

Below are the meanings of terms and phrases that are commonly used in the gas and oil industry in the U.S.

### **ABSTRACT OF TITLE**

A chronological history of the ownership of a tract of land.

### **ACCREDITED INVESTOR**

A person or institution deemed capable of understanding and affording the financial risks associated with the acquisition of unregistered securities.

The SEC recognizes the following parties as accredited:

1. An individual who alone, or with a spouse, has a net worth of over \$1 million.
2. An individual who alone had income in excess of \$200,000 in each of the past two years (or with a spouse, in excess of \$300,000 in each of the past two years) and has a reasonable expectation of doing as well in the current year.
3. A financial institution such as bank, broker/dealer, insurance company or business development company.
4. Any director, officer or general partner of the issuer.
5. A trust or business partnership, with assets in excess of \$5 million, that wasn't formed for the purpose of acquiring the unregistered securities.
6. Any entity wholly owned by accredited investors.

### **ABANDON**

A well is permanently plugged and abandoned if it is drilled and found to be a dry hole, or in the case of a producing well, it is not economically productive.

### **ACIDIZING**

A technique for increasing the flow of oil and/or gas into a well. Hydrochloric acid is pumped into the oil-bearing rock. The acid dissolves limestone in the producing zone enlarging pores and flow into the well bore with less restrictions.

## **ALLOWABLE**

The maximum amount of oil or gas a well or field is permitted to produce per day. It is typically set by state regulating agencies, after considering the economic market for the product, the maximum efficient rate (MER), and other factors.

## **ANNULUS**

The donut-shaped space around the outside of the drill pipe in an open borehole. A cased well has two annular spaces: one between the drill pipe and the casing, the other between the casing and the borehole

## **ANTICLINE**

A geological term describing a fold in the earth's surface with strata sloping downward on both sides from a common crest. Anticlines frequently have surface manifestations like hills, knobs, and ridges. At least 80 percent of the world's oil and gas has been found in anticlines.

## **API**

American Petroleum Institute, a petroleum industry association that sets standards for oil field equipment and operations.

## **ASPHALT**

A solid hydrocarbon which may be deposited within the reservoir rock, in well equipment, or in surface lines and tanks.

## **ASSESSMENTS**

Additional capital contributions that maybe required by the limited partners during the course of the partnership's existence.

## **ASSIGNMENT**

## **ASSOCIATE GAS**

The gas that occurs with oil either as free gas or in solution. When occurring alone, it is referred to as unassociated gas.

## **AUTHORIZATION FOR EXPENDITURE**

**(AFE)** - An estimate of the costs of drilling and completing a proposed well, which the operator provides to each working-interest owner before the well is drilled. Various categories of costs are typically listed as 'dry hole' costs (the costs to drill to the casing point; these are costs that would be incurred if no indications of hydrocarbons are found), completion cost (the additional costs to complete the well), and the total cost.

## **BACK IN**

The type of interest in a well or property that becomes effective at a specific time in the future, or on the occurrence of a specified future event. See reversionary interest.

## **BARREL OF OIL**

The standard unit of oil measurement in the U.S. oil industry. A Barrel equals 42 U.S. gallons, or 159 liters. In some countries, oil is measured using the metric system; volumes in liters or weights in metric tons.

## **BASIN**

A natural depression on the earth's surfaces, in which (usually water-borne) sediments accumulate over millions of years. The gulf of Mexico is an example.

## **BASIS**

Another term for the cost of property that is used in computing gain or loss, for federal income tax purposes.

## **BCF**

Billion cubic feet (or gas). In the U.S. oil and gas industry, the cubic foot is the standard unit of measurement of gas at atmospheric pressure.

## **BEHIND PIPE**

If a well drills through more than one pay zone and is completed in the deepest productive reservoir, casing is set all the way down to the producing zone. Viewed from (a perspective) inside the borehole, reserves in the shallower pay zones up the hole are behind the casing (pipe).

## **BIT**

A bit is the drilling tool that bores or cuts into the earth. There are two basic types: the cable tool bit which moves up and down the hole, striking the bottom, chipping away the rock, and the rotary bit

which revolves to grind the rock. The rotary is the modern technique used in most drilling operations.

## **BLIND POOL**

Refers to an oil and gas limited partnership which has not committed to a specific prospect, lease, or property at the time of the limited partners subscribe.

## **BLOWOUT**

An unexpected violent eruption of oil and gas from a well during the drilling phase of operation. This happens when high pressure gas is encountered and the proper precautions have not been taken. The initial eruption is followed by an uncontrolled flow of fluids from the well.

## **BLOWOUT PREVENTER**

A "BOP" is a large, specially designed valve that is mounted on top of the well during the drilling and completion stages of operation. The operator can close this valve to stop the flow of oil or gas in case of emergency.

## **BLUE SKY LAWS**

State regulations governing an offering to sell securities within that state (analogous to Securities Exchange Commission registration requirements at the Federal level). It originated with the first state securities laws enacted in the U.S. (Kansas, in 1911), intended to protect state residents from being sold securities as lacking in substance with a sky high potential.

## **BONUS MONEY**

Paid to a landowner or other holder of mineral rights by the lessee for the execution of an oil and gas lease in addition to any rental or royalty obligations specified in the lease.

## **BOREHOLE**

The hole created by drilling a well.

## **BOTTOM-HOLE**

The deepest part of a borehole.

## **BOTTOM HOLE PRESSURE**

The reservoir pressure at the bottom of the well. When the well is flowed, a decline in pressure

occurs. The amount of decline in pressure related to the amount of oil production will give an engineer information regarding the reserves of the well.

## **BTU**

British thermal unit, a unit of heat energy, used to describe the amount of heat that can be generated by burning oil or gas.

## **CARVED OUT INTEREST**

The fractional interest conveyed to another party by the original owner of the whole interest.

## **C&E**

Well completion and equipment cost.

## **CASING**

Steel pipe which screws together and is lowered into the hole after drilling is complete. It is used to seal off fluids and keep the hole from caving in.

