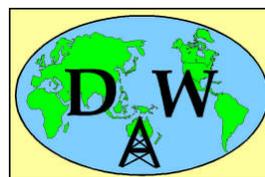


Oil & Gas Industry Glossary of Selected Terms

To Accompany a Range of Training Courses
Offered to Industry Professionals

Compiled by:
DWA Energy Limited
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Acidising: the well stimulation technique of pumping hydrochloric acid down the well hole to enlarge the pore space in oil-bearing rocks, thus increasing oil flow and recovery.

Acoustic log: a record of the time taken by a sound (acoustic) wave to travel over a certain distance through geological formations; also called a seismic log.

ACQ – Annual contract quantity: the amount of gas delivery specified for each contract year in a gas supply contract.

Acreage: an area covered by a lease granted for oil and gas exploration.

Actuals: physical cash commodities, as opposed to futures commodities.

Additive: a chemical added to a product to improve its properties.

AFE: Authority for Expenditure.

Air gun: chamber from which compressed air is released to produce shock waves. The air gun is the most common technique used for seismic surveys at sea.

Amortisation: depreciation, depletion or periodic charge to expense asset costs (usually capital costs) over a period of time (usually years) subject to accounting rules.

Analysis:

- **Fundamental** – basic supply and demand studies, performed at the global level (macroeconomics) and at the level of each firm (microeconomics)
- **Political** – study of foreign governments' likely actions as related to oil markets
- **Qualitative** – interpretive studies (art)
- **Quantitative** – number-oriented studies (science)
- **Statistical** – quantitative study which measures the probability of a price, spread or ratio to occur, based on the historic frequency of similar events

- **Technical** – quantitative study which attempts to forecast future outright price, differential or ratio behaviour

Annual contract quantity: see ACQ.

Annulus: the annular space in a well between the “drill string” or drilling string or production tubing and the well bore or casing.

Anticline: a fold in layered rocks originating below the surface in the form of an elongated dome. Anticlines make excellent drilling prospects since any oil will naturally rise to the highest point of the structure because oil has a lower specific gravity than water.

API – American Petroleum Institute: a US institute created in 1919, which acts as a national trade association and information centre. The API publishes weekly statistics on the petroleum industry.

API gravity: the universally accepted scale adopted by the API for the measurement of crude oil gravity. The scale is calibrated in terms of degrees API and is calculated using the following formula:

$$^{\circ}\text{API} = (141.5 / \text{Specific gravity at } 60/60^{\circ}\text{F}) \text{ minus } 131.5$$

This formula allows representation of the specific gravity of oils, which is on the 60/60°F scale (density of substance at 60°F divided by the density of pure water at 60°F). The lighter the crude, then the higher the API gravity will be. Light crudes generally exceed 38 degrees API and heavy crudes are commonly labelled as crudes with API gravity of 22 degrees or below.

Appraisal well: well drilled after the discovery of oil or gas to establish the limits of the reservoir, the productivity of wells in it, the properties of the oil or gas and to determine the size and likely yield of an oil or gas field. See **development well**.

Arbitrage: trading the same commodity in more than one market in order to profit from different prices in the markets.

Aromatic: organic compound with one or more unsaturated ring molecules with delocalised electrons (e.g. benzene C₆H₆). They usually have a distinctive odour.

Asphalt: a heavy, normally solid, petroleum product. The terms asphalt and bitumen are interchangeable in the US. Elsewhere asphalt describes the combination of bitumen and aggregate used for road surfacing.

Assay (Crude assay): a written laboratory analysis of every defining factor about a crude oil, including yield proportions of each refined product at different heated temperatures, given various refinery configurations.

Associated gas: natural gas found in association with oil, either dissolved in the oil or found as a cap of free gas above the oil in the reservoir. Associated liquids refer to liquid hydrocarbons in association with natural gas.

ASTM – American Society for Testing and Materials: the ASTM sets standards, quality specifications and standard test procedures for determining the quality of petroleum products.

Atmospheric distillation: a basic refining process in which crude oil is heated in order to break it down into a number of intermediate components from which finished products can be made.

Average daily quantity: a contracted quantity of gas divided by the number of operating days in the specified contract period.

Backwardation: a market situation in which prompt physical crude or refined product sells at a premium to forward months' prices for the same commodity. An "inverted market"; the opposite of contango.

Ballasting: ballasting commences as soon as possible after completion of discharge and final draining. It involves taking ballast (water) into either separate segregated tanks or into cargo tanks.

Bare boat charter: a charterer hires a vessel for a long period, appoints the master and crew and pays all the operating expenses.

Barge: a vessel used for transporting oil on rivers or in coastal waters. Barges can vary enormously in size, but typically they have a capacity of between 8,000 and 50,000 barrels.

Barite (Barytes): a heavy barium mineral used to add weight to drilling mud.

Barrel (abbreviated as **bbbl**): a volumetric measurement equal to 42 US gallons or 159 litres. The standard unit of measurement for crude oil and some petroleum products.

Barrels per day (abbreviated as bpd, b/d, and bopd for oil): in production terms, the number of barrels of oil produced from a well over a 24-hour period; in refining terms the number of barrels input to crude oil processing units or production of a refinery during a year divided by 365 less the downtime needed for maintenance.

Barrels of Oil Equivalent (boe): unit conversion to express various forms of petroleum in the standard terms of a barrel. See conversion charts for specific conversion factors.

Bbl: barrels. **mmbbls:** million barrels.

Beam pump: a pump used to pump oil out of a well artificially. Also known as a nodding donkey.

Bed (bedding plane): term for a geological stratum and the interface between strata.

Bentonite: very, fine-grained, water-adsorbing clay commonly used as a drilling mud additive.

BHA – Bottomhole assembly: the lower end of the drill string or drilling string comprising the drill bit, drill collars, heavy weight drill pipe (mud motor if present) and other ancillary equipment – the business end of the drill string.

Bill of lading: a document issued by a ship owner or agent which is a receipt for cargo received on board and is evidence of the contract between shipper and ship owner. A bill of lading binds the shipper to deliver the cargo in a pre-specified condition to the consignee at the port of discharge for a stipulated freight rate.

Bitumen: a tar-like substance found in many crude oils and a substance obtained by oil refining. Bitumen is semi solid at normal temperatures. It is used for surfacing or paving roads and waterproofing roofs.

Black oil / black product: the heavy and dark petroleum products such as fuel oil. The distinction between black and white products is important for transportation purposes, as a black product carrier must be cleaned before it can be used to carry white oils. Black products may also be described as dirty cargoes.

Blending: one of the final operations in refining in which two or more components are mixed to obtain a specific range of properties in the finished product.

Block: subdivision of sea area for the purpose of licensing to a company or companies for exploration/production rights. A UK block is one-thirtieth of a quadrant and is approximately 200–250 square km (a quadrant is one degree by one degree.)

Blow-out: accidental escape of oil or gas from a well during the drilling stage. The uncontrolled escape is usually due to the release of pressure in a reservoir or the failure of containment systems.

Blow-out preventer: high-pressure valve fitted to the top of the casing to prevent blow-outs.

Boiling point: the temperature of a liquid at which its vapour pressure equals the external pressure.

Bottomhole assembly: see BHA.

Breakout: occurrence when one section of drill pipe is unscrewed from another (deliberately on the drill floor).

Brent Blend: a light sweet crude oil produced in North Sea; a benchmark for pricing of many foreign crude oils.

British thermal unit (btu): the quantity of heat required to raise the temperature of 1 pound weight of water by 1 degree Fahrenheit. There are 100,000 btu of gas in one therm. It is an imperial unit commonly used to measure energy content of gas and by which gas is priced.

Broker: an agent employed to buy or sell goods or to negotiate for a principal. A broker in the oil industry is a person who executes the buy and sell orders of a customer in return for a commission or fee. The broker is usually paid by the seller and is thus legally the seller's agent.

