

IHS > Critical Information Product

Canadian Data Companion

Includes background information and key terms and definitions found in IHS Canadian Energy Products and Services



The Source for Critical Information and Insight™



© 2010, IHS Inc. and its affiliated and subsidiary companies, all rights reserved. All other trademarks are the property of IHS Inc. and its affiliated and subsidiary companies.

This product, including software, data and documentation are licenced to the user for its internal business purposes only and may not be disclosed, disseminated, sold, licenced, copied, reproduced, translated or transferred to any third party.

IHS Inc.
15 Inverness Way East
Englewood, Colorado 80112
303-736-3000

Rev. April, 2010

Information in this publication has been compiled from various sources. This publication is intended to provide the reader with background information regarding Canadian Energy products and services from IHS.

Introduction

Data Accumulation and Processing

Key Terms and Definitions

Introduction

For more than 75 years, IHS and its predecessor companies have provided comprehensive decision-critical information to energy organizations. We complement this information with economic, political, fiscal and regulatory analysis, as well as strategic, operational, research and advisory services.

By integrating essential information, intuitive software and analytical services worldwide, we help our customers effectively evaluate investment opportunities and analyze operations so they can reduce operating costs and increase productivity.

Our global experts, located strategically around the world, develop and deliver critical oil and gas industry data on exploration, development, production and transportation activities to major global energy producers and national and independent oil companies.

We also provide strategic operational, research and advisory services to these customers and to utilities and transportation, petrochemical, coal and power companies.

Energy experts at IHS monitor daily exploration and production activity in more than 180 countries around the world. This expertise provides our customers with detailed technical and economic information on oil and gas producing assets, countries and regions.

Typical users of IHS International Energy products include:

Explorationists, Geoscientists, Petroleum Engineers, and GIS Technicians, who review and analyze previous exploration activity to determine true hydrocarbon prospectivity in a basin, and assess the risk of the exploration play.

New Venture and Corporate Planning groups who analyze opportunities to explore for new hydrocarbon accumulations or possible farm-in opportunities.

Using the IHS database allows an organization to thoroughly review the hydrocarbon prospects and feasibility of a project.

Negotiators who evaluate work commitments to determine if a competing company was able to negotiate terms that differ from a model contract.

IHS Data Accumulation and Processing

IHS accumulates oil and gas related critical information: comprehensive global exploration, development and production data, industry activity, fiscal, legal, infrastructure, leasehold and reservoir information, and related news, reports and maps.

Our world-wide digital database components include:

Well Database: includes location, drill time history curves, casing programs, stratigraphy, statistical information and ownership data for all wells.

Field Database: includes location, statistical information, annual production data, DST results, detailed reservoir data and field outlines.

Field Image Database: includes structure maps, cross sections, well logs, stratigraphy, regional maps, etc as available in published literature (AAPG, Journal of Geology, etc.) which were scanned bibliographic referenced and included with each field in the database.

Reservoir Database: consists of details of each producing reservoir within each field. This includes net/gross thickness, porosity, permeability, water saturation, timing of migration and generation of oil, rock descriptions, etc.

Midstream Database: includes location of all pipelines, LNG, refineries etc, capacities, throughputs, demands and planned projects.

Basin Database: covering 400 basins, includes geologic history, detailed Petroleum System data, lithostratigraphic data sheets, bibliographies and statistics in Query and Browse software. Each of the basin studies can be printed to create a basin monitor from the live database.

Survey Database: includes location, statistics, processor, contractor and line km for each

Contract Database: includes operator, partnerships, commitments, locations, and history of the contract stages for licence awards, separating them to be valid and un-valid or expired and also includes bid blocks. In addition, all relinquished blocks with their outlines and details are included for use in making maps or researching historic contracts.

Cartographic Database: includes the digital points for the coastlines, political boundaries, rivers, lakes, basin outlines and bathymetry. IHS gathers this information from government agencies, energy producers and other industry sources and processes it rigorously by testing its accuracy, cross referencing it against numerous sources, verifying surface and subsurface attributes and standardizing and creating common industry codes.

Decision-Support Tools: We integrate critical energy information with technology and applications to meet the needs of a range of users across the energy industry. These tools enable our customers to integrate our information and their proprietary information within their workflows and business processes. Our decision-support tools range from easy-to-use “browse and search” applications to sophisticated engineering, cost analysis and economics tools that estimate drilling costs, assess project economics, optimize exploration and production activities and improve production yields.

A

Acidizing - The injection of acids under pressure into the rock formation to create channels that allow the hydrocarbons to flow more easily into the wellbore.

Acoustic Log - Downhole well log test that is used to identify petrophysical properties of rocks in a borehole. Acoustic waves are transmitted through exposed rocks and recorded.

Activity Bonus Payments - Refers to the amount of money that is paid by an operating group (participant) to the appropriate licensing authority when significant events, defined in the contract, take place. Examples: bonus upon signing of the contract, or upon start of the production.

Age - An interval of geologic time when rocks of a specific stratigraphic unit were deposited, or designated a particular segment of the geologic time scale.

Air Drilling - The use of compressed air instead of mud as a drilling fluid to remove the cuttings.

Allowables - The rate of production for a well or group of wells that is set by a regulatory authority (conservation commission).

Alternative Fuels - Other fuels that can be substituted for the fuel in use.

Annulus - The space between two concentric lengths of pipe or between pipe and the hole in which it is located.

Anticline - A fold of layered sedimentary rocks that originates below the surface in the form of an elongated dome. Anticlines can form a trap for oil and gas and make excellent drilling prospects. Any hydrocarbons in sedimentary sequence will naturally rise to the highest point of the structure due to their lower specific gravity than water.

AOFP (First/Last) - Reported deliverability of the well when subjected to zero sandface pressure for the first/last deliverability test.

API Gravity - An American Petroleum Institute measure of density for petroleum: API gravity = $[141.5 / (\text{specific gravity at } 16^{\circ}\text{C}) - 131.5]$. Heavy oils are $<25^{\circ}$ API; medium oils are 25° to 35° API; light oils are 35° to 45° API; condensates $> 45^{\circ}$ API.

Application - A written offer/bid that is submitted by a group of companies or a single company to the appropriate licensing authority to explore for and/or exploit hydrocarbons within defined geographical limits.

Area - The total amount of the earth's surface within the geographical limits of a selected block. The area is defined for the period of time that corresponds to the selected stage.

Associated Gas - This classification is used when a gas cap directly overlays an oil column in the same reservoir unit. There are two physical phases in this type of reservoir: liquid hydrocarbon (Oil) underlying a gaseous hydrocarbon (Gas), a so-called "gas cap". In these reservoirs there is generally an oil/water contact and an oil/gas contact because the oil leg is sandwiched between the water level and its gas cap.

Associated Unit - Associated units are units that are not stratigraphically equivalent to a unit in question, but nevertheless defines the unit limit such as they overlie it or underlie it.

B

Backhaul - A transaction that results in natural gas being "transported" in the opposite direction of the physical flow of a transportation system. This is usually achieved by redelivering the gas at a point upstream from the point of receipt.

Backstopping - A service that provides alternate supplies of natural gas in the event that a consumer's gas is not delivered.

Barrel - The common unit for measuring petroleum. One barrel contains approximately 159 litres.

Basin - A type of geological province in which an extensive area of sedimentary deposition is characterized by a similar tectonic structure, petrography and geological history and in which such features differ significantly from those found in adjacent areas.

Basin Area - Amount of the earth's surface enclosed within the specified part of the Geological Province under consideration.

Basin Evolution Diagram - Provides the geological characteristics of a basin, such as tectonic events and depositional cycles, on a geological age scale.

Bed - The smallest formal unit in the hierarchy of sedimentary lithostratigraphic units. A single stratum lithologically distinguishable from other layers above and below.

Benchmark Crude - see Marker Crude

Benzene - A volatile organic compound that occurs naturally in petroleum and is also produced by the combustion of petroleum products.

Biostratigraphic Unit - A body of rock defined or characterized by its fossil content.

Bitmaps - An image made up of groups of dots that are stored like a sheet of graph paper.

Bitumen - Heavy oil or petroleum in semi-solid or solid forms.

Blowout - An uncontrolled flow of oil, gas, water or mud from a wellbore caused when drilling activity penetrates a rock layer with natural pressures greater than the drilling mud in the borehole.

Blowout Preventer (BOP) - Equipment that is installed at the wellhead to control pressures and fluids during drilling, completion and certain remedial operations to restore production.

Bonus Payment - The amount paid at land auctions for Crown mineral rights.

BOP Stack - Several blowout preventers used in combination.

Bottom-Hole - The deepest part of the borehole.

Bottom-Hole Pressure - Is the pressure at the bottom of a borehole. It is caused by the hydrostatic pressure of the wellbore fluid and, sometimes, by any backpressure held at the surface, as when the well is shut in with blowout preventers.

Bottom-Hole Pressure Test - Test that measures the reservoir pressure in a well, obtained at a specific depth or at the midpoint of the producing zone. A flowing bottom-hole pressure test measures pressure while the well continues to flow; a shut-in bottom-hole pressure test measures pressure after the well has been shut in for a specified period of time.

Bottom-Hole Pump - Can be a rod pump, a high-pressure liquid pump, or a centrifugal pump that is located at or near the bottom of a well to produce well fluids.

British Thermal Unit (BTU) - A measure of the heat value of a fuel. One BTU is the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit.

Broker - An individual or independent corporation engaged in bringing together sellers and buyers of natural gas, assisting in negotiations, arranging transportation and delivery terms.

Buffer Distance - Indicates the distance a well must be drilled from the survey lines of the land description.

Bundled Service - A service provided by a pipeline or a local distribution company which includes the natural gas as well as all the necessary services required for consistent supply (backstopping, load balancing, storage).

Burner-tip - The point of end-use consumption of a particular fuel, such as natural gas or residual fuel oil.

Burner-tip price - The price of natural gas (or other fuels) paid by the final consumer: for natural gas, this price includes the price of gas plus the cost of processing, gathering, transmitting, and distributing it.

C

Cable-Tool Drilling - One of two principal methods of drilling for crude oil and natural gas. This is the older method and consists of raising and dropping a heavy drill bit suspended from the end of a cable so that it pounds and pulverizes its way through subsurface structures.

Calorie Content Value - The heat produced by the combustion of a unit weight of fuel, expressed in BTU/cubic feet.

Cap Rock - Impermeable rock overlying an oil or gas reservoir that tends to prevent migration of the reservoir fluids from the reservoir.

Carbon Dioxide (CO₂) - A gas produced from decaying materials, respiration of plant and animal life and combustion of organic matter including fossil fuels. Carbon dioxide is the most common greenhouse gas produced by human activity.

Carbonate - Rock formed from the hard parts of marine organisms, mainly consisting of calcite, aragonite and dolomite.

Carbonate Rock - A sedimentary rock dominated by calcium carbonate (Ca CO₃) with a content at least 50 wt % carbonate minerals.

Carboniferous - A period that includes the time interval of about 362.50 to 290.00 million years ago.

Casing - Large steel pipe that is placed in the borehole to prevent the borehole from collapsing and also to prohibit the flow of formation fluids into the borehole.

Casing-Head Gasoline (naphtha) - A highly volatile liquid that is separated from natural gas at the wellhead and was once used as unrefined gasoline.

Cat Cracking (catalytic cracking) - A refinery process that uses catalysts in addition to pressure and heat to convert heavier fuel oil into lighter products such as gasoline and diesel fuel.

Catalysts - Materials that assist chemical reactions.

Cathodic Protection - A technique for preventing corrosion in metal pipelines and tanks that uses weak electric currents to offset the current associated with metal corrosion.

Cement - Is used to set casing in the well bore and to seal off unproductive formations and apertures. Similar to concrete without aggregate.

Cenozoic - A geologic era that includes the time span between 65.00 million years ago to the present.

Center Latitude - The latitude coordinate of the survey location center expressed in degrees, minutes, and seconds.

Center Latitude Decimal Degrees - The latitude coordinate of the survey location center expressed in decimal degrees.

Center Longitude - The longitude coordinate of the survey location center expressed in degrees, minutes, and seconds.