## **CASED HOLE**

A borehole in which casing has been inserted. If the casing does not extend all the way to total depth, the uncased portion is referred to as an open hole.

## **CASH DISTRIBUTIONS**

Money paid by an oil and gas partnership to its partners.

## **CASHINGHEAD**

A fitting attached to the top of the casing in a producing oil or gas well. It regulates the flow of oil or gas, helps separate oil from gas, allows the pumping of oil from an oil well, and facilitates periodic cleaning out of the well.

## **CASING POINT**

When the well has been drilled to its objective depth, the operator is faced with a very important decision, whether to commit additional dollars to "set pipe" and attempt a completion or to abandon the well as non-commercial. The success or failure of many companies has been dependent on these decisions.

## **CEMENT OR "SET PIPE"**

A process whereby cement is pumped into the hole between the walls of the hole and the outside of the casing. Upon hardening, the cement holds the pipe in place and prevents fluid movement in the hole.

## **CHRISTMAS TREE**

A complex assembly of valves/controls, fittings, gauges, and pipe connections at the top of the casing of a well.

## **CIRCULATION**

The continuous pumping of drilling fluid ("mud") from mud tanks at the surface: down through the drill pipe, out the nozzles of the drill bit, and back to the surface through the space between the drill pipe and the borehole. The flow of mud moves the rock cuttings and carries them up to the mud system, by the shale shaker.

## **LOST CIRCULATION**

Is indicated when drilling fluid escapes from an uncased borehole into porous zones, or holes such as fractures or caverns that occur naturally in the penetrated rocks. Mechanical operations may require to drill through a zone of lost circulation. If an attempt to drill through zones of lost circulation are unsuccessful, a well might have to be abandoned.

## **COMMERCIAL WELL**

A well which is capable of producing enough products to pay for itself and give a profit to its owners.

## **COMPLETION**

A general term referring to all activities necessary to put a well on production after it has been drilled to casing point.

## **CONDENSATE**

Hydrocarbons naturally occurring in the gaseous phase in the reservoir that condense into a liquid at the surface (due to the change in pressure and temperature). Often used for aviation fuels.

## **CONTRIBUTION**

In oil and gas limited partnerships: the payment of money, property or services by an investor.

## **CONVERTIBLE INTEREST**

An interest (usually a non-cost-bearing interest) that may, at the option of the owner or on specified date or owner occurrence be changed into another type of interest (usually a cost bearing interest). Example: a 5% overriding royalty convertible to a 1/8 (=12.5%) working interest after payout.

## **CONVEY (CONVEYANCE)**

Legal term to transfer the title of a property from one party to another, typically by deed.

## **CORE**

A cylindrical column of rock usually 4 to 6 inches in diameter cut in lengths of about 30 feet by a special drill bit (the operation is like removing the core from an apple). After the core has been brought to the surface, it is examined by geologist for shows of hydrocarbons.

## **CNG**

Compressed Natural Gas

## **CREEKOLOGY**

Refer to locating the next well, on the basis of science and geology, and gross natural features on the surface of the land.

## **CRUDE OIL**

Oil in its natural state of composition. "Crude" is classified according to its physical properties: a. Paraffin Based, b. Asphaltic Based, c. Mixed Based.

## **CUTTING OR SAMPLES**

Pieces of rock cut out of the formation by the bit and circulated to the surface by the mud. Geologists study this rock for signs of oil and gas as the well is drilled.

## **DEDUCTIONS**

Tax items which may be subtracted from gross income to arrive at taxable income in Federal income tax computations

## **DEED**

A written document (legal 'instrument') by which the title to a property is transferred (conveyed) from one party (the grantor) to another (the grantee). it is signed by the grantor and delivered to the grantee.

## **DEPLETION**

The reduction in value of mineral deposits as it is produced. Oil is a wasting asset, in that proceeds from the well represent both income and return of capital.

## **DEPLETION ALLOWANCE**

An allowance granted on taxable income from oil and gas by the Federal and most State Governments. The current Federal rate is 15% of gross income. The law is rather involved and a tax specialist should be used when computing the tax free portion of income. This information is supplied to each partner prior to filing his income tax returns on April 15th of each year.

## **DEPOSIT**

An accumulation of oil, gas or other minerals which is capable of production.

## **DEVELOPMENTAL WELL**

A well drilled to a known producing formation in an existing oil field.

## **DIP**

The angle that a rock layer lies, measured relative to a horizontal plane.

## **DIPMETER LOG**

A wireline log that tells the angle and direction of the dip of rocklayers penetrated in the borehole.

## **DISCOVERY WELL**

An exploratory well which encounters production in a previously unknown deposit.

## **DIVISION ORDER**

A contract with a purchaser of oil and gas which directs the payments of oil and gas revenues to the interest owners of a well.

## **DOWNHOLE**

Refers to equipment or mechanical operations that take place down a borehole.

## **DOWNTIME**

Time lost during drilling, often as a result of equipment breakdown.

## **DRILL BIT**

A tool with very tough steel or diamond teeth that grind rock into small chips during drilling.

## **DRILLING**

The act of boring into the earth.

## **DRILLING BREAK**

A sudden increase in the rate of drilling. Usually it indicates that the drill bit is penetrating a porous layer of strata and/or can indicate crossing a fault.

## **DRILLING RIG**

The equipment used to bore into the earth. There are two types: a. Rotary b. Cable tools. The rotary type is more modern and efficient.

## **DRILL PIPE**

A special grade of extra-strong steel pipe threaded on both ends.

## **D&A**

Dry and abandoned.

## **DRILL STRING**

The entire length joints of drill pipe that are screwed together and lowered into a borehole. The drill string runs from the Kelly (see definition) on the drilling rig to the drill bit at the bottom of the borehole.

## **D&T**

Drilling and well test cost.

## **DRY GAS**

Natural gas that contains no appreciable liquid hydrocarbons. It may occur naturally, or by the result from passing natural gas through separator installed on a producing well.

