

# GPA Capital's Glossary of Oil & Gas Terms and Acronyms

This glossary of oil and gas definitions and abbreviations will help royalty and/or mineral owners understand the definitions of the terms and acronyms used in the Oil and Gas industry.

**Abandoned Well:** A well that is no longer in use or maintained by the operator. Typically, a series of steps must be done including plugging the well.

**Acre-Foot:** A unit of volume obtained from one acre of surface area that's one foot deep. This is equivalent to 7,758 barrels of oil or 43,560 cubic feet of gas. Combined with reservoir thickness and the approximate percentage of recovery, this can be a helpful measurement for understanding the hydrocarbon production potential of an asset.

**Authority for Expenditure (AFE):** A budgetary document, usually prepared by the operator, to list estimated expenses of drilling a well to a specified depth, casing point or geological objective, and then either completing or abandoning the well. Such expenses may include excavation and surface site preparation, the daily rental rate of a drilling rig, costs of fuel, drill pipe, bits, casing, cement and logging, and coring and testing of the well, among others. This estimate of expenses is provided to partners for approval prior to commencement of drilling or subsequent operations. Failure to approve an authority for expenditure (AFE) may result in delay or cancellation of the proposed drilling project or subsequent operation.

**Barrel of Oil (BBL):** In the oil and gas industry, a barrel is 42 U.S. gallons measured at 60° Fahrenheit.

**BCF:** The abbreviation for a billion cubic feet of gas.

**Bottom Hole Pressure (BHP):** A measurement of the pressure of the well at the bottom of the wellbore. This is usually measured in PSI (pounds per square inch).

**BOE:** Barrel of oil equivalent. This value converts natural gas production to an oil equivalent, representing the total hydrocarbon production of a well. The calculation is usually  $BBL\ Oil + (MCF\ Gas/6)$ . An MCF divided by 6 is the energy equivalent of 1 BBL of oil.

**BOE20:** This value is intended to convert natural gas production to an economic equivalent of oil. The calculation is usually  $(Total\ MCF\ Gas/20) + Total\ BBL\ Oil$ . Although prices can be volatile, the thought for this variable is that a BBL of oil sells for around 20 times the amount of an MCF of natural gas.

**Blowout Preventor (BP/BOP):** Casinghead equipment that prevents the uncontrolled flow of oil, gas and mud from the well by closing around the drill pipe or sealing the hole.

**BOPD:** The abbreviation for "barrels of oil per day".

**Brent Crude:** A major trading classification of sweet light crude oil that serves as one of the two main benchmark prices for purchases of oil worldwide (the other being West Texas Intermediate.) This grade is described as light because of its low density, and sweet because of its low sulphur content. Brent Crude is extracted from the North Sea and its oil marker is also known as Brent Blend, London Brent and Brent petroleum.

**Brine:** Water with a high concentration of salt.

**Basic Sediment and Water (BS&W):** This measures water, sediment, and emulsion as a percentage of the raw fluid production stream produced by an oil well.

**British Thermal Unit (BTU):** The amount of heat required to raise the temperature of one pound of water by one-degree Fahrenheit at sea level under standard conditions of pressure and temperature. Natural Gas has a BTU content of 1,037 BTU per cubic foot. BTU content can be important to understand. Gas with a higher BTU content can command a higher sales price as it would be capable of converting to more energy.

**Casing:** Casing is large diameter pipe cemented into the well. This is done for a variety of reasons including to prevent wellbore collapse and to protect freshwater formations.

**CO2:** Abbreviation for carbon dioxide.

**Commercial Well:** An oil and gas well that has produced or is producing enough oil and gas to be economically viable.

**Completion:** Well completion involves preparing a drilled well for production. For modern, unconventional wells this usually involves intense stimulation with base fluid, proppant, and other chemicals.

**Compression:** For transport purposes, it's common for natural gas to be compressed to create higher pressures for further movement downstream to market.

**Condensate:** A low density hydrocarbon liquid phase that is usually associated with gas. Often, as pressure and temperature drop during extraction, some gas can change into a light condensate liquid.

**Conventional Development:** Conventional Development usually refers to drilling wells vertically or directionally versus drilling a horizontal leg.

**Crude Oil:** Unrefined petroleum or liquid production. This is the raw, extracted oil which is different than hydrocarbons that have been refined into products such as gasoline or heating oil.

**Dry and Abandoned (D&A):** Refers to oil and gas wells.

**Decline:** The rate of decline of an oil and gas well through time. This is usually represented as a percentage.

**Decline Curve:** The decline curve is a visual representation of the production profile for an oil and gas well through time. This curve is also often used to estimate future production based on the profile shape and other parameters.

