



# Glossary of Oil and Gas Terms

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**Acreage**

- Land leased for oil and gas exploration and/or land for which ConocoPhillips owns the mineral rights.

**American Petroleum Institute (API)**

- The American Petroleum Institute is the oil and gas industry's trade organization. API's research and engineering work provides a basis for establishing operating and safety standard issues and specifications for the manufacturing of oil field equipment and furnishes statistical and other information to related agencies. Visit API at [www.api.org](http://www.api.org).

**Anticline**

- A convex-upward formation of rock layers, which may form a trap for hydrocarbons.

**Aquifer**

- An underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, silt or clay) from which groundwater can be extracted using a water well.

**Barrel of oil equivalent (BOE)**

- A measure used to aggregate oil and gas resources or production, with one BOE being approximately equal to 6,000 cubic feet of natural gas.

**Basin**

- A large, natural depression on the Earth's surface in which sediments, generally brought by water, accumulate.

**BBL**

- One stock tank barrel, of 42 U.S. gallons liquid volume, used in reference to crude oil, bitumen, condensate or natural gas liquids.

**BCF**

- One billion cubic feet of natural gas.

**Bitumen**

- A highly viscous form of crude oil (greater than 10,000 centipoise) resembling cold molasses (at room temperature). Bitumen must be heated or combined with lighter hydrocarbons for it to be produced. Contains sulfur, metals and other nonhydrocarbons in its natural form.

**BOED**

- Barrels of oil equivalent per day.

**Borehole**

- A hole in the earth made by a drilling rig.

**British thermal unit (BTU)**

- The heat required to raise the temperature of a one-pound mass of water by one degree Fahrenheit.

**CAPEX**

- Capital expenditures.

**Carbon capture and storage (CCS)**

- Process by which carbon dioxide emissions are captured and removed from the atmosphere and then stored, normally via injection into a secure underground geological formation.

**Carbon dioxide equivalents (CO<sub>2</sub>e)**

- The quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO<sub>2</sub> that would have the same global warming potential (GWP) when measured over a specified timescale (generally 100 years).

**Carbon intensity**

- The quantity of greenhouse gas emissions associated with producing an intermediate or final product. For the oil and gas industry, carbon intensity is commonly expressed in units of Tonnes CO<sub>2</sub>e per product volume (e.g. Tonnes CO<sub>2</sub>e/bbl or Tonnes CO<sub>2</sub>e/MCF).

**Carbon sequestration**

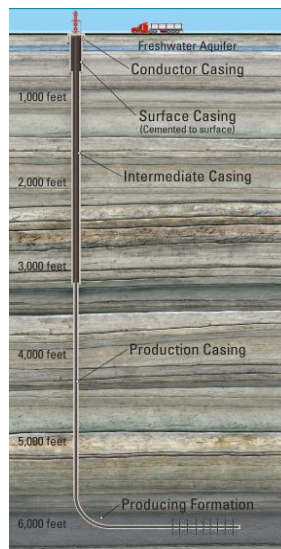
- The fixation of atmospheric carbon dioxide in a carbon sink through biological or physical processes.

**Carbon sink**

- A reservoir that absorbs or takes up released carbon from another part of the carbon cycle. The four sinks, which are regions of the Earth within which carbon behaves in a systematic manner, are the atmosphere, terrestrial biosphere (usually including freshwater systems), oceans and sediments (including fossil fuels).

**Casing**

- Thick walled steel pipe placed in wells to isolate formation fluids (such as fresh water) and to prevent borehole collapse.



**Coal bed methane (CBM)**

- Natural gas extracted from coal beds.

**Completion**

- The process of making a well ready to produce natural gas or oil. Completion involves installing permanent equipment, such as a wellhead, and often includes hydraulic fracturing.

**Compound annual growth rate (CAGR)**

- The average year-over-year growth rate of a metric over a specific period of time.

**Condensate**

- Mixture of hydrocarbons which are in a gaseous state under reservoir conditions and, when produced, become a liquid as the temperature and pressure is reduced.

**Conventional resources**

- Discrete accumulations of hydrocarbons contained in rocks with relatively high matrix permeability, which normally have relatively high recovery factors.

**Developed acreage**

- The number of acres that are allocated or assignable to productive wells or wells capable of production.