## **DUE DILIGENCE**

In the offering of securities, the parties who are responsible for the accuracy of the offering document, have an obligation to perform a 'due diligence' examination of the issuer: issuer's counsel, underwriter of the security, brokerage firm handling the sale of the security.

## **ELECTRIC LOG**

An electrical survey made on uncased holes. A special tool is lowered into the hole which ejects an electrical current into the rock and records its resistance to the current. The data from the survey is used by the geologist to determine the nature of the rock and its contents.

## **ELECTRONIC FLOW METER**

A device used for monitoring oil and gas flows from the wellhead. Measurements usually expressed at headquarters on computer screen as flow of gas in thousands of cubic feet and barrels of oil (42 gallon barrels). Measurements typically expressed in real time, actual flow cumulative flow and historical data.

## **EXPLORATION**

A general term referring to all efforts made in the search for new deposits of oil and gas.

## **ENHANCED OIL RECOVERY**

Various methods of increasing the recovery of oil and gas from a reservoir, (usually) after primary recovery has been used.

## **EUR (ESTIMATED UNDEVELOPED RESERVES)**

Expected (or estimated) Ultimate Reserves: An estimate of the cumulative volume of reserves that will be recovered (from a specified reservoir) over the life of a well.

## **FAULT**

A crack or fracture in the earth's crust.

## **FEET OF PAY**

The thickness of the pay zone penetrated in a well.

## **FIELD FORMATION**

A geographical area under which one or more oil or gas reservoirs lie, all of

them related to the same geological structure.

## **FISHING**

The procedure of locating and retrieving an object (a 'fish') that has accidentally fallen into, or been left in the borehole, and must be retrieved before mechanical operations can be resumed.

## **FLOODING**

One of the methods of enhanced oil recovery. The general method involves pumping (injecting) a fluid (commonly water) into the reservoir, through wells located around the perimeter of an oil field. The 'pressure front' that is created, flushes oil toward the central part of the field, resulting in increased production.

## **FLOWING WELL**

A well capable of producing oil or gas by its own energy without the aid of a mechanical pump. Normally a pump is put on the well after the pressure reduction inhibits the rate of production.

## **FLUORESCENCE**

An optical property of some materials: Hydrocarbons glow emitting visible light when they absorb radiation from an ultraviolet source. Liquid crude oils fluoresce with colors that range from brown to yellow to green to blue. The color may give some indication of the density of the oil and its chemical characteristics.

## **FOLDING**

The bending of layers of rock.

## **FORMATION**

A geological term that describes a succession of strata similar enough to form a distinctive geological unit useful for mapping or description.

## **FARMOUT AGREEMENT**

An arrangement in which the responsibility of exploration and development is shifted (by assignment) from the working interest owner to another party. Under the farmout agreement: An operator is obligated to perform a specified exploration and drilling program to earn a working interest in the property.

## **FRACTURING**

A procedure undertaken to attempt to increase the flow of oil or gas from a well. A fluid is pumped into the reservoir, with tremendous forces that the reservoir rock is physically broken and split open. usually the 'frac fluid' carries small pellets or beads mixed in with it; the idea is for them to get caught in the fractures and prop them open (the beads or pellets are called the propping agent or proppant). As the pumping pressures are gradually released at the surfaces, the natural reservoir pressures will force the 'frac fluid' out of the reservoir, and back into the well as the well begins to flow. The proppant remains behind., holding the fractures open, thereby increasing the flow of oil or gas from the reservoir into the well. This procedure is also called hydraulic fracturing. 'To frac a well' means to hydraulically fracture a reservoir in a well.

## **FRONT-END COST**

Costs which are paid out of an initial capital investment in a venture, first, before the venture activities actually begin. In a limited partnership, these costs might include syndication expenses, legal fees, accounting fees, management fees, etc.

## **FUTURES PRICES**

Refers to the New York Mercantile Exchange (NYMEX) which introduced futures contracts for crude oil and natural gas. A futures contract is an obligation to buy or sell a specified quantity at a specified price in some future month. (as far as 18 months in the future). An oil futures contract is for 1,000 barrels of West Texas Intermediate (WTI) crude oil quoted in dollars per barrel. WTI is the domestic light, sweet crude that is most widely traded in the spot market. A gas futures contract is for 10,000 MM Btu of gas to be delivered during a specified delivery month, at the "Henry Hub" near Erath, Louisiana; price is quoted in dollars per MM Btu. (MM = 1,000,000).

## **FRACING**

The process of pumping fluids into a productive formation at high rates of injection to hydraulically break the rock. The "fractures" which are created in the rock act as flow channels for the oil and gas to the well.

## **GAS CAP**

An accumulation of natural gas, on top of layer of saturated liquid hydrocarbons, in a reservoir.

## **GAS COLUMN**

The vertical height of a gas accumulation above the gas-oil or gas-water contact.

## **GAS DRIVE**

When a well drills into an oil accumulation, free gas in the gas cap above the oil zone, expands. This forces the oil to flow into the wellbore, helping to force oil to flow into the wellbore and up to the surface ('solution gas drive').

## **GAS LIFT**

A method of secondary recovery similar to gas injection, except that the injection well and the production well are both the same well. Dry natural gas is pumped down through the space between the casing and the production tubing, and into the reservoir. Gas dissolves into the oil increasing the oil's ability to flow, and reservoir pressure is increased around the well. Pumping stops. Then as pressure is bled off at the surface, the oil-and-gas mixture (which is lighter than the oil by itself) flows from the reservoir, into the production tubing in the well, and to the surface. The procedure of injecting gas and then flowing the oil-and-gas mixture is carried on intermittently. The gas is separated from the mixture at the surface, where it is stored for re-injection.

## **GAS-OIL RATIO (GOR)**

The volume of gas produced along with the oil from an oil well, usually described in MCF (thousands of cubic feet of gas) per barrel of oil.

## **GAS WELL**

A well that produces natural gas which is not associated with crude oil.