**Dehydration of Natural Gas:** The process of removing water from natural gas so that it can be transported downstream.

**Depletion Allowance:** This relates to oil and gas when minerals are purchased as an investment. Just like depreciating a work truck, the owner can deduct the capital investment costs. This is done by using either a percentage of estimated depletion or from a cost associated with the depletion. Of course, the sum of these deductions cannot exceed the original capital investment.

**Downstream:** The oil and gas industry can be divided into three segments. Upstream, Midstream, and Downstream. The Downstream sector is the process of refining the crude oil and natural gas into products such as gasoline, heating oil, natural gas, and lubricants. This sector also includes the marketing and distribution of these products to consumers. Some companies, such as Chevron, are involved in upstream, midstream, and downstream activities.

**Dry Hole:** A well that fails to produce oil and gas in economic quantities.

**DUC:** DUC is a common industry term to represent a wellbore that has been drilled but has yet to be completed. This can happen for a variety of reasons such as waiting on takeaway capacity to market or because the commodity price dropped suddenly. For DUC's it's important to understand that an operator has already invested capital to drill the well making it more likely that it will be completed at some time in the future.

**Enhanced Oil Recovery (EOR):** Enhanced Oil Recovery usually involves gas, steam, or other chemicals to help recover more hydrocarbons. This differs from secondary recovery in that the properties of the hydrocarbons are altered in the process.

**Extraction Loss (Shrinkage):** The reduction of natural gas volume when condensates form and are removed.

**Farmout Agreement:** In O&G, a Farmout Agreement is an agreement entered into by the owner of one or more mineral leases (the "farmor") and another company who wishes to obtain a percentage of ownership of that lease or leases in exchange for providing services (the "farmee").

**Field:** An area consisting of a single reservoir or multiple reservoirs all grouped on or related to the same individual geological structural feature and/or stratigraphic condition.

**Field Run Ticket:** A record created by the purchaser or transporter of oil and gas documenting how much oil and/or gas was removed from the location.

**Finding Cost:** An amount per Mcfe or BOE equal to the sum of all costs incurred relating to oil and gas property acquisition, exploration and development activities divided by the sum of all additions and revisions to estimated proved reserves, including reserve purchases.

**First Purchaser:** The entity that first purchases the production from the oil and gas well. Only the first purchaser should report production to avoiding duplicate reporting of volumes.

**Flaring:** The process in which natural gas is burned off when extracting oil. This is common in many areas with oil production that has associated natural gas. If takeaway pipes for natural gas are not present, flaring is often performed to burn off the gas as it's produced. A low-price environment for natural gas also promotes flaring. When you see a lot of bright lights in an oilfield at nights that emulate a candle, this is flaring.

**Flush Production:** A high flow rate of oil and gas production associated with a new well coming online.

**Gathering System:** The network of pipelines and processing facilities that transport oil and gas from the wells to a main storage facility, processing plant, or a hub for further transmission downstream.

**Gas:** Natural gas and all other gaseous hydrocarbons or minerals, including helium (see Natural Gas), but specifically excluding any Gas Liquids. (see Natural Gas Liquids)

**Gas to Oil Ratio (GOR):** Number of cubic feet of gas produced per BOE. The GOR is relative to oil in a production stream. It's calculated by taking gas production divided by the oil production. With current commodity prices, investors and operators are usually looking for lower GOR values which indicate more oil production versus gas production.

**Held by Production (HBP):** A lease provision on minerals extending the right to operate a lease if the property produces a minimum quantity of oil and gas.

**Horizontal Drilling:** A well that builds from a vertical trajectory to a horizontal trajectory and extends horizontally for contact with more surface area of the producing formation. This type of drilled is known as Unconventional Drilling as it deviates from the normal vertical well development in the past.

**Hydraulic Fracturing (Fracking):** For modern unconventional wells, the formations are usually very tight and lack enough permeability to allow for the flow of oil and gas to the surface. To overcome this, these wells undergo an intense stimulation of fluid, chemicals, and proppant agents create a fracture network and hold the fractures open. This process allows for the flow of the oil and gas to the wellbore for production.

**Hydrocarbon:** A compound of hydrogen and carbon which are the chief components of oil and gas. Gas represents the smaller hydrocarbon chains and the chains get larger with the transition to oil.

**Independent Producer:** An oil and gas company usually focused on exploration and production and not involved in midstream or refining operations.

**Infill Drilling:** Wells drilled between existing wells on a lease or unit. The ability to add infill wells without affecting the current wells can add value to the mineral property.

**Injection Well:** A well-used to inject fluids into the subsurface. This can include saltwater disposal wells for water disposal or gas injection wells to help with recovery.

