Glossary Section 8 of the Course Materials

Abrogate – To officially abolish or repeal a treaty or contract through legislative authority or an authoritative act.

Accelerated depreciation – Writing off an asset through depreciation or amortization at a rate that is faster than normal accounting straight line depreciation. There are a number of methods of accelerated depreciation, but they are usually characterized by higher rates of depreciation in the early years than latter years in the life of the asset. Accelerated depreciation allows for lower tax rates in the early years.

Access to gross revenues (AGR) – The maximum share of gross revenues a company can receive in any given accounting period relative to their working interest share of gross revenues. This is the complement of the effective royalty rate (ERR).

Acreage – Amount of land area (or offshore area) under lease or associated with and/or governed by a production sharing contract.

Ad valorem – Latin "according to value". A tax on goods or property, based upon value rather than quantity or size. Royalties are typically "ad valorem" based upon value "at the wellhead".

Affiliate – Two companies are affiliated when one owns less than a majority of the voting stock of the other or when they are both subsidiaries of a third parent company. A subsidiary is an affiliate of its parent company. (see Subsidiary)

Amortization – An accounting convention designed to emulate the cost or expense associated with reduction in value of an intangible asset (see Depreciation) over a period of time. Amortization is a noncash expense. Similar to depreciation of tangible capital costs, there are several techniques for amortization of intangible capital costs:

Straight Line Decline (SLD)
Double Declining Balance (DDB)
Declining Balance (DB)
Sum of Year Digits (SYD)
Unit-of-Production (UOP)

API – American Petroleum Institute.

API gravity – American Petroleum Institute measure of the specific gravity of crude oil or condensate. Measured in degrees ( ) as in "West Texas Intermediate is a 38 - 40 API crude". The measuring scale is calibrated in terms of degrees API; it is calculated as follows: Degrees API = (141.5 / sp.gr.60 deg.F/60 deg.F) - 131.5

$$API = \frac{141.5}{Sg} - 131.5$$

Sg = specific gravity in grams per cubic centimeter.

Appraisal well – See Delineation well.

Aquifer – Porous water-bearing rock.

Arbitration – A process in which parties to a dispute agree to settle their differences by submitting their dispute to an independent individual arbitrator or group such as a *tribunal*. Typically, each side of the dispute chooses an arbitrator and those two arbitrators choose a third. The third arbitrator acts as the chairman of the tribunal, which then hears and reviews both sides of the dispute. The tribunal then renders a decision that is final and binding.

Backwardation – When a commodity's current prices or spot price is greater than futures prices the market is said to be "inverted" or "in backwardation". The opposite of "contango" (See contango).

Basket – This term is often used to mean a hypothetical blend of crudes also referred to as a "coctail" for price reference purposes in the absence of arms- length sales.

Block – A license area or contract area – relates to each individual parcel of acreage held by an oil company or a government.

Book value – (1) The value of the equity of a company. Book value per share is equal to the equity divided by the number of shares of common stock. Fully diluted book value is equal to the equity less any amount that preferred shareholders are entitled to, divided by the number of shares of common stock. (2) Book Value of an asset or group of assets is equal to the initial cost less DD&A (effectively depreciation).

Branch – An extension of a parent company but not a separate independent entity. Subsidiary companies are normally taxed as profits and are distributed as opposed to branch profits, which are taxed as they accrue.

Brown tax – A tax that can be positive or negative. A "cash flow based" a Government (working interest) participation could be viewed this way. During the periods of investment the Government pays. During the periods of positive cash flow the Government "takes".

Bubble point – Reservoir pressure at which gas in solution (in the oil) will bubble out of the host oil at the prevailing reservoir temperature.

Calvo clause – A relatively obsolete contract clause once promoted in Latin American countries where the contractor explicitly renounced the protection of its home government over its operation of the contract. The objective of the Calvo Doctrine was to direct disputes to local jurisdictions and avoid international arbitration.

Capitalize – (1) In an accounting sense the periodic expensing of capital costs such as through amortization, depreciation or depletion. (2) To convert an (anticipated) income stream to a present value by dividing by an interest rate. (3) To record capital outlays as additions to asset value rather than as expenses.

Generally, expenditures that will yield benefits to future operations beyond the accounting period in which they are incurred are capitalized—that is, they are depreciated at either a statutory rate or a rate consistent with the useful life of the asset.

Capitalization – All money invested in a company including long term debt (bonds), equity capital (common and preferred stock), retained earnings and other surplus funds. Market capitalization is stock price times the numbers of shares of common stock.

Capitalization rate – The rate of interest used to convert a series of future payments into a single present value.

Carried interest – When a working interest partner in the exploration or development phase of a contract is paying a disproportionately lower share of costs and expenses than its working interest share. This occurs when Government agencies such as the Oil Ministry or the National Oil Company are "carried" through the exploration phase of a contract. In this case the NOC is said to be "carried" or is said to have a "back-in option". Also in a farmin agreement, typically, the company holding the original working interest will farmout a portion of the work obligation to another company and is "carried" through that portion of the work program. The company farming in then "carries" the original license holder through that phase i.e. the original license holder then does not pay, or pays a disproportionately lower percentage.

Cash flow – Gross revenues less all associated capital and operating costs. Contractor cash flow is equal to gross revenues less all costs, government royalties, taxes, imposts, levies, duties and profit oil share, etc. It therefore represents Contractor share of profits. Government cash flow typically consists of government royalties, taxes, imposts, duties, profit oil share etc.

In a financial sense, net income plus depreciation, depletion and amortization and other non-cash expenses. Usually synonymous with cash earnings and operating cash flow. An analysis of all the changes that affect the cash account during an accounting period.

Cash Flow – Two perspectives: The typical petroleum industry engineer/economist performing cash flow analysis needs this comparison handy when talking to many of the Wall Street folks. They are used to taking net income from the income statement and "adding back" DD&A to get "cash flow".