Bubble point: the pressure at which the first infinitesimally small amount of vapour appears in an all liquid system at the system temperature.

Bunker fuel: any diesel or fuel oil supplied to fuel a ship's engines i.e. to run the ship rather than as cargo to be transported for sale. The "bunkers" are the place where the fuel is stored on the ship.

Butane (C₄H₁₀): an alkane that is a gas at atmospheric pressure and room temperature, but which can be liquefied by pressure for handling and use. Butane occurs naturally in crude oil and natural gas and is the product of a variety of refinery processes. Its primary uses are for blending into gasoline, for residential and commercial heating and for industrial uses.

C&F – Cost & Freight: basis for sale of a cargo, in which the price reflects both the cost of the cargo and the cost of freight to its agreed destination. Title and risk of loss or damage to the oil pass from the seller to the buyer when the oil passes the ship's rail at the load port.

Call option: an option that provides the holder the right, but not the obligation, to buy an asset (a commodity or financial instrument) at a specified strike price for a specified period of time. If the market price is below the strike price at any given moment in the option period exercise of the option would not occur as to do so would incur a loss for the holder. The holder's only loss is then the premium paid for the option. Selling a call obligates the seller to sell at the agreed strike price during the option period. A call option is the opposite of a put option.

Calorific value: a measure of the amount of energy released as heat when a fuel is burned.

Cap rock: an impervious layer of rock which overlies a reservoir rock and so prevents the hydrocarbons escaping to the surface.

Carried interest: when one party pays for all or part of a partner's cost during an E&P work programme. The carried partner can sometimes be the state.

Cash commodity: the actual, physical commodity.

Cash market: the market for a cash commodity where the actual physical product is traded.

Casing: a steel pipe used in wells to seal the borehole and reinforce the walls. It prevents caving of the sides of a well, excludes unwanted fluids and provides means of control of well pressures and oil and gas production.

Casing perforation: holes that are made in the liner of a drilled well across a reservoir zone to enable fluids to be produced into the well bore; generally produced by charges fired from a perforating gun.

Catalyst: a substance that assists or deters a chemical reaction but is not itself chemically changed as a result.

Catalytic cracking: a refining process that converts heavy hydrocarbon molecules into lighter, more valuable ones using a catalyst; often abbreviated as cat cracking.

Cement: used to keep the casing fixed to the well bore in a well and to prevent leakage between strata that have been drilled through. *Cementing* is the process of running cement. *Waiting on Cement* means waiting for it to set before commencing further down-hole operations.

Centraliser: device fixed to drill string (drilling string) or casing to keep it away from the well bore wall (prior to cementing while running casing into the well).

Chemical flooding: the technique of adding chemicals to an oil reservoir to increase fluid flow.

Choke: a gauge restriction inserted into a fluid flow line to restrict the flow rate. Commonly used in well testing and fitted to the wellhead of production wells to control flow rates.

Christmas tree: assembly of valves and fittings located at the wellhead to control flow of oil and gas and to prevent blowouts.

CIF – Cost, Insurance, Freight: the basis for sale of a cargo, in which the price reflects three components: the cost of the cargo, insurance, and freight to its agreed destination. The seller is obliged to procure marine insurance against the buyer's risk of loss or damage to the oil during the voyage. Title and risk of loss or damage pass from the seller to the buyer when the oil passes the ship's rail at the load port.

Clean: refined products such as gasoline, kerosene, jet fuel and heating oil; also known as white products.

CME - Chicago Mercantile Exchange: often also called "the Chicago Merc," or "the Merc" is a financial and commodity derivative exchange. Since 2008 the CME has also owned the New York Mercantile Exchange (NYMEX).

COA – Contract of affreightment: this form of contract is used where the owner of a cargo has a need to transport a cargo of oil but has no tanker tonnage of his own. Therefore he contracts separately for his oil with his oil supplier and with another party to provide the tanker tonnage.

Coal: a solid, brittle combustible carbonaceous rock formed by partial to complete decomposition of vegetation.

Coal-bed methane: methane gas economically recovered by drilling from coal seams. This is commonly abbreviated as CBM, although in Australia the term coal-seam gas (CSG) is used to mean the same thing.

Coking: a thermal cracking refining process which uses high temperature and pressure to break up large hydrocarbon molecules into smaller ones with the generation of petroleum coke.

Collar option: a pricing option where a buyer pays or a seller receives market price for a commodity as long as it falls within a range bounded by a ceiling and a floor and pays or receives the ceiling or floor price if the market price falls above or below the collar, respectively.

Combination trap: a geological structure which confines oil as a result of both structural and stratigraphic traps.

Completion: the process by which a finished well is either sealed off or prepared for production with a wellhead and down-hole tubing.

Concession: the right to drill for oil or gas on a block obtained under licence from the state.

Condensate: liquid hydrocarbons recovered from a wet gas reservoir – the fluid in the reservoir is gaseous, but changes of pressure and temperature bringing the fluid to the surface cause petroleum liquid or condensate to drop out.

Contango: a market situation in which prompt physical crude or refined product sells at a discount to forward months' prices for the same commodity; the opposite of backwardation.

Continental shelf: the edge of the continental landmass that lies beneath the sea in shallow water up to 200 metres of water depth.

Contract of affreightment: see COA.

Core: a cylindrical section of rock or soft sediment cut when drilling with a core barrel and annular bit; used by geologists and petrophysicists to establish reservoir structure, physical properties and composition.

Corrosion: the progressive breakdown of a metal structure by chemical or electrolytic attack, e.g. rusting. It is a common problem with steel pipelines and with well tubulars in contact with corrosive components, such as hydrogen sulphide and carbon dioxide.

Cost, Insurance, Freight: see CIF.

Counterparty: the party on the opposite side of the deal; if one is the seller, the counterparty is the buyer.

Crack spread: equal and offsetting position in crude oil on one side and refined products, particularly gasoline and heating oil, on the other. The term comes from the refining process known as “cracking”. Crack spread is often expressed as price margins, i.e., the differences in the prices that petroleum products can be sold for versus how much it costs a refinery to purchase the crude oil feedstock it consumes in making them.

Cracker / Cat cracker: a unit in an oil refinery in which heavy fractions from crude oil are broken down (cracked) into lighter distillates such as motor spirit. A “Cat Cracker” uses a catalyst, but there are other types of crackers, such as thermal crackers and hydro crackers that may or may not use catalysts.

Cracking: the breaking down of large molecules of hydrocarbons into smaller components. When this process is achieved by the application of heat only, it is known as thermal cracking. If a catalyst is used as well it is known as catalytic cracking. It is known as hydrocracking if the catalytic process is conducted in a hydrogen atmosphere.

CRINE: Cost Reduction Initiative for the New Era; an oil company initiative dating from the early 1990s.

Critical temperature: maximum temperature at which a gas can be liquefied. A wet gas will contain no liquid above the critical temperature but it will below it.

Crown (Crown block): the uppermost part of a drilling rig’s derrick. It is fitted with pulleys used in raising and lowering the drill string.

Crude oil: a mixture of hydrocarbons that is produced from a reservoir after separation from any associated gas. Crude oil exists in liquid state in underground

reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities; often referred to as crude.

Crude oil production: the volume of crude oil, which is produced from oil reservoirs during given periods of time.

Crude oil refinery input: total crude oil input to crude oil distillation units and other processing units.

Crude oil stock: stocks of crude oil held at refineries, in pipelines and at terminals.

CSWIP: Certification Scheme for Welding Inspection Personnel.

Cubic foot: a standard imperial unit for measuring volumes of gas (1 cubic foot = 0.0283 cubic metres – the standard metric unit).

Cushion gas: the volume of gas required in an underground storage reservoir to maintain a minimum practical operating pressure.