**Initial Production (IP):** The initial flow rate of a well as reported in a test from the operator. Understanding how the test was performed is important when evaluating the results.

**Land Department:** The department within an oil and gas company responsible for acquiring leases in areas where the company thinks oil and gas can be produced economically.

**Land Grant:** A land grant is an area of land to which title was conferred by a predecessor government and confirmed by the U.S Government after the territory in which it is situated was acquired by the United States. These lands were never part of the original public domain and were not subject to subdivision by the PLSS.

**Lease Automatic Custody Transfer Unit (LACT Unit):** A system providing for the automatic measurement, sampling, and transfer of oil from the lease location into a pipeline.

**MCF:** One thousand cubic feet of gas. This a common measurement for reporting gas production.

**MCF/D:** One thousand cubic feet of natural gas per day.

**MCF/E:** Mcf of natural gas equivalent, determined using the ratio of six Mcf of natural gas to one Bbl of crude oil, condensate or natural gas liquids.

**MCFE/D:** Mcfe per day.

**MMBTU:** One million British thermal units; a measurement of heating value.

**MMCF:** One million cubic feet of gas.

**Natural Gas:** Gaseous forms of petroleum consisting of mixtures of hydrocarbon gases and vapors, the more important of which are methane, ethane, propane, butane, pentane, and hexane; gas produced from a gas well.

**Natural Gas Liquids (NGL):** Gas that is processed through a plant to separate the heavier hydrocarbons that are separated from natural gas and settle in a liquid phase (e.g., ethane, propane, butane and natural gasoline). These typically receive higher sales prices than dry gas although not as high as oil prices.

**NGL Fractionation:** The process of breaking down mixed NGL streams into purity products such as natural gasoline, ethane, propane, and butanes.

**Net Revenue Interest (NRI):** An owner's interest in the revenues of a well.

**Oil, Gas, and Mineral Lease (OGML):** The agreement outlining the basic terms of developing lands or minerals such as royalty to be paid, length of time, description of lands.

**Oil Gravity:** A measurement of density for hydrocarbons. For the most common measurement, API Gravity, the number is an inverse calculation where the higher density hydrocarbons are lower than the less dense hydrocarbons such as gas.

**Operator:** An entity with responsibility for drilling and maintaining well operations including complying with state regulatory bodies.

**Participating Royalty Interest:** Also known as a working interest, the owners of this interest are obligated to pay a specified percent of the costs to drill and complete the well in exchange for a revenue percentage.

**Peak Oil:** The hypothetical point in time when global production reaches its maximum rate. After this point is reached, global supply will gradually decline.

**Percent Liquids:** The percentage of hydrocarbons produced in liquid phase versus gas phase. This is a common metric for analysis as commodity prices are historically volatile. Currently liquids are more valuable than gas in the US.

**Perforation:** The communication channel created from casing or liner to the producing formation. There are many methods for this, but a common method is the use of targeted explosive charges.

**Permeability:** The measurement of a rock's ability to transmit fluids. Recent technology, such as Hydraulic Fracturing, has provided the ability to create permeability in tighter rocks such as shales.

**Play:** A Play refers to a focused region of oil and gas activity. An example of this is the STACK play in Oklahoma. The STACK is one of many plays in the Anadarko Basin, but the STACK represents a focused area of activity. Some Basins, such as the Delaware Basin, can also be considered plays. For this reason we provide a field that combines both Basins and Plays to match areas of focused drilling activity with names commonly known in the industry. This allows our clients to best filter the data in focused regions for analysis.

**Plugged & Abandoned well (P&A):** After a well's productive life, it's usually plugged and abandoned with cement and heavy mud. The wellhead is removed, the casing cut off 3-6 feet underground, and a steel plate welded over the top.

**Pooled Unit:** The joining of tracts or portions of tracts so that there is enough acreage to receive a drilling permit by the governing regulatory body.

**Possible Reserves:** Possible Reserves are less certain than probable reserves and can be estimated with a low degree of certainty (10-50%), insufficient to indicate whether gas will be commercially extracted from a given area.

**Postproduction Costs:** Costs incurred in the process of getting the crude oil and gas from the wellhead to the market. This can include costs such as transportation, compression, and other processing charges. Whether or not a royalty

owner's payments are deducted for Postproduction Costs will be determined by the details of the lease. This is important for mineral owners to understand during lease negotiations.

**Primary Recovery:** Primary Recovery refers to the oil and gas production that naturally lifts to the surface or is assisted by artificial lift devices such as pumps.