Upstream micro-economic modeling		**Accountants and Wall Street financial statements**
Gross revenues		
- Royalty		
= Net revenues	→ → → → →	**Revenues** (or "turnover")
- Operating costs		- Operating costs
- Capital costs		- Depreciation
= Pre-tax cash flow		= Taxable income
- Income taxes		- Income taxes
= After-tax cash flow		**= Net income**

[Net cash flow] | Same thing | + Depreciation
- Capital expenditures

= **After-tax cash flow**
[Net cash flow]

Central bank – The primary government owned banking institution of a country. The central bank usually regulates all aspects of foreign exchange in and out of the country. It actively intervenes in the acquisition and sale its own currency in foreign exchange markets primarily to maintain stability in the value of the country's currency.

Commercial discovery – (Or commercial success) In popular usage the term applies to any discovery, which would be economically feasible to develop under a given fiscal system. As a contractual term it often applies to the requirement on the part of the contractor to demonstrate to the government that a discovery would be sufficiently profitable to develop from both the contractor and government point of view. A field that satisfied these conditions would then be "granted commercial status" and the contractor would then have the right to develop the field.

Commingled production – Production of petroleum from more than one reservoir through a single wellbore or flowline without seperate measurement.

Completion – Equipment and activities required after drilling a well in order to prepare the well for production of oil and/or gas.

Concession – An agreement between a government and a company that grants the company the right to explore for, develop, produce, transport and market hydrocarbons or minerals within a fixed area for a specific amount of time. The concession and production and sale of hydrocarbons from the concession is then subject to rentals, royalties, bonuses and taxes. Under a concessionary agreement the company would take title to gross production less Government royalty oil “at the wellhead”.

Condensate – Light liquid hydrocarbons associated with gas, typically “pentanes plus” (C_5 +). (see Hydrocarbon series)

Consortium – A group of companies operating jointly, usually in a partnership with one company as operator in a given permit, license, contract area, block etc.

Contango – The relationship between a commodity’s futures prices and the current market price for the commodity. When futures prices are greater than current prices such as spot prices or current contract prices the market is said to be in contango. Contango is the opposite of “backwardation”.

Contractor – An oil company operating in a country under a production sharing contract or a service contract on behalf of the host government for which it receives either a share of production or a fee.

Contractor take – Total contractor after-tax share of cash flow.

Cost of capital – The minimum rate of return on capital required to compensate debt holders and equity investors for bearing risk. Cost of capital is computed by weighting the after-tax cost of debt and equity according to their relative proportions in the corporate capital structure.

Cost insurance and freight – (CIF) is included in the contract price for a commodity. The seller fulfills his obligations when he delivers the merchandise to the shipper, pays the freight, and insurance to the point of (buyers) destination and sends the buyer the bill of lading, insurance policy, invoice, and receipt for payment of freight. The following example illustrates the difference between an FOB (Free on board) Jakarta price and a CIF Yokohama price for a Ton of LNG. (see FOB).

FOB Jakarta	\$170/ton	also called "netback price"
	+ 30/ton	Freight Charge
CIF Yokohama	\$200/ton	

Cost oil – A term most commonly applied to production sharing contracts which refers to the oil (or revenues) used to reimburse the Contractor for exploration, development and operating costs incurred by the Contractor.

Cost recovery – The means by which companies recover costs; same as deductions.

Cost recovery limit – Typically with PSCs in any given accounting period there is a limit to the amount of deductions that can be taken for cost recovery purposes. The limit is usually quoted in terms of a percentage of gross revenues or gross production. Unrecovered costs are carried forward and recovered in subsequent accounting periods if there is sufficient production.

Country risk – The risks and uncertainties of doing business in a foreign country including political, and commercial risks. (see Sovereign Risk).

Creeping nationalization or Creeping expropriation – A subtle means of expropriation through expanding taxes, restrictive labor legislation, or labor strikes, withholding work permits, import restrictions, price controls and tariff policies.

Crypto tax – This is a non-technical reference to non-conventional/(less direct) means by which Governments may impose duties, levies, or financial requirements on an oil company. These elements rarely are captured in typical published “take” statistics. Examples include; social welfare development funds (written or unwritten), hostile audits, mandatory currency conversions, customs duty exemptions that are not honored, hiring and purchase quotas, inordinately long depreciation rates, inefficient procurement requirements, excessive immigration/visa requirements, etc.

Debt service – Cash required in a given period, usually one year, for payments of interest and current maturities of principal on outstanding debt. In corporate bond issues, the annual interest plus annual sinking fund payments.

Delineation well – A well drilled in order to determine the extent of a reservoir also known as an “Appraisal well”.

Depletion – (1) Economic depletion is the reduction in value of a wasting asset by the removal of minerals. (2) Depletion for tax purposes (depletion allowance) deals with the reduction of mineral resources due to removal by production from an oil or gas reservoir or a mineral deposit.

Depletion allowance – This is one type of "incentive" that a few Governments use to encourage investment. Typically these allowances provide the companies a "deduction" for tax calculation purposes based on some percentage of gross revenues. The "Filipino Participation Incentive Allowance (FPIA) in the Philippines has this characteristic. It allows the contractor group 7.5% of gross revenues as part of the service fee. These mechanisms are very "progressive".

Depreciation – An accounting convention designed to emulate the cost or expense associated with reduction in value of a tangible asset due to wear and tear, deterioration or obsolescence over a period of time. Depreciation is a noncash expense. There are several techniques for depreciation of capital costs:

Straight Line Decline
Double Declining Balance
Declining Balance
Sum of Year Digits
Unit-of-Production

Development costs – Costs associated with placing an oil or gas discovery into production. These costs typically consist of drilling, production facilities and transportation costs.

Development drilling – Drilling that follows exploratory and appraisal drilling after a discovery.

Development well – A well drilled within a proven or known productive area of an oil or gas reservoir.

Dew point pressure – The (gas) reservoir pressure below which liquids begin to condensate out of the gas at the prevailing reservoir temperature.