Cut: the portion of a crude oil that boils within certain temperature limits. In production it can be used as “water cut” meaning the water content of a crude oil or a well’s fluid production.

Cut point: the temperature limit of a cut, usually on a true boiling point basis.

Daisy chain: process involving the sale of a cargo of a commodity many times over before being delivered to its ultimate customer.

Decommissioning / Abandonment: removal of production equipment from depleted oilfields.

Degree-days: degrees of temperature above (heating degree-days) or below (cooling degree-days) a standardised regional temperature scale on a specific day; used to track energy requirements of specific markets.

Demand: customer, system load or market requirements over a specific period of time.

Demurrage: the sum agreed by charter to be paid as damages for delay beyond the contracted time for loading or discharging from a transportation vessel.

Density: the density of a substance is the mass per unit volume. The term density is sometimes loosely used instead of specific gravity.

Depreciation: the reduction in the value of plant or equipment over time due to wear, tear and obsolescence; generally at rates specified by accounting or taxation rules of the jurisdiction in which the assets are operated.

Deregulated gas: gas not subject to the sales volume or price constraints of a monopoly or government controlled markets.

Derivative: any financial instrument, such as a swap or option, which derives its value from the value of an underlying security or physical commodity.

Derivatives: financial instrument derived from the underlying commodity including forward, futures, swaps and options.

Derrick: the steel structure mounted over the borehole to support the drill pipe and other equipment, which is lowered and raised during drilling operations.

DERV: Diesel-engined road vehicle. Fuel usually referred to as Diesel.

Deterministic calculations: those calculations associated with forecasting future values based upon a number of uncertain variables (e.g. prices, production, reserves etc.) that use single numbers for each variable. Useful in providing indicative values such models provide no indication of uncertainty, but are still widely used in the industry (see stochastic models for alternative).

Development well: well drilled in order to produce oil and gas after an appraisal well has proved the reserves sufficiently large for exploitation.

Deviated well: a well drilled at an angle to the vertical (deviated drilling) to cover the maximum area of oil or gas reservoirs; also known as a deviation well.

Dew point: the temperature at which air is saturated with water or natural gas is saturated with liquid hydrocarbon. The temperature at which the first infinitesimally small amount of liquid appears in an all-vapour system at the system pressure.

Diesel fuel: diesel is a fuel made of the light, gasoil range of refinery products.

Differential: arithmetical difference between two commodity prices.

Dip: measure of inclination of rock strata.

Directional drilling: technique used in drilling whereby wells are drilled non-vertically to reach a target away from the drilling location (also known as deviated drilling).

Dirty: those petroleum products which leave significant amounts of residue in tanks. Generally applies to crude oil and residual fuel; also referred to as black products.

Dispersant: a chemical used to reduce the surface tension between two liquids; commonly used to break up spilt crude oil.

Dissolved gas drive: reservoir drive provided by the expansion of natural gas in solution in reservoir oil.

Distillate: a product of distillation. Distillate fuels are those blended from light gas oil range streams such as kerosene, jet fuel, diesel fuel and heating oil.

Distillation: a physical separation process in which different hydrocarbon fractions are separated by means of heating, vaporisation, fractionation, condensation and cooling. Successive vaporisation and condensation of crude oil in a fractionating column will separate out the lighter products leaving a residue of fuel oil or bitumen. Distillation (or fractional distillation) is the basic process that takes place in an oil refinery.

Diurnal storage: refers to short-term storage facilities supplying daily fluctuations in the gas market rather than seasonal fluctuations supplied by seasonal storage facilities.

Diverter: an inflatable packer (torus shaped to fit the well annulus), which seals off the well annulus and diverts mud into the mud pits.

Dividend: the proportion of a company's profit that it chooses to repay periodically to its shareholders.

Dogleg: a deliberate or accidental sharp bend in a well.

Double bottom tanker: a tanker in which the bottom of the cargo tanks is separated from the bottom of the ship by a space of 1–3 metres. The space is empty when the tanker carries cargo but full of seawater on the ballast voyage. They provide better environmental protection in case of collision.

Double hull tanker: a tanker in which the bottom and sides of the cargo tanks are separated from the bottom and sides of the hull by spaces. These spaces are empty when the tanker carries cargo but full of seawater on the ballast voyage.

Downdip: a geological term that refers to positions in a rock strata that are at lower elevations than a reference point.

Down-dip well: a well that is structurally lower than other wells at the reservoir level.

Downhole: below the surface within the well bore. *Downhole safety valve* is a valve fitted in the production tubing below but close to the surface that enables flow to be stopped in an emergency.

Downstream: those commercial activities, which take place between the loading of crude oil at the export terminal and the use of the oil by the end-user. This covers transportation of crude oil, supply and trading, refining crude oil, marketing,

transporting and distributing the refined product output. It is the opposite of upstream, which covers exploration, production and transport prior to refining.

Downstream pipeline: a pipeline, which is closer to the market, as opposed to an upstream pipeline, which is closer to the production area.

Downtime: the time during which operations cannot be continued owing to adverse weather conditions or other factors.

Drill bit: the cutting head tool which actually cuts through the rock. It is attached to the bottom end of the drill-pipe.

Drilling mud: a mixture of clays, water and chemicals used in drilling operations to lubricate and cool the drilling bit, carry drilling wastes to the surface, prevent the walls of the well from collapsing and keep the upward flow of oil or gas under control. It is circulated continuously down the drilling string and up to the surface between the drilling pipe and the wall of the hole.

Drilling string: steel pipes roughly 30 feet (9 metres) long joined together to form a pipe from the drilling bit to the drilling platform. The drilling string is rotated to carry out the drilling operation and also is the conduit for the drilling mud. It is also referred to as the drill string.

Drillship: free floating, offshore drilling unit shaped like a ship, positioned by anchors of dynamic positioning.

Drill Stem Test: see DST.

Dry hole: an unsuccessful well, drilled without finding commercial quantities of oil or gas.

Dry natural gas: gas with low associated liquids and predominantly methane (>~90%).

DST – Drill Stem Test: a test of potential reservoir zones to allow them to flow into the drill string or drilling string and to the surface for evaluation purposes.

Dubai Crude: a light sour crude oil produced in the Arabian Gulf and refined in Asia; a Pacific Rim benchmark.

DWT – Dead weight tonnage: the weight of cargo and fuel, which a vessel carries when fully loaded.

Dynamic positioning: method to keep a marine vessel at a fixed location by computer-controlled thruster propellers rather than anchors; commonly used by drill ships.

E&P: the abbreviation for Exploration & Production.

Efficiency: for energy consumption in energy-generating equipment expressed as a percentage to measure energy consumed that is converted into useful output energy (energy output / energy input).

Elevators: the clamps on the rigs travelling block which are attached to the drill pipe in order to raise or lower it.

Emissions: gases released during the production, transport, storage and consumption of petroleum and its products. These include the pollutant oxides of nitrogen and sulphur (sometimes referred to as NOX and SOX) and the greenhouse gases dominated by carbon dioxide.

End user: the ultimate consumer of a commodity e.g. a retail outlet or industrial customer (for refined products).

EOR – Enhanced oil recovery: the recovery of oil from a reservoir other than by the use of natural reservoir pressure. This can involve increasing the pressure (secondary recovery) or heating or increasing the pore size of the reservoir (tertiary recovery).

Equity capital: capital raised by issuing shares to investors.

Equity petroleum or Equity stake: the share of production / reserves to which a joint venture participating entity is entitled as a result of its contractual interest in a petroleum production project.

ERR: Economically Recoverable Reserves.

Ethane: an alkane extracted from natural gas or refinery gas streams. Ethane is used as a petrochemical feedstock.

Exercise price: the price at which an option on a commodity may be exercised. This price is specified in the option contract usually in conjunction with a time period or exercise date.