**Developed reserves**

- Reserves that can be expected to be recovered through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well and, if extraction is by means other than a well, through installed equipment and infrastructure operational at the time of the reserves estimate.

**Development well**

- A well drilled within the proved area of an oil or gas reservoir to the depth of a stratigraphic horizon known to be productive.

**Directional drilling**

- The application of special tools and techniques to drill a wellbore at a predetermined angle. Horizontal drilling is a form of directional drilling where the wellbore is ultimately drilled at +/- 90 degrees to the vertical direction.

**Drilling rig**

- The machine used to drill a wellbore.

**Dry gas**

- Dry gas is almost pure methane and occurs in the absence of liquid hydrocarbons or by processing natural gas to remove liquid hydrocarbons and impurities.

**Dry hole**

- A well incapable of economically producing saleable hydrocarbons in sufficient quantities to justify commercial exploitation.

**E&P**

- Exploration and Production.

**Economically producible**

- A resource that generates revenue that exceeds, or is reasonably expected to exceed, the costs of the operation.

**Enhanced oil recovery (EOR)**

- One or more of a variety of processes that seek to improve recovery of hydrocarbon from a reservoir after the primary production phase.

**Environmental assessment**

- A study that can be required to assess the potential direct, indirect and cumulative environmental impacts of a project.

**Estimated ultimate recovery (EUR)**

- The sum of reserves remaining as of a given date and cumulative production as of that date.

**Exploratory well**

- A well drilled to find a new field or to find a new reservoir in a field previously found to be productive of oil or gas in another reservoir.

#### **Farm-in**

- The acquisition of part or all of an oil, natural gas or mineral interest from a third party.

#### **Farm-out**

- The assignment of part or all of an oil, natural gas or mineral interest to a third party.

#### **FEED**

- Front-end engineering and design – part of a project's life cycle.

#### **Field**

- An area consisting of a single hydrocarbon reservoir or multiple geologically related reservoirs all grouped on or related to the same individual geological structure or stratigraphic condition.

#### **Flaring**

- The burning of natural gas for safety reasons or when there is no way to transport the gas to market or use the gas for other beneficial purposes (such as EOR or reservoir pressure maintenance). The practice of flaring is being steadily reduced as pipelines are completed and in response to environmental concerns.

#### **Formation**

- A rock layer which has distinct characteristics (e.g. rock type, geologic age).

#### **Fossil fuel**

- A fuel source (such as oil, condensate, natural gas, natural gas liquids or coal) formed in the earth from plant or animal remains.

#### **Floating production, storage and offloading (FPSO)**

- Provides alternative to pipeline to store oil production and load vessels for movement to markets.



*Peng Bo FPSO in Bohai Bay, China*

#### **Fugitive Emissions**

- Emissions of gases or vapors from pressurized equipment, including pipelines, due to leakage, unintended or irregular releases of gases.

#### **Global-warming potential (GWP)**

- The relative measure of how much heat a greenhouse gas traps in the atmosphere. It compares the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of carbon dioxide. GWP is calculated over a specific time interval, commonly 100 years. GWP is expressed as a multiple of that for carbon dioxide (whose GWP is standardized to 1).

#### **Greenhouse gas**

- Atmospheric gases that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving Earth's atmosphere. The net effect of these gases is a trapping of absorbed radiation and a tendency to warm the planet's surface. The greenhouse gases most relevant to the oil and gas industry are carbon dioxide, methane and nitrous oxide.

### Heavy oil

- Crude oil with an API gravity less than 20°. Heavy oil generally does not flow easily due to its elevated viscosity.

### Horizontal drilling

- A drilling technique whereby a well is progressively turned from vertical to horizontal so as to allow for greater exposure to an oil or natural gas reservoir. Horizontal laterals can be more than a mile long. In general, longer exposure lengths allow for more oil and natural gas to be recovered from a well and often can reduce the number of wells required to develop a field, thereby minimizing surface disturbance. Horizontal drilling technology has been extensively used since the 1980s and is appropriate for many, but not all, developments.

