	Information sheet for production well surface sites, which is applicable only for production facilities. Include information for all production wells at the well site facility (including temporarily shut-in or permanently plugged and abandoned production wells)
	Section 1A. Provide the general well surface site information requested.
	Section 1B. Provide the cost information requested.
	Section 2. Provide the well-specific information requested. The request for production profiles in optional. EPA will use available oil and natural gas production profiles for the basin in which this well is located, general information on oil and natural gas production profiles from the state or similar basins, or other published sources will be used to create the production profile for wells unless alternative production profiles are provided.
	Section 3. Provide the well-specific information requested for well completion and workovers.
	Section 4. Provide the well-specific information requested for well testing and liquids unloading.
Injection-StorageWells	Information sheet for injection or storage well surface sites. Include information for all wells at the well site facility (including temporarily shut-in or permanently plugged and abandoned injection or storage wells)
	Section 1. Provide the general well surface site information requested.
	Section 2. Provide the well-specific information requested.

	abandoned injection or storage wells)
	Section 1. Provide the general well surface site information requested.
	Section 2. Provide the well-specific information requested.

Oil and Gas ICR Part 2 - Detailed Facility Survey: Instructions (Continued)

Name	Details
Tanks Separators	Source-specific information sheet for separators and storage tanks located at the facility. This information should be completed for all separators, heater treaters, and other liquid hydrocarbon storage vessels managing produced fluids. Information on "pressure vessels" or tanks used to store any type of glycol, amine, diesel fuel, gasoline, or inorganic chemical and should not be included in this tab.
	Section 1. Provide the overall information requested for number of tanks and separators at the facility. These counts should reflect tanks/separators counts for those tanks for which information will be provided in subsequent sections of this tab.
	Section 2. Provide the tank- or separator-specific information requested.
	Section 3. Provide the feed material characteristics requested for each tank or separator.
	Section 4. *If feed material to an atmospheric tank comes from a pressurized system (e.g., a well, gas-liquid separator, compressor condensate, or pipeline fluids), you must perform pressurized feed sampling and flash gas compositional analysis according to the CARB method specified in Section 4 each separator that produces 5 bbl/day or more of liquid material.* If the produced fluids entering an atmospheric storage tank is less than 5 bbl/day for each separator/tank at the facility then no pressurized sample is specifically required for that facility, with the following proviso: for facilities in the onshore natural gas transmission compression, transmission pipeline, or underground storage industry segments, if all tank/separators manage less than 5 bbl/day of produced fluids at all facilities within parent company, the parent company must collect one representative pressurized feed sample for flash analysis for any of its facilities. Provide the results of the flash composition analysis requested.
	Section 5. Provide the information requested for the controls, dump vavle (separators), thief hatch (tanks) and pressure relief devices associated with each tank or separator.
	Section 6. If any direct emissions measurement data are available from an emissions source on a tank or separator, provide the information requested.
Pneumatics	Source-specific information sheet for pneumatic devices, including pneumatic controllers, pneumatic isolation valve actuators, and pneumatic pumps.
	Section 1. Indicate if you have any natural gas-driven pneumatic devices or pumps. If no, you are not required to (further) complete the pneumatics tab.
	Section 2. If you have any natural gas-driven pneumatic devices or pumps, *you must complete the pneumatic device counts in Section 2 of this form based on actual counts at the facility. If this information is not readily available, you must visit the site and determine the actual pneumatic device count*.
	Section 3. Provide the information requested regarding requested for natural gas-driven devices or pumps.
	Section 4. Provide the information on isolation valves based on controller design, manufacturer's information, and company records for each natural gas-driven pneumatic isolation valve actuator at the facility.
	Section 5. If any direct emissions measurement data are available from a pneumatic device, provide the information requested regarding those measurements.
AGRU	Source-specific information sheet for acid gas removal (or sweetening) units.
	Section 1. Provide the number of dehydration units and general facility requested.
	Section 2. Provide the AGRU-specific information requested for each AGRU at the facility.
	Section 3. If any direct emissions measurement data are available from the AGRU, provide the information requested regarding those measurements.
	Section 4. If any emissions estimates are available based on modelling software for the AGRU, provide the information requested regarding those estimates.
Dehy	Source-specific information sheet for dehydration units.
	Section 1. Provide the number of dehydration units at the facility.
	Section 2. Provide the unit-specific information requested for each dehydration unit at the facility.
	Section 3. Provide the unit-specific information requested for emissions sources associated with each dehydration unit.
	Section 4. If any direct emissions measurement data are available from the dehydration unit, provide the information requested regarding those measurements.
	Section 5. Provide the wet gas analysis composition based on most recent gas sampling event or other available information.
	Section 6. If any emissions estimates are available based on modelling software for the dehydration unit, provide the information requested regarding those estimates.

Oil and Gas ICR Part 2 - Detailed Facility Survey: Instructions (Continued)

Name	Details
EqLeaks	Source-specific information sheet for equipment component leaks compressors (including vapor recovery compressors).
	Section 1. Provide the general information regarding applicable rules on leak detection practices at the facility.
	Section 2. Provide the information regarding equipment component counts. *You must complete the equipment component counts in Section 2 of this form based on actual counts at the facility. If this information is not readily available, you must visit the site and determine the actual equipment component counts*.
	Section 3. Provide the information regarding equipment component counts aggregated by major equipment type. *You must complete the equipment component counts in Section 3 of this form based on actual counts at the facility. If this information is not readily available, you must visit the site and determine the actual equipment component counts*.
	Section 4. If any direct (quantitative) emissions measurement data are available for an equipment leak, provide the information requested regarding those measurements.
Comp	Source-specific information sheet for compressors (including vapor recovery compressors).
	Section 1. Provide the number of compressors of specified types at the facility.
	Section 2. Provide the compressor-specific information requested for each compressor at the facility.
	Section 3. If any direct emissions measurement data are available for compressor leak or vent sources, provide the information requested regarding those measurements.
	Section 4. Provide the requested compressor engine information for each compressor engine associated with a compressor at the facility.
	Section 5. If applicable, provide the requested information for centrifugal compressor wet seal replacements.
	Section 6. If applicable, provide the requested information for reciprocating compressor rod packing replacements.
Blowdown	Source-specific information sheet for equipment/pipeline blowdowns. Complete form based on available information for 2015.
	Section 1. Indicate if there were any equipment or piping blowdowns in 2015.
	Section 2. Provide the blowdown quantities requested for each blowdown category. *If your facility is first required to track this information in 2016, you may estimate 2015 blowdown events/emissions as twice the events/emissions determined in January through June 2016*.
	Section 3. Indicate the blowdown emission reduction measures, if any, implemented to reduce blowdown emissions and the estimated quantity of emissions avoided.

Useful Tips

Printing

It may be useful to print out this sheet as well as the "Acronyms" and "Definitions" sheet for easy reference while completed the various forms. The blue tabs are formatted for printing; the other tabs are not formatted for printing.

Shading

Cells with grey shading are for table headers and calculated values. These cells are locked and cannot be altered. You should not need to enter data in these cells.
Cells with black shading are cells that are input cells that not expected to be required based on answers to a related response. Values can be entered in these cells, but generally, black shading indicated that a response is not needed.
Cells with blue shading are input cells. These cells should be completed based on the number of sources of a given type present at the facility.

Drop down pick lists

Many input values have predetermined lists of potential answers. A small triangle will appear on the right side of the cell that contains a pick list. Click on the triangle and the candidate options will appear. Select the best option of those provided. Some lists include "Other (specify)". Please provide further information to describe the type of unit/device.

Data validation errors

Certain inputs have built-in data validation checks. For example, if a fraction is requested and you try to enter "98" for 98% rather than "0.98", an error message will appear noting that the value expected must be between 0 and 1. If you have questions regarding the source of an error, please call the information help line at (888) 888-8888.

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Acronym List for Detailed Facility Survey

Acronym	Definition
AAPG	American Association of Petroleum Geologists
AGRU	acid gas removal unit
API	American Petroleum Institute
AVO	audio, visual, olfactory
bbl	barrel
BOE	barrel of oil equivalence
Btu	British thermal unit
CARB	California Air Resources Board
CFR	Code of Federal Regulations
CH4	methane
CO2	carbon dioxide
EOR	enhanced oil recovery
g	gram
G&B	gathering and boosting
GHG	greenhouse gas
GHGRP	Greenhouse Gas Reporting Program (40 CFR part 98)
GOR	gas-to-oil ratio
Hg	mercury
kPa	kilopascals
lb	pounds
lb/hr	pounds per hour
LPG	liquefied petroleum gas
MW	molecular weight
NG	natural gas
NGL	natural gas liquids
OGI	optical gas imaging
psig	pounds per square inch gauge pressure
scf	standard cubic feet
scf/hr	standard cubic feet per hour
scfm	standard cubic feet per minute
VOC	volatile organic compound
°F	degrees Fahrenheit
°K	degrees Kelvin

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Key Terms and Definitions for Detailed Facility Survey

Term	Definition
Acid gas removal unit	A process unit that separates hydrogen sulfide and/or carbon dioxide from sour natural gas using liquid or solid absorbents or membrane separators. Also commonly referred to as a sweetening unit.
Adjust air to fuel ratio	Use of oxygen in the exhaust to control the combustion ratio (fuel use), thus reducing NOx emissions.
Air-assisted flare	A flare that intentionally introduces air at or near the flare tip through nozzles or other hardware conveyance for the purposes including, but not limited to, protecting the design of the flare tip, promoting turbulence for mixing or inducing air into the flame.
API gravity	A specific gravity scale developed by the American Petroleum Institute (API) for measuring the relative density of various petroleum liquids, expressed in degrees. The formula for determining API gravity is: API gravity = (141.5/SG at 60°F) - 131.5, where SG is the specific gravity of the fluid.
Artificial lift	A wellbore deliquification technique that adds energy to the fluid column in a wellbore. Artificial-lift systems use a range of operating principles and include surface compression, sucker rod pumps, progressive cavity pumps, electric submersible pumps, jet pumps, and gas lift.
Associated gas	The natural gas which originates at oil wells and occurs either in a discrete gaseous phase at the wellhead or is released from the liquid hydrocarbon phase by separation.
Atmospheric storage tank	A class of storage tanks that store materials at approximately atmospheric pressure. Atmospheric storage tanks may store liquids at ambient temperatures or at elevated temperatures (e.g., "heater treaters").
Balanced bellows spring-loaded relief valve	A type of reclosing pressure relief device that uses spring force to keep the relief valve closed until the set pressure is reached and that uses a bellows to protect the bonnet, spring and guide from the released fluids, thereby minimizing the effects of backpressure.
Barrel	A common unit of measurement for the volume of crude oil produced or processed. The volume of a barrel is equivalent to 42 US gallons.
Barrel of oil equivalent (BOE)	A unit of energy equal to 5.8-million British thermal units (5.8 MMBtu) based on the approximate energy released be burning one barrel of crude oil. For the purposes of this information collection request, you may use 1 BOE = 1 barrel of crude oil produced and 1 BOE = 5,800 scf of natural gas produced rather than using a direct energy conversion.
Basin	Geologic provinces as defined by the American Association of Petroleum Geologists (AAPG) Geologic Note: AAPG-CSD Geologic Provinces Code Map: AAPG Bulletin, Prepared by Richard F. Meyer, Laure G. Wallace, and Fred J. Wagner, Jr., Volume 75, Number 10 (October 1991) (incorporated by reference, see §98.7) and the Alaska Geological Province Boundary Map, Compiled by the American Association of Petroleum Geologists Committee on Statistics of Drilling in Cooperation with the USGS, 1978.
Blowdown	The act of releasing gas from a well, process unit, or pipeline to reduce the pressure of the system or to prepare equipment for maintenance or cleaning, such as pigging.
Candlestick flare	A flare that has an elevated flare stack and open (exposed) flame.
Casing	Large-diameter steel pipe lowered into an open hole and cemented in place during the construction process to stabilize the wellbore.
Centralized production surface site	Any onshore surface site that obtains crude oil or natural gas directly from multiple well surface sites without a custody transfer, and includes all equipment used in the transportation, compression, stabilization, separation, storing or treating of crude oil and/or natural gas (including condensate) located at the surface site.
Centrifugal compressor	Any machine for raising the pressure of a gaseous stream by drawing in low pressure gas and discharging significantly higher pressure gas by means of mechanical rotating vanes or impellers. Screw, sliding vane, and liquid ring compressors are not centrifugal compressors for the purposes of this information collection request.
Coal bed methane	Natural gas, predominantly methane, generated during coal formation and adsorbed in coal.
Coal seam	A stratum of coal thick enough to be profitably mined
Components (or equipment components)	Those parts of major process equipment that are typically included in leak detection and repair programs to reduce equipment leak emissions. Equipment components include, but are not limited to: valves, pumps, connectors (including flanges), meters, open-ended lines, and pressure relief devices.
Compressor	Any machine for raising the pressure of a gaseous stream by drawing in low pressure gas and discharging significantly higher pressure gas.
Compressor station	Any permanent combination of one or more compressors that move natural gas at increased pressure from fields, in transmission pipelines, or into storage.
Condensate	Hydrocarbon liquid separated from natural gas that condenses due to changes in the temperature, pressure, or both, and remains liquid at standard conditions.
Continuous bleed pneumatic controller	A pneumatic controller that uses a continuous flow of pneumatic supply gas to the process control device (e.g., level control, temperature control, pressure control) where the supply gas pressure is modulated by the process condition, and then flows to the valve controller where the signal is compared with the process set-point to adjust gas pressure in the valve actuator. For the purposes of this paper, continuous bleed controllers are further subdivided into two types based on their bleed rate. A low continuous bleed controller has a bleed rate of less than or equal to 6 standard cubic feet per hour (scf/hr). A high continuous bleed controller has a bleed rate of greater than 6 scf/hr.
Control device	Equipment that is utilized to recover or reduce emissions from a process stream that would otherwise be released to the atmosphere. For the purpose of completing the control device tab in this ICR, information is only required for each “organic emissions control device.”
Conventional spring-loaded relief valve	A type of reclosing pressure relief device that uses a spring force to keep the relief valve closed until the set pressure is released and where the bonnet, spring and guide are exposed to the released fluids and the release system backpressure effects the relief set pressure.
Crude oil	A mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities. Depending upon the characteristics of the crude stream, it may also include small amounts of non-hydrocarbons produced from oil, such as sulfur and various metals, drip gases, and liquid hydrocarbons produced from tar sands, gilsonite, and oil shale.

Term	Definition
Custody transfer	The transfer of natural gas after processing and/or treatment in the producing operations, or from storage vessels or automatic transfer facilities or other such equipment, including product loading racks, to pipelines or any other forms of transportation.
Darcy	A standard unit of measure of permeability. One darcy describes the permeability of a porous medium through which the passage of one cubic centimeter of fluid having one centipoise of viscosity flowing in one second under a pressure differential of one atmosphere where the porous medium has a cross-sectional area of one square centimeter and a length of one centimeter. A millidarcy (mD) is one thousandth of a darcy and is a commonly used unit for reservoir rocks.
Directional well	A wellbore that has a planned deviation from primarily vertical so as to require the use of special tools or techniques to ensure that the wellbore path hits a particular subsurface target, typically located away from (as opposed to directly under) the surface location of the well.
Dry gas well	For the purposes of this ICR, a well that produces natural gas, other than coal bed methane, with a GOR greater than 1,000,000 scf/bbl.
Equipment	The set of articles or physical resources used in an operation or activity.
Enclosed flare/combustor	A flare or combustion device that uses a large stack enclosure to contain the devices flame within the stack enclosure. The bottom of the stack enclosure may be open or have openings to allow ambient air flow into the stack enclosure and the flare/flame tips are located near the base of the enclosure. This device is differs from a thermal oxidizer or incinerator due to the lack of a defined volume combustion chamber.
Enhanced oil recovery (or EOR)	The implementation of various techniques for increasing the amount of crude oil that can be extracted from an oil field, including gas injection, thermal injection, chemical injection, and plasma-pulse technology.
Facility	All of the pollutant-emitting activities which belong to the same industrial grouping (same two-digit code as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement), are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant emitting activities shall be considered adjacent if they are located on the same surface site; or if they are located on surface sites that are located within 1/4 mile of one another (measured from the center of the equipment on the surface site) and they share equipment. The term facility may also refer to the pollutant-emitting activities at one or more surface sites depending on the industry segment. For the purposes of completing this ICR, the following definitions apply: · Well site facility for the onshore petroleum and natural gas production industry segment. · Gathering and boosting compressor station facility for the onshore petroleum and natural gas gathering and boosting industry segment. · Transmission pipeline facility for the onshore natural gas transmission pipeline industry segment. All other industry segments, the basic definition of facility applies.
Field operator site	A centralized office or company that serves as the overall manager of the operations of one or more wells sites.
Field quality natural gas	Natural gas as produced at the wellhead or feedstock natural gas entering the natural gas processing plant.
Fixed operating and maintenance costs	Operating and maintenance costs that are independent of production levels.
Flare	A combustion device, whether at ground level or elevated, that uses an open flame to burn combustible gases with combustion air provided by uncontrolled ambient air around the flame.
Flowback	The process of allowing fluids and entrained solids to flow from a 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 term flowback also means the fluids and entrained solids that emerge from a well during the flowback process. The flowback period begins when material introduced into the well during the treatment returns to the surface following hydraulic fracturing or refracturing. The flowback period ends when either the well is shut in and permanently disconnected from the flowback equipment or at the startup of production. The flowback period includes the initial flowback stage and the separation flowback stage.
Formation type	The type of reservoir classified into one of the five following categories: Oil, high permeability gas, shale gas, coal seam, or other tight gas reservoir rock. All wells that produce hydrocarbon liquids with a gas-to-oil ratio less than 100,000 scf/barrel. The distinction between high permeability gas and tight gas reservoirs shall be designated as follows: High permeability gas reservoirs with >0.1 millidarcy permeability, and tight gas reservoirs with ≤0.1 millidarcy permeability. Permeability for a reservoir type shall be determined by engineering estimate. Wells that produce only from high permeability gas, shale gas, coal seam, or other tight gas reservoir rock are considered gas wells; gas wells producing from more than one of these formation types shall be classified into only one type based on the formation with the most contribution to production as determined by engineering knowledge.
Gas liquid ratio	The ratio of the volume of natural gas that comes out of solution when liquid is stored at standard conditions. The liquid may be crude oil, condensate or produced water.
Gas-to-oil-ratio (GOR)	The ratio of the volume of natural gas that is produced or that comes out of solution when crude oil is extracted from a well equilibrated to standard conditions to the volume of hydrocarbon liquids (oil and condensate) produced after the natural gas comes out of solution. This is often calculated by dividing the measured natural gas production by the measured crude oil and condensate production.
Gas reservoir	A reservoir that produces natural gas or that produces natural gas and hydrocarbon liquids (oil and condensate) such that the gas-to-oil ratio of the material extracted from the reservoir is 100,000 scf/barrel of more.
Gas service	A piece of equipment that contains process fluid that is in the gaseous state at operating conditions.
Gas well	A well that produces natural gas or that produces natural gas and hydrocarbon liquids (oil and condensate) such that the gas-to-oil ratio is 100,000 scf/barrel of more.