Export credit agencies: government bodies promoting the sale and export of goods and services from their countries by providing financial credit at favourable commercial terms together with security for credit and political risk in areas which many financial institutions consider to be too risky (e.g. Britain's ECGD; France's COFACE; Italy's SACE; Germany's HERMES).

Extraction losses: reduction in volume of wellhead petroleum fluids due to the emission and removal of commercial and contaminant gases. Commonly included in *shrinkage* along with volume changes due to stabilising products at standard temperature and pressure.

Farm in: where one organisation acquires an interest in an E&P Licence or well by paying some of the past or future cost share of the current holders of that interest.

Farm out: the opposite of farm in, where a company relinquishes all or part of an interest in exchange for cash payment or agreed work programme.

Fault: a geological feature consisting of a fracture in the rock, along which there has been an observable amount of displacement.

Fault trap: some faults form reservoir seals and trap petroleum.

FBP – Final boiling point: the final boiling point of a cut.

FCC - Fluid catalytic cracking: is one of the most important conversion process used in petroleum refineries. It produces more gasoline with a higher octane rating than thermal cracking.

Feedstock: the supply of crude oil, natural gas liquids or natural gas to a refinery or petrochemical plant or the supply of a refined fraction of an intermediate product to some other manufacturing process.

FID: Final investment decision.

Field: an area in which an oil and / or gas well or a group of wells is found.

Final boiling point: see FBP.

Fire flooding: see Thermal recovery.

Flaring: the controlled burning of gas, which cannot be used for commercial or technical reasons.

Flash point: the lowest temperature at which a liquid will generate sufficient vapour to ignite when exposed to an ignition source.

Floater: an offshore drilling platform without a fixed base.

Floating storage unit: see FSU.

FOB – Free on board: the basis for sale of a cargo in which the price covers only the cost of the crude. The seller fulfils its obligation to deliver when the goods have passed over the ship's rail at the named port of shipment. The buyer bears all costs and risks of loss or damage to the oil from that point.

Fold: compressed or bent / curved layers /strata of rock.

Force majeure: an event or effect that has a negative impact on the operation and / or delivery of a contract which cannot be reasonably controlled by the contract parties. A clause addressing force majeure is found in most petroleum contracts and specifies a wide range of events, e.g. acts of God, natural disasters, war, riot, strikes, etc.

Formation fracturing – “fracing”: the technique of pumping oil or water mixed with sand into the oil formation at high pressure in order to cause rock fractures.

Forward contract: any purchase or sale of a physical commodity where delivery is not made immediately but instead at an agreed-upon future date.

Forward market: a market where contracts for forward delivery of cargoes may be transacted.

Fossil fuel: a naturally occurring fuel of an organic nature such as oil, gas, peat and coal.

FPSO: Floating Production Storage and Offloading. This usually refers to a marine vessel or barge that combines all of these activities.

Fractional distillation: see Distillation.

Fractionation: the general name for the process of separating a mixture into its constituents or fractions.

Fracture pressure: the amount of pressure required to crack or split the rock formation in the subsurface at a particular depth such that fluids can flow into it. Important when drilling and leak-off tests after casing evaluate it to ensure the mud weight and pressure is not too high to cause loss of circulation.

Free on board: see FOB.

Freight rates: the charge for transporting goods.

FSU – Floating storage unit: a large moored chamber in which oil produced from an offshore production platform is stored before being transferred to a tanker.

Fuel oil: the heavy oils from the oil refining process, used as fuel for power stations, industry, marine boilers etc. Includes No.6 fuel oil, HSFO, LSFO and LSWR.

Fuel switching: ability of an industrial user to change fuel type depending on prevailing fuel supply and price advantages. Dual or multi-fuel power generation facilities are becoming more commonplace to benefit from fuel market fluctuations.

Full cycle economics: valuation that includes all historic and current exploration, development and production costs associated with a petroleum asset to ensure that quoted returns reflect all costs.

Fundamentals: basic measures of supply and demand, performed at the global level (macroeconomics) and at the level of each firm (microeconomics). Fundamental analysis is a study of the price behaviour of commodities through consideration of the impact of key economic factors.

Fungible: interchangeable, mixable; can refer to commodities, which can be commingled for transportation. It is also used to mean “easily traded”.

Futures: the sale and purchase of a commodity at a specified or set price, quantity and quality agreed in advance for delivery on a specified future date. Futures contracts differ from forward contracts in that they are settled daily in the markets and parties have to post a performance bond related to the call margin.

Futures market: a standardised contract for the purchase or sale of a commodity that is traded for future delivery under the provisions of exchange regulations.

Gas cap: compressed natural gas in a free state contained in reservoir rock above crude oil.

Gas cap drive: reservoir drive provided by the expansion of compressed gas in a free state above the reservoir fluid being produced.

Gas cycling: process in which produced gas is re-injected into a reservoir after condensate and other gas liquids are stripped from it to maintain reservoir pressure above the dew point or to preserve the gas until a market for it becomes available. It is essential to maximise gas liquids recovery from a retrograde condensate reservoir.

Gas drive: the technique of injecting gas into an oil reservoir in order to increase pressure and improve oil flow.

Gas grid: the network of pipeline used to distribute gas around a country to end users of gas.

Gas lift: a method of artificial well lift involving pumping gas into the well to lighten the fluids in the well bore and make it easier to flow fluids to the surface.

Gas oil: the medium distillate from the oil refining process. It derives its name from its original use in the manufacture of illuminating gas. It is burned in central heating systems, used to produce diesel fuel and used as a feedstock for the chemical industry. The term gasoil is used interchangeably with No.2 heating oil.

Gasoline: a light fraction of petroleum distillation commonly used as a motor fuel in internal combustion engines. Gasolines are complex mixtures of relatively volatile

hydrocarbon liquids, with or without small quantities of additives, which have been blended to form fuels suitable for use in spark-ignition engines; also known as motor gasoline, mogas or petrol.

Gas-to-liquids: see GTL.

Gate station: gas pipeline facility where gas is transferred from a transmission system (e.g. trunk line) to a lower-pressured, smaller-diameter distribution pipeline. Flow is usually metered through a gate station.

Geophones: sensitive detectors used to record and measure the intensity of reflections of acoustic shock waves in a seismic survey.

GOR – Gas to oil ratio: the volume of gas at atmospheric pressure produced per unit volume of oil produced.

GPW – Gross product worth: a way of estimating the value of crude oil based on the value of refined petroleum products derived from that crude oil.

Gross tonnage: the volume of the interior of a crude oil tanker including all enclosed spaces except the space between a double hull. It is imperially expressed in tons per 100 cubic feet.

GTL – Gas-to-liquids: techniques that convert natural gas into high-value petroleum fuels, blending agents and petrochemicals by changing its chemical structure into commodities in demand locally or to be traded on the world markets. GTL plants are gas refineries.

HAZOP: Hazard and Operability Study.

Heating oil: see Gasoil.

Heavy crude oil: crude oil of ~20⁰ API or less. Opposite of light crude oil, which flows freely at atmospheric temperatures and has an API gravity in the high 30s and 40s.

Hedging: taking a derivatives position that is equal and opposite to a physical position with the sole aim of controlling price risk.

Henry hub: pipeline interchange near Erath, Louisiana where a number of interstate gas pipelines meet. It is the delivery point for **Nymex** natural gas futures contracts in the US and the benchmark natural gas price for gas trading in the US Gulf Coast.

Heptane: an alkane with seven carbon atoms (C₇H₁₆) which is liquid under normal atmospheric conditions.

Hexane: an alkane with six carbon atoms (C₆H₁₄) which is liquid under normal atmospheric conditions.

HOA: Heads of Agreement.

HSFO: High Sulphur Fuel Oil.

HT/HP: High temperature / High pressure

Hundred year storm: a combination of storm conditions (wave height and wind speed) that should statistically only occur every one hundred years in a particular area (based on historical records). Offshore structures are designed to withstand such storms.