Dilution Clause – In a joint operating agreement a clause that outlines a formula for the dilution of interest of a working interest partner if that partner defaults on a financial obligation. Also called a "withering clause".

Direct tax - A tax that is levied on corporations or individuals--the opposite of an indirect tax such as a value-added tax (VAT) or sales taxes.

Discounted cash flow analysis – Economic modeling of anticipated income versus expenditures over time. It is based upon estimated production rates, oil prices and costs, as well as royalties, taxes and other means of Government take. The net result is a stream of cash flow over time. Cash received in the distant future is not as valuable as cash received now so the time value of the cash flow is calculated factoring in time value of money to arrive at a "present value" equivalent.

Disposal – This term usually refers to transportation and sales of crude or gas from the field.

Dividend withholding tax – A tax levied on dividends or repatriation of profits. Tax treaties normally try to reduce these taxes whether they are so named or simply operate in the same manner as a withholding tax.

Dollars-of-the-day – A term usually associated with cost or price estimates that indicate the effects of anticipated inflation have been taken into account. For example, if a well costs $5 MM right now in "today's dollars" (the "real" cost) —(the opposite of dollars-of-the-day) then the cost of the well two years from now might be estimated at $5.51 MM in dollars-of-the-day (or Nominal dollars) assuming a 5% inflation factor. Other associated terms:

Real	vs.	Nominal Dollars
Non-escalated	vs.	Escalated
Today's dollars	vs.	Dollars-of-the-day
2004 dollars	vs.	Inflated
Constant	vs.	Current

Example: EIA 2006 Long-Term Price Forecast

Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
EIA **Price Forecast** Imported Low Sulfur Light Crude Oil Price, 2004 $/BBL							
2004 $/BBL	**$40.49**	**$55.93**	**$59.10**	**$55.62**	**$52.30**	**$50.14**	**$47.29**
"Real", "Unescalated", "Today's Dollars"							
CPIU, 1982-1984=1	**1.889**	**1.953**	**2.010**	**2.053**			
Inflation per EIA		**3.39%**	**2.92%**	**2.14%**			
Inflation Estimated				**2.00%**	**2.00%**	**2.00%**	
CPI Adjusted to 2004=1	**1.00**	**1.034**	**1.064**	**1.087**	**1.109**	**1.131**	**1.153**
Nominal Forecast $/BBL	**$40.49**	**$57.82**	**$62.89**	**$60.45**	**$57.98**	**$56.70**	**$54.54**

Domestication - A form of creeping nationalization where host government enacts legislation that forces foreign-owned enterprises to surrender various degrees of ownership and/or control to nationals.

Domestic market obligation – Some countries provide the State an option to purchase a certain portion of the contractor's share of production. This is called domestic market obligation (DMO) or domestic requirement. Typically the purchase price for DMO crude is less than market price. Also local currency may be part of the price formula. There are many variations on this theme.

Double taxation – (1) In economics a situation where income flow is subjected to more than one tier of taxation under the same domestic tax system--such as state/provincial taxes, then federal taxes or federal income taxes and then dividend taxes. (2) International double taxation is where profit is taxed under the system of more than one country. It arises when a taxpayer or taxpaying entity resident (for tax purposes) in one country generates income in another country. It can also occur when a taxpaying entity is resident for tax purposes in more than one country.

Double taxation treaty – Formal agreement between countries to reduce or eliminate double taxation. A bilateral tax treaty is a treaty between two countries to coordinate taxation provisions which would otherwise create double taxation. A multilateral tax treaty involves three or more countries for the same purpose. The U.S. has few treaties with oil producing nations.

Dual residence – When a taxpaying entity is resident for tax purposes in more than one country. This can happen when different countries apply the tests for determining residence and the company passes the test in more than one country.

Dutch disease – The adverse results of large-scale positive shock to a single sector of a nations economy—so named because of the problems associated with large-scale development of the Groningen Gas field in the Netherlands in the 1970s. Typically the sector of the economy that is booming causes widespread inflation and other sectors, particularly agriculture, suffer from inability to attract workers. The dramatic increase in foreign exchange can cause problems with local currencies and fiscal and monetary problems can occur without proper management.

Economic profit – Gross project revenues minus total costs which include exploration, development and operating costs.

Economic rent – While there are a number of definitions, one common definition is: the difference between the value of production and the cost to extract it. The extraction cost consists of normal exploration, development and operating costs as well as a share of profits for the industry. Economic rent is what the governments try to extract as efficiently as possible.

Effective royalty rate – The minimum share of revenues (or production) the government will receive in any given accounting period from royalties and its (guaranteed) share of profit oil. This statistic is the complement of the access to gross revenues (AGR) statistic.

Entitlements – The shares of production to which the operating company, the working interest partners, and the government or government agencies are authorized to lift. Entitlements are based on royalties, cost recovery, production sharing, working interest percentages, etc. (see Lifting)

Excise tax – A tax applied to a specific commodity such as tobacco, coffee, gasoline or oil based either on production, sale or consumption.

Exclusion of areas – (see Relinquishment)

Expected monetary value – (see Expected value)

Expected value – A weighted average financial value of various possible outcomes such as either a discovery or a dry hole weighted according to the estimated likelihood (estimated probability of success or failure) that either outcome might occur. Same as Expected monetary value (EMV).

Expense – (1) In a financial sense a non-capital cost associated most often with operations or production. (2) In accounting, costs incurred in a given accounting period that are charged against revenues. To “expense” a particular cost is to charge it against income during the accounting period in which it was spent. The opposite would be to “capitalize” the cost and charge it off through some depreciation schedule.

Exploration drilling – Drilling in an un-proved area. (see Exploratory well)

Exploratory well – A well drilled in an unproved area. This can include: (1) a well in a proved area seeking a new reservoir in a significantly deeper horizon, (2) a well drilled substantially beyond the limits of existing production. Exploratory wells are defined partly by distance from proved production and by degree of risk associated with the drilling. Wildcat wells involve a higher degree of risk than exploratory wells.