Term	Definition
Gathering and boosting compressor station facility	All equipment at a compressor station surface site within the onshore petroleum and natural gas gathering and boosting industry segment, the gathering pipelines associated with the compressor station, and all equipment associated with those gathering pipelines. Gathering pipelines that are associated with a compressor station include all pipelines upstream of the compressor station up to either the well site facility, upstream gathering and boosting station facility or custody transfer point, as applicable. Gathering pipelines that are associated with a compressor station also include pipelines downstream of the compressor station that are not directed to another gathering and boosting station facility under the same ownership; the down steam upstream pipelines associated with the compressor station ends at the custody transfer point, entrance to a transmission pipeline, of entrance to a gas processing plant, as applicable.
Heater Treater	A storage vessel that uses heat to break oil-water emulsions so the oil can be accepted by the pipeline or transport.
Heavy liquid service	A piece of equipment that is not in gas service or in light liquid service.
Heavy oil well	For the purposes of this ICR, a well that produces crude oil with a GOR of 300 scf/bbl or less.
High permeability gas reservoir	A natural gas reservoir with a permeability exceeding 0.1 millidarcy.
Horizontal well	A subset of the more general term "directional well" used where the departure of the wellbore from vertical exceeds about 80 degrees.
Hydraulic fracturing	The process of directing pressurized fluids containing any combination of water or other base fluid, proppant, and any added chemicals to penetrate a formations, generally to stimulate production, that subsequently require high rate, extended flowback to expel fracture fluids and solids during completions.
Hydraulic refracturing	Conducting a subsequent hydraulic fracturing operation at a well that has previously undergone a hydraulic fracturing operation.
Ignition retard	Adjust ignition timing (reduction in cycle) to reduce emissions.
Incinerator	An apparatus for burning waste material, especially industrial waste, at high temperatures until it is reduced to ash. Incinerators may be used to treat solid, liquid or gaseous waste and typically have a fixed volume combustion chamber.
Intermittent bleed controller	A pneumatic controller that does not have a continuous bleed, but rather vents only when the controller is actuated.
Isolation valve	A valve in a fluid handling system that stops the flow of process media to a given location, usually for maintenance or safety purposes.
Liquefied natural gas (LNG)	Natural gas (primarily methane) that has been liquefied by reducing its temperature to -260 degrees Fahrenheit at atmospheric pressure.
Liquefied natural gas (LNG) storage	The oil and gas industry segment that liquefies natural gas, stores LNG in storage vessels, and/or re-gasifies LNG in onshore facilities that are not associated with LNG import or export,
Liquefied petroleum gas (LPG)	Light hydrocarbons, such as ethane, propane, and butane that are extracted from crude oil.
Light liquid service	A piece of equipment that contains a liquid for which all of the following conditions apply: • The vapor pressure of one or more of the organic components is greater than 0.3 kPa at 20 °C (1.2 in. H2O at 68 °F), • The total concentration of the pure organic components having a vapor pressure greater than 0.3 kPa at 20 °C (1.2 in. H2O at 68 °F) is equal to or greater than 20 percent by weight, and • The fluid is a liquid at operating conditions.
Light oil well	For the purposes of this ICR, a well that produces crude oil with a GOR greater than 300 scf/bbl but less than or equal to 100,000 scf/bbl.
Liquids unloading	The process of removing water or condensate build-up from producing gas wells. Also known as "gas well deliquification" or "gas well dewatering."
LNG import and export equipment	The oil and gas industry segment that either receives imported LNG via ocean transport, stores LNG, re-gasifies LNG, and delivers re-gasified natural gas to a natural gas transmission or distribution system or that receives natural gas, liquefies natural gas, stores LNG, and transfers the LNG via ocean transportation to any location, including locations in the United States. The LNG import and export equipment industry segment includes both onshore and offshore equipment.
Low emissions combustion	Engine retrofit with high energy ignition systems, pre-combustion chambers, or other retrofit to the engine to improve efficiency and reduce NOx emissions.
Low excess air	Tuning of air within a combustion unit.
Low-NOx burner	Staging of air or fuel within the burner tip.
NAICS code	The numerical code of up to 6 digits used by the North American Industry Classification System (NAICS) for classifying business establishments by industry sector.
Natural gas (NG)	A naturally occurring mixture or process derivative of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the earth's surface, of which its constituents include, but are not limited to methane, heavier hydrocarbons and carbon dioxide. Natural gas may be field quality, pipeline quality, or process gas.
Natural gas liquids	The hydrocarbons, such as ethane, propane, butane, and pentane that are extracted from field quality natural gas.
Natural gas reburn	Recirculation of flue (natural) gas to reduce combustion temperature, thus reducing NOx emissions.
Net heating value	The energy released as heat when a compound undergoes complete combustion with oxygen to form gaseous carbon dioxide and gaseous water (also referred to as lower heating value).
Non-Selective Catalytic Reduction (NSCR)	Reaction using a reducing agent to in the presence of a 3-way catalyst.
Nonstripper well	A well that produces more than 15 barrels of oil equivalent (BOE) per day on average over a 12-month period.
Oil reservoir	A reservoir that contains predominately hydrocarbon liquids (crude oil) such that the gas-to-oil ratio of the material extracted from the well is less 100,000 scf/barrel
Oil well	A well that produces crude oil or that produces crude oil and associated gas such that the gas-to-oil ratio is less 100,000 scf/barrel.

Term	Definition
Onshore	All facilities except those that are located in the territorial seas or on the outer continental shelf.
Onshore natural gas processing	The oil and gas industry segment that is engaged in the extraction of natural gas liquids from field quality natural gas, fractionation of mixed natural gas liquids to natural gas products, or both at an onshore facility. A Joule-Thompson valve, a dew point depression valve, or an isolated or standalone Joule-Thompson skid is not an onshore natural gas processing facility.
Onshore natural gas transmission compression (or Onshore natural gas transmission compressor station)	The oil and gas industry segment whose primary function is to move natural gas from production facilities, gathering and boosting facilities, natural gas processing plants, or other transmission compressor stations through transmission pipelines to natural gas distribution pipelines, LNG storage facilities, or into underground storage using a combination of onshore compressors. Facilities in this industry segment are referred to as Onshore natural gas transmission compressor stations and these facilities may include equipment for liquids separation, and tanks for the storage of water and hydrocarbon liquids; however; the Onshore natural gas transmission compression industry segment does not include facilities that have compressors but that are in the production, gathering and boosting, or processing industry segments.
Onshore natural gas transmission pipeline	The oil and gas industry segment that operates onshore transmission pipelines.
Onshore petroleum and natural gas gathering and boosting	The oil and gas industry segment that uses onshore gathering pipelines and other equipment to collect petroleum and/or natural gas from onshore petroleum and natural gas production facilities and to compress, dehydrate, sweeten, or transport the crude oil , condensate and/or natural gas to a natural gas processing facility, a transmission pipeline or to a natural gas distribution pipeline. See also Gathering and boosting compressor station facility.
Onshore petroleum and natural gas production	The oil and gas industry segment responsible for the onshore extraction and production of crude oil, condensate, and/or natural gas and generally operate under NAICS code 211111 or 211112.
Organic emissions control device	A control device designed to recover or reduce emissions of organic pollutants, and includes, but is not limited to, traditional candlestick flares, enclosed flares, thermal oxidizers/incinerators, vapor recovery units and carbon adsorption systems. Catalyst systems used on compressor engines to reduce the emissions of CO, NOx or other inorganic pollutants are not considered to be an organic emissions control device.
Owner or operator	Any person who owns, leases, operates, controls, or supervises an affected facility or a stationary source of which an affected facility is a part.
Permeable gas reservoir	A natural gas reservoir that has a permeability greater than 0.1 millidarcy.
Pilot-operated relief valve	A type of reclosing pressure relief device that uses the process fluid itself, circulated through a pilot valve, to apply the closing force on the safety valve disc. The pilot valve is itself a small safety valve with a spring. The main valve does not have a spring but is controlled by the process fluid from pilot valve.
Plugged well	A well that has been sealed, typically by filling a portion of the well bore with cement, in order to permanently abandon the well following State, local or other regulatory body requirements for plugging and abandoning the well.
Plunger lift	A type of gas-lift method that uses a plunger that goes up and down inside the tubing and is used to remove water and condensate from a well. The plunger provides an interface between the liquid phase and the lift gas, minimizing liquid fallback.
Pneumatic controller	An automated pneumatic device used for maintaining a process condition such as liquid level, pressure, pressure difference and temperature.
Pneumatic device	Any device which generates or is powered by compressed air or natural gas which includes pneumatic controllers, pneumatic valve actuators, and pneumatic pumps.
Pneumatic pump	Devices that use gas pressure to drive a fluid by raising or reducing the pressure of the fluid by means of a positive displacement, a piston or set of rotating impellers.
Pressure relief device	A valve, rupture disc or other device that is designed to open or release fluids when the pressure inside a piece of equipment reaches a set pressure to avoid safety hazards and equipment damage caused by exceeding the design limits of the equipment.
Pressure vessels	Vessel that are designed to store compressed gases or liquids, such as LNG, at pressures of 30 psig or higher without emissions to the atmosphere.
Producing well	A well for which crude oil or natural gas are actively flowing from a subsurface reservoir and through the wellhead valve.
Production profile	How the production level of a well or basin changes (or is expected to change) over the life of the well.
Production tubing	See "tubing"
Purge gas	Gas intentionally introduced either into the flare header system or at the base of the flare to maintain a constant flow of gas through the flare header and stack in order to prevent oxygen ingress.
Reciprocating compressor	A piece of equipment that increases the pressure of a gaseous stream by positive displacement, employing linear movement of the driveshaft.
Relief valve	Any reclosing pressure relief device such as a conventional spring-loaded relief valve, a balanced bellows spring-loaded relief valve, or a pilot-operated relief valve.
Rotary vane actuator	A type of pneumatic actuator that uses a system of chambers and vanes to produce rotational force on a shaft. The chambers typically contain a hydraulic fluid and pneumatic pressure is used to displace the hydraulic fluid from one chamber to apply pressure on one side of the shaft, which forces hydraulic fluid and venting of pneumatic gas from the other chamber. Also known as a displacement-type actuator.
Rupture disc	A non-reclosing differential-pressure device actuated by inlet static pressure and set to burst as a set inlet pressure. A rupture disk may be used alone, in parallel with, or in conjunction with reclosing pressure relief valves.
Selective catalytic reduction (SCR)	Reagent injection to reduce NOx in the presence of a catalyst.
Separator (or Gas-liquid separator)	A process vessel specifically designed to separate gaseous fluids from one or more liquid fluids produced from a well or as received via a pipeline. Generally, separators are operated at pressures greater than ambient air pressure.

Term	Definition
Shale gas	Natural gas that is found trapped within shale formations, which are formations of fine-grained, clastic sedimentary rock composed of mud that is a mix of flakes of clay minerals and tiny fragments (silt-sized particles) of other minerals, especially quartz and calcite that is characterized by breaks along thin laminae or parallel layering or bedding less than one centimeter in thickness, called fissility.
Snap acting controller	A controller that acts as an on/off switch and is either fully open or fully closed. Most snap acting controllers, when functioning properly, do not have a continuous gas bleed and vent gas only when actuating and are, therefore, typically designed as intermittent bleed pneumatic devices.
Specific gravity	The ratio of the density of a fluid compared to the density of 4 °C water (i.e., 1.00 g/cm3).
Standard conditions	For the purposes of this ICR questionnaire, standard conditions may include any "standard" temperature between 288°K and 298°K and pressure between 1 bar (100 kilopascals) and 1 atmosphere. For emissions source tests, standard conditions refer to a temperature of 293°K (68°F) and a pressure of 1 atmosphere (101.3 kilopascals or 29.92 inches Hg).
Stationary source	Any building, structure, facility, or installation which emits or may emit any air pollutant.
Steam-assisted flare	A flare that intentionally introduces steam prior to or at the flare tip through nozzles or other hardware conveyance for the purposes including, but not limited to, protecting the design of the flare tip, promoting turbulence for mixing or inducing air into the flame.
Steam injection	Injecting steam into combustion chamber to reduce flame temperature, thus reducing NOx emissions.
Storage tank or vessel	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. For the purposes of this ICR, pressure vessels (vessels designed to operate at pressures of 30 psig or higher) are not considered storage tanks.
Stripper well	A well that produces 15 barrels of oil equivalent (BOE) or less per day on average over a 12-month period.
Sub-basin category	A unique combination of Basin ID, the County and State, and the formation type. See definitions of "Basin" and "Formation type".
Surface site	Any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which equipment is physically affixed.
Temporarily shut-in well	A well for which production is halted due to lack of a suitable market, a lack of available equipment to produce the product, or other reasons, but for which production may be resumed. The halt in production may extend for long periods of time, but the shut-in is "temporary" in that the well is not permanently plugged and production can resume when conditions are favorable.
Thermal oxidizer	An apparatus with a fixed volume combustion chamber for burning waste gases at high temperatures. A thermal oxidizer is an incinerator designed to handle only gaseous waste streams.
Thief hatch	An opening in the top of a storage vessel that allows tank access for collecting (liquid or sediment) samples or measuring (liquid or sediment) levels.
Throttling controller	A controller that can provide a variable signal based on the deviation from the desired set point. A throttling controller is designed to hold an end device in an intermediate position and move it from any position to more or less open without a requirement to go fully open or fully shut every actuation cycle.
Tight gas reservoir	A natural gas reservoir (other than coal seam or shale formation) with a permeability of 0.1 millidarcy or less.
Total compressor power rating	The nameplate capacity of the compressor power output of the compressor drive.
Transmission pipeline	A Federal Energy Regulatory Commission rate-regulated Interstate pipeline, a state rate-regulated Intrastate pipeline, or a pipeline that falls under the “Hinshaw Exemption” as referenced in section 1(c) of the Natural Gas Act, 15 U.S.C. 717-717 (w) (1994).
Transmission pipeline facility	For the purposes of this ICR, all onshore transmission pipelines that are physically connected within a given state and that is under the control of the same person (or persons under common control). The transmission pipeline facility starts or ends at the custody transfer point or state lines, whichever is applicable.
Tubing (or production tubing)	A tube installed within the casing and used as the primary conduit through which reservoir fluids are produced to surface.
Turbine operated actuator	A type of pneumatic actuator that uses a small turbine to actuate a valve, most commonly a gate valve. Pneumatic gas is used to spin the turbine blades and the turbine shaft turns gears that actuates the gate valve system.
Underground natural gas storage	The oil and gas industry segment that uses subsurface storage (include storage in depleted gas or oil reservoirs and salt dome caverns) of natural gas that has been transferred from its original location for the primary purpose of load balancing (the process of equalizing the receipt and delivery of natural gas).
Ultra-low NOx burner	Advanced staging of air or fuel within the burner tip.
Unassisted flare	A flare that does not have special nozzles or other hardware conveyance designed to intentionally supply air or steam prior at or near the flare tip.
Underground storage vessel	A storage vessel stored below ground.
US Well ID (or API Well ID)	The uniquely assigned number for a well on the property (formerly known as the API Well ID).
Variable operating and maintenance costs	Operating and maintenance costs that are proportional to production levels.
Vertical well	A well that is not turned horizontally at depth, allowing access to oil and gas reserves located directly beneath the surface access point.
Volatile organic compounds (VOC)	Any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. Compounds that have been determined to have negligible photochemical reactivity, such as methane and ethane, are excluded from the define
Waste gas	Gas from facility operations that is directed to a flare for the purpose of disposing of the gas.
Water injection	Injecting water into combustion chamber to reduce flame temperature, thus reducing NOx emissions.
Well	A hole drilled for the purpose of producing crude oil or natural gas, or a well into which fluids are injected.
Well bore length	The nominal length of the well from the wellhead to the termination of the well bore in the reservoir. For vertical wells, well bore length and well depth are equivalent. For directional or horizontal wells, well bore length will be greater than well depth.