### Hydraulic fracturing

- Hydraulic fracturing (also referred to as frac'ing or fracking) is an essential completion technique in use since the 1940s that facilitates production of oil and natural gas trapped in low-permeability reservoir rocks. The process involves pumping fluid at high pressure into the target formation, thereby creating small fractures in the rock that enable hydrocarbons to flow to the wellbore. View our hydraulic fracturing overview fact sheet for more details: [www.powerincooperation.com/EN/Documents/COP\\_Hyd%20Fracturing%20Fluids.pdf](http://www.powerincooperation.com/EN/Documents/COP_Hyd%20Fracturing%20Fluids.pdf).

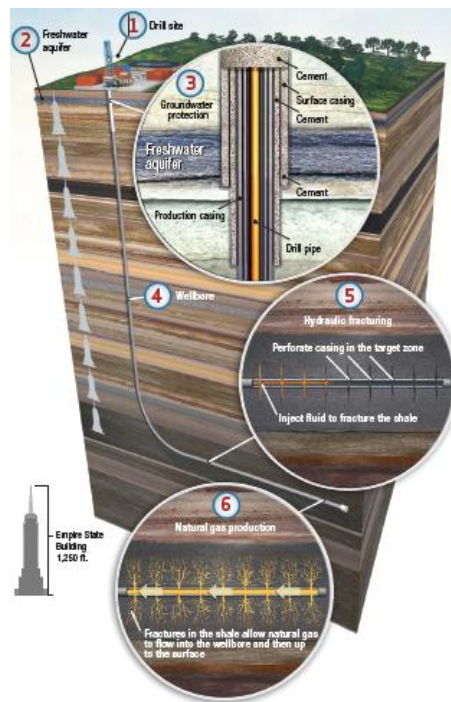


Illustration based on a typical Eagle Ford shale well in Texas.

### Hydraulic fracturing fluids

- Mixture of water and proppant along with minor amounts of chemical additives used to hydraulically fracture low permeability formations. Water and sand typically comprise up to 99.5 percent of the mixture. View our hydraulic fracturing fluid fact sheet for more details: [www.powerincooperation.com/EN/Documents/COP\\_Hyd%20Fracturing%20Fluids.pdf](http://www.powerincooperation.com/EN/Documents/COP_Hyd%20Fracturing%20Fluids.pdf).

### Hydrocarbons

- An organic compound containing only carbon and hydrogen and often occurring in nature as petroleum, natural gas, coal and bitumens or in refined products such as gasoline and jet fuel.

### Improved oil recovery (IOR)

- Term used to describe methods employed to improve the flow of hydrocarbons from the reservoir to the wellbore or to recover more oil or natural gas. **Enhanced oil recovery (EOR)** would be one form of IOR.

**Infill wells**

- Wells drilled into the same reservoir as known producing wells so that oil or natural gas does not have to travel as far through the formation, thereby helping to improve or accelerate recovery.

**In-situ recovery**

- Techniques used to extract hydrocarbons from deposits of extra-heavy crude oil, bitumen or oil shale without removing the soil and other overburden materials.

**Jack-up rig**

- An offshore rig with retractable steel legs that are placed on the ocean floor to raise the rig above the water line.

**Joint operating agreement (JOA)**

- An agreement governing the rights and obligations of co-owners in a field or undeveloped acreage, which defines, amongst other things, how costs and revenues are to be shared among the parties and who is the operator.

**Lease**

- A legal document executed between a mineral owner and a company or individual that conveys the right to explore for and develop hydrocarbons and/or other products for a specified period of time over a given area.

**Life Cycle Analysis (LCA)**

- LCA is an analytical methodology used to comprehensively quantify and interpret the environmental flows to and from the environment (including air emissions, water effluents, solid waste and the consumption/depletion of energy and other resources) over the life cycle of a product or process. LCAs should be performed in adherence to the International Organization for Standardization (ISO) 14040 series of standards.

**Liquefied natural gas (LNG)**

- Natural gas that has been converted to a liquid by refrigerating it to -260°F. Liquefying natural gas reduces the fuel's volume by 600 times, enabling it to be shipped economically from distant producing areas to markets.

**MBBL**

- One thousand barrels of crude oil, bitumen, condensate or natural gas liquids.

**MBD**

- One thousand barrels per day.

**MBOE**

- One thousand barrels of oil equivalent.

**MCF**

- One thousand standard cubic feet of natural gas. In the United States, standard conditions are defined as gas at 14.7 psia and 60°F.