Expropriation – Similar to the concept of nationalization or outright seizure or confiscation of foreign assets by a host government. With expropriation the confiscation is directed toward a particular company, nationalization is where a government confiscates a whole industry. Expropriation is legal but theoretically must be accompanied by prompt adequate and effective compensation and must be in the public interest.

Fairway – (see Trend)

Fair market value (FMV) of Reserves – Often defined as a specific fraction of the present value of future net cash flow discounted at a specific discount rate. One common usage defines FMV at 2/3 - 3/4 of the present value of future net cash flow discounted at the prime interest rate plus .75 to 1 percentage point.

Farmin – (1) A lease or working interest obtained from another company in return for a consideration. (2) To receive a farmin.

Farmout – (1) A lease or working interest granted to another company in return for a consideration. (2) To grant a farmout.

Farmout extension – Sometimes the NOC or the Government will allow a Contractor some additional time (an extension to the current contract phase) to find a partner. Governments know that finding partners is an important way for companies to spread the risk of exploration.

Farmee – The party farming-in.

Farmor – The party farming-out.

Finding cost – The amount of money spent per unit (barrel of oil or MCF of gas) in exploration divided by reserves added. There are numerous formulas but generally includes discoveries, and revisions to previous reserve estimates. Some include acquisition costs of reserves.

Fiscal system – Technically the legislated taxation structure for a country including royalty payments. In popular usage the term includes all aspects of contractual and fiscal elements that make up a given government-foreign oil company relationship.

Fiscal marksmanship – The ability of authorities to predict with any degree of accuracy or certainty the tax revenues that may fall due to be paid to the government. In the petroleum industry it is particularly difficult to accurately estimate what revenues may be generated for countries with little or no exploration history.

Also the ability to determine the appropriate taxation scheme

Flare – Or “flaring”; burning of residue hydrocarbon gasses.

Flooding – Injection of water ("water flood") or gas ("gas flood") into or adjacent to a reservoir to increase oil recovery.

Formation – A layer of rock or geological horizon that can be mapped. It has a distinct top and bottom. The formation is typically given a name such as the "Red Wall Limestone" or "Kimmeridgian Shale".

Franked dividends – Dividends that have already been taxed at the corporate level and are therefore either not subject to withholding tax or the taxes paid are creditable against withholding taxes.

FOB – Free on Board. A transportation term that means the invoice price includes transportation charges to a specific destination. Title is usually transferred to the buyer at the FOB point by way of a bill of lading. For example, FOB New York means the buyer must pay all transportation costs from New York to the buyers receiving point. FOB plus transportation costs equals CIF price. (see Cost Insurance Freight)

> **FOB shipping point**: Buyer bears transportation costs from point of origin.
>
> **FOB destination**: Supplier bears transportation costs to the destination.

Foreign Corrupt Practices Act (FCPA) – Sometimes referred to as "anti-bribery legislation". It is illegal for a U.S. company or individual to knowingly pay a bribe to a foreign official in order to obtain, or retain business. This includes commissions or payments to agents or intermediaries with the knowledge that all or a part of the payments will be given to a foreign official. The FCPA also has various record-keeping and reporting requirements.

Foreign tax credit – Taxes paid by a company in a foreign country may sometimes be treated as "taxes paid" in the company's home country. These are creditable against taxes and represent a direct dollar-for-dollar reduction in tax liability. This usually applies to foreign income taxes paid and credited against home country income taxes. Other taxes which may not qualify for a tax credit may never-the-less qualify as deductions for home country income tax calculations.

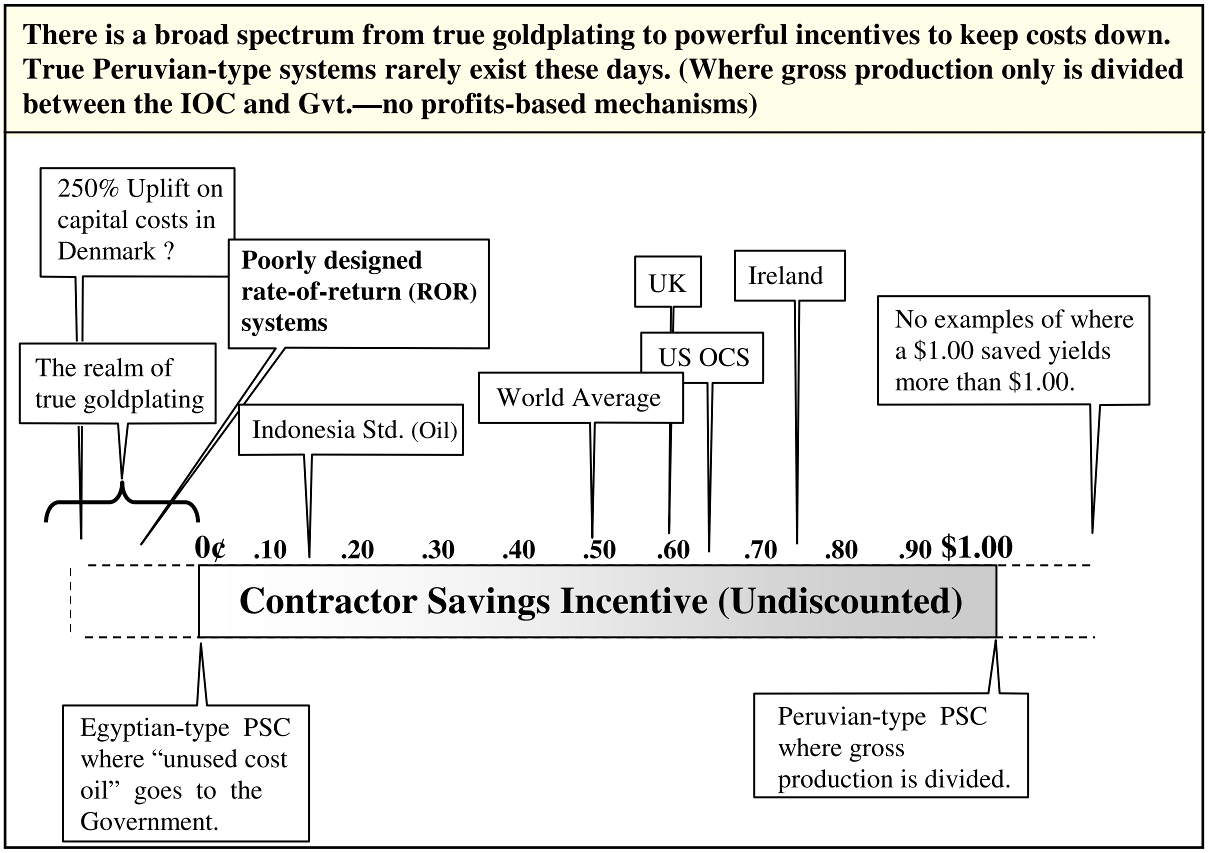
Gas oil ratio – (GOR) The number of cubic feet of natural gas produced with each barrel of oil produced. It is measured under surface conditions. Also known as Solution Gas Oil Ratio.