Term	Definition
Well completion	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 depth	The vertical distance from the wellhead to the termination of the well bore in the reservoir.
Well head (or wellhead)	The piping, casing, tubing and connected valves protruding above the earth's surface for an oil and/or natural gas well. The wellhead ends where the flow line connects to a wellhead valve. The wellhead does not include other equipment at the well site except for any conveyance through which gas is vented to the atmosphere.
Well shut-in pressure	The surface force per unit area exerted at the top of a wellbore when the wellhead valve is closed for at least 12 hours.
Well site facility	A well surface site plus all equipment at the centralized production area surface site collecting crude oil, condensate, intermediate hydrocarbon liquids, or produced water from wells at the well surface site but that not are located at the well surface site (e.g., centralized tank batteries).
Well surface site	One or more surface sites that are constructed for the drilling and subsequent operation of any oil well, natural gas well, or injection well. For purposes of this ICR, well surface site refers only to the well(s) and equipment at the disturbed area of land associated with the well(s). The well surface site area does not include equipment at a centralized production surface site not located at the well surface site.
Well testing	The determination of the production rate of a well or an assessment of reservoir characteristics for regulatory, commercial, or technical purposes. Well testing may or may not require venting of gas at the well surface site.
Wet gas well	For the purposes of this ICR, a well that produces natural gas, other than coal bed methane, with a GOR greater than 100,000 scf/bbl but less than or equal to 1,000,000 scf/bbl.
Workover	The process of performing major maintenance or remedial treatments on producing petroleum and natural gas wells to try to increase production. This process includes production tubing replacement, hydraulic refracturing, and snubbing and other well-intervention techniques.
Zero bleed pneumatic controller	A pneumatic controller that does not bleed the pneumatic gas to the atmosphere. These pneumatic controllers are self-contained devices that release gas to a downstream pipeline instead of to the atmosphere.

1. Parent Company General Information

Legal Name:
Does this company meet the definition of small business?
Dun and Bradstreet Number:

Mailing Address:
Mailing City:
Mailing State:
Mailing Zip:

Contact Name:
Contact Title:
Contact Phone:
Contact Phone 2:
Contact Email:
Contact Email 2:

2. Facility General Information

Facility Name:
Assigned Facility ICR ID:
Facility Type:
Other Facility Type, if applicable:
Are greenhouse gas (GHG) emissions from this facility reported under 40 CFR part 98 subpart W for reporting year 2015?
Facility GHGRP ID, if applicable:
Physical Address:
Physical City:
Physical State:
Physical Zip:
Physical County:
Latitude (degrees decimal)
Longitude (degrees decimal)

Mailing Address:
Mailing City:
Mailing State:
Mailing Zip:

Contact Name:
Contact Title:
Contact Phone:
Contact Phone 2:
Contact Email:

Contact Email 2:

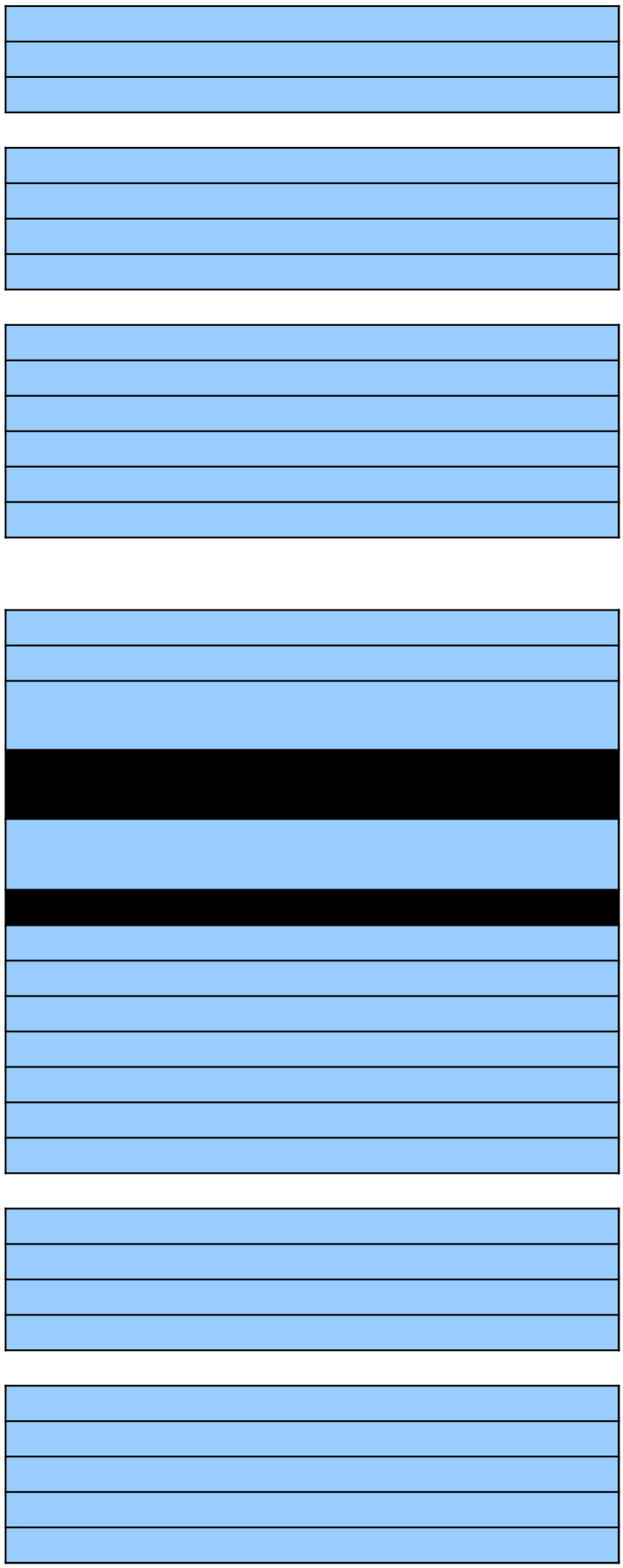
To the best of your ability based on existing records:

How often is this facility manned or visited?
What type of electricity is available at thia facility?
Number of months the facility operated in 2015
Quantity of natural gas received by the facility in the 2015 calendar year (thousand standard cubic feet). [For storage facilities, this is the quantity placed into storage.]
Quantity of natural gas leaving the facility (sales) in the 2015 calendar year (thousand standard cubic feet). [For production facilities, this is the quantity extracted from all wells at the well surface site and also report the quantity leaving the centralized production surface site; for storage facilities, this is the quantity removed from storage.]
Quantity of all hydrocarbon liquids (crude oil and condensate, including NGLs) received by the facility in the 2015 calendar year (barrels).
Quantity of all hydrocarbon liquids (crude oil and condensate, including NGLs) leaving the facility (sales) in the 2015 calendar year (barrels). [For production facilities, this is the quantity extracted from all wells at the well surface site and also report the quantity leaving the centralized production surface site.]
Quantity of natural gas vented from the facility in the 2015 calendar year (thousand standard cubic feet).
For production facilities, quantity of produced water (thousand bbl/year in the 2015 calendar year).
For gathering and boosting facilities, miles of pipeline associated with the "gathering and boosting station facility" (see definition)
For tranmission pipeline facilities, miles of natural gas transmission pipeline
Total number of pig launchers/receivers at the facility
What are the total voluntary CH_4 reductions achieved by the facility through EPA Gas STAR since 2012? (mt CH_4)
What are the total voluntary CH_4 reductions achieved by the facility through EPA Methane Challenge since 2015? (mt CH_4)

3. Gas Composition - Complete according to most recent gas sampling eve

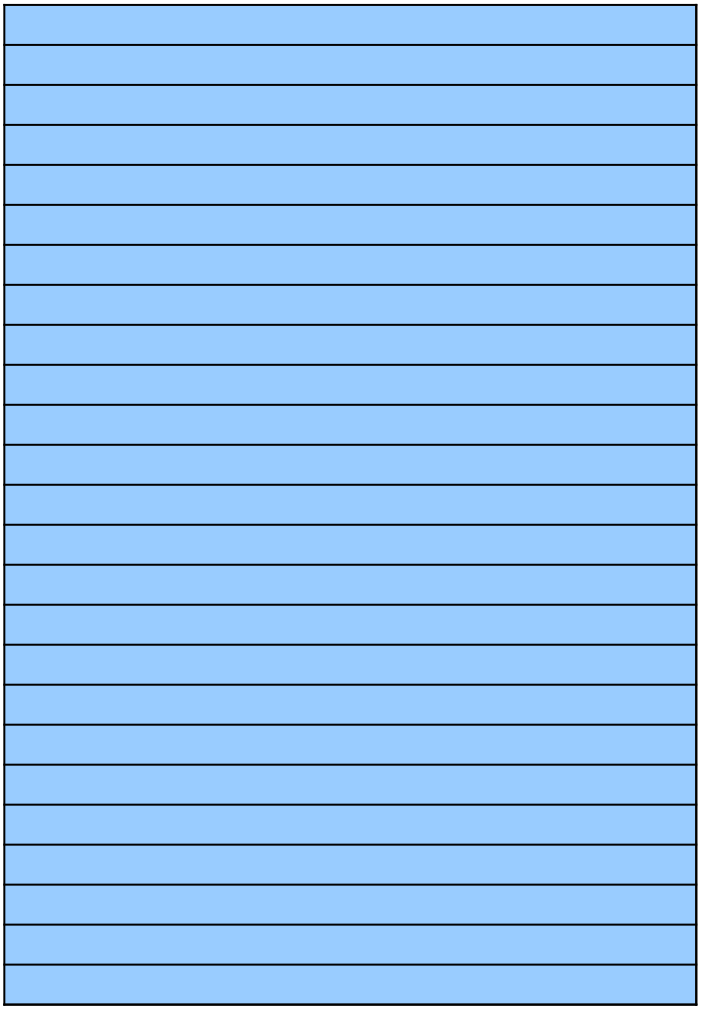
Sample Date (mm/dd/yyyy):
Sample Location:
Component:
Carbon Dioxide
Nitrogen
Ethane
Propane

Isobutane
n-Butane
Isopentane
n-Pentane
Cyclopentane
n-Hexane
Cyclohexane
Heptanes
Methylcyclohexane
2,2,4-Trimethylpentane
Benzene
Toluene
Ethylbenzene
Xylene (isomers and mixtures)
o-Xylene
m-Xylene
p-Xylene
C8+ Heavies
Acetaldehyde
Carbon Disulfide
Carbonyl Sulfide
Ethylbenzene
Ethylene Glycol
Formaldehyde
Napthalene

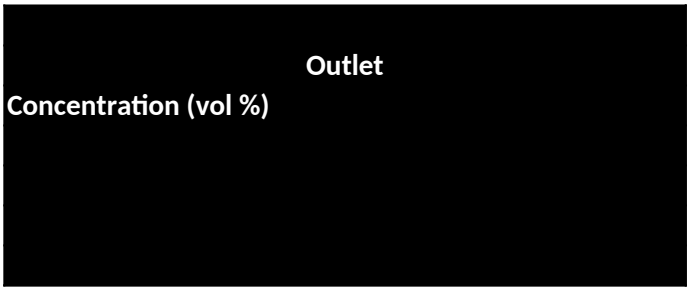


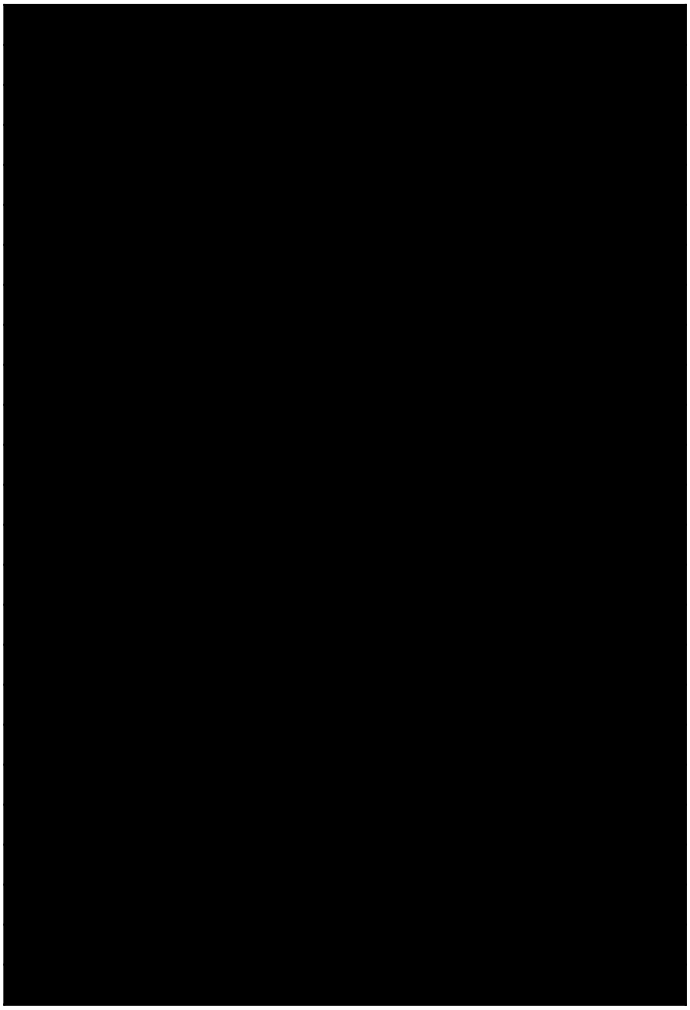
nt if available.

Inlet
Concentration (vol %)



Quantities for Centralized Production Suface Site





1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of organic emissions control devices at the facility	

2. General Control Device Information - Complete for each Organic Emissions Co

Control Device ID	Control Device Type

3. Control Device Cost Information - Complete for each Organic Emissions Contr

Control Device ID	Year Installed

ntrol Device:

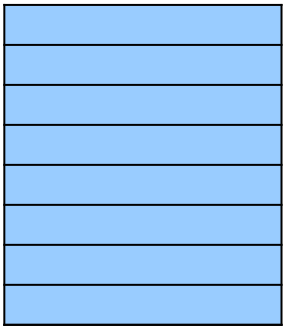
Specify Type if selected "Other"	Release height (ft)	Stack diameter (ft)	Maximum flow capacity for device (scfm)
[redacted]			

ol Device:

Was Device Installed During Initial Construction?	Purchased Equipment Costs ($)	Total Capital Installed Cost ($)	Annual Operating and Maintenance Cost ($/yr in 2015)

2015 Annual operating hours (hrs)	Average Net Heating Value of waste gas stream (Btu/scf)	Estimated cummulative volume of waste gas sent to device in 2015 (scf)	Net Heating Value of purge/pilot gas (Btu/scf)

Natural Gas Consumption Rate (MMscf/yr)



Purge Gas Flow Rate (scf/hr)	Pilot Gas Flow Rate (scf/hr)	Fraction of time control device is operated (lit) while waste gas flow is present	Design Fractional Control Efficiency of Device

Maximum Heat Input Capacity to the Control Device (MMBtu/hr)	For Vapor Recovery Units, Minimum Rated Suction Pressure (psig)	For Vapor Recovery Units, Maximum Rated Suction Pressure (psig)	For thermal control devices, type of ignition source

For thermal control devices, does it have a monitor to ensure a continuous flame?	For thermal control devices, does it have monitoring to indicate when the device malfunctions or shuts down?	For thermal control device, are there louvers, dampers, or other means of controlling ambient inlet air

For air assisted flares, type of air supply fan	Is device equipped with a waste gas meter or other continuous parameter monitor?	If yes, provide parameter(s) monitored.

Were any emissions source tests conducted for this control device in past 5 years? If yes, please attach source test report.	If yes, enter file name of attached report.