Center Longitude Decimal Degrees - The longitude coordinate of the survey location center expressed in decimal degrees.

Centrifugal Pump - A rotating pump, commonly used for large-volume oil and natural gas pipelines that takes in fluids near the centre and accelerates them as they move to the outlet on the outer rim.

Certainty Level - The certainty level of a petroleum system indicates the confidence for which a particular pod of active source rock has generated the hydrocarbon in an accumulation: Known, Hypothetical, and Speculative.

Change Date - The date of an E/P contract or application stage.

Choke - A fixed or adjustable device with an orifice that restricts and controls the flow of gas or fluids.

Christmas Tree - A combination of gauges, valves, controls and pipe connections at the top of the casing on a flowing well that controls well flow and resembles a heavily-decorated Christmas tree.

Chronostratigraphic Units - All rocks were formed within certain time spans of the earth's history regardless of their compositions or properties.

Circulation - A continuous pumping of drilling mud down through the drill pipe and drill bit and back up to the surface so that rock cuttings are moved away from the drill bit.

City-Gate - The delivery point or the point of interconnection between long-distance transmission pipelines and local distribution companies.

Clastic - Made up of pieces (clasts) of older rock; rock derived from mechanical process; generally sandstone, siltstone or shale.

Clay/Claystone - A sedimentary rock comprised of loose particles of rock or minerals having a diameter of less than 0.004 millimetres.

Coalbed Methane - Methane gas from coal seams characterized by low recovery rates and high associated water production.

Co-Firing - The process of burning natural gas in conjunction with another fuel.

Cogeneration - The simultaneous production of electricity and steam from one energy source (ie: natural gas, oil, biomass).

Coiled Tubing - A continuous, jointless hollow steel cylinder that is stored on a reel and can be uncoiled or coiled repeatedly as required.

Coke - Solid carbon that remains in the refining process after cracking of hydrocarbons.

Coking - A process used to break down heavy oil molecules into lighter ones by removing the carbon which remains as a coke residue.

Combined-Cycle Generation - When the steam generated in a cogeneration process is used to create additional electricity. The efficiency of producing electricity is increased.

Commitments - A financial expense, exploration survey and/or drilling operation that is pledged to be completed by an operating group of an E/P contract within a specific period of time. For example: within the first three years of exploration, \$100,000 must be spent in environment impact studies, 500 1-km of 2-D Seismic must be shot, and 2 wells drilled.

Common Depth Point Method - A method of recording and processing seismic signals so that signals belonging to the same subsurface point are brought together.

Completion - The process of finishing a well so that it is ready to produce oil or gas.

Compression (Z) - The compressibility factor used for the gas. The Z-factor is a correction factor and is the ratio of the volume actually occupied by a gas at a given temperature and pressure to the volume the gas would occupy at the same temperature and pressure if the gas behaved like an ideal gas.

Compressor - A machine used to boost natural gas pressure to move it through pipelines or other facilities.

Compressor Station - Permanent facilities containing compressors that supply the energy needed to move natural gas at increased pressures.

Condensate - Hydrocarbons that are gaseous under reservoir pressure but become liquid at atmospheric pressure and temperature.

Conductor Casing - First string of casing in a well. Its purpose is to prevent the soft formations near the surface from caving in and to conduct drilling mud from the bottom of the hole to the surface when drilling starts. Also known as conductor pipe, drive pipe or surface casing.

Conf Date - The date on which the well status will no longer be Confidential.

Consumption - The quantity of natural gas used by final consumers.

Coordinate Conversions - Changing coordinates in data files from one geographic coordinate system to another involves complex mathematic algorithms.

Coordinate System - A mathematical transformation that enables a person to project ellipsoid points on a flat surface.

Core - A continuous cylinder of rock, usually from 5 to 10 centimetres in diameter, cut from the bottom of a wellbore as a sample of an underground formation.

Cracking - A refining process for increasing the yield of gasoline from crude oil; cracking involves breaking down the larger, heavier and more complex hydrocarbon molecules into simpler and lighter molecules through the use of heat and pressure and sometimes a catalyst.

Cretaceous - A geological period that includes the time interval of about 145.60 to 65.00 million years ago.

Critical Pressure - The critical pressure of a pure substance is the pressure above which liquid and gas cannot coexist regardless of the temperature.

Critical Temperature - The critical temperature of a pure substance is defined as the temperature above which the gas cannot be liquefied.

Critical Zone - The zone in a well where sour gas will likely be encountered.

Crown Coal Lease - Coal rights leased in a Provincial Coal Lease Agreement.

Crown Land - Mineral rights that are owned by the federal or provincial governments.

Cubic Foot - The volume of gas that fills a cube that is one foot by one foot by one foot under set temperature and pressure conditions.

Current Name - The latest E/P contract or application name.

Cuttings - Chips and small fragments of rock cut by the drill bit and brought to the surface by the flow of drilling mud fluid.

Cycle - An age interval of considerable duration (generally in the range of 50-200 MY) during which a particular tectonic regime affected the geological setting. To classify basins, the geological record is analyzed and divided into cycles. Related to such a setting is the depositional environment and the sedimentary fill. The Cycle is comparable to the Genetic Unit (GU) used in IHS Energy's Basin database. The main difference is that a GU is based on the present-day lithostratigraphic sequence whereas a cycle is based on time. The cycle thus includes hiatuses or periods of non-deposition or erosion. The cycle might contain deposition of sediments that are no longer present in the GU due to erosion.

D

Darcy - A measure of rock permeability.

Data Owner - A supplier of the selected data.

Data Source - This attribute indicates the source of an associated resource estimate. In addition, when the source is an estimate made by IHS, a percentage accuracy factor may be attached to the estimate.

Datum - A mathematical model of the earth's surface applied to a given point, best suited to the concerned zone and referenced to a unique ellipsoid.

Decline Rate (%/year) - Upon completion of the plateau period, the field production will decline at the annual rate until the total reserves as per the field size entry are produced.

Deliverability - The amount of natural gas a well, field, gathering, transmission, or distribution system can supply in a given period of time.

Density - The heaviness of crude oil indicating the proportion of large carbon-rich molecules, generally measured in kilograms per cubic metre (kg/m³) or on the American Petroleum Institute (API) gravity. In western Canada oil up to 900kg/m³ is considered light to medium crude.

Depletion - The exhaustion of a natural resource by actual extraction of the mineral or gas, etc. The decrease in value (of mineral or gas rights, timberland, etc.) caused by production operations.

Depth Bottom/Top - Bottom/top depth of the packer, as measured from the kelly bushing, for a specific DST interval.

Depth Measured BHD - Measured depth at which the top of the formation is believed to occur. This value is determined by measuring along the well bore during a deviation survey, measured depth is always greater than true vertical depth.

Depth Reference Point - This is the point from which depths are measured. e.g. kelly bushing, rotary table etc.

Depth Vertical - True vertical depth at which the top of the formation is believed to occur, measured from the KB straight down to the top of the formation. True vertical depth is always identical to or less than measured depth.

Deregulation - The process of changing natural gas market regulations to allow a greater role for market forces to balance supply and demand and set prices. It does not mean the absence of regulation.

Derrick - A load bearing tower like structure over a natural gas or crude oil well that holds the hoisting and lowering equipment for drilling, testing and reworking wells.

Desiccant - Any absorbent or adsorbent (liquid or solid) that will remove water or water vapour from a material.

Desulphurization - The process of removing sulphur and sulphur compounds from gases or liquid hydrocarbon mixes.

Developing Fields - Are defined as those fields where a commitment to spend money to develop the field has been made on the part of the operating group and government approval has been granted. Development is currently taking place and production has not yet begun.

Devonian - A geological period that includes the time interval of about 408.50 to 362.50 million years ago.

Diapir - A domed rock formation where a core of rock (usually salt, mud or hot magma) has moved upward and pierced through the more brittle overlying strata. By pushing upward and piercing overlying rock layers, diapirs can form anticlines, salt domes and other structures capable of trapping oil and gas.

Diatom - Is an aqueous, microscopic, single-celled, algae that has a silica-rich cell wall called a frustule. Diatoms can form thick layers of sediment composed of the frustules of the organisms that died and sank to the bottom. Diatoms can be a source of abundant organic matter in rocks.

Diluents - Light petroleum liquids used to dilute bitumen and heavy oil so they can flow through pipelines.

Direct Interest - Parent company has 100% interest in a subsidiary.

Directional Drilling - The intentional deviation of a wellbore through the use of whipstocks, bottomhole assembly (BHA) configurations, instruments to measure the path of the wellbore in three-dimensional space, and drill bits. Is notably used in a systematic way on offshore platforms.

Disconformity - A surface of erosion or non-deposition that separates younger strata from older rocks in which the beds below and above that surface are parallel.

DLSS - The surveyed Dominion Land Survey System grid for Alberta, Saskatchewan, and parts of Manitoba and British Columbia. The major components of the DLSS are Meridians, Ranges, Townships, Sections, and Legal Subdivisions.

Dolomite - Sedimentary rock rich in calcium carbonate and magnesium in which oil or gas reservoirs are found. See also limestone.

Dome - A roughly symmetrical upfold of layers of rock in which the beds dip in all directions more or less equally from a common point; any deformation characterized by local uplift and approximately circular in outline.

Dominion Land - Mineral rights owned by the federal government, such as military ranges and federal parks.

Downstream - Term is used to refer to all petroleum activities from the processing of refining crude oil into petroleum products to the distribution, marketing, and shipping of the products. The opposite of downstream is upstream.

Drawworks - The hoisting mechanism on a drilling rig which spools off or takes in the drilling line and thus raises or lowers the drill string and bit.

Drill Pipe - Steel pipe sections, approximately 9.5 metres long, that are screwed together from a continuous pipe extending from the drilling rig to the drilling bit at the bottom of the hole. Rotation of the drill pipe and bit causes the bit to bore through the rock.

Drill String - Steel pipes roughly 10m long joined together to form a pipe from the drill bit to the drilling platform. It is rotated during drilling and is also the conduit for the drilling mud.

Drilling Contractor - A person or company whose business is drilling wells.

Drilling Mud - Is a fluid used in drilling operations to lubricate and cool the drill bit, carry drilling wastes to the surface, prevent the walls of the well from collapsing, and to keep the upward flow of oil or gas under control. Drilling mud is a mixture of water, or oil distillate, and 'heavy' minerals such as bentonite or barite and chemicals. The mud is pumped into a well at densities calculated to provide a hydrostatic pressure sufficient to overcome downhole formation pressures such as gas kick.

Drillstem Test (DST) - Is a method of formation testing. The basic drill stem test tool consists of a packer or packers, valves or ports that may be opened and closed from the surface, and two or more pressure-recording devices. The tool is lowered on the drill string to the zone to be tested. The packer or packers are set to isolate the zone from the drilling fluid column.

Drive Type - The natural mechanism that induces fluid recovery from the reservoir ie: water, gas, gas and water.

Dry Hole - An unsuccessful well; a well not capable of producing commercial quantities of oil or gas.

DST Fluid - Type of fluid recovered during the drill stem test.

DST Gradient - The DST gradient is a calculated value. It is the maximum shut-in pressure divided by the top of the interval (or packer). When there are two or more DST gradients available in a well (from multiple DST records), the largest gradient is used.

Duration of Plateau - Represents the number of years that production will remain at peak production once all wells have been brought on production.

E

E/P Contract - A legal agreement between a government or a government-appointed agent and one or more companies, allowing for the exploration and/or production of hydrocarbons in a specified area.

E/P Contract Name - The designation given to the exploration and/or production contract, either by a licensing authority, the operator or as assigned by IHS in the absence of another data source.

Electric Well Log - An electrical survey in an uncased borehole that measures the resistivity of rock strata to electrical current of the spontaneous potential (S.P.) of the rock.

End Date - The end date of an E/P contract or application stage.

Energy Resources Conservation Board (ERCB) - An independent, quasi-judicial agency of the Government of Alberta. They regulate the safe, responsible, and efficient development of Alberta's energy resources: oil, natural gas, oil sands, coal, and pipelines.

Enhanced Oil Recovery (EOR) - The use of certain methods such as water flooding or gas injection into existing wells to increase the recovery from a reservoir.