The engineer J. J. Arps had a rule-of-thumb; typically GOR for black oil is equal to reservoir depth divided by 10. For example if oil was found at a reservoir depth of 7,000 feet then the amount of gas in solution would be equal to 700 cubic feet per barrel (7,000/10). This would not require substantial gas-handling facilities by world standards. However, some crudes can have a GOR of 3,000 to 9,000 cubic feet per barrel or more.

Gazette – To officially announce license round offering or results, or publication of notification of acceptance of bids in official government publication (gazette). To gazette means to offer blocks--as in "The licenses have not been gazetted yet."

Geological horizon – A layer of rock that can be mapped. It has a distinct top and bottom. (see Formation).

Gold plating – When a company or contractor makes unreasonably large expenditures due to lack of cost cutting incentives. This kind of behavior could be encouraged where a contractor's compensation is based in part on the level of capital and operating expenditure, however, it is rare.



Government take – Government share of economic profits, typically expressed as %. Total government share of production or gross cash flow from royalties, taxes, bonuses, profit oil.

There are a number of definitions but the most succinct is: Government Take = Government Cash Flow/Gross Project Cash Flow.

Graben – A block of rock that has dropped down (due to geologic faults) between two other blocks.

Graticulation – The practice of superimposing a grid of typically north-south and east-west lines for the purpose of defining acreage or block boundaries and acreage relinquishment. The most common grid system is the five-minute grid defined by reference to Greenwich coordinates.

Gravity – (see API gravity)

Gravity based structure – (GBS) Concrete production or wellhead platform fixed to the sea floor by its own weight.

Gross Benefits – Beyond Government take there are other benefits to a country from having foreign companies operating in-country such as employment, reduction in risk to the government.

Hard currency – Currency in which there is widespread confidence and a broad market such as that for the U.S. Dollar, the British Pound, Swiss Franc, or Japanese Yen. The opposite would be soft currency where there is a thin market and the currency fluctuates erratically in value.

Heads Up – When working interest partners are paying costs and expenses in proportion to their working interest percentages they are said to be “heads up”. When one or more partners is being “carried” they are not “heads up”.

Hectare – Metric unit of area equal to 10,000 square meters, which also equals 2.471 acres.

High grade – A term used to describe the evaluation of acreage or a portfolio of prospects to determine which prospects or areas are best. It is used to determine which acreage to relinquish, and or which prospects to drill first.

Horizon – A geological layer of rock or a formation (see Formation).

Hull formula – Compensation for expropriation in the language of many bilateral and multilateral investment treaties that states it should be "prompt, adequate and effective." This is known as the Hull formula. Alternate wording found in other treaties includes, "fair and equitable","reasonable","market value at date of expropriation," etc.

Hurdle rate – Term used in investment analysis or capital budgeting that means the required rate of return in a discounted cash flow analysis. Projects to be considered viable must at least meet the hurdle rate. Most common investment theory, and practice dictates that the hurdle rate should be equal to or greater than the incremental cost of capital.

Hydrocarbon series – The various components of crude oil and natural gas composed of carbon and hydrogen atoms. i.e. the paraffin series (a subset of the hydrocarbon series):

Paraffin series (characterized by the formula C_nH_{2n+2})

C_1	-	Methane	- CH_4
C_2	-	Ethane	- C_2H_6
C_3	-	Propane	- C_3H_8
C_4	-	Butanes	- C_4H_{10}
C_5	-	Pentanes	- C_5H_{12}
C_6	-	Hexanes	- C_6H_{14}
C_7	-	Heptanes	- C_7H_{16}
C_8	-	Octanes	- C_8H_{18}
C_9	-	Nonanes	- C_9H_{20}
C_{10}	-	Decanes	- $C_{10}H_{22}$
et cetera			

Hydrocarbon system – Proven combination of organic-rich source rocks that have been subjected to sufficient pressures and temperatures over geologic time to generate and expel hydrocarbons.

Incentives – Fiscal or contractual elements provided by host governments that make petroleum exploration or development more economically attractive. Includes such things as:

Royalty holidays

Tax holidays
Tax credits
Reduced government participation
Lower government take
Investment credits/uplifts
Accelerated depreciation
Depletion allowances
Interest expense deductions (cost recovery)

Inconvertibility – Inability of a foreign contractor to convert payments received in soft local currency into home country or hard currency such as dollars, pounds, or yen.

Indirect tax – A tax that is levied on consumption rather than income. Examples include value-added taxes, sales taxes, or excise taxes on luxury items. (see Direct Tax)

Injection – The process of pumping gas or water in a petroleum reservoir in order to maintain pressure and enhance production.

Intangible drilling and development costs (IDCs) - Expenditures for wages, transportation, fuel, fungible supplies used in drilling and equipping wells for production.

Intangibles - All intangible assets such as goodwill, patents, trademarks, unamortized debt discounts and deferred charges. Also, for example, for fixed assets the cost of transportation, labor and fuel associated with construction, installation and commissioning.