1A. Production Well Surface Site Information:

Facility ID (pulled from Facility sheet)	
Driving distance from field office (road miles).	
Travel time to well site from field office (minutes).	
Is the well site connected to a gathering and boosting or natural gas transmission pipeline?	
If not connected, why not?	
If not connected, distance to the nearest natural gas transmission pipeline or gathering and boosting pipeline (miles).	
How frequently is well site visited by field office personnel?	
Is land owned or leased?	
Who owns the mineral rights?	
Is the well site subject to environmental regulations?	
Is the well site subject to State/Local Environmental Regulations?	
Is the well site subject to 40 CFR 60 subpart OOOO?	
Is the well site subject to 40 CFR 60 subpart OOOOa?	
Is the well site subject to 43 CFR 3100 subpart 3179?	
How are produced waters managed?	
Number of wells at the well site.	
Is there a combustion device on site?	
If combustion device is on site, what type of device is it?	
If other combustion device is on site, please list.	

2. General Well Information - Complete for each well at the well surface site.

US Well ID Number	Basin ID

3. Well Completion and Workover Information - Complete for each well at the well surfac

US Well ID Number	Date Well Completed (mm/dd/yyyy)

4. Well Testing and Liquids Unloading Information - Complete for each well at the well sur

US Well ID Number	Date of last well testing (mm/dd/yyyy)

1B. Production Well Surface Site Cost Information: Provide the follow

	Minimum
2015 Wellhead price for natural gas ($.$$/MMBtu)	
2015 Wellhead price for crude oil ($. $$/bbl)	
2015 Average royalty rate for crude oil (%)	
2015 Average royalty rate for natural gas (%)	
2015 Average severance tax rate (%)	
2015 Average of other (additional) taxes, such as ad valorem taxes or production shares (%)	

County and State in which the Sub-basin is Located	Sub-basin Formation Type	Sub-basin ID

e site.

Type of Well Completion	Date of Last Workover (mm/dd/yyyy)	Type of Well Workover

·face site.

Anticipated date of next well testing (mm/dd/yyyy)	Annual hours for well testing (hours)	Controls used for last well testing

ing information for the well surface site:

Average	Maximum

Well Drilling Type	Well Type	Well depth (feet)

Controls used for workovers	Control Device ID (Enter "Temporary" if device only present for workover)	Cost of last workover ($)

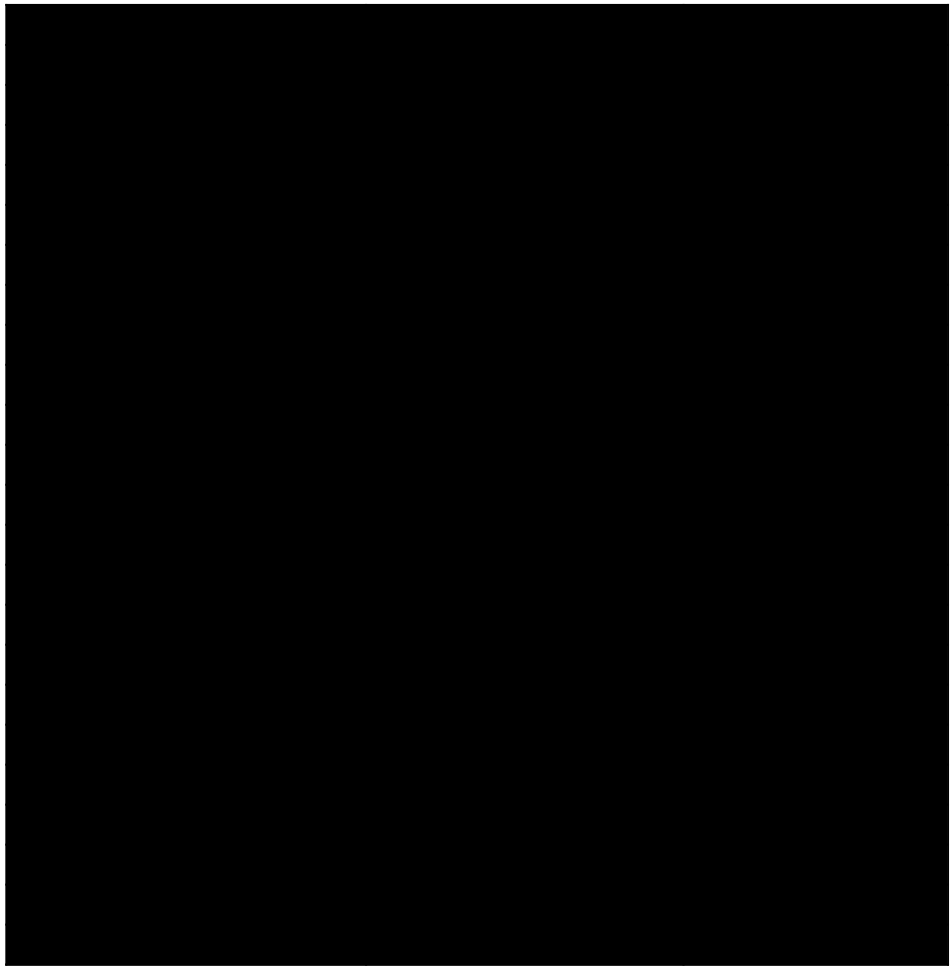
	[redacted]

Primary technique used for gas well liquids unloading?	Number of well venting events for liquids unloading in past year (or since completion if <1 year old)	Controls used for well venting for liquids unloading

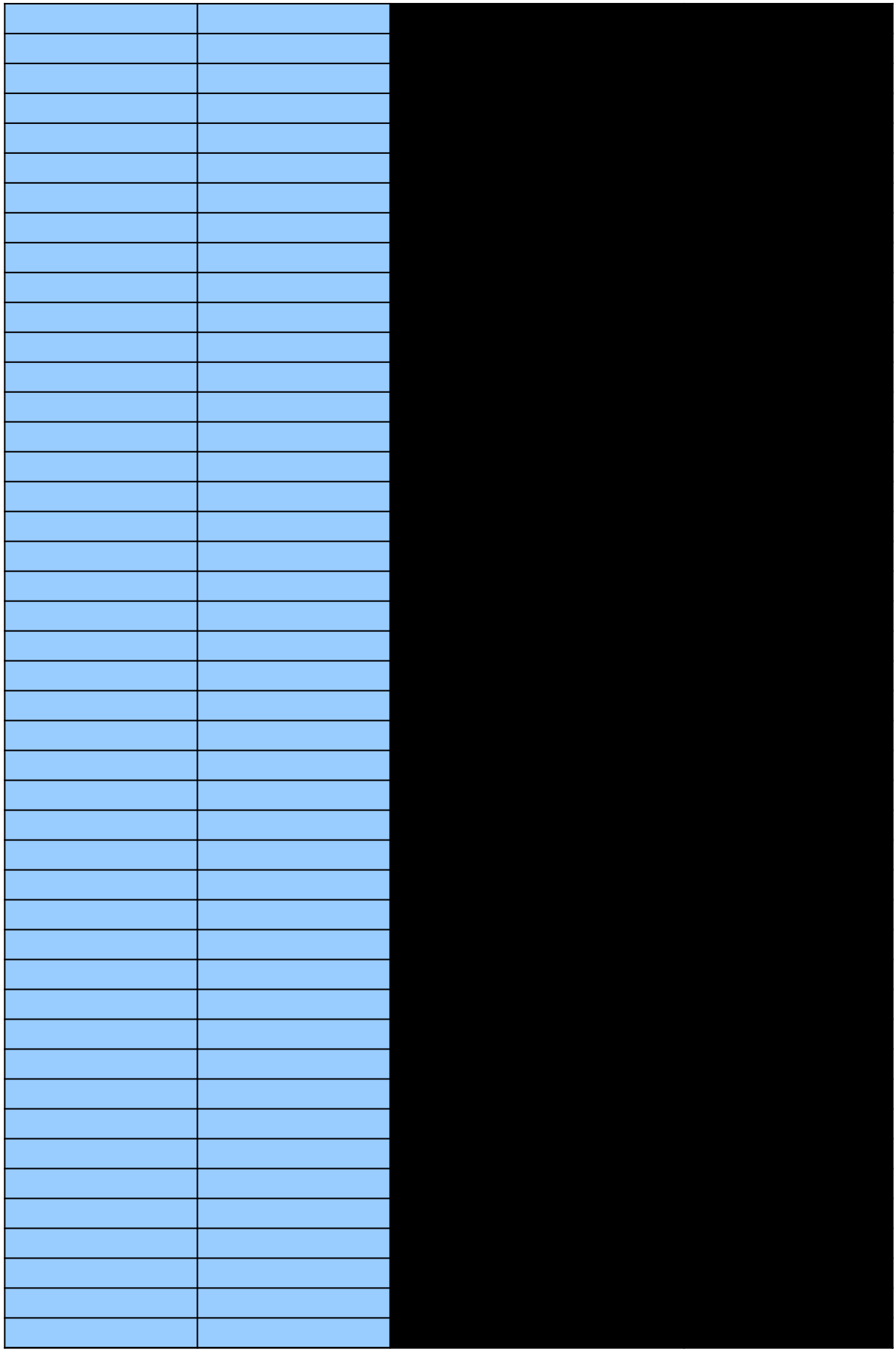
Type of well bore	Well bore length (feet)	Well shut-in pressure (psig)	Well casing inside diameter (inches)

If unshaded, provide the following information regarding costs for liquids unloading assist:

Year Installed (for plunger lift, velocity tubing, or other assist method)	Total Capital Installed Cost ($)	Annual Operating and Maintenance Costs ($/yr in 2015)
[redacted]		

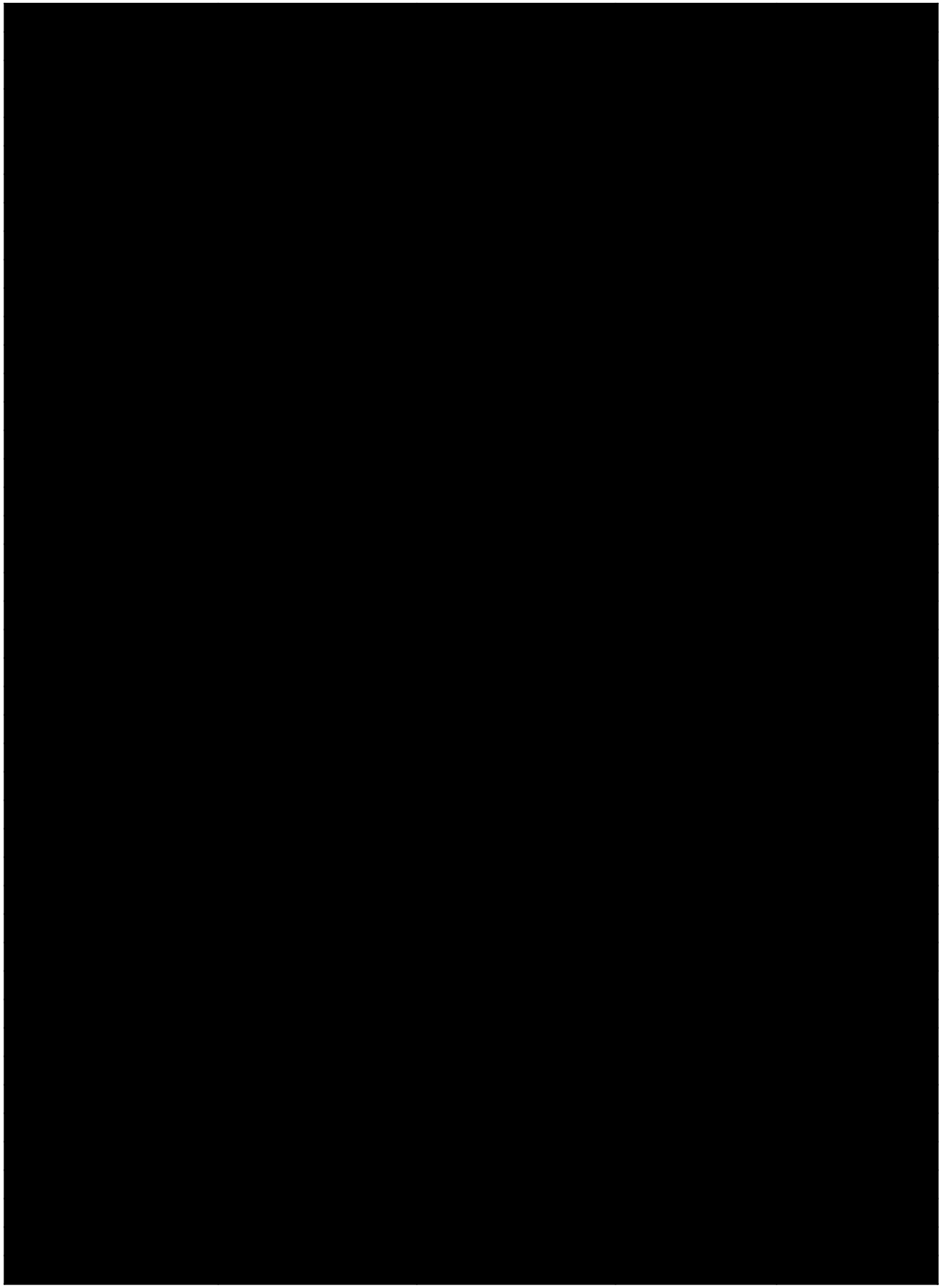


		For production rate and cumulative amou	
Well tubing inside diameter (inches)	What is the age (years) of the well at the well site?	Natural gas production rate from well (daily average over last 30 days of operation). (Mscf/day)	Cumulative natural gas production from well in 2015. (Mscf/day)



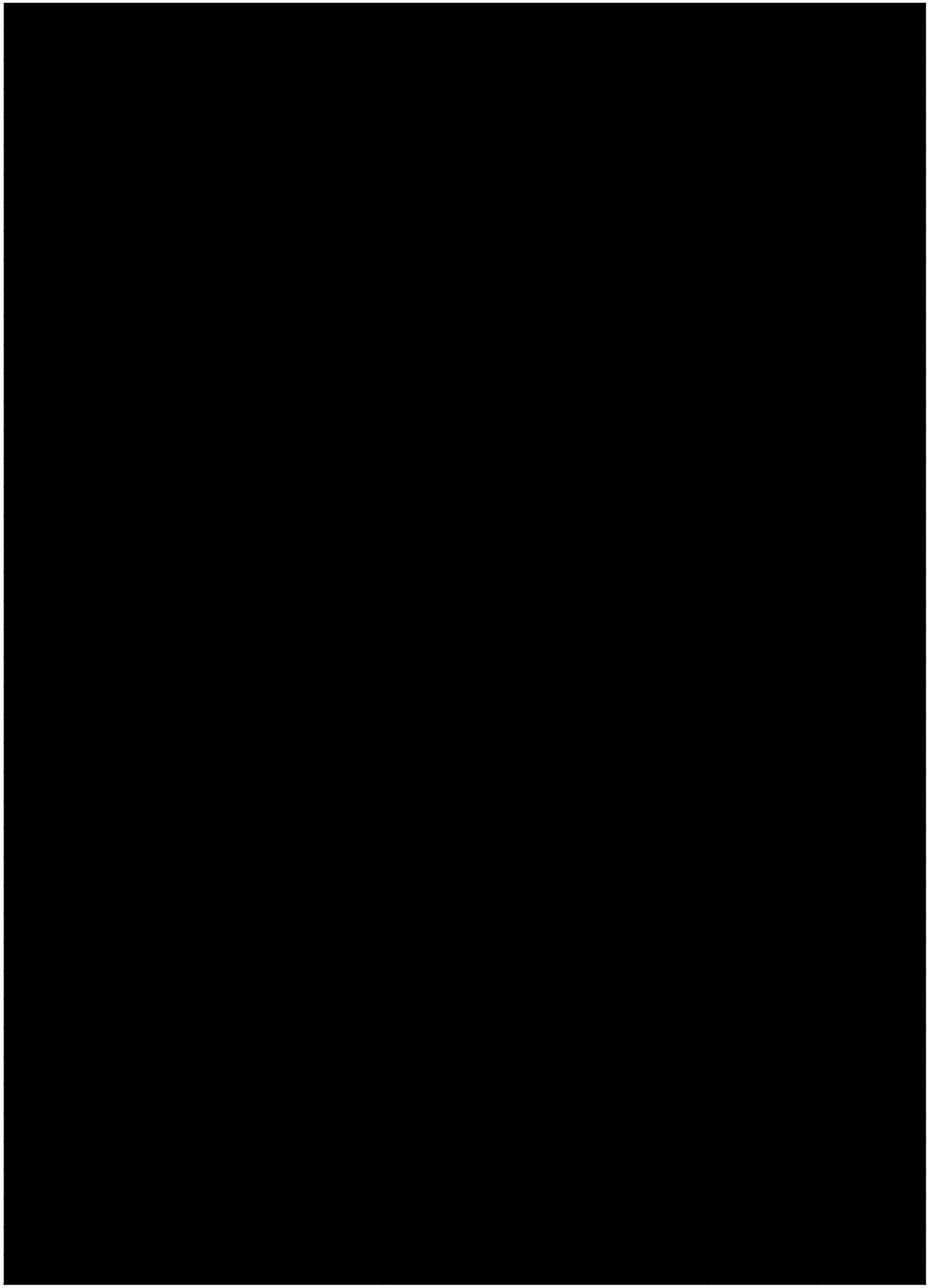
unts, use metered data where available; otherwise use best available data.