Entitlements - In IHS Energy related applications, you are entitled to access only the data that you subscribe to. Entitlements are separate for E&P data, editorial products, and fiscal/political products. In most cases, you can subscribe to data by country. There are three levels of entitlements for E&P data: 1. Country layers will be plotted on the map in only the countries that you have entitlements for. 2. Data categories. Only the layers for which you have entitlements will appear on the layer list. 3. Attributes (Header or Full) for the available data categories. Within a layer, you can access only the attributes that you have entitlements for.

Eocene - An epoch that includes the time interval of about 56.50 to 35.40 million years ago.

Established Reserves - Those reserves recoverable under current technology and present and anticipated economic conditions.

Evaluation Exclusive - An exclusive right that allows surface exploration including geological, geophysical and/or other studies.

Evaluation Non-Exclusive - A non-exclusive right that allows surface exploration including geological, geophysical and/or other studies.

Evaporite - A class of sedimentary deposits that form by precipitation from evaporating aqueous fluid. Common evaporite minerals are halite, gypsum and anhydrite, which can form as seawater evaporates, and the rocks limestone and dolostone. Evaporite minerals, particularly halite, can form excellent cap rocks or seals for hydrocarbon traps because they have minimal porosity and they are able to deform plastically.

Event - A reason for which the E/P contract terms or the geographical area has undergone a change. Examples: official award, change of operator, application for area reduction, relinquishment.

Exploration - The act of searching for potential subsurface reservoirs of gas or oil. Methods include the use of magnetometres, gravity metres, seismic explorations, surface mapping, and exploratory drilling.

Extraction Loss - The reduction in volume of natural gas resulting from the removal of the natural gas liquid constituents at the processing plant.

Extrusive Rock - Igneous rock that cools and solidifies rapidly at or very near the surface of the earth. Also known as volcanic rock.

F

Facies (Depositional, Lithological, Organic) - The characteristics of a rock unit that reflect its origin (depositional environment). Facies usually are characterized using different geological characteristics known for that rock unit.

Farm-in - An outside party paying a licence holder all or a percentage of the exploration costs including G&G and drilling costs of a well in order to obtain a working interest in a block. Usually the incoming party is required to pay a premium over and above its earning interest.

Farm-out - The licence holder gives a percentage of his working interest in a block in order to allow an outside party to drill or explore on his block. The allocation of a working interest in the block reduces the exploration risk exposure of the initial block holder.

Fault - Fracture or a zone of fractures along which there has been displacement of the sides relative to one another parallel to the fracture.

Fault Trap - A common type of structural hydrocarbon trap in which closure is controlled by the presence of one or several fault surfaces.

Field - A reservoir (pool) or group of reservoirs in which either (a) commercial hydrocarbon production has been established from at least one reservoir or (b) a firm decision, usually involving a significant financial commitment, has been taken to develop at least one reservoir for production.

Field Pressure - The pressure of the natural gas as it is found in the underground formations from which it is produced.

Field Price - The amount received by petroleum producers after deducting transportation and distribution costs.

Field Researchers - Field data is entered into the IHS Field Database by field researchers. Each researcher is responsible for entering data for specific countries.

Field SQKM - The overall projected productive area of the field in km².

Final Period Well Class - This refers to the final well class of the final period of a well.

Final Well Class - Each period of operation for a well has an initial and final well class.

Finish Drill Date - The date that final total depth was reached on the well.

First Nations Land - Mineral rights owned by First Nations Bands and administered by the Federal Government.

Fiscal Terms - The contractual terms and tax legislation that an international oil company should follow whilst engaged in exploration and production.

Fish - An object left in the well bore during drilling or workover operations that must be recovered or drilled around before work can proceed.

Fishing - The procedure of recovering lost or stuck equipment in the wellbore.

Fixed Operating Expense (%CAPEX) - Is a percentage of the cumulative development capital expended. This cost is incurred annually and will begin when production starts.

Flaring - The controlled and safe burning of gas which cannot be used for commercial or technical reasons.

Flooding - A secondary recovery method used to increase production in an existing oil field. Water is injected into wells around a field's perimeter so that a pressure front is created that will flush oil to the center of the field.

Flow (Gas/Oil) - Average daily gas/oil flow to surface, based on the actual number of hours fluids are allowed to produce during the drill stem test.

Fluid Injection - Pumping fluid into a producing formation to increase or maintain reservoir pressure, and thus, production.

Fluid Loss - The unwanted migration of the liquid portion of drilling mud or cement slurry into a formation. This is often minimized or prevented by blending additives with the mud or cement.

Fluid System - The phases in which fluid(s) occurs within the reservoir. Example: single-phase oil; single-phase gas; two phases; dew point.

Fold - The number of times each subsurface data point is sampled at the target zone.

Form of Participation - All members of an operating group are described as participants.

Formation - A body of rock or strata identified by lithologic characteristics and stratigraphic position.

Formation Damage - Reduction of the permeability in a reservoir rock due to the infiltration of drilling or treating fluids into the area adjacent to the wellbore.

Formation Pressure - The force exerted by fluids or gas in a formation. This pressure is recorded in the borehole at formation level with the well shut in. Also referred to as reservoir pressure or shut-in bottom-hole pressure.

Formation Testing - Gathering of pressure data and fluid samples from a formation to determine its production potential before choosing a completion method.

Formation Water - Water originally in place in a formation. Usually includes any water that resides in the pore spaces of a formation.

FP (Final/Pre flow) - Flow pressure during the final/preflow period, as measured by the recorder near the interval tested while the shut-in valve is open and the fluids are allowed to produce.

Frac Fluid - A fluid used in the fracturing process of a well such as distillate, diesel fuel, crude oil, dilute hydrochloric acid, water, or kerosene.

Fractionation - The process whereby saturated hydrocarbons from natural gas are separated into distinct parts or "fractions" such as propane, butane, ethane, etc.

Fracture Porosity - A type of secondary porosity that is produced by tectonic stress resulting in fracturing of rock. Fractures join pre-existing pores and enhance permeability significantly.

Fracturing (Fracing) - The pumping of crude oil, diesel, water, or chemicals into a reservoir with such force that the surrounding reservoir rock is broken. This results in greater flow of oil or gas from the reservoir.

Freehold Land - All land contained in a mineral title agreement in Alberta, Saskatchewan, Manitoba, and British Columbia.

G

Gamma Ray Log - A type of well log that records natural radioactivity around the wellbore.

Gas Cap - In a field containing both gas and oil, some gas will often collect at the top of a reservoir in a single deposit known as a gas cap.

Gas Controller - A person or persons who are responsible for monitoring and controlling daily gas system operations and ensuring safety of a gathering, transmission or distribution system.

Gas Cycling - A petroleum recovery process that takes produced gas and condensate and injects it back into the reservoir to increase pressure and increase the production of natural gas liquids.

Gas Density - The measurement of the relative "heaviness" of a gas with a constant volume. For gases, the density may vary with the number of gas molecules in a constant volume. Gas Density is calculated relative to air.

Gas Drive - The energy that arises from the expansion of a compressed gas in a reservoir to move crude oil to the wellbore. Also called depletion drive.

Gas Hydrates - Crystals of water and methane molecules found in vast quantities on ocean floors and in the Arctic.

Gas In Place (GIP) - The volume of gas in a reservoir at any given time calculated at standard temperature and pressure conditions, including both recoverable and nonrecoverable gas.

Gas Injection - A secondary recovery method wherein gas is injected into a reservoir to maintain formation pressure (by gas drive) and to reduce the rate of decline of the original reservoir drive.

Gas Injectors - Wells into which gas is injected to increase reservoir pressure and thus enhance hydrocarbon recovery.

Gas Lift - The process of retrieving fluid from a well by injecting gas down the well through tubing. The injected gas aerates and saturates the fluid to make it exert less pressure than the formation does. As a result higher formation pressure forces the fluid out of the wellbore.

Gas Metre - An instrument that measures the volume of gas that has passed through it.

Gas Oil Ratio (GOR) - The ratio between the quantity of gas and the quantity of oil, expressed in standard cubic feet per barrel.

Gas Pool - The term "pool" is generally synonymous with the term "reservoir".

Gas Processing Plant - A plant which extracts liquefiable hydrocarbons or sulfur from natural gas and/or fractionates a liquid stream.

Gas-Prone - A type of source rock that is more likely to generate gas than oil. Terrestrial source rocks rich in higher plant material are commonly gas-prone.

Gas Reservoir - A rock stratum that forms a trap for the accumulation of crude oil and natural gas.

Gas to Liquids (GTL) - The conversion of natural gas to liquid hydrocarbons using catalytic reactions. This technology is an alternative to gas flaring and injection.

Gas Transmission Systems - Pipelines that carry natural gas at high pressure from producing areas to consuming areas.

Gas Type - In IHS applications this term is occasionally used to record the reserves of non-hydrocarbon gas (e.g. carbon dioxide).

Gasification - The process of turning liquefied natural gas into a vapourous or gaseous state by increasing the temperature and decreasing the pressure.

Gathering Lines - Pipelines that move raw petroleum from wellheads to processing plants and transmission facilities.

Gathering Systems - A system of pipelines, compressor stations, and other related facilities that gather natural gas from the supply region and transport it to the major transmission systems.

Genetic Unit - A genetically-related package of sediment, commonly bounded above and below by surfaces of erosion (or non-deposition) of regional extent.

Geochemistry - The science of chemistry applied to rocks and minerals.

Geological Province - An extensive region characterized by similar tectonic structure, petrography and geological history. Such features differ significantly from those found in adjacent areas. The IHS Geological Province database includes basins, sub-basins and non-prospective provinces.

Geological Trap - Any geological structure that stops the migration of natural gas, crude oil and water through subsurface rocks, causing the hydrocarbons to accumulate into pools in the reservoir rock.

Geologist - A person trained in the study of the earth's crust.

Geophones (jugs) - Sensitive vibration-detecting instruments used in conducting seismic surveys; marine versions are known as hydrophones.

Geophysical Survey - Searching and mapping the subsurface structures of the earth's crust using geophysical methods to locate probable reservoir structures capable of producing commercial quantities of natural gas and/or crude oil.

Geophysics - The science that deals with the relations between the physical features of the earth and forces that produce them; geophysics includes the study of seismology and magnetism.

Geothermal Gradient - The increase in temperature with increasing depth within the earth, in degrees Celsius per kilometre.

GHV - The gross heating value is the quantity of heat produced in the complete combustion of a gas to carbon dioxide and water under constant pressure with the combustion products cooled to standard conditions and the water condensed to the liquid state. The gross heating value is used in the calculation of energy.

Government Wells - Wells within an agreement boundary (includes a delimiter). The delimiter defines the relationship of the well to the agreement. This is government source data.

GR Elevation - Elevation of the ground surface with respect to mean sea level.

Grain Density - The density of the grains in the core sample. Grain refers to all solid rock material. Grain density is calculated from the rock's dry weight/grain volume.

Granite - A coarse-grained, plutonic or intrusive igneous rock of felsic composition having large crystals of quartz, feldspar and mica. Fractured granite can be a reservoir for hydrocarbons.

Gravity Survey - An exploration tool showing the measurement of gravitational acceleration over an area, presented as a map or profile of Bouguer or free-air anomalies.

Greenhouse Effect - The warming of the earth's surface caused by the presence of carbon dioxide and other gases in the atmosphere that trap the heat of the sun.

Gross Interest - A participant may have an interest in a licence, survey, well or field, that may vary between 0% and 100%. The gross interest of a participant indicates company interest shown as a whole. If a company has a 30% interest in a 1,000 km² licence, it has a gross interest of 1,000 km².

Gross Thickness - The thickness of the reservoir measured from the highest point in the unit at which the hydrocarbons occur, to the base of what, lithologically, is a coherent hydraulic unit, expressed in feet.

Ground Elevation - For onshore locations, this is the height of the ground relative to mean sea level (can be negative in areas such as the Caspian Sea).

Ground Level Ozone - see Volatile Organic Compounds

Group Interval - This number indicates the distance between each group of geophones in the spread and can also be referred to as the station interval or the trace spacing.