Investment credit – A fiscal incentive where the government allows a company to recover an additional percentage of tangible capital expenditure. For example if a contractor spent $10 MM on expenditures eligible for a 20% investment credit then the contractor would actually be able to recover $12 MM through cost recovery (see Uplift). These incentives can be taxable. Sometimes investment credits are mistakenly referred to as Investment Tax Credits.

Jack-up rig – Offshore mobile drilling vessel with a drilling rig mounted on the hull and with at least 3 tall legs through the hull. It is floated into position like a barge and hoisted above the water when the legs are mechanically lowered to the sea floor.

Joint operating agreement – (JOA) Official contract between working interest partners (members of the Contractor group) in a foreign concession or production sharing contract. The JOA will outline rights and obligations of the Operator and other working interest shareholders (members of the Contractor group) and means by which partners will conduct themselves. It will outline the means by which an operating committee is established, authorizations for expenditure and budgets are governed, notification deadlines, lifting rules, cash calls and so forth.

Joint venture – The term applies to a number of partnership arrangements between individual oil companies or between a company and a host government. Typically an oil company or consortium (contractor group) carries out sole risk exploration efforts with a right to develop any discoveries made. Development and production costs then are shared pro-rata between partners to the joint venture which may include the government.

Lease Option – A contractual right of an individual or a company to sign a lease, typically within a certain timeframe and upon completion of some agreed upon work such as a feasibility study, regional study, or regional data acquisition program.

Letter of credit – An instrument or document from a bank to another party indicating that a credit has been opened in that party's favor guaranteeing payment under certain contractual conditions. The conditions are based upon a contract between the two parties. Sometimes called a performance letter of credit, which is issued to guarantee performance under the contract.

Letter of intent – A formal letter of agreement signed by all parties to negotiations after negotiations have been completed outlining the basic features of the agreement, but preliminary to formal contract signing.

Levy – To impose or collect a tax or fine.

License – An arrangement between an oil company and a host government regarding a specific geographical area and petroleum operations. In more precise usage the term applies to the development phase of a contract after a commercial discovery has been made (see Permit or Block).

License area – A block or concession area governed by a PSC or other type of contract between an IOC and a host Government.

License splitting – A company's option to segregate a license area into segments and find partners and negotiate farmin/farmout arrangements for a specific segment.

Lifting – When a company takes physical and legal possession of its entitlement of crude oil, which ordinarily consists of two components under a PSC: cost oil and profit oil. Lifting agreements govern the rules by which partners will lift their respective shares and how adjustments are made if a party is "over lifted" or "under lifted".

The liftings may actually be more or less than actual entitlements, which are based on royalties, working interest percentages and a number of other factors. If an operator or partner has taken and sold more oil than it was actually entitled to, then it is in an "overlifted" position. Conversely if a partner has not taken as much as it was entitled to it is in an "underlifted" position. (see Nomination and Entitlements).

Lifting agreement – (see Lifting)

Limitada – Business entity which resembles a partnership with liability of all members limited to their contribution and no general partner with unlimited liability. Normally treated as a partnership by the US for tax purposes. Similar to a Limited Liability Company in the U.S. although the limitada was the forerunner.

LNG – Liquid natural gas is natural gas that is liquefied for shipment in specially designed refrigeration ships then regasified and distributed to customers through pipelines.

London interbank offered rate (LIBOR) – The rate most creditworthy international banks that deal in Eurodollars will charge each other. Thus, LIBOR is sometimes referred to as the Eurodollar Rate.

International lending is often based on LIBOR rates. For example, a country may have a loan with interest pegged at LIBOR plus 1.5%.

Loss of bargain damages – In an action for breach of contract under English law, the plaintiff is entitled to damages so as to put him in the same position, as far as money can do it, as he would have been in if the contract has been performed.

LPG – Liquid petroleum gas is a product of distillation and contains considerably more energy than natural gas. A cubic foot of natural gas contains roughly 1,000 BTUs of energy. A cubic foot of propane contains about 2,500 BTUs.

Marginal Government take – Same as Government Take but with costs assumed to be zero.

Marker crude – A marker, or benchmark crude, is a widely traded crude oil used as a reference for setting prices for other crudes, (e.g., Brent, West Texas Intermediate, and Dubai are benchmark crudes).

Maximum cash impairment – Maximum negative cash balance in a cash flow projection.

Nationalization – Government confiscation of the assets held by foreign companies throughout an entire industry. (see Expropriation).

Net back – Many royalty calculations are based upon gross revenues from some point of valuation, usually the wellhead, the last valve off of a production platform or at the boundary of a field or license area. The point of sale however may be different than the point of valuation and the statutory royalty calculation may allow the transportation costs from the point of valuation to the point of sale to be deducted from the actual sale price—netted back. Downstream costs between the wellhead (or point of valuation) and the point of sale are sometimes referred to as net back deductions.

Nomination – Under a lifting agreement the amount of crude oil a working interest owner is expected to lift. Each working interest partner has a specific entitlement depending upon the level of production, royalties, their working interest, and their relative position (i.e. underlifted or overlifted), etc. Each working interest partner must notify the operator (nominate) the amount of its entitlement that it will lift. Sometimes, depending upon the lifting agreement the nomination may be more or less than the actual entitlement. (see Liftings and Entitlements)

Nomination – Some countries allow oil companies to "nominate" certain areas or blocks for upcoming license rounds or offerings. This was used in the US OCS prior to 1983—known as the "Track Nomination (TN)" system.

Oil-in-place (OIP) – Estimates of the quantity of liquid hydrocarbons held in the pore spaces of a reservoir rock. It is understood that it is virtually impossible to recover all of the oil in a reservoir. Therefore an estimate of the percentage of the oil-in-place that might be recovered is required to estimate recoverable reserves (see Recovery factor).