Where is produced gas monitored?	Oil and condensate production rate from well (daily average over last 30 days of operation) (bbl/day)	Cumulative oil and condensate production rate from well in 2015 (bbl/day)	Where is oil/condensate flow monitored?	Date of last production for shut-in or plugged wells (dd/mm/yyyy)



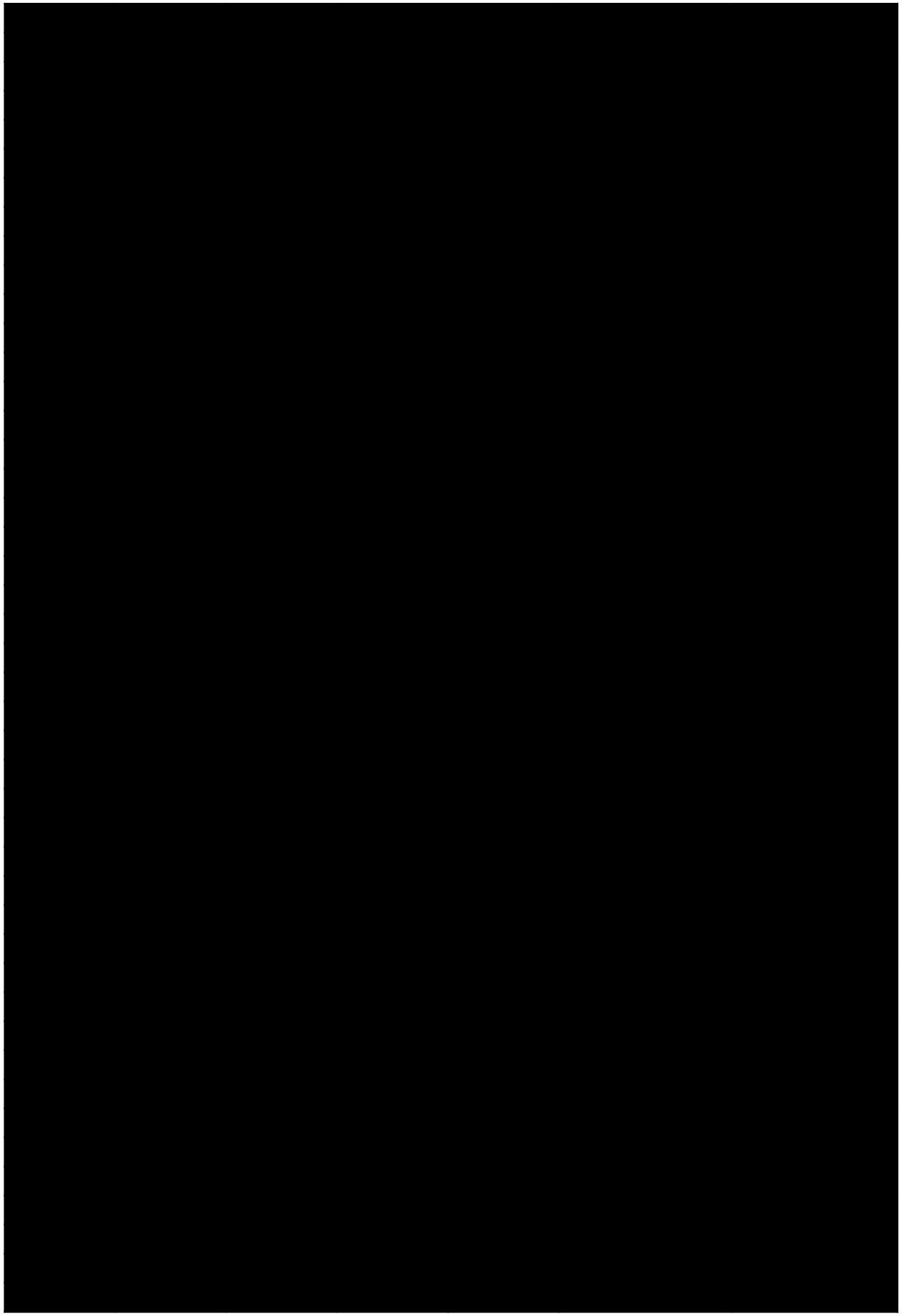
[redacted]

Well pressure in first 30 days production (psig)	Produced Gas Composition in first 30 days production						Produced G
	CO_2 (% by vol)	CH_4 (% by vol)	C_2H_6 (% by vol)	VOC (% by vol)	HAP (% by vol)	H2S (% by vol)	CO_2 (% by vol)



[redacted]

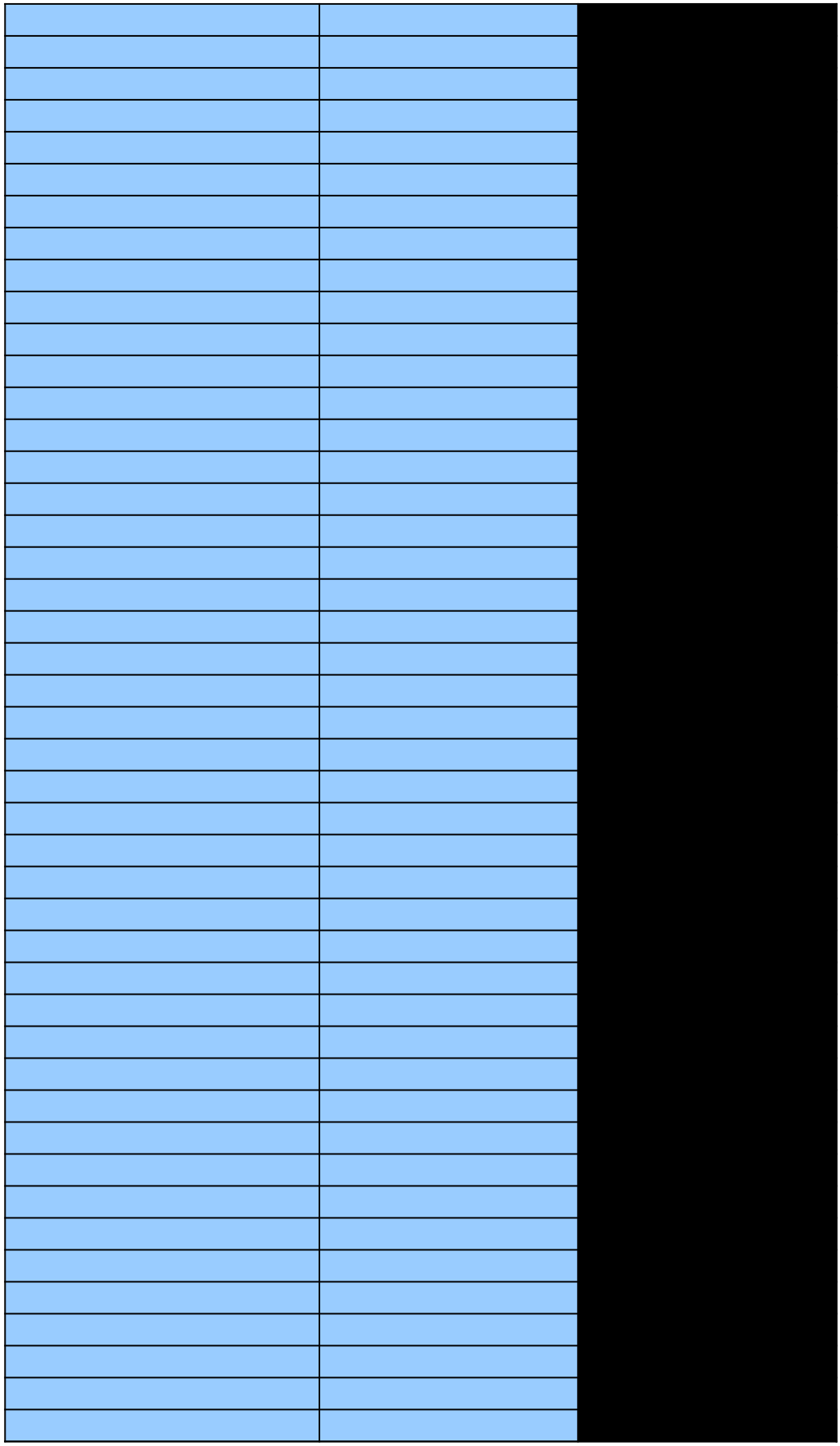
Gas Composition in calendar year 2015 or last year of operation					Gas to Oil Ratio in first 30 days production. For new wells, use best available data.	Gas to Oil Ratio in calendar year 2015 or last year of operation. For new wells, use best available data.
CH_4 (% by vol)	C_2H_6 (% by vol)	VOC (% by vol)	HAP (% by vol)	H2S (% by vol)		



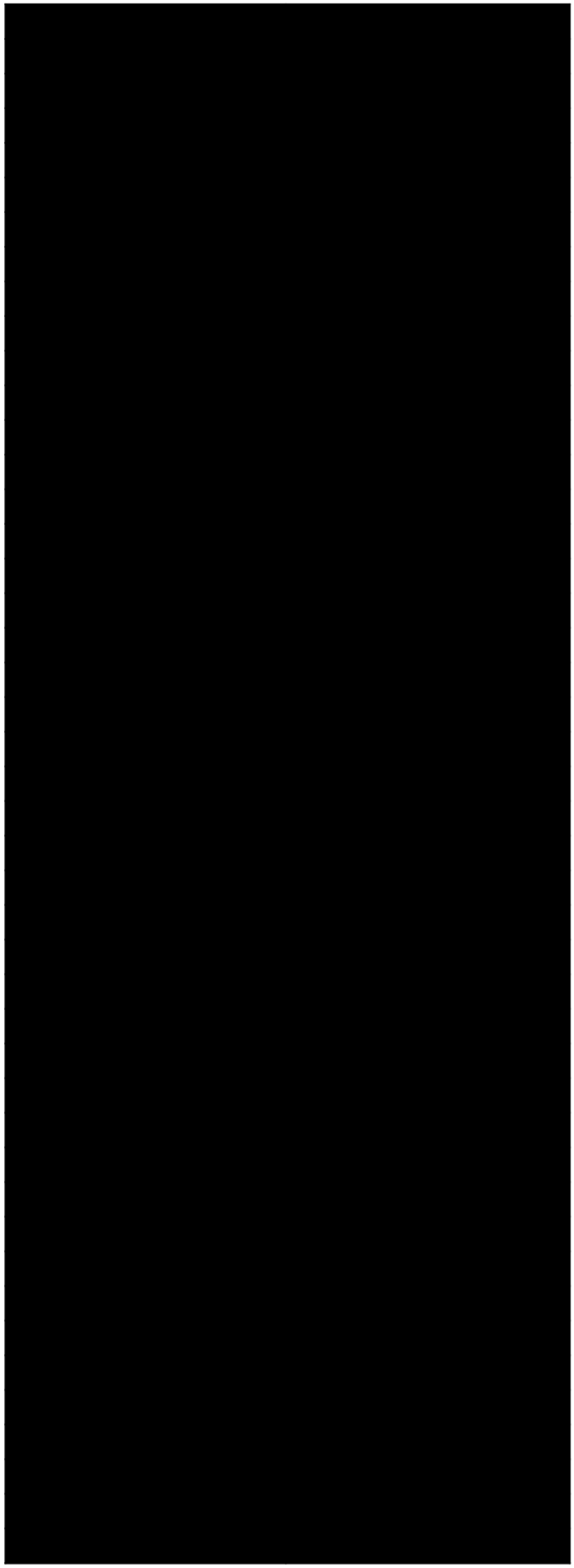
[redacted]

Oil Producing Wells Only		Estimated annual fixed operating and maintenance cost for this well in 2015 ($/yr)	Estimated variable operating and maintenance cost for this well in 2015 ($/BOE)
API gravity of produced crude oil	Disposition of casing head gas		

With current prices, how long do you expect this well to produce economically?	Would you like to provide a representative production profile for this well or basin?	If yes, indicate the filename of the attached profile?



If yes, indicate the type of profile attached?	If other, specify?



1. Injection/Storage Well Facility Information:

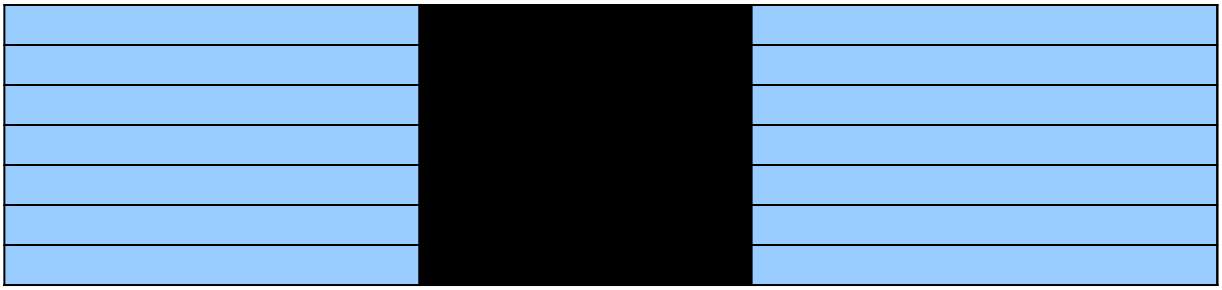
Facility ID (pulled from Facility sheet)	
Driving distance from field office (road miles).	
Travel time to well site from field office (minutes).	
How frequently is well site visited by field office personnel?	
Is the well site subject to environmental regulations?	
Is the well site subject to State/Local Environmental Regulations?	
Is the well site subject to 40 CFR 60 subpart OOOO?	
Is the well site subject to 40 CFR 60 subpart OOOOa?	
Number of injection/storage wells at the facility.	
Is there a combustion device on site?	
If combustion device is on site, what type of device is it?	
If other combustion device is on site, please list.	

2. General Well Information - Complete for each injection or storage well at the facility.

US Well ID Number	Injection/Storage Well Type

:

Material being (or that was) injected/stored	Specify if other	Type of formation in which the material is injected or stored



Specify if other	Total gas storage capacity (MMscf)	Working gas capacity (MMscf)	Storage pressure at base capacity (psig)
[redacted]			

Natural gas deliverability (MMscf/day)	Injection capacity (Maximum injection rate) (MMscf/day)	Liquids disposal capacity of formation (MMgallons)	Liquids injection capacity/rate (MMgallons/day)
[redacted]			

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of Separators at the Facility	
Number of Atmospheric Storage Tanks <10 bbl/day at the facility	
Number of Atmospheric Storage Tanks ≥10 bbl/day at the facility	

2. General Tank / Separator Information - Complete for each Tank / Separator on-site that st

Tank/Separator ID	Vessel Type

3. Feed Material Characteristics - Complete for each Tank / Separator:

Tank/Separator ID	Type of feed material
	Other (specify)

<u>4. Feed Material Flash Gas Properties</u> - ***Complete the following table with direct measuremen***
separator, if no separator is used) according to the California Environmental Protection Agen
Water[1] (CARB Method), but you may use a sampling rate of 60 mL/min. If you have perform
test results in-hand. If you have not performed testing of the feed material composition follo
the CARB Method and report the results of the test in the following table.

Enter the Tank/Separator ID for the separator from which sample is collected (Enter "temporary" if a temporary separator was used)	Enter Tank/Separator ID(s) for tanks for which this material is used as feed. [Use a comma "," to separate Tank IDs if material is sent to more than one tank. If liquids from separator pumped offsite, list "OFFSITE"]

1. Available at: http://www.arb.ca.gov/cc/oil-gas/meetings/Draft_Regulatory_Language_4-22-

5. Leakage, Controls and Inspection - Complete for each Tank / Separator:

Tank/Separator ID	Disposition of natural gas (or other off-gas)

6. Direct Emissions Measurements - Complete for each Tank / Separator, as applicable, for w

Tank/Separator ID	Source/Vent Description

7. Process Emissions Simulations - Complete for each tank and attach software output results

Unit ID	Modeling Softwa

ores or processes hydrocarbon materials or produced water.

Does this vessel receive feed from another vessel onsite?	Enter Tank/Separator IDs for the vessel(s) that feed to this tank or separator [Use a comma to delineate multiple IDs]	Is the tank/separator subject to 40 CFR 60 subpart OOOO?

	[redacted]	

If other, specify	Reid vapor pressure of liquid feed material (psig)	Average pressure of feed material (psig)
[redacted]		

nt data for each feed material sent to an atmospheric tank using pressurized sample co
ncy Air Resources Board's Test Procedure for Determining Annual Flash Emission Rate o
ed testing of the feed material composition using the CARB Method within the last 12
wing the reference CARB Method, you must sample and analyze the pressurized separa

CH_4 (wt%)	C_2H_6 (wt%)	CO_2 (wt%)

·15.pdf

Control Device ID [Enter "Not applicable" if recovered with out use of a vapor recovery compressor]	Dump valve inspection frequency	Hours dump valve stuck in 2015 (Actual or best engineering estimate)

which emissions measurement data are available.