**MMBBL**

- One million barrels of crude oil, bitumen, condensate or natural gas liquids.

**MMBOE**

- One million barrels of oil equivalent.

**MMBTU**

- One million British thermal units.



**MMCF**

- One million standard cubic feet of natural gas. In the United States, standard conditions are defined as gas at 14.7 psia and 60°F.

**MTPA**

- Millions of tonnes per annum.

**NYMEX**

- The New York Mercantile Exchange.

**Natural gas**

- Naturally occurring hydrocarbon gases found in porous rock formations. Its principal component is usually methane. Nonhydrocarbon gases such as carbon dioxide and hydrogen sulfide can sometimes be present in natural gas. For more information, view our fact sheets at [www.powerincooperation.com/EN/Pages/factsheets.html](http://www.powerincooperation.com/EN/Pages/factsheets.html).

**Natural gas liquids (NGLs)**

- A general term for highly volatile liquid products separated from natural gas in a gas processing plant. NGLs include ethane, propane, butane and condensate.

**Net acres**

- The percentage that a company owns in an acreage position with multiple owners. For example, a company that has a 50 percent interest in a lease covering 10,000 acres owns 5,000 net acres.

**Oil sands**

- Geologic formation comprised predominantly of sand grains and bitumen, a highly viscous form of crude oil.

**Operator**

- The entity responsible for managing operations in a field or undeveloped acreage position.

**Permeability**

- The permeability of a rock is the measure of the resistance to the flow of fluid through the rock. High permeability means fluid passes through the rock easily.

**Play**

- An area in which hydrocarbon accumulations or prospects with similar characteristics occur, such as the Lower Tertiary play in the deepwater Gulf of Mexico or the Marcellus play in the eastern United States.

**Porosity**

- The measure of a rock's ability to hold a fluid. Porosity is normally expressed as a percentage of the total rock which is taken up by pore space.

**Possible reserves**

- Additional reserves that are less certain to be recovered than probable reserves.

**Probable reserves**

- Additional reserves that are less certain to be recovered than proved reserves but which, together with proved reserves, are as likely as not to be recovered.

**Produced water**

- Water produced in connection with oil and natural gas exploration and development activities.

**Production sharing contract (PSC)**

- An agreement between a host government and the owners (or co-owners) of a well or field regarding the percentage of production each party will receive after the parties have recovered a specified amount of capital and operational expenses.

**Productive well**

- A well that is capable of producing hydrocarbons in sufficient quantities to justify commercial exploitation.

**Proppant**

- Sand or man-made, sand-sized particles pumped into a formation during a hydraulic fracturing treatment to keep fractures open so that oil and natural gas can flow through the fractures to the wellbore.

**Proved developed reserves**

- Proved reserves that can be expected to be recovered through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well.

**Proved reserves**

- Proved oil and gas reserves are those quantities of oil and gas which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible – as defined by the U.S. Securities and Exchange Commission regulations and the ConocoPhillips Policy for Reserves Estimation, Accounting and Reporting.

**Reasonable certainty**

- A high degree of certainty. Much more likely to be achieved than not.

**Recompletion**

- The process of entering an existing wellbore and performing work designed to establish production from a new zone.

**Recordable cases**

- As related to health, safety and environment (HSE), recordable cases include occupational death, nonfatal occupational illness and those nonfatal occupational injuries which involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job or medical treatment (other than first aid).

**Reserves**

- Estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations. In addition, there must exist, or there must be a reasonable expectation that there will exist, the legal right to produce or a revenue interest in production, installed means of delivering oil and gas or related substances to market and all permits and financing required to implement the project.

**Reservoir**

- A porous and permeable underground formation containing a natural accumulation of producible oil and/or gas that is confined by impermeable rock or water barriers and is individual and separate from other reservoirs.

**Resources**

- Quantities of oil and gas estimated to exist in naturally occurring accumulations. A portion of the resources may be estimated to be recoverable, and another portion may be considered to be unrecoverable. Resources include both discovered and undiscovered accumulations.

### Return on capital employed (ROCE)

- ROCE is a measure of the profitability of a company's capital employed in its business compared with that of its peers. ROCE is calculated as a ratio, with the numerator of net income plus after-tax interest expense and the denominator of average total equity plus total debt. The net income is adjusted for nonoperational or special items impacts.