## **GENERAL PARTNER**

In a limited partnership, the general partner is responsible for managing the partnership's activities (and is commonly the party that put the deal together).

## **GEOPHYSICIST**

A geophysicist applies the principles of physics to the understanding of geology.

## **GROSS ACRES**

The number of acres in which one owns a working interest. A net acre, is a gross acre multiplied by one's working interest owned.

## **GUARANTEED PAYMENTS**

Payments by a partnership to one or more of its partners for services rendered.

## **HELD BY PRODUCTION (HBP)**

Refers to an oil and gas property under lease, because of production from that property.

## **HORIZONTAL DRILLING**

The new and developing technology that makes it possible to drill a well from the surface, vertically down to a particular depth and then to turn a right angle, and continue drilling horizontally within a specified reservoir, or an interval of a reservoir.

## **HOT OILING**

Some crude oils contain significant paraffin (waxy) hydrocarbons. Production of this type oil usually tends to decline rather rapidly (as the paraffins in the oil clog the porosity surrounding the well bore). Hot oiling is a method of (temporarily) alleviating this situation by using heating equipment and special procedures to increase the temperature in the reservoir close to the borehole, thereby liquefying the paraffin, and unclogging the pore spaces.

## **HYDROCARBONS**

A large class of organic compounds composed of hydrogen and carbon. Crude oil, natural gas and natural gas condensate and methane.

## **IDC**

(Intangible Drilling Costs) All cost incurred in drilling a well other than equipment or leasehold. These expenses are 100% tax deductible even if the well is productive.

## **INITIAL POTENTIAL**

Flow rate measured during the initial completion of a well.

## **INVESTMENT TAX CREDIT (ITC)**

A credit against income taxes, usually computed as a percent of the cost of investment in certain types of assets (specified in tax regulations). It directly offsets tax liability.

## **IP**

(Initial Production) Production from a well is generally broken down into three categories: a. Flush or Initial b. Settled c. Stripper. It is important for investors to realize that a well cannot maintain the flow rates it made during the first stages of its life.

## **JOINT**

A single section of drill pipe, casing or tubing, usually about 30 feet long.

## **JOI OPERATING AGREEMENT (JOA)**

A detailed written agreement between the working interest owners of a property which specifies the

terms according to which that property shall be developed.

## **KELLY BUSHING (KB)**

Part of the drilling rig, the Kelly is a long hollow steel bar that connects to the upper most end of the drill string. It is square or hexagonal in cross-section. The Kelly bushing is a 'sleeve' in the rotary table through which the Kelly can freely move up and down during drilling. The depth to a particular zone for a well is generally measured from the Kelly bushing, which can be anywhere from about 5 to 50 feet above ground level (dependent on the type and size of drilling rig used).

## **LEASE**

A contract by which the owner of the mineral rights to a property conveys to another, the exclusive right to explore for and develop minerals on the property, for a specified period of time. The conveying party is 'lessor'; the mineral rights owner. The recipient is 'lessee'. The terms of the lease are typically negotiated between company, and the owner of the mineral rights.

## **LEASE BONUS**

## **LIFTING COST**

The cost involved in lifting (pumping) oil from a producing reservoir in a well, up to the surface, including the lease operating cost.

## **LIME STONE**

Sedimentary rock mostly consisting of calcite (calcium carbonate). On a world-wide scale, limestone reservoirs contain more oil and gas reserves than any other type of reservoir rocks.

## **LIMITED LIABILITY**

Entities limiting liability

If a taxpayer holds his working interest through any of the following entities, the entity is considered to limit his liability, and the taxpayer's interest in the activity will not be exempt from the passive loss rules

1. A limited partnership interest is a partnership in which the taxpayer is not a general partner.
2. Stock in a corporation.
3. Any entity other than a limited partnership or corporation that, under applicable state law, limits

the potential liability of a holder of such interests for all obligations of the entity to a determinable fixed amount. (e.g., the taxpayer's capital contributions).

## **LIMITED PARTNERSHIP**

A partnership in which the general partner manages the partnership's activity and is solely liable for them. The limited partners are liable only to the extent of their contributions (and assessments), and they have limited control over policy decisions.

## **LNG**

Liquefied Natural Gas.

## **LOGS**

Records made from data-gathering devices lowered into the wellbore. The devices transmit signals to the surface which are then recorded on film and used to make the record describing the formation's porosity, fluid saturation, and lithology. The filing of a log is required by the federal government if the drill site is on federal land.

## **MANAGEMENT FEE**

In oil and gas limited partnership: A fee paid by the limited partners to the general partner for services he provides in the management of the partnership. The amount of such fee is so noted in the partnership agreement.

## **MAXIMUM EFFICIENT RATE (MER)**

## **MIGRATION**

The motion of oil and gas through layers of rock deep in the earth.

## **MINERAL ACRE**

The full mineral interest in one acre of land.

## **MINERAL INTEREST ('MINERAL RIGHTS')**

The ownership of all rights to gas, oil, and other minerals as they naturally occur in place, at or below the surface of a tract of land. The mineral owner may execute an oil or gas lease conveying his interest in a tract of land.

## **MUD (DRILLING MUD)**

A fluid mixture of clays, chemicals, and weighed materials suspended in fresh-water, salt-water, or diesel oil. It cools and lubricates the drill bit, carries cuttings to the surface, maintains the required pressure at the bottom of the hole, and coats the inside of the borehole with a sort of plaster called 'mud cake' which helps prevent the walls from caving into the hole. 'Mud weight' is the density of the mud measured in pounds per gallon (ppg). It can be controlled at the surface by the addition of various substances, such as barite (barium sulfate-BaSO<sub>4</sub>), a heavy mineral 4.5 times as dense as water. 8.3 ppg = the density of water .15 ppg = 2x the density of water .20 ppg = 2.4x the density of water The pressure exerted by the column of mud in the borehole must be greater than natural pressures in rocks likely to be encountered during drilling. Drilling with too light of mud weight could result in a blowout.