Date of measurement (mm/dd/yyyy)	Source total volumetric flow rate of emissions (scf/hr)	VOC (tons/yr actual)

[redacted]

s.

are	Breathing Emissions (lb/hr)	
If Other, Specify:	Total VOC	Total HAP
[redacted]		

If no, specify reason	Is the tank/separator subject to 40 CFR 60 subpart OOOOa?	If no, specify reason	Is the tank/separator subject to other environmental regulations?
[redacted]		[redacted]	

Average temperature of feed material (°F)	Average specific gravity of liquid feed material (relative to water at 4 °C)	Average temperature of liquids in vessel (°F)	Average operating pressure of vessel (psig)

llection from each separator (or from a temporary f Methane from Crude Oil, Condensate, and Produced months, complete the following table based on the ator fluid (storage vessel feed material) according to

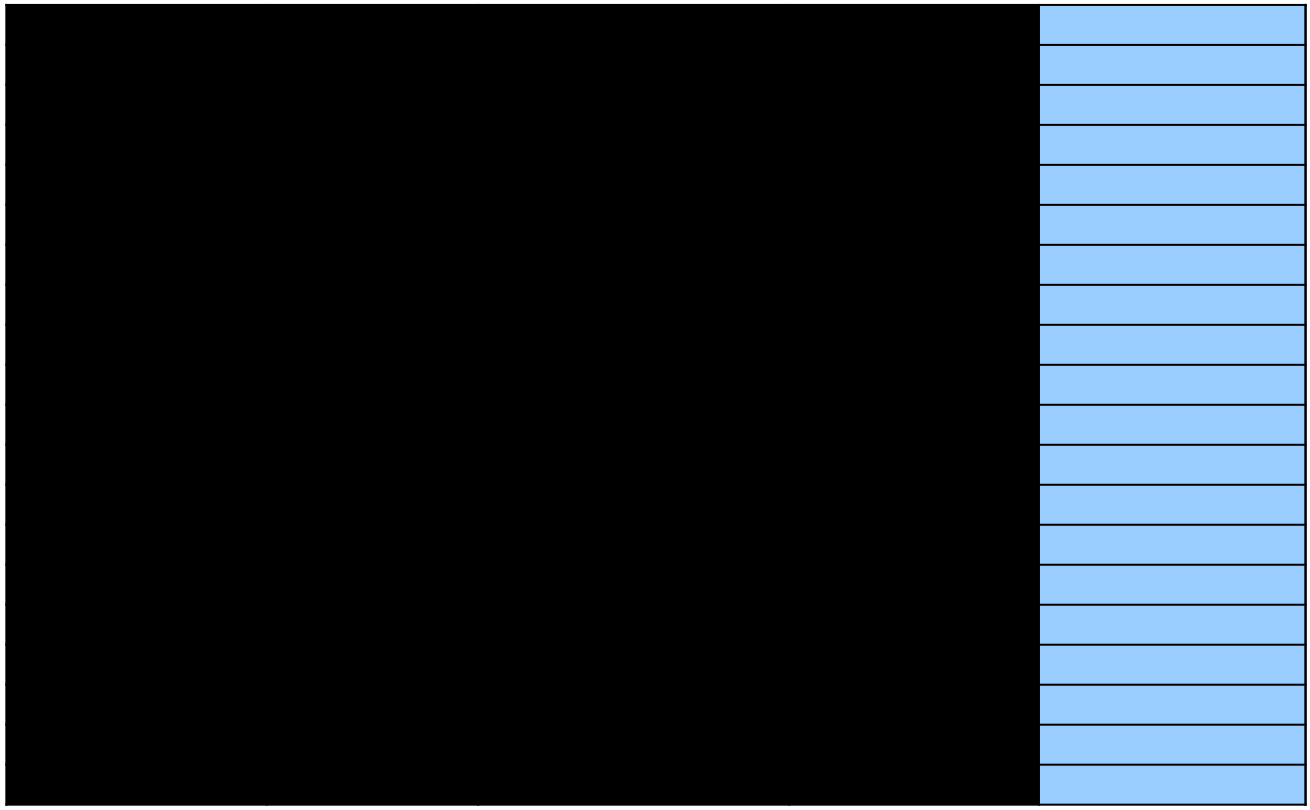
VOC (wt%)	C3 (wt%)	C4 (wt%)	C5 (wt%)

Type of thief hatch	Thief hatch monitoring or inspection frequency	Pressure release setting for thief hatch (psig)	What kind of alarms exist to let operator know the thief hatch is open?

CH4 (tons/yr actual)	C2H6 (tons/yr actual)	Benzene (tons/yr actual)	Toluene (tons/yr actual)

	Working Emissions (lb/hr)		
Total BTEX	Total VOC	Total HAP	Total BTEX

Is the tank/separator subject 40 CFR 63 subpart HH?	Is the tank/separator subject to 43 CFR 3100 subpart 3179?	Is the tank/separator subject to State/local or other environmental regulations?	If State/local/other, specify rule	Are emissions from the tank or separator sent to a control device?

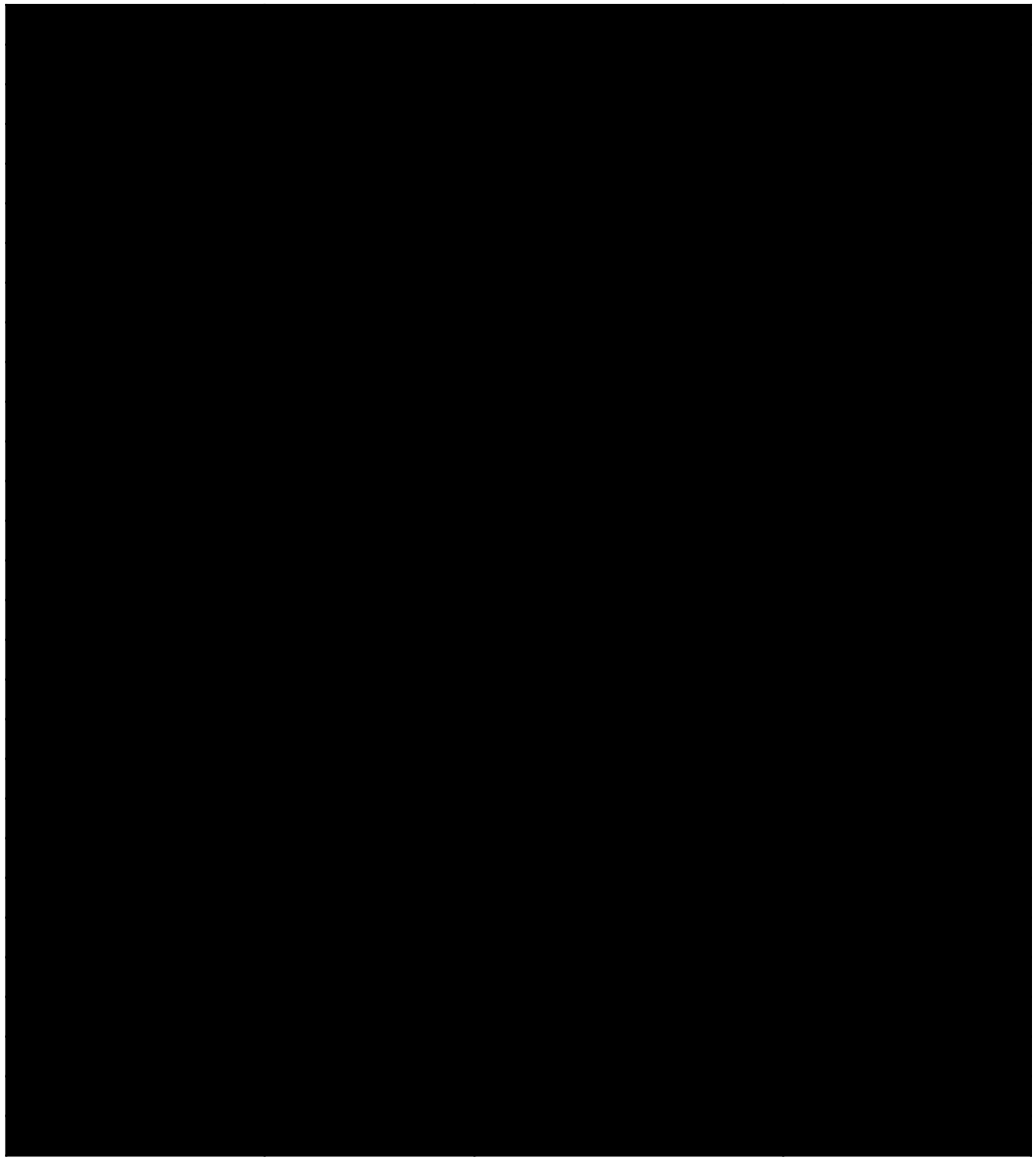


C6 (wt%)	C7 (wt%)	C8 (wt%)	C9 (wt%)	C10+ (wt%)

If other, please describe	Hours the thief hatch was open in 2015	Measures that have been take to limit dump valve openings	Type of pressure relief device	Pressure relief device monitoring or inspection frequency
[redacted]				

[redacted]				

Ethylbenzene (tons/yr actual)	Xylenes (total) (tons/yr actual)	Hexane (tons/yr actual)	Total HAP (tons/yr actual)
[redacted]			



	Provide the following emission rates based on modeled emissior		
If yes, enter the Control Device ID for the primary control device associated with the tank/separator	VOC (tons/yr potential to emit)	VOC (tons/yr actual)	CH4 (tons/yr actual)

Benzene (wt%)	Toluene (wt%)	Ethylbenzene (wt%)	Xylene (wt%)

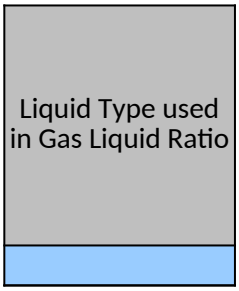
Pressure release setting for the pressure relief device (report lowest pressure PRD if multiple PRD) (psig)	Hours the thief hatch was open in 2015	Number of releases from pressure relief device in 2015	Were any direct measurements of emissions from vessel taken in last 5 years? If yes, complete next section.

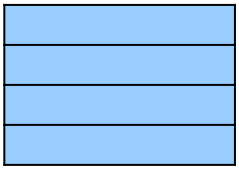
ns or best available data:

C2H6 (tons/yr actual)	Benzene (tons/yr actual)	Toluene (tons/yr actual)	Ethylbenzene (tons/yr actual)	Xylenes (total) (tons/yr actual)

O_2 (wt%)	N_2 (wt%)	H_2S (wt%)	MW (g/g-mole)	Gas Liquid Ratio of Flashed Pressurized Sample (scf/bbl)

					Is there a conti
Hexane (tons/yr actual)	Total HAP (tons/yr actual)	Vessel capacity (gallons)	Average vessel hydrocarbon throughput (bbl/day)	Average vessel water throughput (bbl/day)	Gaseous flow rate to vessel


Liquid Type used
in Gas Liquid Ratio



nuous monitor for the following:				
Liquid feed flow rate to vessel	Vessel operating pressure	Liquid level in vessel	Liquid flow rate from vessel	Gaseous flow from vessel

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Does the facility have any natural gas-driven pneumatic devices or pumps?	

2. Pneumatic Controllers/Devices/Pumps Inventory, provide the count of each of the following

Type of Pneumatic Device	Total Number of Natural Gas-Driven Devices
Snap acting, intermittent bleed controllers	
Snap acting, continuous bleed controllers	
Throttling low continuous bleed controllers	
Throttling high continuous bleed controllers	
Throttling intermittent bleed controllers	
Throttling no-bleed controllers (discharge to downstream gas line)	
Rotary vane isolation valve actuators	
Turbine operated isolation valve actuators	
Other pnuematic isolation valve actuators	
Chemical injection piston pumps that are operated for 90 days per calendar year or more	
Chemical injection piston pumps that are operated for less than 90 days per calendar year	
Chemical injection diaphragm pumps that are operated for 90 days per calendar year or more	
Chemical injection diaphragm pumps that are operated for less than 90 days per calendar year	
Liquid circulation (Kimray) pumps that are operated for 90 days per calendar year or more	
Liquid circulation (Kimray) pumps that are operated for less than 90 days per calendar year	

3. General Pneumatic Controllers/Devices/Pumps Information:

How does the facility determine if a device is intermittent or continuous bleed?	
How does the facility determine if a continuous bleed device is high or low bleed?	
What work practices does the facility employ to identify malfunctioning controllers (e.g., intermittent devices continuously venting)?	
How many controllers were found malfunctioning (leaking or excessively bleeding) in the past year?	
What is the typical natural gas supply pressure for the pneumatic devices (psig)?	

Does the facility use practices to minimize natural gas emissions from pneumatic devices or pumps?	[redacted]
Were any direct measurements of emissions from pneumatic devices taken in past 5 years? If yes, complete Section 5 below.	
Are the pneumatic controllers subject to State/Local Environmental Regulations?	
Are the pneumatic controllers subject to state or other regulation?	
Are the pneumatic controllers subject to 40 CFR 60 subpart OOOO?	
Are the pneumatic controllers subject to 40 CFR 60 subpart OOOOa?	
Are the pneumatic controllers subject to both state regulation and 40 CFR 60 subpart OOOO/OOOOa?	
Are pneumatic controllers controlled?	
Are pneumatic pumps controlled?	

4. Pneumatically Driven Isolation Valve Actuations in 2015. Provide the following information f
driven pneumatic isolation valve actuator.

Isolation Valve/Actuator ID	Isolation Valve Actuator Type
[redacted]	

[redacted]

5. Direct Measurements - Complete for each Natural Gas-Driven Pneumatic Controllers/Device

Source Description or ID	Pneumatic Device Type
[redacted]	

Are there air-driven devices of this type at the facility?
[redacted]

[redacted]

[redacted]

If pneumatics are controlled, specify the control device on numger of pnuematic devices are controllec

Control Device ID1	Numper of devices of specified type controlled by control device ID1	Control Device ID2
[redacted]		

based on controller design, manufacturer's information, and company records for each natural gas

Specify if other	Gas Usage per Cycle based on manufacturers information (scf/psi)	Based on best available data, cumulative number of actuation cycles in 2015 (or most recent operating year).
[redacted]		

[redacted]

es/Pumps, as applicable, for which measurement data are available.

Pneumatic Device Type (Include if "other" device type)	Measurement Method	Number of Devices [included in measurement]
[redacted]		

l by that device:

Numper of devices of specified type controlled by control device ID2	Control Device ID3	Numper of devices of specified type controlled by control device ID3

Gas supply pressure for pneumatic device (psig)

[redacted]

Measured NG emission rate [for all devices included in measurement] (scf/hr)	Make and Model Number of Device(s)
[redacted]	

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of acid gas removal units at the facility	

2. General AGRU Information - Complete for each AGRU:

Unit ID	AGRU Type	
		If Other, Specify:

3. Direct Emissions Measurements - Complete for each AGRU for which emissions measurement data

Unit ID	Source Description	Date of Measurement (mm/dd/yyyy)

	[redacted]

4. Process Emissions Simulations - Complete for each AGRU and attach software output results.

Unit ID	Are modeled emissions available for this unit?	Modelin
		[redacted]

Is the AGRU subject to environmental regulations?	Is the AGRU subject to State/Local Environmental Regulations?	Is the AGRU subject to 40 CFR 60 subpart OOOO?

are available.

H_2S emission rate (lb/hr)	SO_2 emission rate (lb/hr)	CO_2 emission rate (lb/hr)

[redacted]

g Software		
If Other, Specify:	Methane	CO2

[redacted]

Is the AGRU subject to 40 CFR 60 subpart OOOOa?	Is the AGRU subject to 40 CFR 60 subpart KKK?	Is the AGRU subject to 43 CFR 3100 subpart 3179?

CH_4 emission rate (lb/hr)	Ethane emission rate (lb/hr)	VOC emission rate (lb/hr)

[redacted]

Uncontrolled Emissio		
Total VOC	Total HAP	Benzene
[redacted]		

Contactor Tower Pressure (psig)	Circulation Rate of Solution (gal/min)	Operating Hours in 2015	Relative selectivity of H_2S over CH4 (Mass ratio)

Benzene emission rate (lb/hr)	Toluene emission rate (lb/hr)	Ethylbenzene emission rate (lb/hr)	Xylenes (total) emission rate (lb/hr)

ons (lb/hr)

Total BTEX	Hydrogen Sulfide	Carbonyl Sulfide	Carbon Disulfide

Relative selectivity of CO_2 over CH_4 (Mass ratio)	Relative selectivity of Mercury over CH_4 (Mass ratio)	Average volumetric flow rate of feed natural gas (scfm)	H_2S concentration if feed gas (% by vol)	CO_2 concentration in feed gas (% by vol)

Carbonyl sulfide emission rate (lb/hr)	Carbon disulfide emission rate (lb/hr)	Total HAP emission rate (lb/hr)

SO2	Methane	CO2	Total VOC	Total HAP

Average volumetric flow rate of treated natural gas (scfm)	H_2S concentration if treated gas (% by vol)	CO_2 concentration in treated gas (% by vol)	Primary

Controlled Emissions (if applicable) (lb/hr)			
Benzene	Total BTEX	Hydrogen Sulfide	Carbonyl Sulfide

purpose of AGR	Disposition of removed H_2S	
If Other, Specify:		If Other, Specify:

Carbon Disulfide	SO2
[redacted]	

Disposition of removed CO_2		Were any direct measurements of emissions from vessel taken in past 5 years? If yes, complete next section.
	If Other, Specify:	
		Yes

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of dehydrators at the facility	
Does the facility handle, process, or store black oil exclusively (including use or generation of gas from black oil)?	
Does the facility have actual annual average natural gas and hydrocarbon throughputs of less than 18,400 standard m^3/day and 39,700 liters/day, respectively?	
Is facility at an area or major source for HAPs?	