OPEC - Organization of Petroleum Exporting Countries founded in 1960 to coordinate petroleum prices of the members. Members include:

June

Member	Date Joined	1993 Quota (1) MBOPD	2000 Production MBOPD
Abu Dhabi (UAE)	1967	2,161	2,280
Algeria	1969	750	1,250
Ecuador (2)	1960		
Gabon (3)	1975	287	
Indonesia	1962	1,330	1,490
Iran	1960	3,600	3,705
Iraq	1960	400	2,565
Kuwait	1960	2,000	2,150
Libya	1962	1,390	1,420
Neutral Zone		(4)	
Nigeria	1971	1,865	2,140
Qatar	1961	378	735
Saudi Arabia	1960	8,000	8,250
Venezuela	1960	2,359	2,940
		24,520	28,925

(1) Quota did not apply for the full year
(2) Dropped out at end of 1992
(3) Dropped out at end of 1996)
(4) Quotas do not apply – Production shared by Saudi Arabia and Kuwait and included in their production

Operator – The company directly responsible for day-to-day operations, maintaining a lease or license and ensuring the rights and obligations of the other members of the Contractor group are met.

Operating profit (or loss) – The difference between business revenues and the associated costs and expenses exclusive of interest or other financing expenses, and extraordinary items or ancillary activities. Synonymous with net operating profit (or loss), operating income (or loss), and net operating income (or loss), economic profit (or loss) or cash flow.

OPIC – Overseas Private Investment Corporation - a U.S. Government agency founded under the Foreign Assistance Act of 1969 to administer the national investment guarantee program for investment in less developed countries (LDCs) through the issuance of insurance for risks associated with war, expropriation and inconvertibility of payments in local currency.

Out-of-round – A term that indicates licensing of particular blocks or licenses is conducted at a time other than during an official bid round. Usually these out-of-round situations occur when companies "nominate" particular acreage that is of interest due to recent discoveries or other situations.

Over lifting – Over/Under lifting is the difference between actual contractor lifting during an accounting period and the contractor entitlements based upon cost recovery and profit oil in the case of a PSC. A lifting is the actual physical volume of crude oil taken and sold.

Overspill – In international taxation, a situation where a taxpaying company has a credit for foreign taxes which is greater than its corporate tax liability in its home country so that it has an unused and/or unusable tax credit.

Pareto's law – The law of the trivial many and the critical few, is commonly known as the 80/20 rule. It has many applications and is an important analytical concept. It allows the analyst to maximize efficiency by concentrating efforts on key elements.

For example, in a portfolio of producing wells, if there is a large enough (statistically significant) sampling, 20 percent of the wells will likely produce 80% of the production. Twenty percent of the wells will represent 80% of the value. In a given basin it is likely that 20% of the fields will hold 80% of the reserves.

Permit – In a loose sense the term is used to describe any arrangement between a foreign contractor and a host government regarding a specific geographical area and petroleum operations. In a more precise usage the term applies to the exploration phase of a contract before a commercial discovery has been made (see License).

Petrophysics – The study of rock properties from either actual rock samples from the field, from coring and/or from logging methods.

Pood – Unit of measure of oil production (Azerbaijan). One pood equals 16 kilograms or roughly 62-62.5 poods per ton.

Posted price – The official government selling price of crude oil. Posted prices may or may not reflect actual market values or market prices.

Pour point – The lowest temperature at which a particular crude oil will flow. It is an indication of the wax content of the oil. Some of the famous Indonesian "waxy" crudes have pour points at nearly 100 F.

Present value – The value now of a future payment or stream of payments based on a specified discount rate.

Price cap formulas – A fiscal mechanism where Government gets all or a significant portion of revenues above a certain oil or gas price. These formulas are typically characterized by a base price indexed to an inflation factor such as percentage change in the United States Producer Price Index for example. The U.S. Windfall profits tax of the late 1970s and early 1980s was a variation on this theme. Malaysia and Angola have had such elements in their systems.

Prime lending rate – The interest rate on short-term loans banks charge to their most stable and credit-worthy customers. The prime rate charged by major lending institutions is closely watched and is considered a benchmark by which other loans are based. For example, a less well established company may borrow at prime plus 1%.

Produced water – Water associated with oil or gas that is produced along with the oil or gas.

Production platform – An offshore structure equipped for oil and gas production and processing. As opposed to a "wellhead platform" which is equipped for production only. Typically, production from a wellhead platform is piped to a production platform.

Production sharing agreement (PSA) – This is the same as a Production Sharing Contract (PSC). While at one time this term was quite common it is used less frequently now, and the term Production Sharing Contract is becoming more common—except in the FSU where "PSA" is preferred terminology.

Production sharing contract (PSC) – A contractual agreement between a contractor and a host government whereby the contractor bears all exploration costs and risks and development and production costs in return for a stipulated share of the production resulting from this effort.

Production/Reserves ratio (P/R) – The percentage of total ultimate recoverable reserves produced in a peak year of production (barrels divided by barrels = %). For example, the Murcheson field in the UK sector of the North Sea produced at an average rate of 112,000 BOPD [40.8 MMBBLS] during 1983. With total ultimate recovery of 350 MMBBLS, this represented a P/R ratio of 11.6%.

This statistic is the inverse of the Reserves/Production ratio and/or the Reserve Life Index. These measures compare expected ultimate recovery with annual production rates (barrels divided by barrels per year = years). For example, if a company has 2,400 MMBBBLS of oil reserves and produces 800 MBOPD [365 billion barrels per year] The reserve life index is 8.2 years—about average for most Western oil companies. This is a slightly abstract statistic because it represents how many "years" of production the company has "if" it produces at a constant rate with no decline.

Productive horizon – A geological formation (horizon) that is known to be hydrocarbon bearing in a given area or province.

Pro forma – Latin for as a matter of form. A financial projection based upon assumptions and possible events that have not occurred. For example, a financial analyst may create a consolidated balance sheet of two non-related companies to see what the combination would look like if the companies had merged. Often a cash flow projection, for discounted cash flow analysis, is referred to as a pro forma cash flow.