## **MUD ENGINEER**

A technician responsible for the proper weight and flow of the mud.

## **MWD**

Measurement while drilling.

## **NET PAY (NET FEET OF PAY)**

The aggregate thickness (in feet) of the pay zone.

## **NET PROFITS INTEREST**

A share of the gross production from a property that is carved out of a working interest, and it is figured as a function of net profits from operation of the property.

## **NON-COMMERCIAL**

A well that is not capable of producing enough oil to pay for the drilling.

## **NRI**

(Net Revenue Interest) That percent of the production revenue allocated to the working interest after first deducting proceeds allocated to royalty and overriding interest.

## **OFFERING MEMORANDUM**

A legal document provided to potential investors in a venture (such as an oil and gas limited partnership), describing the terms under which the investment is offered.

## **OIL COLUMN**

The vertical height or thickness of an oil accumulation above the oil-water contact. In commercial oil fields, oil columns can range from 5 feet to (rarely!) several hundred feet. See gas column.

## **OIL**

A liquid hydrocarbon. (see "Crude Oil")

## **OIL GRAVITY**

The most widely used indicator of a crude oil's worth to the producer is its API gravity. Normally, the price which a producer receives for his oil depends on its gravity, the less dense oils (higher API gravity) being the most valuable. This price schedule is based on the premise that the lighter oil contains higher percentages of the more valuable products such as gasoline. API Gravity (degrees) =  $(141.5/\text{sp.gr.}) - 131.5$ .

## **OIL & GAS LEASES**

A contract between an oil operator and a landowner which gives the operator the right to drill for oil and gas on his property for a consideration. It is simply a "ticket to hunt".

## **ON THE PUMP**

An expression that means a well is incapable of flowing and that the oil is being pumped to the surface by a "pumping unit".

## **OPEN HOLE**

Refers to a borehole, or the portion of a borehole, in which the casing has not been set.

## **OPERATING EXPENSE**

The expenses incurred through the operation of producing properties.

## **OPERATOR**

The working-interest owner responsible for the drilling, completion and production operations of a well, and the maintenance of the leased property. Responsibilities of the operator and other working-interest owners are listed in the joint operating agreement.

## **ORGANIZATION COSTS**

The costs incurred in the creation of a new business organization such as an oil and gas limited partnership: legal and accounting fees, organizational meetings, and printing costs.

## **OVERRIDING ROYALTY ('OVERRIDE', 'ORI')**

A revenue interest in oil and gas, created out of a working interest. Like the lessor's royalty, it entitles the owner to a share of the proceeds from gross production, non-inclusive of any operating or production costs.

## **PACKER**

A flexible rubber sleeve that is part of a special section of pipe. The tool may be added to the drilling string. When the drill string is lowered into the borehole, the packer can be expanded (from the surface), to temporarily block off a portion of the annulus of the borehole. Often it may be done during drill stem tests or the squeezing operations.

## **PAY ZONE or PAY**

The section of rock, from which oil or gas is expected to be produced in commercial quantities.

## **PAYOUT**

When the costs of drilling, producing and operating have been recouped from the sale of products on a well.

## **PERFORATING GUN**

An instrument lowered by a wireline into a cased well. It contains explosive charges that are electronically detonated from the surface. When it is on the level of the pay zone, the bullets are shot into the reservoir rock, piercing the casing (and surrounding cement sheath). The resulting holes allow hydrocarbons to flow from the pay zone into the borehole.

## **PERMEABILITY**

A measure of the resistance of rock to the movement of fluids. Rocks may have holes or void spaces in them (porosity), but if these holes do not connect, the permeability can be drastically reduced.

## **PETROLEUM GEOLOGIST**

A geologist who specializes in the exploration, and the production of petroleum.

## **PLUG**

An object set in a borehole to block the passage of fluids (usually made of cast iron or cement).

## **PLUG BACK**

To block off the lower section of the borehole by setting a plug, usually to perform operations in the upper part of the hole.

### **PLUGGED & ABANDONED (P&A)**

This expression refers to setting cement plug or cast iron in an unsuccessful well (a 'dry hole') or a depleted well, before abandoning the well.

### **POOR-BOY**

To 'poor-boy' a well means to try to make do without adequate financing to borrow money, sell interests, make trades, borrow equipment, or otherwise somehow get enough money or credit, to drill the well.

### **POROSITY**

A measure of the relative volume of void space in rock to the total rock volume. These spaces or pores are where oil and gas accumulate; therefore, a formation containing a high percentage of porosity can contain more hydrocarbons.

### **PRIVATE PLACEMENT OFFERING**

A securities offering not intended for the general public.

### **PROPPANT, PROPPING AGENT**

See fracturing.

### **PROVEN RESERVES**

Oil and gas which has not been produced but has been located and is recoverable.

### **PUBLIC OFFERING**

A securities offering for sale to the general public. It must be registered with: (1) the Securities and Exchange Commission of the Federal government and (2) the securities-regulating agencies of the various state in which it will be offered. See private placement.

### **PUMPER**

An employee of an operator who is responsible for gauging the oil and gas sold off the leases he has been assigned and who is also responsible for maintaining and reporting the daily production.

## **REWORK OPERATIONS**

Any major operation performed on a well after its completion in an attempt to restore or improve its ability to produce.

## **RE-ENTRY**

Assume that a well has been abandoned, but subsequent drilling and production in the area suggests that a potential pay zone in the well was missed or 'passed over'. Instead of drilling a second well to evaluate the zone of interest, a company might drill out the cement abandonment plugs in the original borehole to test the potential zone. Such a 're-entry' can be a rather risky operation, but if successful, the cost may be much less than drilling a new well.