Hydrocarbon: an organic compound containing hydrogen and carbon atoms in various combinations, forming the basis for petroleum and petroleum products.

Hydrocyclone: cone-shaped centrifuge for removing solids (sand, silt etc) from drilling mud.

Hydrocracking: the breaking of hydrocarbon chains into smaller compounds in the presence of hydrogen and a catalyst.

IBP – Initial boiling point: the initial boiling point of a cut.

ICE – Intercontinental exchange: a regulated commodity exchange which trades energy futures and options contracts in London (prior to 2001 this was known as the International Petroleum Exchange or IPE).

IEA – International Energy Agency: established in 1974 to monitor the world energy situation, promote good relations between producer and consumer countries and develop strategies for energy supplies during times of emergency. The IEA is an autonomous body within the OECD.

IM: Information Memorandum.

Independent: a non-integrated oil company, usually only active in one or two sectors of the industry.

Inert gas: a gas resistant to chemical reactions with other substances (e.g. helium and other noble gases).

Initial boiling point: see IBP.

Injection well: a well used to inject fluids into the well to maintain reservoir pressure or to dispose of unwanted produced fluids (e.g. formation water produced to the surface).

In-situ combustion: see Thermal recovery.

Inspection: the formal measurement of loaded or discharged volumes of oil to ensure conformance to the deal.

Integrated oil company: a company that is engaged in all facets of the oil industry from exploration and production through refining, distribution and marketing of petroleum products.

Interconnector pipeline: gas pipeline link between Bacton (UK) and Zeebrugge (Belgium); 238-km with capacity of 20 bcm/year flow to Europe or 9 bcm / year flow to UK.

Interruptible: a contract term referring to capacity or supply as part of petroleum sales, storage or transportation agreements that will only be available if unused capacity or product volumes exist.

Inventory: the stock of oil held by a seller or buyer or government.

IPO: Initial Public Offering.

Isopach map: a geological map that plots the thickness of given strata; useful in establishing reservoir volumes and potential reserves.

Jacket: the structure used to support an offshore steel production platform.

Jack-up rig: mobile offshore drilling platform with retractable legs, on which the platform rests on the seabed when operational. The legs can be raised or lowered in order to adjust the drilling platform for use in different water depths; only used in relatively shallow water.

Jet fuel: a quality fuel in the kerosene boiling range, used primarily in commercial aircraft. Joint venture: an investment undertaken by a consortium.

Joint venture: an investment, contract or licence undertaken by a consortium of organisations with one party being the operator; common form of business arrangement for high-cost / high-risk upstream ventures.

Junked well: drillers' jargon – either when equipment is lost downhole or a well is plugged and abandoned.

Kerosene: a medium-light petroleum distillate from the oil refining process used for lighting and heating and for the manufacture of fuel for jet aircraft engines.

Kick: a potentially dangerous situation downhole when the formation pressure of the strata entered by the bit exceeds the well bore pressure exerted by the drilling mud allowing formation fluids into the well bore. If uncontrolled it can lead to a blow-out.

Killing a well: overcoming the tendency of a well to flow by filling the bore with drilling mud of suitable density.

Licence: an exploration licence permits only geological and geophysical surveying and the drilling of shallow wells; a production licence confers exclusive rights on the licensee to search and bore for and get petroleum.

Light crude oil: a crude oil of high API gravity and low specific gravity.

Linear programme: see LP.

Liner: small-diameter casing extending into the producing layer from just inside the bottom of the final string of casing cemented in a well.

Liquefied Natural Gas: see LNG.

Liquefied Petroleum Gas: see LPG.

LNG – Liquefied Natural Gas: gas, mainly methane, liquefied at very low (cryogenic) temperatures close to minus 160°C at close to atmospheric pressure conditions.

LNG receiving terminal: see Regasification plant.

Low sulphur crude oil: see Sweet crude oil.

Load (electricity): the amount of electricity delivered or required at any specific point in a supply system.

Loan capital: funds raised by borrowing money rather than from retained income (cash flow) or issuing shares (equity).

Loan spread or margin: difference between interest rate a bank charges a borrower and the rate at which the bank itself borrows.

Log: a tabular or graphical description of sub-surface conditions in a well from measurement made while drilling or wireline logging a well; widely used to evaluate well performance.

LOI: Letter of Intent.

Lost circulation: loss of drilling mud into the well bore formation due to excess pressure in the well bore (also referred to as loss of returns as mud does not return to surface as it normally does). Total losses means that all mud pumped into the well is being lost downhole when there is danger of the drill string becoming stuck.

LP – Linear programme: a computer model using linear optimisation algorithms to closely estimate the optimal outcomes of combined assets or processes; widely used in refining to optimise process inputs and outputs, in asset portfolio modelling and to assist in a range of optimisation decisions.

LPG – Liquefied Petroleum Gas: propane and butane liquefied under pressure or refrigeration (moderate cryogenic temperatures as low as about minus 40°C); sometimes referred to as bottled gas.

LSFO: Low Sulphur Fuel Oil.

LSWR – Low Sulphur Waxy Residue: a low-sulphur, high-paraffin residual fuel oil.

Lubricant / Lubricating oil: a fluid used to reduce friction when introduced between solid surfaces. The major constituents of lubricating oils are from distillate or residual fractions of crude oil. The manufacture of lubricating oils is highly specialised.

Macroeconomics: the fundamental, global supply and demand factors that affect the entire market.

Major: a term broadly applied to those multinational oil companies which, by virtue of size, age and degree of integration, are among the pre-eminent companies in the international oil industry.

Manifold: piping arrangement, which allows one stream of fluid to be divided into two or more streams.

Margin: theoretical or realised profit from a trade or from refining each barrel of oil.

Marpol: is the International Convention for the Prevention of Pollution From Ships. Marpol 73/78 is one of the most important international marine environmental conventions. It was initially signed in 1973 and modified in 1978. Since 2005, 136 countries, representing 98% of the world's shipping tonnage, are parties to the Convention.

Methane (CH₄): the main constituent of natural gas, the simplest hydrocarbon molecule and less dense than air (calorific value of 1045 btu / cubic foot).

Metric ton (tonne): equivalent to 1000 kilograms, 2204.61 pounds or 0.9842 imperial tons.

Microeconomics: the fundamental supply and demand factors, pricings and cost structures that affect a single firm or local industry sector or group of related firms / assets.

Middle distillate: the fraction of petroleum liquids produced in the middle range of refinery distillation, including kerosenes, gasoils and light fuel oils.

Miscible flooding: the technique of injecting carbon dioxide or nitrogen into an oil reservoir in order to increase fluid flow.

mmcf: million cubic feet **mmcfd:** million cubic feet per day **mmscfd:** million standard cubic feet per day **mmmcf:** billion cubic feet

Module: the box or package containing equipment for installation on a production platform. Each self-containing unit is constructed ashore and serves a specific purpose.

Mogas: motor gasoline: see Gasoline.

Monopoly: exclusive control of a product, commodity or supply network enabling the monopoly holder to control, manipulate or influence prices.

Monte Carlo simulation: a type of probabilistic (stochastic) mathematical model that samples input distributions through many iterations using random numbers and analyses the results statistically. Widely used in the industry to calculate future reserves and asset and portfolio valuations.

MOU: Memorandum of Understanding.

Multinational company: a company with operations and investments in many countries around the world.

Naphtha: a range of straight-chain distillate gasoline fractions heavier than gas, but lighter than kerosene. Naphtha is used as a feedstock for gasoline production and the petrochemical industry.

Natural gas: a mixture of naturally occurring gases found either in isolation (non-associated gas) or associated with crude oil (associated gas).

Natural gas liquids: see NGL.