2. General Dehydrator Information - Complete for each Dehydrator:

Unit ID	Dehydra

3. Glycol Dehydrator Information - Complete for each Glycol Dehydrator:

Unit ID	Does the unit have a flash ta

4. Direct Emissions Measurements - Complete for each dehydrator for which em

Unit ID	Source/Vent Description

5. Wet Gas Composition - Complete according to most recent gas sampling event

Sample Date (mm/dd/yyyy):	
Component:	**Concentration (vol %)**
Carbon Dioxide	
Nitrogen	
Ethane	

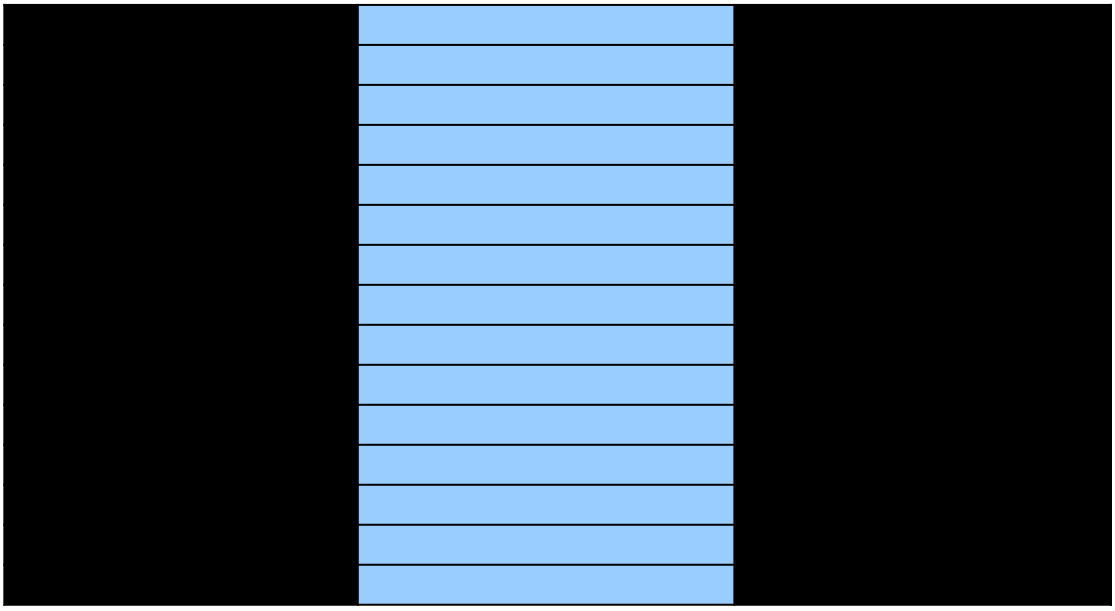
Propane	
Isobutane	
n-Butane	
Isopentane	
n-Pentane	
Cyclopentane	
n-Hexane	
Cyclohexane	
Heptanes	
Methylcyclohexane	
2,2,4-Trimethylpentane	
Benzene	
Toluene	
Ethylbenzene	
Xylene (isomers and mixtures)	
o-Xylene	
m-Xylene	
p-Xylene	
C8+ Heavies	
Acetaldehyde	
Carbon Disulfide	
Carbonyl Sulfide	
Ethylbenzene	
Ethylene Glycol	
Formaldehyde	
Napthalene	

6. Process Emissions Simulations - Complete for each dehydrator and attach soft

Unit ID	Are modeled emissions available for this unit?

ator Type	Is the Dehydrator subject to environmental regulations?	Is the Dehydrator subject to State/Local Environmental Regulations?
If Other, Specify:		

nk separator?		
If yes, provide natural gas recovery efficiency (percent)	If yes, provide disposition of recovered natural gas.	If Other, Specify:



issions measurement data are available.

Date of Measurement (mm/dd/yyyy)	CO_2 emission rate (lb/hr)	CH_4 emission rate (lb/hr)

t if available.

ware output results.

Modeling Software		
	If Other, Specify:	Total VOC
[redacted]		

Is the Dehydrator subject to 43 CFR 3100 subpart 3179?	Is the Dehydrator subject to 40 CFR 63 subpart HH or subpart HHH?	Date of Construction/Reconstruction (mm/dd/yyyy)

Glycol reboiler/regenerator fuel gas type		Glycol reboiler/regenerator fuel gas consumption rate (scfm)
	If Other, Specify:	

[redacted]

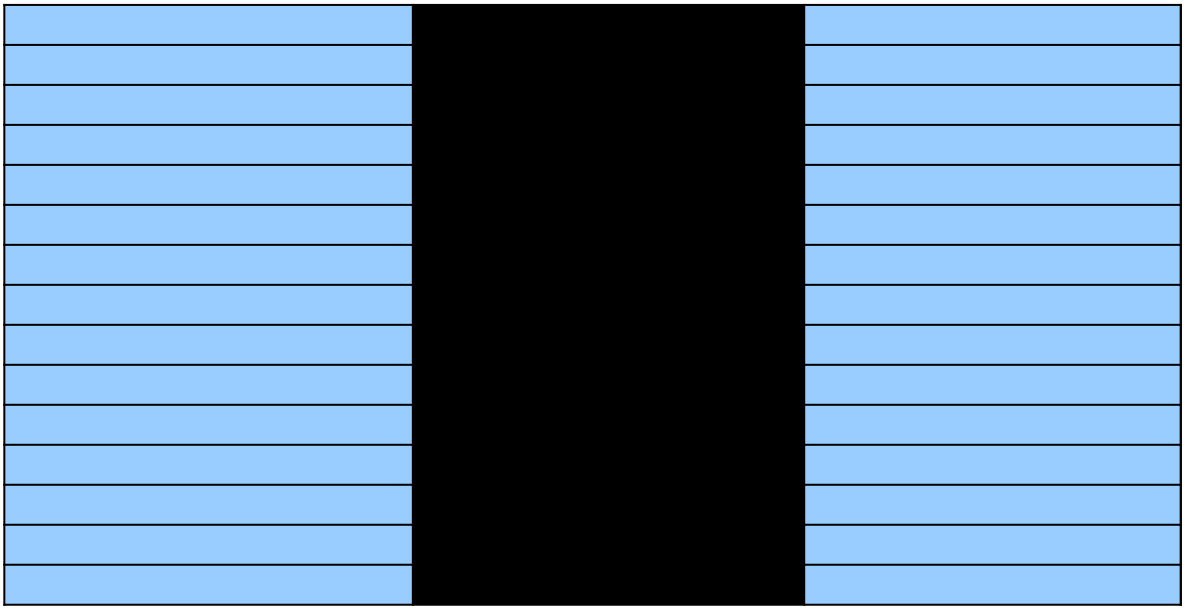
Ethane emission rate (lb/hr)	VOC emission rate (lb/hr)
[redacted]	

Uncontrolled Emissions (lb/hr)		
Total HAP	Benzene	Total BTEX
[redacted]		

[redacted]

Does the Dehydrator emit more than or less than 1 ton per year of benzene?	Is the Dehydrator subject to 40 CFR 63 subpart HH and located within an Urban Area/Urban Cluster?	What is the Dehydrator's actual annual average natural gas flow rate range?

Disposition of reboiler/regenerator exhaust		
	If Other, Specify:	Control Device ID (if applicable)

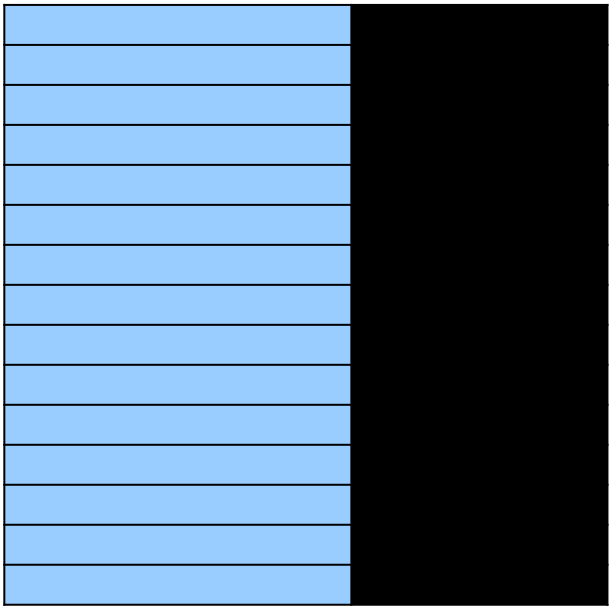


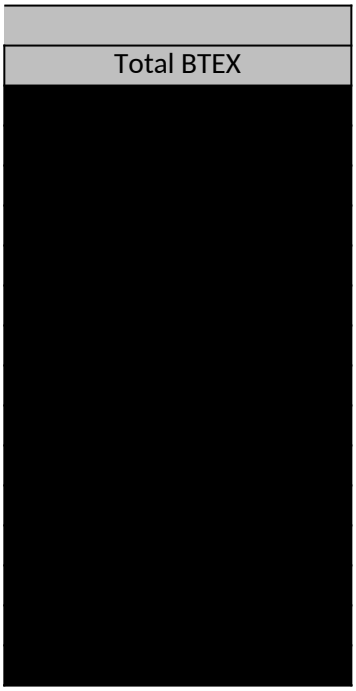
Controlled Emissions (if applicable) (lb/hr)		
Total VOC	Total HAP	Benzene
[redacted]		

[redacted]

Average volumetric flow rate of feed natural gas (scfm)	2015 Annual Operating Hours (hrs)	Contactor Tower Pressure (psig)	Temperature of Feed Gas Stream (°F)

Emission reduction work practices used	
	If Other, Specify:




Total BTEX

Pressure of Feed Gas Stream (psig)	Is feed gas saturated or subsaturated?	Circulation Rate of Solution (gal/min)	Liquid Circulation Pump Type

Stripper Gas Consumption Rate (scfm)	Stripper Gas Methane Composition (% by vol)	H_2O concentration in feed gas (lb H_2O/MMSCF)	CO_2 concentration in feed gas (% by vol)

CH_4 concentration in feed gas (% by vol)	Average volumetric flow rate of treated natural gas (scfm)	H_2O concentration in treated gas (lb H2O/MMSCF)	CO_2 concentration in treated gas (% by vol)

CH_4 concentration in treated gas (% by vol)	Were any direct measurements of emissions from any dehydrator (glycol or desiccant) taken in past 5 years? If yes, complete the direct measurements section.

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Are equipment leaks at the facility subject to environmental regulations?	
Are equipment leaks subject to State/Local Environmental Regulations?	
Are equipment leaks subject to 40 CFR 60 subpart KKK?	
Are equipment leaks subject to 40 CFR 60 subpart OOOO?	
Are equipment leaks subject to 40 CFR 60 subpart OOOOa?	
Are equipment leaks subject to 40 CFR 63 subpart HH?	
Are equipment leaks subject to 43 CFR 3100 subpart 3179?	
Does the facility conduct regular audio-visual-olfactory (AVO) inspections for leak?	
Frequency of AVO inspections.	
Does the facility conduct routine inspections (Method 21, OGI, or other instrumented method) to identify leaking equipment components?	
If yes, provide the following information by component type:	Gas or Light Liquid Valves
Frequency of inspections.	
Monitoring method used.	
If Other method, specify.	
Has this facility performed emissions testing for equipment leaks in the last five years? If yes, complete the direct measurements section.	

2. Equipment Leak Inventory Information - Provide component counts by service type

Service / Component Type	Total Number of Components contacting a process fluid or gas that contains 5 percent by weight or more of any of the following pollutants: VOC, CH_4, CO_2
Gas Service Valves	
Gas Service Connectors (other than flanges)	
Gas Service Flanges	

Gas Service Open-ended Lines	
Gas Service Pressure-relief Valves	
Gas Service Pumps	
Gas Service Meters	
Gas Service Vapor Recovery Compressors	
Gas Service Other	
Light Liquid Service Valves	
Light Liquid Service Connectors (other than flanges)	
Light Liquid Service Flanges	
Light Liquid Service Open-ended Lines	
Light Liquid Service Pressure-relief Valves	
Light Liquid Service Pumps	
Light Liquid Service Meters	
Light Liquid Service Vapor Recovery Compressors	
Light Liquid Service Other	
Heavy Liquid Service Valves	
Heavy Liquid Service Connectors (other than flanges)	
Heavy Liquid Service Flanges	
Heavy Liquid Service Open-ended Lines	
Heavy Liquid Service Pressure-relief Valves	
Heavy Liquid Service Pumps	
Heavy Liquid Service Meters	
Heavy Liquid Service Vapor Recovery Compressors	
Heavy Liquid Service Other	

3. Provide the following equipment counts based on actual equipment and equipment

Major Equipment Type	Total Number of Each Major Equipment Type
Natural gas Wellheads	
Natural gas Separators	
Natural gas Meters/piping runs	
Natural gas Tanks	
Natural gas Compressors	
Natural gas In-line heaters	
Natural gas Dehydrators	
Crude oil Wellheads	
Crude oil Separators	
Crude oil Meters/piping runs	
Crude oil Tanks (other than heater-treaters)	
Crude oil Heater-treaters	

Crude oil Headers	

4. Direct Emissions Measurements - Complete for each component or equipment type

Major Equipment type	Component type
[redacted]	

Gas or Light Liquid Connectors	Gas or Light Liquid Pressure-relief Valves	Pumps	Other components in gas or light liquid service

for all components meeting the specified criteria based on actual component counts:

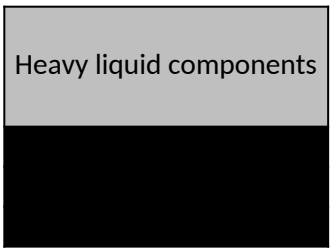
For natural gas processing plants only: Total Number of Components contacting a process fluid or gas that is at least 10 percent VOC by weight	Total Number of Components Monitored for Leaks During Most Recent Monitoring Survey	Total Number of Components Found Leaking During Most Recent Monitoring Survey	Definition of Leak used for Monitoring Components

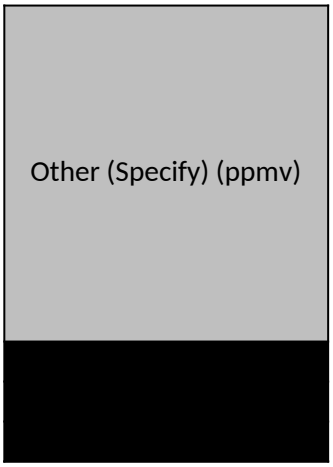
t components counts at the facility:

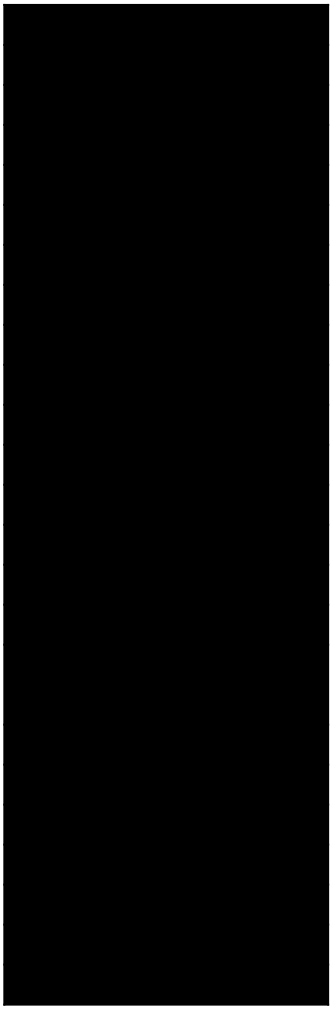
Total Number of Valves	Total Number of Connectors (including flanges)	Total Number of Open-Ended Lines	Total Number of Pressure Relief Devices

, as applicable, for which most recent direct emissions measurement data are available.