Gun Perforator - A device that creates small holes through the casing, cement, and into the producing formation of a well.

Gusher - A well that comes in with such great pressure that the oil or gas blows out of the wellhead like a geyser.

H

Hiatus - A time interval which may represent an unconformity or a disconformity in basin deposition. This may be a regional, local or partial unconformity or a total or a partial disconformity.

Horizon - An interface indicative of a particular position in a stratigraphic sequence.

Horizontal Drilling - Drilling a well that deviates from the vertical and travels horizontally through a producing layer.

Hot Water Process - A method for separating bitumen from oil sand using hot water and caustic soda, developed by Karl Clark of the Alberta Research Council.

HP (Final Flow) - DST hydrostatic pressure at the end of the test after the valve was closed following the final flow.

HP (Pre Flow) - DST hydrostatic pressure at the start of the test before the valve was opened for the preflow.

Hydrocarbon - Any compound or mix of compounds, solid, liquid or gas, comprised of carbon and hydrogen (e.g., coal, crude oil, and natural gas).

Hydrocarbon Generation Time - The chronostratigraphic age of a period over which all hydrocarbons (oil and/or gas) currently discovered within a petroleum system are considered to have been generated, expressed in millions of years.

Hydrocarbon Type - Volumes of oil, gas, and condensate are recorded within the "Hydrocarbons In-Place" and "Recoverable Reserves" data categories.

Hydrocarbons In-Place - Describes the total hydrocarbon content of a reservoir versus 'reserves' which can be 'recovered' or produced. Oil or gas in place (OIP, GIP) before the start of production is known as Oil or Gas Originally in Place or Initially in Place.

Hydrocracking - A refining process which adds hydrogen to the carbon-rich molecules of heavier oil in the presence of a catalyst to produce a higher proportion of gasoline and diesel fuel.

Hydrodynamic Play - A play type in which the trap results from a difference in fluid pressure, which causes a downdip flow of water to oppose and bar the updip migration of hydrocarbon.

Hydrogen Index (HI) - A parameter of Rock Eval pyrolysis that is used to identify the origin and maturity of organic matter in sediments. This parameter is defined as $(S2/TOC) \times 100$ and measured in units mg hydrocarbon/g TOC, where S2 is the amount of hydrocarbons generated through thermal cracking of nonvolatile organic matter and TOC is Total Organic Carbon. The HI is used in modified van Krevelen diagram of HI vs OI to determine organic matter type.

Hydrogen Sulphide - A naturally occurring, highly toxic gas with the odor of rotten eggs.

Hydrotransport - A process that uses hot water to transport oil sand through a pipeline to a processing plant.

Hydrotreating - The process of adding hydrogen to heavy oil or bitumen molecules during the upgrading process.

I

Igneous Rock - Rock formed when molten rock (magma) has cooled and solidified (crystallized).

Indirect Interests - A parent company operates through a joint venture company formed with other companies.

Infill Drilling - Drilling more wells into the same pool to maintain or increase production.

Injection Well - A well used for injecting air, steam, or fluids into an underground formation.

Inorganic Theory - A theory that maintains petroleum originated from hydrocarbons that were trapped inside the earth during the planet's formation and are slowly moving upwards.

In-situ - In its original place; in position; in-situ recovery refers to various methods used to recover deeply buried bitumen deposits including steam injection, solvent injection, and firefloods.

Interval Types - Wherever possible or practical, we attempt to provide a separate description for each reservoir present in a field. These descriptions are assigned an interval type or "Reservoir Interval".

Intervenor - A person, business entity, or other organization that is granted the right to participate in a regulatory hearing.

Interwell Distance - The minimal distance between the wells within the spacing.

Intrusive Rock - Igneous rock that cools and solidifies beneath the earth's surface (plutonic rock).

ISBN - Is the International Standard Book Number. A unique ISBN is issued to all published books (not for articles or papers). Although ISBN is copy-dependent, it also appears here for ease of retrieval and compatibility with some library systems. It may be a partial ISBN, and if entered, provides a default for the ISBN of the copies.

Isopach - A contour that connects points of equal thickness. Commonly, isopachs, or contours that make up an isopach map display the stratigraphic thickness of a rock unit as opposed to the true vertical thickness. Isopachs are true stratigraphic thicknesses; i.e., perpendicular to bedding surfaces.

Isopach Calculated - Thickness of several formations, calculated as the difference between the true vertical top (subsea) of one formation and the true vertical top (subsea) of the formation below it.

Isopach Summed - The combined thickness of several formations that may not occur in stratigraphic sequence. Each of the summed formations is calculated as the difference between the true vertical top (subsea) of one formation and the true vertical top (subsea) of the formation below it.

J

Jackknife (folding mast) - They type of mast that can be folded for moving, as opposed to the standard derrick, which has to be completely dismantled and re-erected.

Joint Implementation - A means of reducing global greenhouse gas emissions whereby a country receives credit for supporting emissions reductions elsewhere - for example, planting trees or replacing inefficient power generation facilities in developing countries.

Joint Venture Agreement (Joint Interest Holder) - Two parties hold an ""undisclosed"" percent interest in the Mineral Agreement. Alberta Crown will no longer issue joint interest for Mineral Agreements as of January 1, 1998.

Jurassic - A geological time period that occurred from 208.00 to 145.60 million years ago.

K

K90 - The horizontal 90 degree permeability, this measurement is taken 90 degrees from Kmax.

KB Elevation - Elevation above sea level of the kelly bushing on the rig platform.

Kelly - The first and sturdiest joint of the drill string in conventional rotary drilling rigs; a thick-walled, hollow steel forging with four flat sides that fits into a square hole in the rotary table.

Kelly Bushing - A device fitted to the rotary table through which the kelly passes and the means by which the torque of the rotary table is transmitted to the kelly and to the drill stem. Also called the drive bushing.

Kerogen - Insoluble in organic solvents particulate organic matter comprised of various macerals. Kerogen originates from components of plants, animals, and bacteria that are preserved in sedimentary rocks.

Kerosene - A mixture of hydrocarbons produced by distilling petroleum, which is used as a lamp oil or jet fuel.

Key Wells - A UWI used by the ERCB to describe the stratigraphy of the referenced zone. For the referenced zone, a log type and zone interval depths are identified. Key wells are tract specific.

Kick - When fluids with a higher pressure than that exerted by the drilling mud enter the wellbore, this creates the potential for a well to blow out of control.

Kickoff Point (KOP) - The point in a vertical borehole at which a deviated or slant hole is started. In the case of a sidetrack, this is the depth from which the sidetracked section of the well starts.

Kmax - The maximum horizontal permeability measurement generally made parallel to the direction of principle fracture.

Kvert - The vertical permeability with respect to the vertical orientation of the core.

L

Land - In the petroleum industry, "land" often refers to the oil and gas rights on a particular area of land. For example, in a "land sale" the oil and/or gas rights are "sold" (although in reality the rights are leased).

Landman - A male or female member of the exploration team whose primary duties are formulating and carrying out exploration strategies and managing an oil company's relations with its landowners and partners including securing and administering oil and gas leases and other agreements. Also known as a land agent or land person.

Latitude - A surface location expressed in Greenwich degrees, minutes, and seconds. Latitude is measured from the equator, with positive values going north and negative values going south.

Latitude Decimal Degree - Is the surface location expressed in Greenwich decimal degrees.

Lease - An agreement between two or more parties where the owner of the surface and/or mineral rights grants another party the right to drill and produce petroleum substances in exchange for payment.

Legislation - The laws in force within a specific country or region at a defined date.

Legislation Type - A set of laws that address specific exploration/production rights. Legislation types are unique to individual countries. Examples: Retention Lease, Seismic Option Contract, Petroleum Prospecting Licence.

Lens - A lens-shaped body of rock whose lithology differs from the unit that encloses it.

Licence Date - Date the well was licenced to drill (i.e., on or before the Spud Date). Note that the site may lie fallow for some time before drilling takes place, or the licence may even be cancelled.

Licencee - The code of the company licensed to operate the pipeline.

Licensing Authorities - The local authority (Ministry or National Oil Company or both) that grants petroleum rights and administers licencing arrangements.

Limestone - A carbonate sedimentary rock that is composed predominantly of calcite with an organic, chemical or detrital origin. Minor amounts of dolomite, chert and clay are also common in limestone. Chalk is a form of fine-grained limestone.

Linepack - The volume of gas which is needed to be kept in the pipe of a gathering, transmission, or distribution system in order to ensure the functioning of the system. Linepack can sometimes be used for short-term temporary storage of additional gas supplies.

Lithology - The type of rock(s) of the lithostratigraphic unit. Examples: sandstone; limestone.

Lithostratigraphic Age - The numeric age of the lithostratigraphic unit expressed in millions of years.

Log - A systematic recording of data, such as a driller's log, mud log, electrical well log, or radioactivity log. Many different types of logs are run in wells to discern various characteristics of downhole information.

Log Digital - Well logs digitized by IHS.

Log Raster - Paper well logs scanned by IHS.

Logging Devices - Any of several electrical, acoustical, mechanical, or radioactive tools that can be used to measure and record certain characteristics or events that occur in a well that has been or is being drilled.

Longitude - A surface location expressed in Greenwich degrees, minutes, and seconds. Longitude is measured from the Prime Meridian (which runs through Greenwich, England). Positive values are measured east of the Prime Meridian whilst negative values are measured west.

Longitude Decimal Degree - Is the surface location expressed in Greenwich decimal degrees.

Looping - A method of increasing capacity on a pipeline: an existing pipeline by another line over any part of the whole length of the original pipeline.

Lost Circulation - Quantities of drilling mud that are lost into a formation whilst drilling a well. This can be caused by a cavernous condition, pressure difference or coarsely permeable beds. Generally, this is evidenced by the complete or partial failure of drilling mud returning to the surface as it is being circulated through the borehole.

M

Magnetostratigraphic Unit - A body of rock unified by specific magnetic properties and distinct from underlying and overlying magnetostratigraphic units having different magnetic properties.

Magnitude - Defines the order of magnitude of proven+probable recoverable reserves of a field / discovery. Also used to define whether a field is dominantly an oil field or a gas field.

Main - A distribution line that serves as a common source of supply for more than one service line.

Maintenance - Routine repairs that must be performed throughout the life of a well. This is generally required more for oil wells than for gas wells.

Manifold - A system that connects a series of piping systems that will either divide a flow into several parts, combines several flows into one, or re-routes a flow to any one of several possible destinations.

Marker Crude - A specific crude oil usually a blended crude of defined properties used as a reference for pricing other crude oils. Typical marker crudes are West Texas Intermediate (WTI), Brent (North Sea), Arab Light and Edmonton Par Crude.

Maximum Efficient Rate (MER) - The maximum rate at which natural gas and crude oil can be produced without excessive decline of reservoir energy or a loss in ultimate production.

Mean Depth - The average depth from the KB elevation of the midpoint of the productive zone for that pool.

Measurement-While-Drilling (MWD) Tool - Technology that transmits information from downhole measuring devices to the surface while drilling is ongoing.

Member - A formal lithostratigraphic unit ranking below a formation. A member possesses lithologic properties that distinguish it from adjacent parts of a formation. Formations are not always sub-divided into members. Some formations can be divided into members whilst others may have only certain parts designated as members. A member can also extend from one formation to another.

Mercaptans - Strong smelling compounds of carbon, hydrogen, and sulphur found in gas and oil. Added to natural gas for safety reasons.

Meridian (W) - A meridian in the DLSS grid system. Referred to as West of the nth Meridian.

Mesozoic - A geologic era that includes the time span between 245.00 to 65.00 million years ago.

Metamorphic Rock - A rock that has undergone chemical or structural changes as a result of heat or pressure or by replacement of elements by hot, chemically active fluids.

Methane (CH₄) - The principal constituent of natural gas.

Middle Distillate - Hydrocarbons that are in the so-called "middle boiling range" of refinery distillation. Examples are heating oil, diesel fuels, and kerosene.

Midstream - The processing, storage, and transportation sector of the petroleum industry.

Migration - The movement of natural gas, crude oil, and/or water through porous and permeable rock.