## **RESERVES**

The amount of oil and gas in a reservoir currently available for production, usually described as barrels of oil, or MCF (thousands of cubic feet) of gas, attributable to a well, to a property, or to an entire field. The term should be qualified by an adjective, since there are many ways of estimating the reserves. 'Reserves in place' is the amount of oil or gas physically contained in the reservoir. The amount of reserves that can actually be gotten out of the ground (can be recovered) may be only 25% to 30% of the reserves in place. 'Recoverable reserves' is an estimated amount of oil or gas that can be produced from the reservoir in the future. Proved Reserves: the amount of reserves that are considered to be recoverable using technology based on the available geologic and engineering data.

## **RESERVOIR**

Any rock having enough porosity and permeability to contain appreciable hydrocarbons. Most often reservoirs are sandstone and limestone (limestone/dolomite).

## **(Electrical) RESISTIVITY**

The ability of a substance to impede the flow of electricity through it. Variations in the resistivity of various rocks depends largely on the fluids contained in the pores of the rocks: pure oil, pure gas, and fresh water each have high resistivity, while salt water has very low resistivity. Most dry rocks do not conduct electricity (and therefore have high resistivity).

## **RETAINED INTEREST**

A fractional interest kept by the owner of a whole interest when the balance of the whole interest is transferred (conveyed) to another party. See carved out interest.

## **REVERSIONARY INTEREST**

An interest in a well or property that becomes effective at a specified time in the future or on the

occurrence of a specified future event. See back-in.

## **RISK**

Literally: 'the possibility of loss or injury'. In oil and gas exploration, a level of uncertainty is associated with the various possible outcomes of the undertaking.

## **ROUGHNECK**

One of the two or three field-hands on the derrick floor during drilling operations, whose job revolves around breaking out the drill pipe, making connections, and stacking drill pipe. It is a tough, physically demanding, and very dangerous job.

## **ROUSTABOUT**

A semi-skilled hand that looks after producing wells and production facilities. As the name indicates the greater diversity of general maintenance jobs that must be done. This position is frequently offered to former roughnecks, who due to age or injury, may no longer be fit for the strenuous work on a drilling rig during drilling operations.

## **ROYALTY ACRE**

The (mineral owner's) royalty on one acre of leased land.

## **SALT WATER DISPOSAL WELL**

Many wells produce salt water while producing oil. The disposal of this water is a problem to an operator because of pollution. The best solution to the problem is to pump the waste back into a formation that is deep enough not to pollute shallow water sands. Many stripper wells which are no longer commercial are converted for this purpose.

## **SANDSTONE**

Rock composed chiefly of sand-sized particles or fragments of the mineral quartz. Individual grains seem to be naturally "glued" together by the mineral calcite.

## **SATURATION**

(1) Water-Saturation: the fluid contained in the pores of an oil and gas rock which usually consists of a mixture of water plus oil and gas. Water-saturation is the percent of water contained in the mixture. A low water-saturation (25% for example) implies a high concentration of hydrocarbons (approximately  $100-25=75\%$ ) and suggests that the rock will produce oil or gas. (2) In a reservoir containing oil, the crude oil is said to be saturated when it contains dissolved natural gas. Any excess gas would accumulate above the oil as a gas cap.

## **SECONDARY RECOVERY**

After primary recovery operations have taken their course, various operations may be taken to increase the amount of oil by normal methods of flowing and pumping. The second stage to increase production is by addressing the condition of the reservoir. Typical operation may involve forcing gas ('gas injection'), or water ('water flooding') into the reservoir. This re-pressurizes the reservoir, which allows recovery of more oil than would be possible from primary recovery. Tertiary (third stage) recovery includes efforts to recover additional oil from the reservoir, by altering the physical characteristics of the oil itself such as reducing viscosity, or reducing surface tension. These are largely experimental procedures, like the injection of CO<sub>2</sub>, detergent-like fluids, steam, or chemically treated water into the reservoir; or injections of air (oxygen) into the reservoir and burning some of the oil in place which raise the temperature of the oil and improve its ability to flow.

A board term encompassing any method of extracting oil from a reservoir after a well or field has exhausted its primary production.

## **SECONDARY TERM**

The period of time that a lease is automatically extended, as long as there is active drilling or production.

## **SECTION**

A square tract of land which has area of one square mile (=640 acres). There are 36 sections in a township.

## **SECURITIES**

Securities are commonly thought of as stocks and bonds. As defined by the Securities Act of 1933, securities include any certificate of interest or participation in any profit-sharing agreement, investment contract, or fractional undivided interest in oil, gas, or other mineral rights.

## **SECURITIES ACT OF 1933**

Establishes requirements for the disclosure of information for any interstate offering for the sale of securities.

## **SECURITIES ACT OF 1934**

Established the Securities and Exchange Commission which regulates the activities of securities markets and their offering requirements.

## **SEDIMENTARY ROCK**

Rock that is naturally formed from fragments of other rocks by compression. Sedimentary rocks are important in terms of petroleum because sandstone and limestone are often reservoir rock.

Rock is generally classified in one of three categories: a. Sedimentary; b. Igneous; c. Metamorphic.

### **3-D SEISMIC**

A relatively new exploration technique used in the search for oil and gas underground structures. The basic premise behind seismic is the same as ultra sound technology used in the medical field. Sound from a shot hole is recorded from geophones and interpreted to give a picture of the underlying structures within the earth. 3-D has now become a common practice to redefine and identify known as well as unknown structures. Many times these structures contain traps that hold oil and gas yet to be discovered.

### **4-D SEISMIC**

The newest advances in seismic technology which now takes into consideration a 4th dimension; which is time. With 4-D seismic geologists are now able to monitor the movement and the mobility of oil as it is extracted in the production process.

### **SELLING EXPENSES**

Cost incurred in marketing interests in securities.

### **SETTLED PRODUCTION**

The second phase of production in the producing life of a well. (see IP).

### **SEVERANCE**

A tax paid to the state by producers of oil or gas in that state.

### **SHALE**

A type of rock composed of clay or mud. When the clay is compacted under great pressure and temperature deep in the earth, water contained in the clay is squeezed out, and clay turns into shale.

### **SHOW**

An indication of oil or gas as observed and recorded during the drilling of a well. A geologist would

rate a show as 'good', 'fair', or 'poor', etc.