Netback: a means of valuing crude oil. From the downstream perspective it is the value of the refined products (gross product worth) less the costs of transporting and refining the crude oil. Used in the 1980s as a method of crude oil pricing. From the upstream perspective it is generally the sales price at the wellhead (i.e. market price less transportation and processing costs).

Netback margin: the gain or loss resulting from the difference between the netback value and the purchase price of the crude oil.

Net-forward pricing: used by buyers to determine whether it is better to buy commodity at the supply source and pay for its transportation or better to buy in the destination market region.

NGL – Natural gas liquids: hydrocarbons which can be extracted as liquids during the manufacture, purification and stabilisation of natural gas in processing plants or from gas field facilities. NGL compositions range from propane (C3) to condensates (C5+). The lighter NGLs commonly exist in gaseous form in a sub-surface reservoir, whereas the heavier NGLs may be in either gas or liquid states in a sub-surface reservoir.

Nodding donkey: pumping unit.

Non-associated gas: natural gas produced from a reservoir that does not contain oil.

NYMEX – New York Mercantile Exchange: a regulated commodity exchange, which trades energy futures and options contracts. Since 2008 the Chicago Mercantile Exchange (CME) has owned NYMEX.

Obligation well: a well that an operator or joint venture is contractually obliged to drill as part of their E&P Licence terms.

Octane: an alkane with eight carbon atoms (C₈H₁₈), which is liquid under normal atmospheric conditions.

Off-peak gas: gas supplied during periods of low market or system demand.

Oil-in-place: measure of oil in the reservoir. This is some 40% to 90% higher than recoverable oil reserves figure for a field.

OIM: Offshore Installation Manager.

OPEC: Organisation of Petroleum Exporting Countries founded in 1960. Twelve current members: Algeria, Angola, Ecuador, , Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, Venezuela. (Indonesia and Gabon have left OPEC).

Operator: the member of a joint venture with contractual authority to run and operate activities on an E&P licence and to represent the joint venture to the statutory authorities, suppliers, contractors and other third parties.

Optimisation: *of refining yield* – analysis of the crude that provides the best net margin (highest differential of refined product yield less delivered crude supply cost) and trading to achieve such optimisation.

of cash flow – by a refiner: delaying crude purchases as long as possible, without risking a supply interruption, in order to match cash outflows (for crude supply) closely to cash inflows (for refined product output). By a producer: selling and receiving payment for crude oil as quickly as possible.

Option: a contract which gives the holder the right but not the obligation to purchase or sell an underlying futures contract at a specified price within a specified period of time, in exchange for the payment of a premium.

Orimulsion: a heavy oil and water mixture, originating in the Orinoco Basin, Venezuela, marketed as an industrial fuel.

Ozone: molecule consisting of three atoms of oxygen, a chemical oxidant and greenhouse gas occurring naturally in the stratosphere; formed by many hydrocarbon gases reacting with other compounds in the presence of solar radiation.

Packer: a mechanical or inflatable device containing a rubber packing element which can be expanded to isolate the annular section of the well bore. Used extensively in production wells to isolate zones.

PADD: division of the US into geographic regions whose supply and demand statistics are reported weekly by the American Petroleum Institute.

Paper trading: most spot market trading, in which the seller or buyer anticipates reversing the position before it transforms into a physical deal with a specific loading date.

Pay, Pay zone: the rock formation or part formation, which contains petroleum. The term **Net Pay** refers just to that part of the formation that has producible petroleum, it excludes low-porosity or tight zones within the reservoir.

Peak-shaving or lopping: consuming gas to produce electricity only during periods of peak demand or high gas or electricity prices.

Petrochemical: an intermediate chemical derived from petroleum or natural gas e.g. ethylene, benzene, propylene, toluene and xylene.

Petroleum: generic term for fluid (gaseous or liquid) hydrocarbons.

Petroleum fraction: a major product that may be separated from petroleum i.e. gasoline, kerosene, fuel oil; an elementary compound with a constant boiling range. Heavier fractions have higher boiling ranges than lighter fractions.

Petroleum product: any oil-based product obtained by refining.

Physical market: the forum for the trading of oil with specific loading or delivery dates. Producers and refiners are the primary participants in this market.

Pig: a device (i.e., pipeline inspection gauge) used for cleaning a pipeline or separating two liquids being moved down a pipeline. The pig is forced through pipelines by hydraulic pressure to scrape off rust, scale, wax or other solid residues.

An “intelligent pig” is fitted with sensors which can check for corrosion or defects in the pipeline.

Pigging Station: is a facility located along a pipeline from which “pigs” (pipeline inspection gauges) are launched or received. These may also be referred to as pig launching and /or pig receiving stations. Most pigging stations have the capability of both launching and receiving pigs. These facilities involve short spur sections to the main pipeline into which the pig is placed for launching into the main pipeline using pressure. The pig then flows through the pipeline, carried by the flow of the product in the line, to the next pigging station where it is diverted from the main line into a receiving trap or 'pig catcher' in the receiving portion of the station.

Pinch-out trap: petroleum trap where the reservoir gradually thins and eventually disappears between impermeable sealing formations.

Pipeline: an underground tube of welded steel through which oil travels from the producing area to refining area or distribution terminals.

Plateau level: the level of peak production reached by an oilfield.

Platform: a fixed or floating offshore structure on which offshore facilities are located and wells may in some cases be drilled from. Drilling platforms can become production platforms once the wells are producing oil. **Fixed platform:** A fixed structure resting on the seabed or piled into it from which development wells are drilled, using directional drilling, to exploit an oil or gas field. To date, these platforms are of two kinds, although several novel designs are in existence. Gravity structures, either concrete or hybrid with concrete base and steel legs and superstructure, which rest on the seabed by virtue of their own weight, or steel, which are piled into the seabed.

Polymer: complex and versatile chemical compound formed by polymerisation. Widely used in fabrication materials and in modern drilling muds.

Pontoon: a hollow buoyancy tank used to support, for example, a semi-submersible rig.

Pore: a void or empty space in rock; a property of petroleum-bearing rock. **Porosity** is the measure of this space.

Portfolio: the term referring to the entire entity of assets held by an entity. The assets can be financial instruments or in the case of oil and gas companies will primarily consist of all the upstream and downstream assets in which they have an equity interest.

Portfolio management: a set of processes that allows decision-makers to design strategies and take actions, including acquisitions and divestments, designed to maximize the combined risk-adjusted value of the assets owned by a company, within the

constraints imposed by that company's strategic goals, objectives and resources. Many companies now use sophisticated stochastic portfolio models to aid this process.

Pour point: the temperature at which a crude oil tends to solidify and will no longer flow freely.

Price risk: the magnitude of potential adverse price movement, against an existing or contemplated trade.

Primary recovery: the recovery of oil and gas from a reservoir using only the natural pressure of the reservoir itself to force the oil or gas out.

Principal: when referring to loans it is the original sum borrowed and on which loan interest is paid.

Producing field: crude oil or natural gas reservoir(s) that in production and delivering oil and gas to market.

Product output: the proportion of each refined product yielded when a specific crude is run in a specific refinery.

Production licence: a contractual licence with a government allowing an organization or joint venture to produce oil or gas from within the licence area.

Production Sharing Agreement or Contract: see PSA or PSC.

Propane (C₃H₈): a hydrocarbon, which is a gas under normal conditions. It is used as motor fuel, for cooking and heating purposes and as a chemical feedstock.

Proven reserves: the quantity of crude oil and natural gas demonstrated with reasonable certainty to be recoverable from known reservoirs under existing economic and operating conditions.

PSA or PSC – Production Sharing Agreement or Contract: an upstream contract type widely used internationally between governments and oil and gas companies. Title to petroleum remains with the government. The contractor, usually an IOC meets all exploration and development costs in most PSAs, and earns revenue from a share of production controlled by specified fiscal terms. IOC may also have to pay royalties and taxes on its share of production, although in some cases the contract specifies that taxes are paid from the government's share of production.