Millidarcy - A measurement of reservoir rock permeability. One darcy characterizes the permeability of a porous rock through which the passage of one cubic centimetre of fluid having one centipoise of viscosity flowing in one second under a pressure differential of one atmosphere where the porous medium has a cross-sectional area of one square centimetre and a length of one centimetre. One millidarcy is one thousandth of a darcy.

Mineral Rights - The rights to explore for and produce the resources below the surface. In the petroleum industry, mineral rights can also be referred to as "land".

Miocene - A geologic epoch occurring about 23.30 to 5.20 million years ago.

Miscible Flooding - An oil-recovery process in which a fluid, capable of mixing completely with the oil it contacts, is injected into an oil reservoir to increase recovery.

Mode - Operating mode of the well.

MOP - The maximum operating pressure of the pipeline.

Mousehole - A hole drilled to the side of the wellbore to hold the next joint of drill pipe to be used. When this joint is pulled out and screwed on the drillstring, another joint of pipe is readied and slipped into the mousehole to await its turn.

MPP - The reservoir pressure obtained by shut-in of the well to complete stabilization at the mid-point of perms.

Mud - The liquid circulated through the wellbore during rotary drilling and workover operations.

Mud Logging - The recording of information derived from the examination and analysis of formation cuttings made by the drill bit and circulated out of the hole in the drilling mud. A portion of the mud is diverted through a gas-detecting device. Cuttings are examined under ultraviolet light to detect the presence of oil or gas. Mud logging is often carried out in a portable laboratory set up at the well site.

Mud Motor - A downhole drilling motor that is powered by the force of the drilling mud pushed through the motor by the mud pumps at the surface.

Mud Weight - The measurement of the density of drilling fluid expressed as pounds per gallon, pounds per cubic foot, or kilograms per cubic metre. Mud weight is directly related to the amount of pressure the column of drilling mud exerts at the bottom of the borehole.

Multiple Entry - A technique for drilling several horizontal wells from a single vertical, directional, or horizontal wellbore.

Multiple Zone Well Completion - Completion of a well in such a way that production is obtained from several different formations.

N

Naphtha - A volatile, colorless product of petroleum distillation. Used primarily as a paint solvent, cleaning fluid, and blendstock in gasoline production.

Naphthenes - One of the three basic hydrocarbon classifications found naturally in crude oil. Naphthenes are widely used as petrochemical feedstocks.

Neogene - A geological time period that occurred from 23.30 to 1.64 million years ago.

Net Interest - A participant may have an interest in a licence, a survey, a well or a field, that can be between 0% and 100%. The net interest of a participant reflects the degree of participation. For example, if a company has a 30% interest in a 1,000 km² licence, it has a net interest of 300 km².

Net Pay - The thickness of the portion of the producing zone that is capable of production.

Net Thickness - That portion of a formation (expressed in feet) that is porous and permeable and considered capable of sustaining hydrocarbon production and/or aquifer movement. This normally excludes interbedded shale, cemented zones and other low-permeability intervals.

Netback - The amount of money received per barrel of oil equivalent produced after subtracting transportation costs.

Neutron Log - A radioactive well log used to determine formation porosity. The logging tool bombards the formation with neutrons. When the neutrons strike hydrogen atoms in water or oil, gamma rays are released.

Nitrous Oxide (N₂O) - A very potent greenhouse gas which has a large number of natural sources and is a secondary product of the burning of organic material and fossil fuels.

No Data Field Category - Exists for fields and/or discoveries for which a production operation status data is not available. The field could be undeveloped, producing or may already have been depleted but none of this is known.

Normal Fault - A fault in which the hanging wall (fault block above the fault surface) has moved downward relative to the footwall (fault block below the fault).

O

Octane - A performance rating of gasoline; the higher the octane number, the greater the anti-knock quality of the gasoline.

Offset Metre - The horizontal distance between an energy source and a receiver expressed in metres.

Oil or Gas Shows - The appearance of a small amount of oil and/or gas in drilling mud, cuttings or cores. Generally a show is not considered commercial.

Oil Originally in Place - The total amount of proven + probable oil that is present prior to production. Expressed in millions of barrels.

Oil Sands - A complex mixture of sand, water and clay, trapping very heavy oil known as bitumen.

Oil Window - The maturity range in which oil is generated from oil-prone organic matter. Corresponding maturity measured by Vitrinite reflectance is in the range of 0.6-1.4%.

Oil-Prone - A source rock that will more likely generate oil than gas. Marine organic-rich source rocks are commonly oil-prone. Algae and microorganisms are precursors of organic matter in oil-prone source rocks.

Oligocene - A geologic epoch from about 35.40 to 23.30 million years ago.

On Stream - When production is flowing or a plant is in operation.

Onshore/Offshore - Identifies whether the surface projection of an exploration /production contract lies onshore, offshore or straddles the coastline.

Open Area - A non-limited in-time geographical area in which a company or a group of companies can make an application to obtain the rights to explore for and/or exploit hydrocarbons.

Open Crown Land - Land owned by the crown (Provincial) but not leased to a PNG company. Termed "open" because the PNG mineral rights are open, unleased, or available.

Openhole Test - A drillstem test that is performed in the openhole portion of a wellbore.

Operating Group - Licences, surveys, wells and fields are typically owned or operated by a group of companies or institutions.

Operator - The Company that has been designated the manager of an E/P contract or application.

Ordovician - A geologic time period from about 510.00 to 439.00 million years ago.

Organic Theory - The most widely accepted theory explaining the origins of petroleum: as organic materials become deeply buried over time, heat and pressure transform them into hydrocarbons.

Organization of Petroleum Exporting Countries (OPEC) - An organization comprised of countries from the Middle East, Southeast Asia, Africa, and South America who produce and export oil and negotiate and regulate production and prices. Members as of 1997 include Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

Orientation Axis - The orientation of a basins longest axis (0 - 179 degrees).

Orogenic - A major episode of plate tectonic activity in which lithospheric plates collide with each other and produce mountain belts, faults and folds. In some cases, this can include the formation of subduction zones and igneous activity accompanied by earthquakes.

Overthrust Fault - Is a low-dip angle (nearly horizontal) reverse fault along which a large displacement of sedimentary rocks has occurred. Some overthrusts lead to sedimentary rock slippages of many miles.

Oxygen Index (OI) - A parameter of Rock Eval pyrolysis used to identify the origin of organic matter in sediments. Defined as $(S3/TOC) \times 100$ and measured in mg carbon dioxide/g TOC, where S3 is an indication of the amount of oxygen in the kerogen and TOC is Total Organic Carbon. OI is used in modified van Krevelen diagram of HI vs OI to describe organic matter type.

P

P/Z - Calculated run depth pressure/Super compressibility factor determined from the Standing-Katz Z Factor correlation graph.

Packer - An expanding plug used in a well to seal off certain sections of tubing or casing when cementing and acidizing or when a producing formation is to be isolated.

Paleogene - A geologic time period that occurred about 65.00 to 23.3 million years ago.

Paleontologist - A person trained in paleontology; the study of plant and animal life in past geological time through the study of fossil plants and animals, their relationship to present-day plants and animals and their environment.

Paleozoic - A geologic era that occurred between 570.00 to 245.00 million years ago.

Palynologist - A paleontologist who specializes in fossil pollens and spores.

Paraffin - A class of saturated aliphatic hydrocarbons having the formula C_nH_{2n+2} . Heavier paraffin hydrocarbons (for example, $C_{18}H_{38}$) form a wax like substance that often accumulate on the walls of tubing and other production equipment, restricting or stopping the flow of the desirable lighter paraffins.

Participant - A company or a group of companies that holds an E/P contract.

Pay Zone - The producing part of a formation.

Payout - The length of time that it takes for cumulative net cash flow to equal zero.

Peak of Hydrocarbon Generation - Main Phase of Oil/gas generation - Oil Window - The chronostratigraphic age of the time period in which the most prolific hydrocarbon generation occurs within a petroleum system.

Peak Productivity - Represents the portion of recoverable reserves that are produced annually at the maximum level of production and is expressed as a percentage of the total recoverable reserves.

Perforate - To pierce the casing wall and cement in a wellbore to provide holes through which formation fluids may enter or to provide holes in the casing so that materials may be introduced into the annulus between the casing and the wall of the borehole.

Perforating Gun - A special tool used downhole for shooting holes in the well's casing into the producing formation.

Period Schedule - Indicates the number of exploration and/or production periods allowable by a contract. Example: 3 exploration periods of 2 years and then 1 production period of 30 years.

Permeability - The ease in which a fluid flows through a selected lithostratigraphic unit, expressed in Millidarcies.

Permian - A geological time occurring approximately 290.00 to 245.00 million years ago.

Petrochemicals - An intermediate chemical such as ethylene, propylene, benzene, toluene, and xylene that is derived from petroleum, hydrocarbon liquids, or natural gas.

Petroleum - A general term for all the naturally occurring hydrocarbons.

Pig - A cylindrical device inserted into a pipeline to inspect the pipe or to sweep the line clean of water, rust, or other foreign matter; pipeline inspection and cleaning devices are called pigs because early models squealed as they moved through the pipe.

Pinch-Out - The disappearance or "wedging out" of a porous, permeable formation between two layers of impervious rock.

Pinnacle Reef - A conical formation, higher than it is wide, usually composed of limestone in which hydrocarbons might be trapped.

Pipeline - All parts of the physical facility through which gas is moved in transportation, including pipe, valves, and other equipment attached to the pipe.

Plate Location Type - The environment of the associated geological feature within the lithospheric plate upon which it occurs. Examples: back-arc; active divergent continental margin.

Platform - An offshore structure that is permanently fixed to the seabed.

Play - A play is an association of proven and prospective hydrocarbon accumulations at a specific stratigraphic interval, which share similar geologic conditions of entrapment of hydrocarbons such as reservoir, seal and trap type.

Pliocene - A geologic epoch that occurred approximately 5.20 to 1.64 million years ago.

Plug - A permanent plug, usually cast iron or cement that is set in a borehole to block the flow of fluids in order to isolate sections of a well or to permanently plug a dry hole or depleted well.

Pool - A natural underground reservoir containing an accumulation of petroleum.

Pooling Agreement - When the boundaries of two or more oil or gas leases do not coincide with the drill spacing unit, than a pooling agreement is needed among the lease holders before the regulatory authority will grant a drill permit.

Porosity - The volume percentage of pore space in a selected lithostratigraphic unit, expressed in percent.

Porosity Type - There are two main porosity types: Primary porosity is original or a relic of deposition porosity system in a rock. (Example of primary porosity: space between grains that were not compacted together completely). Secondary porosity is a subsequent or separate porosity system in a rock, often enhancing the overall porosity of a rock. This can be a result of the leaching of minerals or the generation of a fracture system. This can replace the primary porosity or coexist with it. Fracture porosity is porosity associated with a fracture system or faulting. This can create secondary porosity in rocks that otherwise would not be reservoirs for hydrocarbons due to their primary porosity being destroyed (for example due to depth of burial) or of a rock type not normally considered a reservoir (for example igneous intrusions). Vuggy porosity is secondary porosity generated by dissolution of large features (such as macrofossils) in carbonate rocks leaving large holes, vugs, or even caves.

Potential Resources - The volume of natural gas or crude oil that is thought to exist based on geological knowledge but has not been proven to exist through geophysical techniques or drilling.

Precambrian - Formed prior to the Cambrian era approximately 600 million years ago.

Primary Migration (Expulsion) - The process in which oil or gas exits a source rock. This generally involves short distances (metres to tens of metres).

Primary Migration Age - The chronostratigraphic age of the period from the time primary migration started to the time at which secondary migration ceased, expressed in millions of years.

Primary Recovery - The period of production in which oil moves from its reservoir through the wellbore under naturally occurring reservoir pressure.

Prime Meridian - Is the meridian (line of longitude) passing through Royal Greenwich Observatory, Greenwich, England. The longitudinal coordinate at this meridian is 0 degrees. It is sometimes referred to as the Greenwich Meridian. Whilst Greenwich is the most common prime meridian, there are others such as Paris and Peking/Beijing.