**Primary Term:** The initial period that a lessee must develop the property as stated in lease agreement. For example, the lease term may be 3 years and continues if a drilled well is producing economic quantities of oil and gas.

**Probable Reserves:** Probable reserves refer to a 50-90% percent likelihood that oil and gas will be commercially extracted from a given area.

**Production Unit:** An area allocated to a well by a regulatory authority to be included in the drilling/production of a well.

**Proration Unit:** The amount of acreage, as stated by a regulatory authority, which can be efficiently and economically drained by a well at a specific depth or formation.

**Proved Reserves:** Proved reserves refer to greater than 90% likelihood that oil and gas will be commercially extracted from a given area.

**Proved Developed Non-producing Reserves (PDNP):** Proved developed reserves that can be expected to be recovered from zones behind casing in existing wells, or from zones that are shut-in for market conditions, pipeline connections or mechanical reasons and are capable of production, but the timing is uncertain.

**Proved Developed Producing Reserves (PDP):** Proved developed reserves that are expected to be recovered from completion intervals currently open in existing wells and able to produce to market. Reserves that can be recovered through wells with existing equipment and operating methods. Additional oil and natural gas to be obtained through the application of fluid injection or other improved recovery techniques for supplementing the forces and mechanisms of primary recovery will be included as "proved developed reserves" only after the improved recovery project is in operation.

**Proved Reserves:** The estimated quantities of crude oil, natural gas and natural gas liquids which geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions (i.e., prices and costs as of the date the estimate is made). Prices include consideration of changes in existing prices provided only by contractual arrangements, but not on escalations based upon future conditions.

- Reservoirs are considered "proved" if economic producibility is supported by either actual production or conclusive formation test. The area of a reservoir considered proved includes (A) that portion delineated by drilling and defined by gas-oil and/or oil-water contacts, if any; and (B) the immediately adjoining portions not yet drilled, but which can be reasonably judged as economically productive on the basis of available geological and engineering data. In the absence of information on fluid contacts, the lowest known occurrence of hydrocarbons controls the lower proved limit of the reservoir.
- Reserves which can be produced economically through application of improved recovery techniques (such as fluid injection) are included in the "proved" classification when successful testing by a pilot project or the operation of an installed program in the reservoir provides support for the engineering analysis on which the project or program was based.
- Estimates of proved reserves do not include the following: (A) oil that may become available from known reservoirs but is classified separately as "indicated additional reserves;" (B) crude oil, natural gas and NGLs, the recovery of which is subject to reasonable doubt because of uncertainty as to geology, reservoir characteristics or economic factors; (C) crude oil, gas and NGLs that may occur in undrilled prospects; and (D) crude oil, natural gas and NGLs that may be recovered from oil shales, coal, gilsonite and other such sources.

**Proved Undeveloped Reserves (PUD):** Reserves that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a major expenditure is required for recompletion. Reserves on undrilled acreage shall be limited to those drilling units offsetting productive units that are reasonably certain of production when drilled. Proved reserves for other undrilled units can be claimed only where it can be demonstrated with certainty that there is continuity of production from the existing productive formation. Under no circumstances should estimates for proved

undeveloped reserves be attributable to any acreage for which an application of fluid injection or other improved recovery technique is contemplated, unless such techniques have proved effective by actual tests in the area and in the same reservoir.

**Proved Undeveloped Location:** A site on which a development well can be drilled consistent with spacing rules for purposes of recovering proved undeveloped reserves.

**PV10:** When used with respect to O&G reserves, PV10 means the estimated future gross revenue to be generated from the production of proved reserves, net of estimated production and future development costs, using prices and costs in effect at the determination date, without giving effect to non-property related expenses such as general/administrative expenses, debt service and future income tax expense or to depreciation, depletion and amortization, discounted using an annual discount rate of 10%.

As the basis for calculation of PV10, reservoir engineers develop a reserve report for each existing well, whether producing or shut-in, and for each proved undeveloped well location. The reserve report takes into account:

- current rate of production (or estimated initial rate of production of a proved undeveloped location);
- the rate at which production, assuming no further reserve additions, is expected to decline;
- future production costs unique to each well;
- development costs associated with the proved undeveloped reserves; and
- any production taxes that must be paid. To calculate the estimated future gross revenue to be generated from the production of proved reserves, engineers must apply an expected price to be received from the sale of such production. Such expected price typically equals the price in effect at the determination date either held flat or escalated at some appropriate rate.

**Recompletion:** Reentering a previously completed well and applying new stimulation or repairing the old completion in hopes of gaining more productivity from the well.

**Reserve Mud Pit:** A pit used to collect and store waste from drilling operations such as drilling mud, brine, and base oil. The pit is usually plastic-lined.