Put option: an option that provides the holder the right, but not the obligation, to sell an asset (a commodity or financial instrument) at a specified strike price for a specified period of time. If the market price is above the strike price at any given moment in the option period exercise of the option would not occur as to do so would incur a loss for the holder. The holder's only loss is then the premium paid for

the option. Selling a Call obligates the seller to buy at the agreed strike price during the option period. A put option is the opposite of a call option.

Rail tank car (RTC): a railway wagon.

Rate of penetration (ROP): the length of hole that is drilled in a well in a specified time (e.g. feet / hour).

Real options: a technique used by some companies to use the mathematical approach used for financial options to integrate flexibility, opportunity and optionality into oil and gas discounted cash flow analysis. An option provides the right – but not the obligation – to undertake an action of some sort (buy or sell, invest or don't invest, etc.) under prescribed terms within a prescribed time period. That investments in risky oil and gas assets have option-like characteristics is the basis of the approach. The “real” refers to physical assets rather than financial ones.

Recoverable reserves: the proportion of oil and gas that can be recovered to the surface from a sub-surface reservoir using existing techniques that can be applied using the facilities and equipment installed at the surface production site.

Recovery factor: ratio of recoverable to in-place petroleum reserves.

Refined product: gasoline, kerosene, heating oil, and fuel oil produced when a specific crude oil is run through a refinery.

Refiner: a company or division within a company that refines products from crude oil.

Refiner - Marketer: a marketer of gasoline and / or gasoil / heating oil who operates his own refinery.

Refinery: a plant used to separate the various light or heavy fractions present in crude oil and convert them into useable products.

Refinery output: the total amount of petroleum products produced by a refinery in a given period, including those products produced and consumed by a refinery.

Refinery yield: the amount of each product produced when a specific crude is processed in a specific refinery expressed as a percentage of total input of crude oil and unfinished oils in a given period.

Refining margin: the product value less the feedstock and refining costs and value of any loss in the refining process.

Reforming: a process, which improves the quality of gasoline fractions by modifying the molecular structure. When achieved by heat and pressure the process is known

as thermal reforming. When achieved by a catalyst the process is known as catalytic reforming.

Regasification plant (LNG receiving terminal): facility that receives LNG and processes it back into natural gas for injection into a gas transmission / distribution pipeline network.

Renewable energies: energy from sources that are not dependent on finite physical resources, (e.g. solar, wind, geothermal, biomass), unlike fossil fuels which have finite and ultimately exhaustible reserves.

Reserves: the estimated volume of recoverable crude oil in a reservoir, based on drilling and geophysical information. There are several different categories. Proved are the most certain.

Reservoir: a subsurface, porous, permeable rock formation in which oil and gas are found.

Reservoir drive: the energy or force in a reservoir that causes reservoir fluid to move towards a well and up to the surface.

Reservoir rock: the porous and permeable sedimentary (usually) rock formations that contain quantities of petroleum.

Residual oil: the residue remaining from crude oil after the light and middle distillates have been separated out. Fuel oils are used primarily in the power industry, for industrial heating and as a ship fuel.

Return on assets: see ROA.

Risk capital: equity raised to finance a venture in which the risks attached cannot guarantee any return.

ROA – Return on assets: net profit after tax expressed as a percentage of either total or net assets on the balance sheet. Most organisations also measure performance by **Return on capital employed (ROCE)**, which does not deduct debt, only other liabilities from the assets in a similar calculation (**ROACE – A** means average-calculation averages capital employed at the beginning and end of a specified period).

RON /MON: Research Octane Number / Motor Octane Number of petroleum fuels.

Rotary drilling: making a hole in the earth by rotating the entire drilling string. Downhole motors can drill without rotation and are widely used for directional drilling.

Roughneck: the floorman in a drilling crew, who sets the slips to hold the drill pipe, handles the tongs or elevators and other equipment around the rig floor.

Roundtrip: the complete process of pulling out and running in the drill string.

Roustabout: general labourer in the rig crew.

Royalty: payment of a percentage of gross income from the production of minerals, including hydrocarbons, by the company licensed to produce, to the state.

RTC – Rail tank car: a railway wagon.

RVP: Reid Vapour Pressure (VP in PSI at 1000 F).

Salt dome: a plug of salt in the Earth's sedimentary layers that has risen through other formations because of its light density forming potential petroleum traps; common in the Gulf of Mexico and many other petroleum basins.

Sandstone: a rock comprised of cemented quartz grains. A common oil and gas reservoir rock, because it is often porous and permeable.

SBM – Single buoy mooring: a single floating chamber moored near an offshore production platform to serve as a connection to a tanker; also known as single point mooring. Another mooring system used is *SPM/ELSBM*: single point mooring/exposed location single buoy mooring; used for loading oil in to tankers in the open sea or fixing FPSOs, the principle being that the vessel can moor to load oil whatever the direction of wind or current and swing at the mooring to present least resistance to the prevailing conditions.

Scrubbing: purification of a gas or a liquid by washing it in a tower; commonly used to remove hydrogen sulphide for example.

Secondary recovery: the recovery of oil or gas from a reservoir through increasing the reservoir pressure by injecting gas or water (water flooding) into the reservoir rock.

Sedimentary rock: rock laid down by the accumulation of sediments, usually, but not always in water, over millions of years.

Seismic survey: a method of establishing a detailed subsurface structure of rocks by detecting and measuring the reflection of acoustic shock waves from the various layers of rock. It is used to locate potential oil- or gas-bearing structures before drilling.

Semi-submersible: mobile floating offshore drilling platform with floats or pontoons submerged to give stability while operating, kept in position by anchors or dynamic positioning.

Shortage: when demand exceeds supply.

Show: an indication of oil or gas in the mud returns while drilling an E&P well.

Shuttle tanker: an oil tanker, which makes regular round trips between a producing field and an onshore terminal or refinery. Used where there is no pipeline link to the field.

Sidetrack drilling: kicking out of a window (hole) made in the casing of an existing well to drill a new well bore of diameter less than the casing size of the parent well. This can be for remedial purposes (e.g. well is blocked with junk) or to reach an untapped part of the reservoir and to save the expense of drilling a new well from the surface.

Single buoy mooring: see SBM.

Slug catcher: arrangement of piping designed to catch a slug of liquid in the gas pipeline to separate it from the gas.

SOLAS: International Convention for Safety of Life at Sea.

Sour crude oil: a general classification of crude oil according to its sulphur content. A crude oil is considered sour if it contains a large amount of sulphur. However, West Texas crude is always considered sour regardless of its hydrogen sulphide content. Arabian crudes are not always considered sour, even when of high sulphur content, because they do not contain highly active sulphur compounds; the opposite of sweet crude oil; can also have **sour gas**. See Sweet crude oil.

Sour crudes: for example in the Middle East – Iranian Light, Iranian Heavy, and Saudi Light.

Sweet crudes: for example in the North Sea – Brent, Ekofisk, and Forties.

Source rock: formation which generates and expels petroleum and from which it migrates into the reservoir. These are often organic-rich shales.

SPA: Sale and Purchase Agreement.

Spar: a single buoy mooring which includes oil storage capacity so that production can continue even if the weather is too severe for tanker loading.

Spark spread: is a price margin. It is the differences in the price that electricity can be sold for versus how much it costs a power generator to purchase the natural gas feed to fuel a gas-fired power generation plant.

Specific gravity: the ratio of the density of a substance at a particular temperature compared with the weight of an equal volume of pure water at 4°C.

Speculator: an individual who invests in commodity futures with the objective of achieving profits by successfully anticipating price movements.

Spot contract: a term describing a one-time open market transaction where a commodity is purchased “on the spot” at current market rates. Spot transactions are made in the short term in contrast to term deals, which specify a steady supply of product over a period of time.

Spot market: a market in which actual physical products are traded for immediate delivery; a general term for short-term transactions.