Probable Reserves - Hydrocarbon deposits believed to exist with reasonable certainty on the basis of geological information.

Production - Oil and gas yielded from drilling and pumping activities.

Production Casing - The last string of casing set in a well.

Production Enhanced - "Non-conventional" techniques to improve recovery, other than described under Production Improved, generally but not exclusively based on the intermittent or ongoing injection of gases/liquids/chemicals/ bacteria.

Production Improved - Is an ongoing injection of water and/or dry hydrocarbon gas to maintain pressure/manage the movement of hydrocarbon contacts /improve liquids recovery from retrograde gas-condensate ("dew-point") reservoirs.

Production Level - Is the minimum volume of hydrocarbons which must be produced over a defined period of time before the participant must make payment to the appropriate licensing authority.

Production Maintenance - The efforts made to minimize the decline in a well's production.

Production Payments - Is an amount of money to be paid by the participant to the appropriate licensing authority when commercial production reaches a specified level (over a defined period of time or not).

Production Split - This term applies to Production Sharing Contracts and refers to the percentage share of hydrocarbon production assigned to the Participant within certain fixed hydrocarbons production limits; also referred as Profit Oil.

Production Tubing - Steel pipe inside the casing used to flow the petroleum from the producing zone to the surface.

Productive Capacity - The estimated maximum volume which can be produced from known reserves based on reservoir characteristics, economic considerations, regulatory limitations and the feasibility of infill drilling or additional production facilities; also known as available supply.

Profitability Index - Defined as revenue less operating expenses and all fiscal regime variables divided by the capital expenditures.

Prospect - A geographical area that exploration has shown contains sedimentary rocks and structures favorable for the presence of crude oil or natural gas.

Proved Reserves - Hydrocarbons in known reservoirs that can be recovered with a great degree of certainty under existing technological and economic conditions.

Province - Province or state lookup code.

PSI - The abbreviation for pounds per square inch. The force in pounds divided by the area in square inches over which the force acts.

Public Consultation - The process of involving all affected parties in the design, planning and operation of a seismic program and oil, or gas well, pipeline, processing plant, or other facility.

Public Interest - Usually intended to mean the interest of the public generally as opposed to the interest of an individual or company.

Q

Quad - An energy quantity of one quadrillion BTUs which is approximately the energy equivalent contained in one trillion cubic feet of natural gas.

R

Radioactivity Well Logging - Recording of the natural or induced radioactive characteristics of subsurface formations. A radioactivity log, also known as a radiation log or a nuclear log, normally consists of two recorded curves: a gamma ray curve and a neutron curve.

Range - A Range in the DLSS grid system.

Rate of Return - A figure that represents the annual after tax return on total investment for a company.

Rathole - A slanted hole drilled near the wellbore to hold the kelly joint when not in use; the kelly is unscrewed from the drill string and lowered into the rathole.

Receipt Point - The location where gas enters a transporter's system from a well, plant or pipeline interconnect.

Recoverable Resources - Hydrocarbon reserves that can be produced with current technology including those not economical to produce at present.

Recovery Factor - The ratio of estimated ultimate recoverable hydrocarbons to the volume of the same type of hydrocarbon initially in-place.

Reef - A build-up (sometime a ridge) of sedimentary rock, produced by organisms that form carbonate shells such as corals. Carbonate reefs occur in a narrow range of temperatures, water depths, salinities and wave activities.

Reef Reservoir - A type of reservoir trap composed of rocks which are made up of the skeletal remains of marine animals. Reef reservoirs are often characterized by excellent reservoir characteristics (porosity and permeability) and very high initial production rates that may fall off rapidly.

Re-Entry - Testing a potential zone by using the borehole of a plugged and abandoned well, usually after new drilling and production has occurred in the area, also applied for deepening and workover purposes.

Refinery - A complex of facilities where crude oil is separated into light or heavy fractions which are then converted into useable products.

Remaining Recoverable Reserves - Derived by subtracting the cumulative production at a point in time from the ultimate recoverable resource.

Renewal Schedule - Specifies the dates in which an E/P contract is due for renewal, area reduction and expiry.

Repressuring - Forcing gas under pressure into a crude oil reservoir in an attempt to increase the recovery of crude oil.

Reserve Life Index (RLI) - The reserve life index measures the length of time current, proved, or established reserves would last if current production rates were maintained and no new reserves were added.

Reserves - The volume of petroleum which is expected to be recovered from the deposit over its entire productive lifetime.

Reserves By Reservoir - Of all fields and discoveries in the database 66% consisted of only one reservoir. For single-reservoir fields, IHS enters the reserves only at the field level, to avoid double entry of the reserves at the field and reservoir levels. For multi-reservoir fields, IHS makes an effort to estimate reserves by reservoir so that a play analyses can be made.

Reservoir (pool) - A subsurface, porous, permeable or naturally fractured rock body in which oil or gas are stored.

Reservoir Deposition Age - The chronostratigraphic age in millions of years of the period over which all reservoir rocks currently recognized within a petroleum system were deposited.

Residuum - A heavy, black, tar-like substance that remains after crude oil has been fully refined to distil all usable fractions or components.

Resistivity Well Logging - The recording of the resistance of formation water to natural or induced electrical current.

Reverse Fault - Fault in which the dip of the fault is greater than 45 degrees over much if not all of its length and is characterized by horizontal compression.

RF (Recovery Factor) - The percentage of the gas in place that can actually be recovered. The recovery factor is dependent on porosity, permeability, etc.

Rig - The derrick, draw works, and attendant surface equipment of a drilling or workover unit. There are several types of rigs such as deep, shallow, mobile, etc.

Rig Release - Date the drilling rig was removed from the well site.

Right-of-way - A strip of land, the use of which is acquired for the construction and operation of pipeline or some other facility, may be owned outright or an easement taken for a specific purpose.

Rod String - A string of steel rods used to provide up and down motion for a bottom-hole pump to lift oil to the surface.

Rotary Bit - The cutting tool attached to the lower end of the drill pipe of a rotary drilling rig. The bit does the actual drilling of the hole through the formation.

Rotary Drilling - A drilling method in which a hole is drilled by a rotating bit to which a downward force is applied.

Rotary Rig - A modern drilling unit capable of drilling a well with a bit attached to rotating column of steel pipe.

Rotary Table - A heavy, circular casting mounted on a steel platform just above the rig floor which rotates the drill string and thus turns the bit.

Royalty - The owner's share of production or revenues retained by government or freehold mineral rights holders.

S

Sales Date - Date the lease or licence was purchased.

Salt Cavern - An underground natural gas storage cavern which has been developed in a salt dome by the solution mining process.

Sandstone - A sedimentary rock represented by loose particles of rock or mineral that range in size from 0.0625 - 2.0 millimetres in diameter.

Saturation Pressure - Expressed in pounds per square inch (bubble point pressure), this is the maximum pressure value in which solution gas bubbles from oil.

Scout Well - A scouted well flagged as a location.

Seal - An impermeable rock layer overlying an oil or gas reservoir that tends to prevent the migration of reservoir fluids from the reservoir (same as Cap Rock).

Seal Deposition Age - Expressed in millions of years, this is the chronostratigraphic age in which all reservoir seals recognized within a petroleum system were deposited.

Secondary Migration - The migration of oil and gas through faults, unconformities, or through carrier beds (permeable rocks) from an active source rock.

Secondary Recovery - Recovering additional oil and gas from a well by injecting liquids or gases into the producing reservoir.

Sedimentary Rocks - Formed from pre-existing rocks or pieces of once-living organisms that have been deposited and accumulated on the earth's surface.

Seismic Energy Source - This description is the energy source used in the field to record the data. Since seismic data acquisition uses an acoustic source, there must be a source of initial energy penetration to produce the resulting reflection data. The two most common energy sources are dynamite and vibroseis. Other sources include air gun, vacuum gun, betsy, and p-shooter.

Seismic Surveys - An exploration tool that helps identify underground accumulations of oil or gas. Seismic waves are sent into the earth and the wave reflections are recorded. By measuring the time interval between the source of the shock wave and the reflected or refracted shock waves from various formations, geophysicists are able to define underground configurations.

Selected Area - When a selected area exists, it is the actual present day size of the lease. Area, when there is a selected area, is the original size of the lease. When a licence expires, a company can select leases out of it. This new area shows up as selected area. The same thing occurs when a lease is partially continued. It is important that we display the original size of the land parcel, as this is what the bonus price per hectare is based on.

Service Contract - A simple arrangement whereby a host country contracts services from a multinational oil company. The oil company acts as a contractor. There are two main types of service contracts: The service contract with crude purchase and the service contract without crude purchase.

Service Rig - A truck mounted rig, usually smaller than a drilling rig, that is brought in to complete a well or to perform maintenance, replace equipment, or improve production.

Set Casing - To install steel pipe or casing in a well bore.

Shale - Rock formed from clay.

Shale Shaker - A vibrating screen for sifting out rock cuttings from drilling mud.

Shallower-Pool Wildcat Well - A shallower-pool wildcat (SPW) is a well drilled within the known limits of a field, but that aims to discover a reservoir lying at a shallower depth than the one that was originally found. If successful, both shallower-pool wildcats and deeper-pool wildcats are considered discoveries.

Shotpoint Interval - This number refers to the distance between actual live shots in the field. Using a dynamite source at 100m shotpoint intervals, a hole would be drilled and a charge would be detonated every 100 m along the distance of the line. The reflection data resulting from each detonation is recorded.

Shrinkage - The reduction in volume of wet natural gas due to the extraction of some of its constituents, such as hydrocarbon products, hydrogen sulphide, carbon dioxide, nitrogen, helium, and water vapour.

SI (Final/Pre flow) - Length of time in minutes the shut-in valve was closed while the main tester valve was open on the final/pre flow.

Sidetracking - A secondary borehole that is drilled away from an original one.

Silt/Siltstone - A sedimentary rock represented by loose particles of rock or mineral that range in size from 0.004 - 0.0625 millimetres in diameter.

Silurian - A geological time period from about 439.00 to 408.50 million years ago.

SIP (Final/Pre flow) - DST shut-in pressure after the final/preflow, as measured by the recorder near the interval tested while the shut-in valve is closed and the fluids are prohibited from producing.

Smart Pig - Sophisticated instrument packages sent through pipelines to test for corrosion and buckling.

Source Rock - Fine-grained, organic rich rock that could (potential source rock) or has already generated (effective or active source rock) trapped accumulations of petroleum. Source rock lithology varies (argillites, carbonates, siliceous).

Spacing - The distance between wells that is allowed by a regulatory body. Spacing is based on what is deemed to be the amount of acreage that can be efficiently and economically be drained by a well.

Specific Gravity - The specific gravity of gases is defined as the ratio of the density of the gas to the density of dry air. The specific gravity of liquids is defined as the ratio of the density of the liquid to the density of water.

Spread Geometry - This number refers to the overlength of the shotpoint-group interval string and explains the relationship between the various acquisition distances.

Spud Date - Date the drilling of a well began.

Spudding In - Beginning to drill a well.

Status - Identifies the legal standing of a contract or application at a certain point in time. Examples: Application Accepted, Surface Exploration, Production.

Steam Injection - A technique in which steam is injected into a reservoir to reduce the viscosity of the crude oil.

Steam-Assisted Gravity Drainage (SAGD) - A recovery technique for extraction of heavy oil or bitumen that involves drilling a pair of horizontal wells one above the other; one well is used for steam injection and the other for production.

Steamflood - A method of thermal recovery in which steam is injected into a reservoir through injection wells.

Stimulating The Formation - A technique for improving production from a reservoir; stimulation may involve acidizing, fracturing or simply cleaning out sand.

Straddle Extraction Plant - A gas processing plant located on or near a gas transmission line that removes natural gas liquids from the gas and returns it to the line.

Stratigraphic Play - A play type in which a trap results from the lateral reduction in porosity and permeability within the reservoir facies or attenuation of the reservoir facies, and therefore, results from changes in the lateral continuity of the reservoir rock.

Strike - Indicates the spatial entity is currently a strike area and not a field.

Structural Play - A play in which the trap is the result of differential movement and a change in the form of the reservoir rock.