## **SHUT-IN**

Stopping a producing oil and gas well from producing.

## **SHUT-IN ROYALTY**

A special type of royalty negotiated when leasing a property. It commonly pertains to gas production. If a commercially producible gas well is shut-in due to the lack of a gas market, the (pipeline access) lease will remain in effect as long as the working-interest owner (leasee) pays the specified shut-in royalty to the mineral-rights owner (lessor).

## **SIDE TRACK**

When fishing operations have not been able to recover an object in the hole that prevents drilling ahead, the borehole can often be drilled around the obstacle in the original hole. This 'deviated' hole is called the side track hole. Although it is somewhat risky, drilling a side track hole can be much less costly than starting a new borehole from the surface. See whipstock.

## **SLANT HOLE**

See Directional drilling.

## **SOLUTION GAS**

Natural gas that is dissolved in the crude oil in the reservoir. It comes out of the solution as the pressure is reduced as the oil is produced and flows up to the surface.

## **SOUR CRUDE, SOUR GAS**

Oil or natural gas containing sulfur compounds, usually hydrogen sulfide (H<sub>2</sub>S) a poisonous gas. When dissolved in water, H<sub>2</sub>S forms a mild solution of sulfuric (H<sub>2</sub>SO<sub>4</sub>) acid. After awhile, this can corrode and destroy metal pipes and equipment. (Sweet crude and sweet gas do not contain these sulfur compounds).

## **SPACING UNIT**

The surface area size of a parcel of land on which only one producing well is permitted to be drilled to a specific reservoir. The acreage that the single well should drain all (or most) of the recoverable oil or gas from that portion of the reservoir that lies within the spacing unit. State agencies regulate the size of the spacing unit for different reservoirs, in order to facilitate efficient exploitation of oil and gas from them. 'Increased density' means the spacing unit is reduced: 2 wells (instead of one) per 640 acres which amounts to 1 well per 320 acres.

## **SPOT MARKET**

The short-term contract (typically 30 days) for the sale or purchase of a specified quantity of oil or gas at a specified price. See Commodity Markets or Future Markets.

## **SPUD**

To spud a well means to begin the initial drilling operations.

## **SQUEEZE**

The process of pumping a slurry of cement into a particular space in the borehole (often the annulus between the borehole and the casing), so the cement will solidify to form a seal.

## **STRIPPER OIL WELL**

An oil well capable of producing no more than ten barrels of oil per day. A STRIPPER GAS WELL is a well that produces an average of less than 60,000 cubic feet of gas per day.

## **STRUCTURAL TRAP**

A fold or break (or both) in the earth's crust which creates an impervious trap for oil and gas. Oil will migrate underground through rock until it is "trapped".

## **SUBSCRIPTION**

The way by which an investor participates in a limited partnership through investment.

## **SUPERVISORY FEE**

Similar to a management fee in an oil and gas limited partnership, it is paid by the partnership to the general partner for direct supervision of mechanical operations at the well site.

## **SURFACE PIPE**

Pipe which is set with cement through the shallow water sands to avoid polluting the water and keep the sand from caving in while drilling a well.

## **SURFACE RIGHTS**

Surface ownership of a tract of land from which the mineral rights have been separated. Surface rights include the full use and rights that belong to the owner with the exception of surface possession is subject to the mineral owners right of access to the land for the purpose of extracting

his minerals.

## **SWEET CRUDE/GAS**

Crude oil with low sulfur content which is less corrosive, burns cleaner, and requires less processing to yield valuable products.

## **SWAB**

A tool which is lowered down the pipe on a wire line. The "swab" is then pulled out of the hole. As it travels up the pipe, rubber elements expand so that the fluid in the pipe is trapped above the swab and pushed to the surface. This operation is necessary when the formation pressure is not high enough to blow the fluids in the pipe to the surface.

## **SYNDICATION EXPENSES**

The expenditures incurred by a partnership in connection with issuing and marketing interests in an investment plus fees of the issuer for securities and tax advice, accounting fees for audits and other representations included in the offering memorandum, registration (with the Securities and Exchange Commission of the Federal government and with pertinent state government agencies), brokerage fees, and printing costs of the offering memorandum and various promotional materials.

## **TANK BATTERY**

A group of tanks at a well site used to store oil prior to sale to a pipeline company.

## **TAR SAND**

A sandstone in which the pores between grains are filled with a highly viscous tar.

## **TESTING**

When each new well is completed, a series of tests are run on the well. The various tests are used to estimate the daily deliverability, payout, and reserves.

## **TIME VALUE OF MONEY**

The idea that a dollar in hand today is worth more than a dollar that will be received sometime in the future.

## **TITLE**

The combination of factors that, together, constitute legal ownership of a parcel of property.

## **TOOL PUSHER**

The supervisor over drilling rig operations. Also called 'drilling foreman' or 'rig superintendent'

## **TOP LEASE**

A conditional lease that may be granted by the mineral-rights owner of a property while a pre-existing recorded lease of that property is nearing expiration, but nonetheless is still in effect. The top lease goes into effect only if and when the existing lease expires (or is terminated).

## **(TVD) TOTAL VERTICAL DEPTH**

The maximum depth of the borehole. Before the well has been drilled to its planned total depth, the 'current TD' changes each day. If the deeper section of a well is plugged off to facilitate mechanical operations of a shallower section, the top of the cement plug would be the 'plugged back TD' (as distinguished from the drilled TD).

## **TOWNSHIP**

A square tract of land six miles on a side, it consists of 36 sections of one square mile each.

## **TRANSFER RULE**

If an interest in an oil and gas property already proven to be capable of commercial production is transferred, the transferee taxpayer is generally not entitled to percentage depletion, although he may still be entitled to cost depletion, in computing his depletion allowance deduction.

## **TRAP**

A natural folding or shifting of layers of rock where non-porous or impermeable rocks act as a barrier, blocking the natural upward flow of buoyant hydrocarbons from underlying reservoir rocks. Many oil and gas fields are trapped accumulations of oil and gas.