Spot price: a price for oil or oil products for immediate delivery. See Futures price.

Spud: to commence drilling operation; also called spudding in.

Steam injection: see Thermal recovery.

Stochastic calculations: those calculations associated with forecasting future values based upon a number of uncertain variables (e.g. prices, production, reserves etc.) that use probability distribution for each variable and often use simulation models (see Monte Carlo simulation) to perform the calculation expressing the output also in the form of probability distributions. They are useful in providing statistical probabilities and ranges incorporating uncertainties in input forecasts. These are a better alternative than deterministic models and complement them.

Stranded gas field: one that is too remote from transportation infrastructure or gas markets to make it readily economic to develop.

Stratigraphic trap: a hydrocarbon trap formed by the configuration of the sedimentary layers, often originating at the time the sediments were laid down or last eroded, and where the hydrocarbons are enclosed as a result of a change from porous to non-porous rock. It is not a structural trap formed by structural folding / bending or faulting or rock layers.

Structural trap: a hydrocarbon trap formed by the distortion of layers of rock by movements in the earth’s crust.

Substructure: the support frame on which a platform or drill floor rests and which supports it.

Swabbing: causing the inward flow of formation fluids into a well bore by pulling equipment out of the well and reducing downhole pressure.

Swap: a custom-tailored, individually negotiated transaction designed to manage financial risk.

Sweet crude oil: a general classification of crude oil according to its sulphur content. A sweet crude contains little or no dissolved hydrogen sulphide; the opposite of sour crude oil, which has high sulphur content and an unpleasant odour.

Sour crudes: for example in the Middle East – Iranian Light, Iranian Heavy, and Saudi Light.

Sweet crudes: for example in the North Sea – Brent, Ekofisk, and Forties.

SWOPS: Single Well Oil Production System.

Take-or-pay: clause in a contract that dictates a minimum quantity of a commodity to be paid for in a specified period whether or not buyer is able to take delivery of it from the supplier; common in gas sales and LNG contracts.

Take-or-release: supplier has right to cancel a supply contract if buyer does not take specified volumes.

Tanker: an ocean-going ship that is designed for carrying crude oil and other liquid petroleum products in bulk.

Technical analysis: an approach to forecasting commodity prices which examines patterns of price change, rates of change and changes in trading volume, without regard to the underlying fundamentals.

TEMA: Tubular Exchanger Manufacturers Association (USA).

Term contract: the form of perhaps 10% of oil deals, in which multiple volumes are transacted and pricing is done via a formula tied to a benchmark.

Terminal: an onshore transit installation that receives and stores crude oil, products and gas.

Tertiary recovery: recovery of oil or gas from a reservoir over and above what can be recovered using primary and secondary recovery. It usually means employing a method such as heating the reservoir or enlarging the pore spaces using chemicals e.g. acidising.

Thermal recovery: a tertiary recovery technique in which the oil reservoir is heated in order to reduce oil viscosity and so increase fluid flow. Steam injection and fire flooding (in situ combustion) are types of thermal recovery.

Throughput: a term used to describe the total amount of raw materials that are processed by a plant such as an oil refinery in a given period.

Time charter: the charterer has the use of the vessel for a specified period.

Toe / Mtoe: Tonnes of Oil Equivalent / Million Tonnes of Oil Equivalent.

Tonne: a measurement of weight. A metric tonne is equal to 1000 kg or 2205 pounds.

Toolpusher: drill floor supervisor or foreman in charge of drill floor rig crew.

Topsides: the top part of a platform positioned on the jacket.

Trader: a company which buys and sells crude oil or products for a profit.

Trap: a geological structure in which hydrocarbons build up to form an oil or gas field.

Turnaround: short period of plant shutdown at a refinery or LNG plant when facilities are maintained or adjusted ready for new feedstock deliveries.

UKCS: United Kingdom Continental Shelf.

Ullage: the quantity a container requires to completely fill it above its current contents, i.e. the space in a container above the liquid level. Used in pipelines to refer to the space available for additional throughput.

Unbundled costs: when component costs are identified and charged separately to customers, e.g. transmission and distribution pipeline network components.

Unconformity: a geological feature in which rocks of an older age are exposed, eroded and sometimes folded prior to being overlain by rocks of a significantly younger age. The unconformity refers to the boundary between the two ages and can sometimes form a petroleum trap.

Unitisation: when licence holders of a petroleum field spread over more than one licence pool their individual interests in return for a mutually agreed interest in the overall field, which is operated as a single entity usually with one operator.

Updip: opposite of downdip.

Upstream: those activities relating to the exploration, production and delivery to an export terminal of crude oil.

Vapour recovery: Collecting and condensing petroleum product vapours being loaded and unloaded at terminals, refineries and petrol stations. The vapours are then condensed to a liquid thereby significantly reducing air pollution.

Vessel: any self-propelled ship that carries crude oil or refined product over water.
Barge – a vessel for river movement of oil or refined products that holds approximately 25,000–50,000 barrels. It has no power of its own and is pushed by a tugboat. Often several barges are tied together for a single trip.

LR1: a vessel that holds approximately 500,000 barrels

LR2: a vessel that holds approximately 1 million barrels.

ULCC: “ultra large crude carrier”, a vessel that holds more than 2.5 million barrels or 300,000 tonnes dwt.

VLCC: “very large crude carrier”, a vessel that holds approximately 2 million barrels or 200,000 tonnes dwt.

Viscosity: the property of a fluid, which determines its rate of flow. As the temperature of a fluid is increased its viscosity decreases and it therefore flows more readily.

VOC: Volatile Organic Compounds.

Volatility: a statistical measure of dispersion of either historical or expected commodity price changes.

Voyage charter: the hiring of a vessel at an agreed charter rate for one or more specific voyages.

Water drive: a reservoir drive provided by the force of water under pressure below the oil being produced.

Water flooding: the technique of injecting water into an oil reservoir to increase the pressure and flush out the oil.

Wax: a solid or semi-solid material derived from petroleum distillates or residues. Used for various purposes including candles and polishes.

Weather window: the part of the year when the weather is suitable for operations that cannot be carried out in adverse sea and wind states, e.g. pipeline or platform installation.

Well: a hole drilled in rock from the surface to the reservoir in order to explore for, or extract, oil or gas.

Wellhead: the control equipment fitted to the top of the well, consisting of outlets, valves, blowout preventers etc.

Well logging: comprehensive record of data collected on a foot-by-foot basis downhole. It includes wireline logging in which special tools are lowered into the well to record electronic, acoustic, and radioactive responses. Essential to exploration and production reservoir evaluation.

West Texas Intermediate: see WTI.

Whipstock: a wedge-shaped plate placed in the well bore forcing the bit sideways and out of the existing well trajectory. Used in sidetrack drilling.

White oil / White product: those products at the high end of the distillation process e.g. gasoline, naphtha, kerosene and gasoil; the opposite of black products. White products may also be described as clean cargoes.

Wildcat well: speculative exploration well drilled in search of a new oil or gas accumulation.

Wireline: wire or cable used for downhole operations. Usually either steel wire used to lower instruments into a well or electric for recording instruments.

Worldscale index: an index representing a standard cost of time chartering shipping tankers for a specific voyage at a specific time. The negotiated rate is usually specified as a percentage of the Worldscale index value and will depend upon market conditions.

Workover: re-entry into a completed well for modification or repair or remedial work.

WOW: waiting on weather.

WTI – West Texas Intermediate: a light sweet crude oil produced in Texas and used as a price benchmark.

Yield: the refined product output when a specific crude oil is processed in a specific refinery.

Compiled by: David Wood (updated November 2012)

A useful online glossary covering many oil and gas industry technical terms which has a search capability and good cross-referencing is provided by Schlumberger:

<http://www.glossary.oilfield.slb.com/search.cfm>