Structural Trap - A fold or break (or both) in the earth's crust that creates an impervious trap for oil and gas.

Structure Closure Height - The maximum distance between the top of a closed structure and the spill point, expressed in feet.

Structure Name - Is used to distinguish between different reservoirs that lie within the same stratigraphic unit but have different hydrocarbon contacts and are hydraulically distinct because they are separated by faults or saddles.

Sub-basin - A subdivision of a basin with a particular tectonic structure.

Subsea - True vertical depth at which the top of the formation is believed to occur, measured from sea level straight down to the bottom of the wellbore.

Sulphur - A yellow mineral extracted from petroleum and used for making fertilizers, pharmaceuticals and other products.

Sulphur Dioxide - A poisonous gas formed by burning hydrogen sulphide (or other sulphur compounds).

Surface Casing - The first string of casing put into a well; it is cemented into place and serves to shut out shallow water formations and as foundation for well control.

Surface Loss - The percentage of shrinkage due to processing, such as oil removed at the gathering system, flaring vapours, or flaring of acid gas.

Surface Pressure - The reservoir pressure minus the weight of the fluid column in a well, expressed in pounds per square inch (casing pressure).

Surface Rights - The rights to work on the surface of the land.

Surface UWI - The UWI for the surface location of the well derived from survey information when the well is licenced.

Survey Designation Number - A unique country reference number that identifies a survey on a map. This number is comprised of the start year of the survey (first four digits) and the number of the survey (last three digits).

Sustainable Development - Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (as defined by United Nations World Commission on Environment and Development).

Sweeten - Remove hydrogen sulphide and carbon dioxide from sour gas to make it marketable.

Syncline - A fold inclining upward on both sides from a median line or axis where the core contains the geologically younger rocks.

T

Target Area - A designated area within a spacing where a well may be completed without restriction of production rates.

Tectonic Event - Represents the principal tectonic regime in a basin over a period of time. Tectonic event sub-Items include: Compressional, Contraction, Expansion, Extensional, Parallel Shear, Subsidence – Sedimentary Load, Subsidence – Tectonic Load, Transpressional, Transtensional.

Term - Length of the primary duration of the lease or license in years and months. The primary term of a lease is the initial term. At the end of the term, the lease will lapse, and the mineral rights will revert to the Crown, unless certain specified circumstances occur.

Terminal - An onshore transit facility that receives and stores crude oil and products from offshore production facilities via pipeline and/or tankers.

Terrain - The physiographic province in which an E/P contract, application or block is located. Examples: land, lake, shelf, deep water.

Tertiary Migration - The migration of petroleum from an initial accumulation to subsequent accumulation or dispersal. Tertiary migration generally involves long distances.

Tertiary Recovery - The use of improved recovery methods that not only restores formation pressure but improves oil displacement or fluid flow in the reservoir.

Tests - When a 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.

Thermal Maturity - Describes the extent of a temperature driven reaction that converts organic matter into sedimentary rocks, then to petroleum and finally at elevated levels, to gas and graphite.

Thermal Recovery - Is a type of improved recovery in which heat is introduced into a reservoir to lower the viscosity of heavy oils and to facilitate their flow into producing wells.

TOC - The total organic carbon content expressed in weight percent of the rock.

Top Drives - Hydraulic or electric motors that are suspended in the derrick above the rig floor to rotate the drill string and bit.

Total Area - The total amount of the earth's surface located within the geographical limits of a selected E/P contract or application at a certain point in time.

Total Depth - The total downhole distance of a drill bit. In a vertical well (i.e. most exploration wells) this is the true vertical distance. In a deviated well, the true vertical distance will be less than the TD.

Township - A Township in the DLSS grid system.

Transaction - Involves the transfer of interests in oil and gas reserves or petroleum exploration acreage from one company to another.

Trap - A type of geological structure that retards the free migration of oil and gas and accumulates hydrocarbons in a limited space.

Trap Deposition Age - The chronostratigraphic age of the period over which all trap types currently-recognized within a petroleum system are considered to have formed, expressed in millions of years.

Trap Mechanism - The genetic process that is responsible for the origin or modification of the form of a trap. Example: rifting; over-thrusting; inversion; halokinesis; erosion.

Triassic - A geological time period that occurred about 245.00 to 208.00 million years ago.

Tripping - The process of removing the drill string from the hole to change the bit and running the drill string and new bit back into the hole.

Trunk Line - Large diameter pipeline that transports crude oil, natural gas liquids, and refined petroleum products to refineries and petrochemical plants.

Tubing - Small diameter pipe that is set in a cased and completed well that is used to conduct produced hydrocarbons to the surface.

Type Locality - A lithostratigraphic unit is the specific geographic locality in which a type section is situated. Lacking a designated type section, the locality where it was originally defined or named.

Type Of Rights - Identifies the specific exploration and/or production activities in which the Participant is allowed to engage. Examples: Studies, Surface Exploration, Production.

Type Section - The original or subsequently designated standard of reference of a named lithostratigraphic unit, identified as a specific interval or a specific point in a specific sequence of rock strata, and constituting the standard for the definition and recognition of the lithostratigraphic unit.

Types of Coordinate Systems - There are two types of Coordinate Systems: Geographic is based Longitude/Latitude associated with a spheroid. Projected is based on X/Y resulting from the projection from a spheroid.

U

Unconformity - A surface of erosion or non-deposition that separates younger strata from older rocks and that represents a significant hiatus or gap in the stratigraphic succession.

Unconformity Play - A play type in which a trap results from the updip or lateral termination of a reservoir, above or below a major erosional surface.

Unconventional Gas - Natural gas that requires specialized technology to remove it from the ground. Unconventional gas sources are generally categorized as tight sands gas, shale gas, or natural gas from coal.

Underbalanced Drilling - Occurs when an operator uses specialized mud or gas while drilling to allow formation fluids to rise to the surface in order to prevent damage to a prospective formation.

Unique Well Identifier (UWI) - The number is used as a standard reference for electronic data interchange (EDI) and as a cross-reference between wells on other systems. On 25th March 1996, the Geologic Computing Committee of the AAPG selected Petro consultants' (as it then was) IRIS21 Unique Well ID as the unique Worldwide Well(bore) number (WWN) for Well(bore)s outside the USA and Canada. At the same time they recommended the retention of the API number in the USA and the UWI number in Canada. The number is created automatically as a well is committed to the database for the first time, by taking the number of the last well entered into the database and incrementing its number by one.

Unitization - Process whereby owners of adjoining properties pool reserves into a single unit operated by one of the owners, production is divided among the owners according to the unitization agreement.

Unqualified Gas - This term is used when information on the Gas Type is unavailable.

Upstream - A segment of the oil industry related to oil and gas exploration, production and transportation activities.

V

V-door - The opening in the derrick opposite the drawworks used for bringing in drill pipe and casing from the nearby pipe racks.

Vibroseis - The process of producing seismic shock waves with "thumpers" or vibrator vehicles.

Viscosity - The resistance that a fluid has to natural flow. Oil's viscosity is usually greater than an oil and gas mixture.

VO (Final/Pre flow) - Length of time in minutes the shut-in valve was open while the main tester valve was open on the final/preflow.

Volatile Organic Compounds (VOCs) - Gases and vapours, such as benzene, released by petroleum refineries, petrochemical plants, plastics manufacturing and the distribution and use of gasoline; VOCs include carcinogens and chemicals that react with sunlight and nitrogen oxides to form ground-level ozone, a component of smog.

W

Water Depth - For offshore wells, this is the depth of water relative to mean sea level.

Water Disposals - Are wells in which water is temporarily stored to be used at a later stage (e.g. injection).

Water Drive - A reservoir drive mechanism in which oil is produced utilizing the expansion of underlying water and rock that forces oil into the wellbore. There are two types of water drive: Bottom-Water Drive, in which the oil is totally underlain by water; and Edgewater Drive, in which only a portion of the oil is in contact with the water.

Well Density - The number of wells per pool and their orientation.

Wellbore - A hole drilled or bored into the earth, usually cased with metal pipe, for the production of gas or oil.

Wellhead - The equipment used to maintain surface control of a well.

Well-logging Instruments - Instruments lowered into a well to provide specific information on the condition of the well.

Western Canada Sedimentary Basin (WCSB) - Canada's largest region of sedimentary rocks; the largest source of current oil and gas production; covers almost all of Alberta and parts of British Columbia, Saskatchewan, Manitoba, Yukon, and N.W.T.

Wildcat - A well drilled in an area where no oil or gas production exists nearby.

Wireline Logging Tools - Special tools or equipment, such as logging tools, packers, or measuring devices, designed to be lowered into the well on a wireline (small diameter steel cable).

Workover - The performance of one or more of a variety of remedial operations on a producing oil well to try to increase production.

Z

Zone (From/To) - Zone representing the top/bottom of a stratigraphic interval to be used in creating a zonal query, which shows where those specific rights are disposed in formation names, codes, age young, and age old.

Zone (Licenced) - Zone or stratigraphic interval where the mineral rights have been leased in formation names, codes, age young, and age old.

GAS TABLE	
Coal Gas	A mixture of hydrogen, carbon monoxide, and methane produced by distilling coal that was once used for heating and lighting.
Commingled Gas	A homogeneous mix of natural gas from various physical (or contractual) sources.
Compressed Natural Gas (CNG)	Natural gas that has been highly compressed and is stored in high-pressure surface containers.
Conventional Gas	Natural gas that can be produced using recovery techniques normally employed by the oil and gas industry.
Deep Basin Gas	Gas that is found at depths greater than the average for a particular area.
Dry gas	Natural gas from the well that is free of liquid hydrocarbons or gas that has been treated to remove all liquids; pipeline gas.
Gasoline	A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives suitable for use in spark-ignition engines.
Greenhouse Gases	A wide variety of gases that trap heat near the earth's surface preventing its escape into the space. eg: carbon dioxide, methane, nitrous oxide, and water vapour.
Liquified Natural Gas (LNG)	Supercooled natural gas that is maintained as a liquid at or below -160°C; LNG occupies 1/640th of its original volume and is therefore easier to transport if pipelines cannot be used.
Manufactured Gas	A gas obtained by destructive distillation of coal by the thermal decomposition of oil, or by the reaction of steam passing through a bed of heated coal or coke. eg: coal gases, coke or oven gases, blast furnace gas etc.
Natural Gas	A naturally occurring mixture of hydrocarbon and non-hydrocarbon gases found in porous rock formations. Its principal component is methane.
Natural Gas Liquids (NGLs)	Liquids obtained during natural gas production and processing; they include ethane, propane, butane, and condensate.
Non-associated Gas	A reservoir where only natural gas is found.
Raw Natural Gas	A mixture containing methane plus all or some of the following: ethane, propane, butane, pentanes, condensates, nitrogen, carbon dioxide, hydrogen sulphide, helium, hydrogen, water vapour, and minor impurities; found naturally in the ground prior to processing.
Solution Gas	Liquid hydrocarbons (i.e. Oil), contain microscopic bubbles of gas. This dissolved gas is called "solution". It is invisible and can only be extracted in surface facilities such as a gas/oil separation plant (GOSP).
Sour Gas	Raw natural gas with a relatively high concentration of sulphur compounds, such as hydrogen sulphide. All natural gas containing more than 1% hydrogen sulphide is considered sour.
Sweet Gas	Raw natural gas with a relatively low concentration of sulphur compounds such as hydrogen sulphide.
Tight Sands Gas	Natural gas that is found in geological formations with low permeability.
Wet Gas	Raw natural gas with a relatively high concentration of natural gas liquids (ethane, propane, butane, pentanes, condensates).