## **TRIP**

Making a 'trip' is the procedure of pulling the entire drill string (drill pipe) out of the borehole and then running the entire length of drill pipe back into the hole. This is done to change drill bits, or prepare for coring operations, etc. As the drill pipe is pulled from the hole, the drill bit acts like a piston, sucking fluids out of the formations and into the borehole. Gas which is swabbed into the borehole in this manner is called 'trip gas'.

## **TUBING**

A small diameter pipe or tube threaded at both ends, that is lowered into a completed well. Oil and

gas are produced through a string of tubing (which can be periodically removed for maintenance).

## **TURNKEY**

A drilling contract that calls for a drilling contractor to drill a well, for a fixed price, to a specified depth and to adequately equip it so that the operator need only turn a valve and oil will flow into the tanks or gas into the pipeline.

## **TURNKEY CONTRACT**

A contract in which an operator or drilling contractor agrees to furnish all labor and materials necessary to drill a well to a certain depth or stage of completion for a specified sum of money. The operator or contractor assumes all of the responsibility and risks involved in completing the operation.

## **UNASSOCIATED GAS**

Natural gas from a gas reservoir. See associated gas.

## **VISCOSITY**

The resistance of fluid to flow. A high viscosity fluid will not flow as easily as a low viscosity fluid (Mud will not move as easily as water).

## **WASTING ASSETS**

Are assets that will eventually lose their value: by depletion as they are produced (natural resources such as oil, gas, minerals, and timber), or by the passage of time (leased mineral rights, patents).

## **WATER DRIVE**

The most efficient driving mechanism to force oil and gas out of a reservoir. Considering natural pressures in the pay zone, displacing the oil-water contact pushing it upward and flushing the oil ahead of it, as oil is produced. Toward the end of the life of a water drive well, the fluid that is produced, contains increased percentages of water until the well becomes watered out and is abandoned. See also gas drive.

## **WATER FLOODING**

A secondary recovery method for the production of oil from a formation. Oil will float on water. When water is injected into some formations, the oil will float or be washed to the surface, thereby, increasing the amount of production from a well or field. Some formations will not react to this type of stimulation.

## **WEEVIL**

An unglamorous adjective (or noun) used to describe a "green" hand anyone new and uninitiated, especially to the mechanical operations of an oil rig.

## **WELLBORE**

Physically, wellbore refers to the borehole (equipped for, or intended to be equipped for, production or in other words a completed well).

## **WET**

A reservoir rock is considered to be 'wet' when it contains water but no hydrocarbons. (Ironically, a well that finds only a wet reservoir, is called a dry hole.)

## **WET GAS**

Natural gas containing liquid hydrocarbons-commonly condensate.

## **WHIPSTOCK**

A steel blocking device placed in the bottom of a borehole. When drilling is resumed, the whipstock forces the drill bit to veer off at a slight angle. The deviated portion of the borehole is called a side track.

## **WILDCAT**

An exploratory well drilled to a reservoir, from which no oil or gas has previously been produced in the nearby surrounding area. When the well is located far away from all previous drilling attempts, it might be called a 'rank wildcat'. These wells naturally involve a high degree of risk, but a small percentage of them are successful. (When a rank wildcat well comes in a discovery the return on investment can be very attractive, indeed.

## **WORKING INTEREST**

Oil and Gas Working Interests.

A working interest in an oil or gas property held by the taxpayer directly or through an entity that does not limit the liability of the taxpayer is not treated as a passive activity, whether or not the taxpayer materially participates in the activity. Thus, an owner of a working interest in oil or gas property is permitted to deduct otherwise allowable losses attributable to the working interest against other income without limitation under the passive loss rule.

A working interest in an oil or gas property is one that is burdened with the cost of development and operation of the property, such as the responsibility to share expenses of drilling completed or operating oil and gas property, according to working or operating mineral interest in any tract or parcel of land. Rights to overriding royalties, production payments, and the like do not constitute

working interests because they are not burdened with the responsibility to share expenses of drilling, completing, or operating oil and gas property. Likewise, contract rights to extract or share in oil and gas, or in the profits from extraction, without liability to share in the costs of production do not constitute working interests. Income from such interests is generally considered to be portfolio income.

A special rule applies in any case where, for a prior tax year, net losses from a working interest in a property were treated by the taxpayer as nonpassive losses by reason of the working interest exception. In such a case, any net income realized by the taxpayer from the property (or any substituted basis property) in a subsequent year also is treated as active income. For example, suppose a taxpayer claims losses with regard to a working interest that starts to generate net income. If he transfers the interest to an S corporation in which he is a shareholder or to a partnership in which he is a limited partner, the income will continue to be nonpassive. The income from that interest may not be offset by other passive activity deductions.

**IN GENERAL** -- The term "passive activity" shall not include any working interest in any oil or gas property which the taxpayer holds directly or through any entity which does not limit the liability of the taxpayer with respect to such interest.

**INCOME IN SUBSEQUENT YEARS** -- If any taxpayer has any loss for any taxable year from a working interest in any oil or gas property which is treated as a loss and is not from a passive activity, then any net income such as property (or any property the basis of which is determined in whole or in part by reference to the basis of such property) for any succeeding taxable year shall be treated as income of the taxpayer which is not from a passive activity. If the preceding sentence applies to the net income from any property for any taxable year, any credits allowable under subpart B (other than section 27(a) or D of part IV of subchapter A for such taxable year which are attributable to such property shall be treated as credits not from a passive activity to the extent that the amount of such credits does not exceed the regular tax liability of the taxpayer for the taxable year which is allocable to such net income.

## **WRITE-OFFS**

That portion of an oil investment which is deductible for tax purposes. All intangibles are deductible.

## **ZONE**

A layer of rock penetrated by a borehole that shows characteristics which distinguish it from other near by rock; 'pay zone', 'lost-circulation zone', 'high-pressure zone', etc.

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