### Shale

- A very fine-grained sedimentary rock that is formed by the consolidation of clay, mud or silt and that usually has a finely stratified or laminated structure. Certain shale formations, such as the Eagle Ford and the Barnett, contain large amounts of oil and natural gas.

### Social Life Cycle Analysis (S-LCA)

- A methodology for assessing internalities and externalities of the production of goods and services based on social and socioeconomic indicators.

### Sour gas

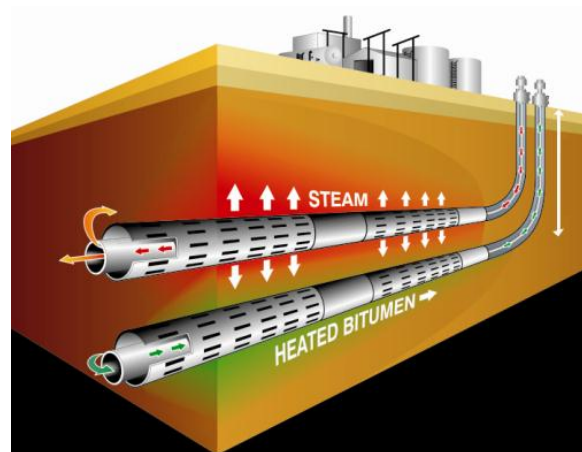
- Sour gas is natural gas or any other gas containing significant amounts of hydrogen sulfide ( $H_2S$ ).

### Spacing

- The distance between wells producing from the same reservoir. Spacing is often expressed in terms of acres (e.g. 80-acre spacing) and is often established by regulatory agencies.

### Steam-assisted gravity drainage (SAGD)

- A process used to recover bitumen that is too deep to mine. A pair of horizontal wells is drilled from a central well pad. In a plant nearby, steam generators heat water and transform it into steam. The steam then travels through above-ground pipelines to the wells. It enters the ground via the steam injection well and heats the bitumen to a temperature at which it can flow by gravity into the producing well. The resulting bitumen and condensed steam emulsion is then piped from the producing well to the plant, where it is separated and treated. The water is recycled for generating new steam.



### Sweet gas

- Natural gas that contains little or no hydrogen sulfide.

### TCF

- One trillion cubic feet of natural gas.

### Tight gas

- Natural gas produced from relatively impermeable rock. Getting tight gas out usually requires enhanced technology applications like hydraulic fracturing. The term is generally used for reservoirs other than shale.

**Total Recordable Rate (TRR)**

- The total recordable rate is a measure of the rate of recordable cases, normalized per 100 workers per year. The factor is derived by multiplying the number of recordable injuries in a calendar year by 200,000 (100 employees working 2,000 hours per year) and dividing this value by the total man hours actually worked in the year.

**Total Shareholder Return (TSR)**

- Represents share price appreciation and dividends returned to shareholders over a period. It is calculated as follows:  $[(\text{stock price at the end of the period}) - (\text{stock price at the start of the period}) + (\text{dividends paid during the calculation period}) \div (\text{stock price at the start of the period})]$ .

**Unconventional reservoirs**

- Reservoirs with permeability so low (generally less than 0.1 millidarcy) that horizontal hydraulically fractured stimulated wells or other advanced completion techniques must be utilized to extract hydrocarbons at commercial rates. Shale reservoirs such as the Eagle Ford and Barnett, as well as tight reservoirs like the Bakken and Three Forks, both are examples of unconventional reservoirs.

**Undeveloped acreage**

- Acreage on which wells have not been drilled or completed to a point that would permit the production of commercial quantities of oil and gas regardless of whether or not the acreage contains proved reserves.

**Unit**

- The joining of interests in a reservoir or field to provide for development and operations without regard to separate property interests. Also, the area covered by a unitization agreement.

**Waterflood**

- An improved oil recovery technique that involves injecting water into a producing reservoir to enhance movement of oil to producing wells.

**Wellbore**

- The hole drilled by a drilling rig to explore for or develop oil and/or natural gas. Also referred to as a well or borehole.

**Wet gas**

- Produced gas that contains natural gas liquids.

**Working interest**

- The right granted to the lessee of a property to explore for, produce and own oil, gas or other minerals. The working interest owners bear the exploration, development and operating costs.

**YTD**

- Year-to-date.