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

**Reservoir Rock:** For conventional oil and gas activity, this refers to a body of like-kind rock having enough porosity and permeability to store and transmit fluids. However, with hydraulic fracturing, operators can now produce reserves in low permeability tighter rocks such as shales.

**Revenue Statement:** The statement, usually monthly, sent by either the operator or the purchaser to all the interest holders in an oil and gas property. These outline the production volumes, prices, and any applicable post-production expenses.

**Revocable Trust:** A trust whereby provisions can be altered or canceled dependent on the grantor. During the life of the trust, income earned is distributed to the grantor. After death, the property transfers to the beneficiaries.

**Rig:** Structures that house equipment that can be used to drill wellbores.

**Saltwater Disposal Well (SWD):** Wells that are used to dispose of saltwater produced during the oil and gas extraction process. It's common for even the best wells to produce more saltwater than oil which creates the need to dispose of exceptionally large volumes of produced saltwater. Oil and gas wells that are no longer productive are sometimes converted into saltwater disposal wells. Usually these wells undergo strict regulation so that environmental concerns such as freshwater aquifer protection are met. In some cases, SWD wells can also perform a dual task of Enhanced Oil Recovery (EOR) to help push oil and gas production to nearby wells.

**Seal Rock:** A rock that forms a barrier or a cap around a reservoir rock. This can create large accumulations of hydrocarbons as the hydrocarbons get trapped by the seal rock during migration.

**Secondary Recovery:** Secondary Recovery refers to oil and gas production that is the result of water and gas injection into a field to help displace the oil into a wellbore. Secondary Recovery does not change the properties of the hydrocarbons which distinguishes it from the EOR or Tertiary Recovery.

**Secondary Term:** This refers to an oil and gas lease being held in force past the primary term of the lease. Examples include extension of a lease with an addition bonus payment from the development of economic quantities of oil & gas.

**Separator:** A vessel used to separate oil, gas, and water from the total fluid stream of a well.

**Shale:** Shale is a fine-grained sedimentary rock that forms from the compaction of tiny fragments of other mineral particles. The fragment sizes are silt and clay sized and before compaction this mix is commonly known as "mud".  
**WI, Working Interest– Interest(s)** in a well which bears the drilling and operating expenses.

**Shut-in Royalty:** Payment made by the lessee to the lessor to keep a lease active when a well capable of producing is being held back due to certain market conditions such as the pipeline for transport not yet being ready.

**Sour Gas:** Natural Gas that contains significant amounts of hydrogen sulfide, H<sub>2</sub>S.

**Spud:** Spudding is the process of beginning to drill a well. A spud date is a common reporting date that represents when drilling commenced.

**Stacked Pay:** This term usually refers to more than one producing formation beneath a given surface area. Having the potential for multiple producing geological formations can enhance the value of the acreage.

**Stripper Well:** A well that is currently producing but is nearing the end of its economic life.

**Swabbing:** A form of "well control" that releases bottom hole pressure in order to "kick" the well off. The pressure is reduced below formation pressure due to pulling the drill string, which allows an influx of formation fluids into the wellbore.

**Sweet Gas:** Natural gas that doesn't contain Hydrogen Sulfide, H<sub>2</sub>S.

**Top Lease:** A lease that covers the same area of land that is currently being leased. Top leasing is done by companies hoping to secure specific land for lease once the current lease expires. This is usually a good sign for mineral owners and often the original lessee will want to add a "first right of refusal" clause to avoid getting top leased.

**Undeveloped Acreage:** Lease 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 such acreage contains estimated, not proved reserves.

**Unitization:** The joining of tracts or portions of tracts so that there is enough acreage to receive a drilling permit by the governing regulatory body.

**Upstream:** The oil and gas industry can be divided into three segments. Upstream, Midstream, and Downstream. The Upstream sector is the process of exploration and extraction of economic quantities of oil and gas to the surface. This industry segment includes the operators that lease acreage from mineral owners.

**Waterflood:** The process of injecting water into a producing formation to help push hydrocarbons to a nearby wellbore. This is a type of Secondary Recovery.

**West Texas Intermediate (WTI) aka "Texas Light Sweet":** A grade of crude oil used as one of the two benchmarks in oil pricing (the other being Brent Crude). This grade is described as light crude oil because of its low density, and sweet because of its low sulfur content. It is the underlying commodity of NY Mercantile Exchange's oil futures contracts.

**Wildcat:** An exploratory well in an unproven area with a goal of discovering a new field.

**Workover:** Operations on a producing well to restore or increase production. Tubing is pulled and the casing at the bottom of the well is pumped or washed free of sand that may have accumulated.