WELL TABLE

Abandoned & Re-entered	Well moved by skidding the rig and drilling a new borehole. The ERCB approves this practice when technical difficulties necessitate abandoning the original borehole soon into the drilling operation.
Abandoned & Whipstocked	Original borehole status is abandoned, and secondary borehole is drilled off the original to a new horizon, new depth, or because of technical difficulties encountered in the original hole.
Abandoned Well	Well is not in use because it was originally a dry hole or has ceased to produce.
Closed	Well that is capable of production is temporarily shut-in.
Critical Sour Gas Wells	A sour gas well that has the potential to release unsafe levels of hydrogen sulphide, which affect nearby residents.
Cyclical	Well is intermittently producing or shut-in.
Deeper-Pool Wildcat Wells	A deeper-pool wildcat (DPW) is a well drilled within the known limits of a field in order to discover a new reservoir lying at a deeper depth than the one that was already discovered.
Development Well	Wells that are producing hydrocarbons from a reservoir whose productive potential has been proven.
Directional (Deviated) Well	A well drilled at an angle from the vertical by using a slanted drilling rig or by deflecting the drill bit.
Discovery Well	Exploratory well that discovers a new gas or oil field.
Disposal	Well into which salt water or spent chemical is pumped; most commonly part of a saltwater- disposal system.
Drain	Wells drilled to drain production into one well when the existing well can't recover all the oil or gas. Production is reported on the main well, while the other wells are classified with a mode of drain.
Experimental	Well drilled in an area where no oil or gas production exists.
Exploratory well	A well drilled either in search of a new, as yet undiscovered accumulation of oil and gas, or in an attempt to significantly extend the limits of a known reservoir.
Flowing	Well produces oil or gas using its own reservoir pressure rather than using artificial means (such as pumps).
Industrial	Well drilled for farmers' purpose (e.g. Farm Gas, Farm Water).
Infill Well	Any well that is drilled on a closer than normal well spacing pattern or requirement; any well drilled between existing wells producing from the same reservoir.
Junked & Abandoned	Well abandoned as non-productive.
New-Field Wildcat Wells	The first well drilled on a structure is called a new-field wildcat (NFW). If this well does not discover hydrocarbons, the operator can decide to drill another well on the same structure. The subsequent well will be designated as the new-field wildcat, and so on until a positive result is achieved.
New-Pool Wildcat Wells	A new-pool wildcat (NPW) is a well that is drilled into a structure where hydrocarbons have already been found for the purpose of discovering a new reservoir in the field.

WELL TABLE continued

Observation Wells	Well drilled simply for observational purposes (e.g., to collect pressure or formation data).
Outpost Wells	When a new-field wildcat proves to be a discovery, it is often decided to drill several additional wells around the discovery well in order to evaluate the
Plugged and Abandoned Well (P & A)	A well no longer in use because it was originally a dry hole or it has ceased to produce.
Potential Well	Well test data indicates the well is capable of producing.
Pumping	Well uses a pump to increase the pressure on a fluid or raise it to a higher level.
Relief Wells	Are drilled towards the lower section of an uncontrolled erupting well in order to try to bring it back under control by injecting heavy mud or thick cement.
Service Wells	Non-producing well used for injecting liquid or gas into the reservoir for enhanced recovery, as a saltwater disposal well, or as a water supply well.
Shut-in Well	Well is shut off to prevent flow for lack of a market or pending connection with a pipeline.
Source Well	Well is currently used as a source of water.
Standing Well	Well is temporarily in limbo (usually used during drilling/completion phases).
Storage Well	Well into which fluid is injected for storage purposes.
Stratigraphic Test Wells	Stratigraphic tests are drilled to acquire geological and stratigraphic information in less well-known areas.
Structural Core Test Wells	Structural core tests are holes drilled to a shallow depth in order to study the geometry of a structure.
Suspended well	Well is on hold until a decision is made as to what to do with it (used anytime during or after drilling or completion).
Training well	Well drilled/completed for educational purposes.
Waiting on Cement (WOC)	Waiting on cement; drilling/completion is suspended while cement in the well hardens sufficiently.
Water Supply Wells	Produce water that is generally utilized to mix drilling mud.

OIL TABLE

Conventional Crude Oil	Oil produced by drilling wells, and if necessary, pumping.
Crude Oil	A naturally occurring liquid mixture of hydrocarbons trapped in underground rock.
Fuel Oil	Refined petroleum products that are used as a fuel source for home heating as well as industrial and utility boilers. Fuel oil is divided into two broad categories: distillate fuel oil, also known as No. 2 fuel, gasoil, or diesel fuel; and residual fuel oil, also known as No. 6 fuel (outside the United States, just as fuel oil). No. 2 fuel is a light oil used for home heating, in compression ignition engines, and in light industrial applications. No. 6 oil is a heavy fuel used in large commercial, industrial, and electric utility boilers.
Heavy Oil	Dense, viscous, oil with a high proportion of bitumen which is difficult to extract with conventional techniques and is more costly to transport and refine.
Light Crude Oil	Liquid petroleum which has a low density and flows freely at room temperature.
Medium Crude Oil	Liquid petroleum with a density that of between light and heavy crude oil.
Non-conventional Crude Oil	Crude oil that is too thick to flow in its natural state and cannot be produced by traditional means.
Sour Oil	Crude oil containing free sulphur, hydrogen sulphide, or other sulphur compounds. Sour crude oil generally contains more than 0.5% sulphur.
Sweet Crude Oil	Crude oil not contaminated by sulphur in excess of 0.5%.
Synthetic Crude Oil	A mixture of hydrocarbons, similar to crude oil, derived by upgrading bitumen from oil sands.
Upgraded Crude Oil	A blend of hydrocarbons similar to light crude oil produced by processing bitumen or heavy oil at facility called an upgrader (see also Synthetic Crude Oil).

UNIT ABBREVIATIONS			
atmos	Atmosphere	lb	Pound
bbl/yr	Barrels of oil per year	m	Metre
bcf	Billions of cubic feet	M cu m/d	Million cubic metres per day
bo/d	Barrels of oil per day	M cu m/yr	Million cubic metres per year
Btu/cu ft	British thermal units per cubic foot	mb/d	Thousands of barrels of oil per day
cf/d	Cubic feet per day	mb/yr	Thousands of barrels of oil per year
cf/yr	Cubic feet per year	Mcf/d	Thousand cubic feet per day
cm	Centimetre	mcf/yr	Thousand cubic feet per year
cu ft	Cubic feet	Mil	Miles
cu ft/bbl	Cubic feet per barrel	mJ/cu m	Megajoules per cubic metre
cu m/cu m	Cubic metres per cubic metres	mmb/d	Millions of barrels of oil per day
cu m/d	Cubic metres per day	mmb/yr	Millions of barrels of oil per year
cu m/yr	Cubic metres per year	mmcf	Millions of cubic feet
deg API	API Gravity	mmcf/yr	Million cubic feet per year
deg C	Degrees Celsius	mmcfd	Millions of cubic feet per day
deg F	Degrees Fahrenheit	mt	Metric Tonne
deg K	Degrees Kelvin	Pa	Pascal
ft	Feet	psi	Pounds per square inch
GBP	Pounds Sterling	ratio	Relative density
ha	Hectares	sq. km	Square Kilometres
in	Inch	sq. mil	Square Miles
k cu m/d	Thousand cubic metres per day	USD	US Dollars
k cu m/yr	Thousand cubic metres per year	yd	Yard
kg	Kilogram	yrs	Years
km	Kilometres		

Conversion Factor Table

<i>Unit Preference Category</i>	<i>Unit Preference</i>	<i>Abbreviation</i>	<i>Conversion Factor</i>	<i>Default Value*</i>
(General Guide)				
Land Area	Square kilometres	sq. km	1	*
Land Area	Square Miles	sq. mil	2.589988	
Land Area	Hectares	ha	100	
Land Area	Acres	acres	0.00404686	
Calorific Value	British thermal units per cubic foot	Btu/cu ft	1	*
Calorific Value	Megajoules per cubic metre	mJ/cu m	1	
Distance	Kilometres	km	1	*
Distance	Miles	Mil	1.60934	
Weight	Kilogram	kg	0.0009842	
Weight	Pound	lb	0.000446429	
Weight	Metric Tonne	mt	0.9842	
Weight	Ton	tons	1	*
Depth	Feet	ft	1	*
Depth	Metre	m	3.281	
Depth	Centimetre	cm	0.03281	
Depth	Inch	in	0.083333	
Depth	Yards	yd	3	
Diametre	Centimetre	cm	2.54	
Diametre	Inch	in	1	*
Currency	US Dollars	USD	1	*
Currency	Pounds Sterling	GBP	1.6	
Pressure	Pascal	Pa	0.00014504	
Pressure	Pounds per square inch	psi	1	*
Pressure	Bars	bar	14.5038	
Pressure	Atmospheres	atmos	14.696	
Gas Production	Million cubic feet per Year	mmcf/yr	2.73972	
Gas Production	Cubic feet per Year	cf/yr	2.73972E-06	
Gas Production	Cubic metres per Year	cu m/yr	9.6752E-06	
Gas Production	Thousand cubic metres per year	k cu m/yr	0.0096752	
Gas Production	Thousand cubic feet per year	mcf/yr	0.00273972	*
Gas Production	Cubic metres per day	cu m/d	0.02832	
Gas Production	Thousand cubic metres per day	k cu m/d	0.00002832	
Gas Production	Million cubic metres per day	M cu m/d	2.832E-08	

<i>Unit Preference Category</i>	<i>Unit Preference</i>	<i>Abbreviation</i>	<i>Conversion Factor</i>	<i>Default Value*</i>
Gas Production	Millions of Cubic feet per day	mmcf/d	1	
Gas Production	Cubic feet per day	cf/d	0.000001	
Gas Production	Million cubic metres per Year	M cu m/yr	9.6752	
Gas Production	Barrels of Oil Equivalent per day	Boe/d	0.000166667	
Gas Production	Barrels of Oil Equivalent per year	Boe/y	0.060834	
Gas Production	Thousands barrels of Oil Equivalent per year	Mboe/y	0.000060834	
Gas Production	Thousands barrels of Oil Equivalent per day	Mboe/d	1.64381E-07	
Gas Production	Millions barrels of Oil Equivalent per day	Mmboe/d	1.6667E-10	
Gas Production	Millions barrels of Oil Equivalent per year	Mmboe/y	6.08333E-08	
Liq Production	Barrels of Oil per Year	bbl/yr	0.0027397	*
Liq Production	Thousands of barrels of Oil per day	mb/d	1	
Liq Production	Millions of Barrels of Oil per day	mmb/d	1000	
Liq Production	Barrels of Oil per day	bbl/d	0.001	
Liq Production	Thousands of Barrels of Oil per Year	mb/yr	2.74	
Liq Production	Millions of Barrels of Oil Per Year	mmb/yr	2740	
Gas/Oil Ratio	Cubic feet per barrel	cu ft/bbl	1	*
Gas/Oil Ratio	Cubic metres/Cubic Metre	cu m/cu m	0.1781	
Liquid Density	Relative Density	ratio	1	
Liquid Density	API Gravity	deg API	1	*
Temperature	Celsius	deg C	32	*
Temperature	Fahrenheit	deg F	1	
Temperature	Kelvin	deg K	-455.8	
Calendar Time	Days	days	0.0328	
Calendar Time	Months	months	1	*
Calendar Time	Year	yrs	12	
Gas Volume	Cubic feet	cu ft	0.00001	
Gas Volume	Billions of Cubic feet	bcf	1000	
Gas Volume	Millions of cubic feet	mmcf	1	*
Gas Volume	Thousands of cubic feet	mcf	0.001	
Gas Volume	Cubic metres	cu m	0.000035	

<i>Unit Preference Category</i>	<i>Unit Preference</i>	<i>Abbreviation</i>	<i>Conversion Factor</i>	<i>Default Value*</i>
Gas Volume	Million cubic metres	M cu m	35.31477	
Gas Volume	Barrels of oil equivalent	boe	0.006	
Gas Volume	Thousand barrels of oil equivalent	Mboe	0.6	
Gas Volume	Millions barrels of oil equivalent	mmboe	6000	
Liq Volume	Barrels	bbbl	0.000001	
Liq Volume	Millions of barrels	mmbbl	1	*
Liq Volume	Thousands of Barrels	mbbl	0.001	
Liq Volume	Cubic metres	cu m	0.000006	
Liq Volume	Thousand cubic metres	k cu m	0.0062904	
Liq Volume	Million cubic metres	M cu m	6.2904	
Coordinate Format	Decimal Degrees	DD	1	*
Coordinate Format	Degrees, Minutes, Seconds	DMS	1	

Notes