Service type	Additional Source Description (if other or more information needs to be related)	Measurement method	Measured Emissions Rate (scf/hr)


Heavy liquid components


Other (Specify) (ppmv)



Total Number of Pumps	Total Number of Other Equipment Components (e.g., seals, dump arms, instruments, and hatches)

Measurement date (mm/dd/yyyy)	Measurement cost ($)
[redacted]	

1. Facility Information:

Facility ID (pulled from Facility sheet)	
Number of reciprocating compressors at the facility	
Number of other compressors at the facility	
Number of centrifugal compressors at the facility	

2. General Compressor Information - Complete for each Compressor:

Compressor Name/ID	Compressor Type

3. Direct Emissions Measurements for Compressor Leaks or Vents- Comp

Compressor Name/ID	Source/Vent Description (e.g., list what compressor sources were measured)

4. Compressor Engine Information - Complete for each compressor engin

Compressor Name/ID	Engine Type

5. Centrifugal Compressor Specific Information - Complete for each Centr

Unit Name/ID	If wet, provide the number of wet seals

6. Reciprocating Compressor Specific Information - Complete for each Re

Unit Name/ID	Date of last rod packing replacement (mm/dd/yyyy)

If Other, Specify:	Operational Service	If Other, Specify:

lete for each compressor for which emissions measurement data are available and are n

Date of Measurement (mm/dd/yyyy)	Operating Mode	Measurement Type

e using best available data.

Diesel Engine Tier (40 CFR part 89 and 1039)	Fuel Type	Starter Motor Type

ifugal Compressor:

If wet seals were replaced with dry seals on or after 1/1/2010, provide the date of the replacement (mm/dd/yyyy)	If wet seals were replaced with dry seals on or after 1/1/2010, provide the total cost (equipment plus installation labor). ($)

ciprocating Compressor:

Hours of Operation Since Last Rod Packing Replacement (hrs)	Total cost of last rod packing replacement ($)	Frequency of rod packing replacement

Are any current environmental regulations applicable to the compressor?	State/Local Environmental Regulations	40 CFR part 60 subpart OOOO

ot already reported to the GHGRP.

	Is the measurement	For continuous

Measurement method for as found tests	method prior to or after commingling with non-compressor emission sources?	For continuous measurement, did the measured volume include blowdowns?

What is the model year of the engine?	What is the hours of operation of the engine in 2015?	Are any current environmental regulations applicable to the compressor engine?

If Other, provide rod packing replacement schedule.
[redacted]

40 CFR part 60 subpart OOOOa	40 CFR part 3100 subpart 3179	Date of Installation (mm/dd/yyyy)

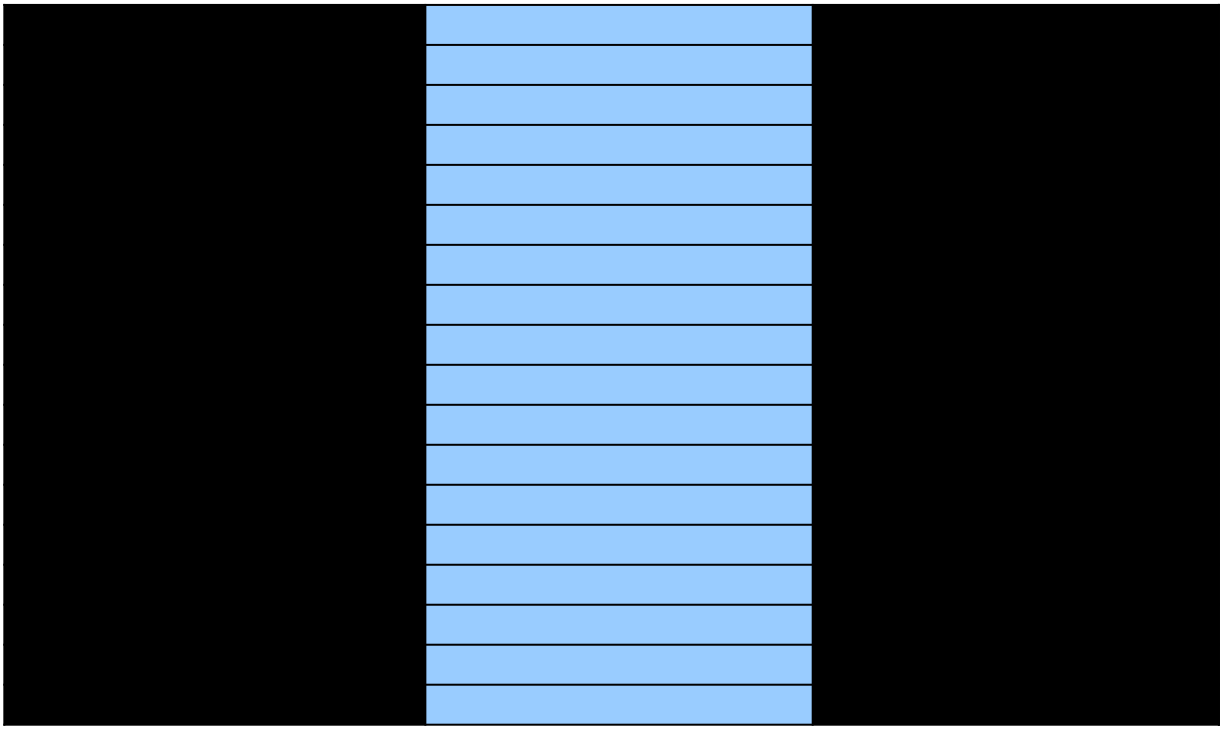
Emission Rate

scf/hr (as found)	MMScf/yr (continuous)
[redacted]	

40 CFR part 60 subpart IIII	41 CFR part 60 subpart JJJJ	40 CFR part 63 subpart ZZZZ
[redacted]		

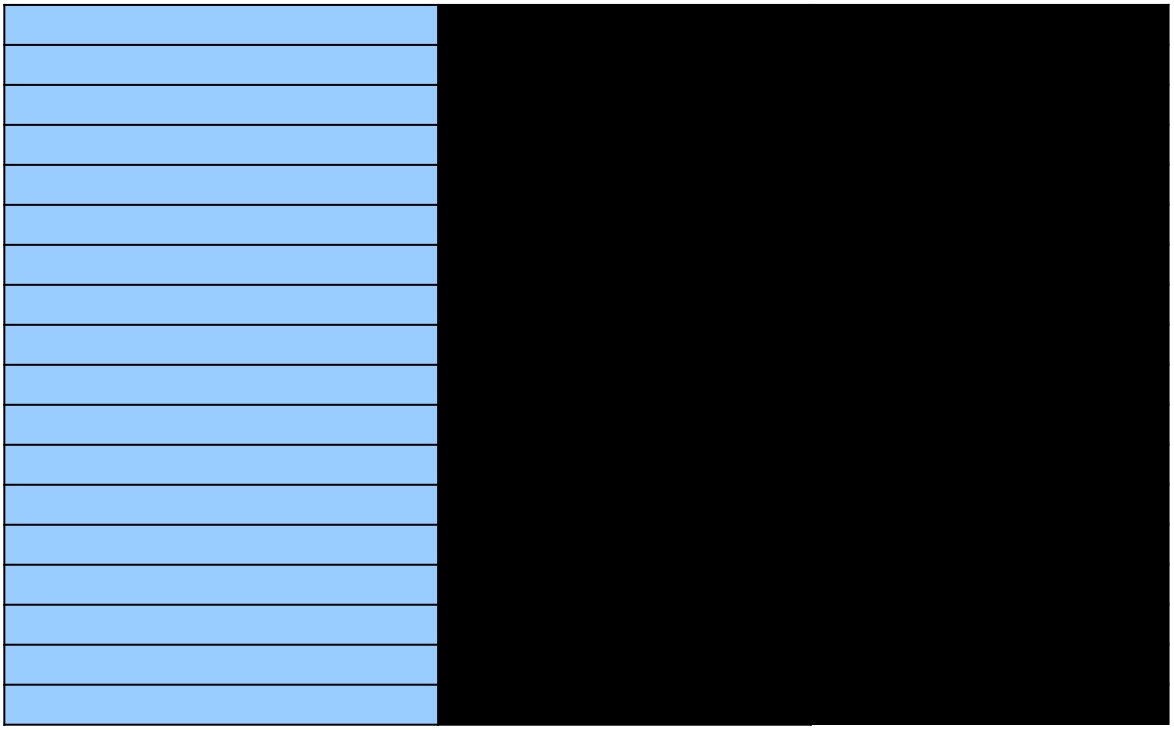
Power output of compressor driver (hp)	Are there add-on emissions controls or recovery used on any of the compressor vent sources?	
		Wet seal degassing vent

State/Local Environmental Regulations	What is the primary NOx control used for the compressor engine?	If other, specify



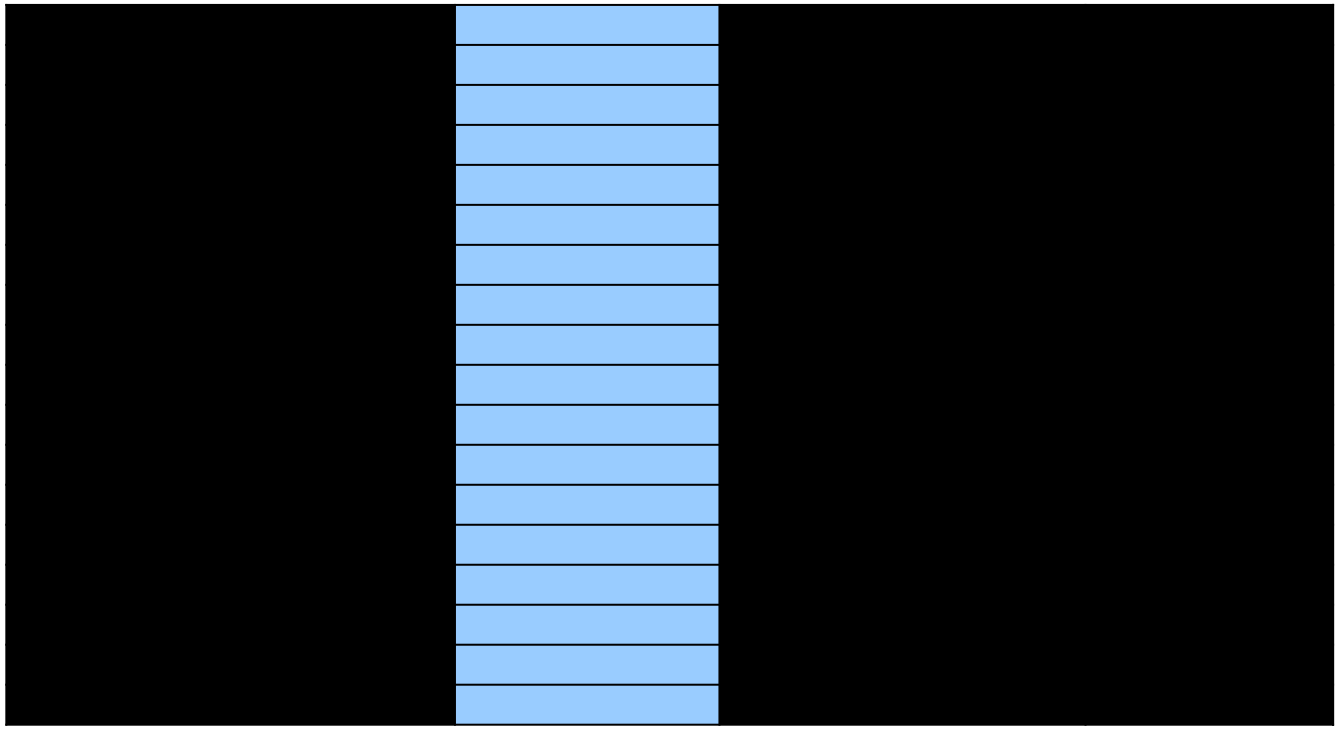
If yes, identify the compressor sources controlled/recovered a		
Wet seal degassing vent Control Device ID	**Rod packing vent**	**Rod packing vent Control Device ID**
[redacted]		

What is the secondary NOx control used for the compressor engine?	If other, specify	What PM controls are used for diesel compressor engine? [Diesel engines only]



and the control device ID [use "Not Applicable" if vent gas is recovered without use of recovery			
Blowdown vent	**Blowdown vent Control Device ID**	**Isolation valve leakage**	**Isolation valve leakage Control Device ID**
[redacted]			

If other, specify	Have direct measurements been performed on compressor engine exhaust in the last 5 years?	Attach the most recent source test report and provide file name of the attached report below and summary of results to the left:	Date of Measurement (mm/dd/yyyy)



compressor].			
Other compressor source	If Other, specify the compressor source controlled or recovered:	Other compressor source Control Device ID	Were direct emissions measurements made for compliance with the RY 2015 GHGRP in 40 CFR 98 Subpart W?

Average fuel feed rate during the source test (MMBtu/hr)	CO emission rate (lb/hr)	NOx emission rate (lb/hr)	VOC emission rate (lb/hr)

If yes, please provide the Compressor ID or Unique Name used in the RY 2015 report (if different than the ID provided in this form).	If no, please provide the total time the compressor was in operating-mode in RY 2015. (hours)	If no, please provide the total time the compressor was in standby-pressurized-mode in RY 2015. (hours)
[redacted]		

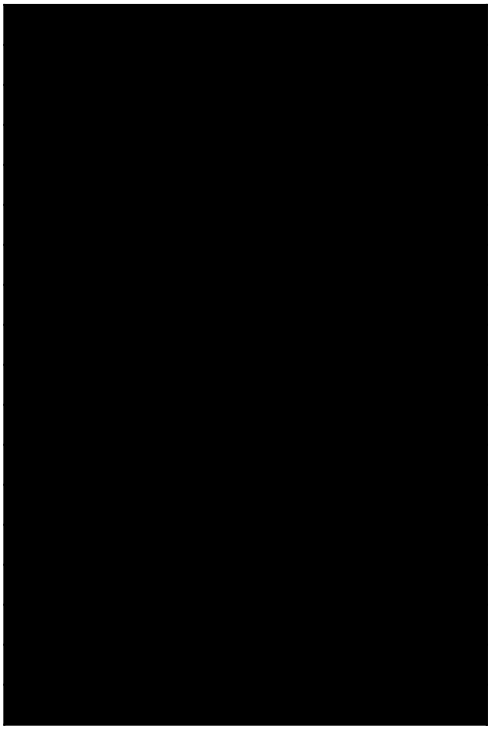
Benzene emission rate (lb/hr)	Toluene emission rate (lb/hr)	Ethyl benzene emission rate (lb/hr)
[redacted]		

If no, please provide the total time the compressor was in not-operating-depressurized-mode in RY 2015. (hours)	If no, have direct measurements been performed on compressor sources for this compressor in the last 5 years? If yes, complete the direct measurements information in Section 3.

Xylenes (total) emission rate (lb/hr)	Formaldehyde emission rate (lb/hr)	Total HAP emission rate (lb/hr)

	Optional: If you would like to su
PM emission rate (lb/hr)	**Provide file name of "Report 2" that is attached, if applicable:**

bmit additional recent test data:
Provide file name of "Report 3" that is attached, if applicable:



1. Facility Information:

Facility ID (pulled from Facility sheet)	
Did the facility blowdown any equipment or piping in 2015?	

2. Blowdown Event Information: Provide the information on the blowdown events that occurred within category when equipment specific information is not available.

Category	Number of Events associated with equipment volumes ≥50 cf	Cumulative pre-control volume of natural gas blown down events associated with equipment volumes ≥50 cf (scf)
Facility piping (except gathering or transmission pipelines)		
Gathering or Transmission Pipeline venting		
Compressors		
Scrubbers/strainers		
Pig launchers and receivers		
Storage wells/Storage field		
Emergency shutdowns (regardless of equipment)		
Other equipment not otherwise specified		

3. Blowdown Emissions Reduction Measures: Provide information on additional blowdown emissions r

Were hot taps or other practices used to reduce/eliminate need for some blowdown events?	

Type of Practice	Amount of Use	
	Value	UOM
Hot taps		Number of Events
Use pipeline pump down techniques		Number of Events
Recompression with multiple lines		Number of Events
Use mechanical of composite sleeve		Number of Events
Use flexible membrane liners (pipelines)		Miles of pipeline
Inspect/repair leaking (not fully sealed) PRD and blowdown valves		Frequency

Other (specify)	[redacted]	Number of Events
Other (specify)		Number of Events
Other (specify)		Number of Events
Other (specify)		Number of Events

ı your facility based on available information. To the extent practical, provide the blowdown information specif

How were blowdown events/volumes associated with equipment volumes ≥50 cf determined?	Number of Events associated with equipment volumes <50 cf	Cumulative pre-control volume of natural gas blown down events associated with equipment volumes <50 cf (scf)	How were blowdown events/volumes associated with equipment volumes <50 cf determined?

eduction measures used at your facility.

Cumulative volume of blowdown avoided (scf)	
	Specify other:

ic to the equipment categories provided. Use the "other equipment"

	If controlled, provide cumulative			
Were any controls used for blowdown releases?	Flare	Flare Control Device ID	Thermal oxidizer/ Incinerator	Thermal oxidizer Control Device ID

e volume of blowdown gas by control method (scf):				
Used as fuel (heater, boiler, or engine)	Recovered for sale	Other	Specify type of "other" control used	Other Control Device ID (If applicable)