Progressive taxation – Where tax rates increase as the basis to which the applied tax increases. Or, where tax rates decrease as the basis decreases. The opposite of regressive taxation.

Profit oil – In a production sharing contract the share of production remaining after royalty oil and cost oil have been allocated to the appropriate parties to the contract (This is the most common definition.).

Sometimes defined as a certain percentage of gross production (such as 100% - 10% royalty oil and - 40% cost oil = 50%) with "unused cost oil" treated separately. Separate treatment may be simply that the "unused cost oil (ullage)" be divided in the same fashion as profit oil. In Malaysia and Egypt separate treatment provides a different profit oil split for ordinary profit oil and for unused cost oil.

In some systems contractor profit oil is defined as the contractor tax base (Russia).

Prospectivity – This term deals with the exploration potential of an area and the chances for making commercial discoveries and the risks associated with exploration. An area with the potential for large discoveries and low costs and low risks would be considered highly "prospective".

Prospect – A location where both geological and geophysical information and economic conditions indicate a feasible place to drill a well.

Protocol – (1) Culturally dictated forms of ceremony and etiquette that govern business relationships, meetings, and negotiations. (2) Formal document primarily used in republics of the former Soviet Union signed by parties who attend meetings or negotiations indicating various minor agreements or stages of agreement reached. These are not the same as a more formal letter of intent which usually signifies that most of the negotiations have been concluded.

Rate of return contracts – Sometimes referred to as "Resource rent royalties (or taxes)", "Trigger taxes", or the "World Bank Model". The government collects a share of cash flows in excess of specified internal rate return (ROR) thresholds. The government share is calculated by accumulating negative net cash flows at the specific threshold rate of return (using a method called "compound uplifting") and once the accumulated value becomes positive the government takes a specified share. An example is shown below:

ROR	Tax Rate
< 20%	0%
20 – 25	30
25 – 30	50
> 30	70

Recoverable reserves – The hydrocarbon volumes expected to be produced economically and not left behind in the reservoir.

Recovery factor – The percentage of oil in place (or gas) expected to be produced. It is an estimate based upon consideration of the fluid properties such as viscosity and GOR, rock properties such as porosity and permeability, pressure gradients, well spacing and the nature of the reservoir energy or drive mechanism.

Regressive tax – Where tax rates become lower as the basis to which the applied tax increases. Or, where tax rates increase as the basis decreases. This is the opposite of progressive taxation.

Relinquishment – This is a common contract term in exploration agreements that requires a certain percentage (often around 25%) of the original contract area be returned to the Government at the end of the first phase of the Exploration period. Usually additional relinquishment is required at the end of the second phase of the Exploration period. Also referred to as exclusion of areas. Contracts typically have specific provisions for the timing and amount of relinquishment prior to entering the subsequent phases of the contract.

Reinvestment obligations – A fiscal term that requires the contractor/operator to set aside a specified percentage of profit oil or income after-tax that must be spent on domestic projects such as exploration.

Reserves Classification – Russian Classification vs typical Western Classifications:

<table>
<tr><td colspan="9">Classification of Reserves and Resources</td></tr>
<tr><td colspan="9">Expected Ultimate Recovery of an Area/Basin (=Total Recoverable Resources)</td></tr>
<tr><td rowspan="6">Cumulative Production
(Nakopiennaya Dobycha)</td><td colspan="5">Reserves in existing fields
(Expanded reserves)</td><td colspan="2" rowspan="3">Expectations From Future Discoveries</td><td rowspan="3">Western Terminology</td></tr>
<tr><td colspan="4">Known Reserves</td><td>Extensions</td></tr>
<tr><td colspan="2">Proven Reserves</td><td colspan="2">Probable Reserves</td><td>Possible Reserves</td></tr>
<tr><td>A</td><td>B</td><td>C1</td><td>C_2</td><td>C_3D_0</td><td>D_1</td><td>D_2</td><td rowspan="3">Russian Terminology</td></tr>
<tr><td colspan="4">Reserves
(Zapasy)</td><td colspan="3">Resources
(Potentsial'nye resursy)</td></tr>
<tr><td colspan="3">Proved plus partly probable
(Razvedannye)</td><td>Probable or Preliminarily evaluated
(Predvariteln o Otsenennye)</td><td>Possible
(Perspektivnye)</td><td colspan="2">Inferred
(Prognoznye)</td></tr>
<tr><td colspan="9">Extracted from: Slovar po geologii neffi i gaza, Nedra, Leningrad, 1988.
The Soviet Union modified its reserves and resources classification in April, 1983.</td></tr>
</table>

Reserve replacement ratio – The amount of oil and gas discovered in a given period divided by the amount of production during that period.

Reserve/Production ratio – This statistic compares expected ultimate recovery with annual production rate (barrels divided by barrels per year = years). For example, if a company has 2,400 MMBBBLS of oil reserves and produces 800 MBOPD [365 billion barrels per year] The reserves/production ratio (also called the reserve life index) is 8.2 years—about average for most Western oil companies. This is a slightly abstract statistic because it represents how many "years" of production the company has "if" it produces at a constant rate with no decline.

This statistic is the inverse of the Production/Reserves ratio. (See Production/Reserves ratio).

Reserve life index – (See Reserve/Production ratio).

Reservoir – A porous, permeable rock formation in which hydrocarbons have accumulated.

Reservoir pressure – The reservoir fluid pressure. See "hydrostatic pressure".

Resource rent tax – (RRT) Some economists refer to additional profits taxes (peculiar to the oil industry) as a resource rent tax. Australia has a specific tax based upon profits, which is referred to as resource rent tax. Normally the RRT is levied after the contractor or oil company has recouped all capital costs plus a specified return on capital that supposedly will yield a fair return on investment. (see Rate of Return Contract).

Ringfencing – A cost center based fiscal (or contractual) device that forces contractors or concessionaires to restrict all cost recovery and or deductions associated with a given license (or sometimes a given field) to that particular cost center. The cost centers may be individual licenses or on a field-by-field basis.

For example, with typical ringfencing, exploration expenses in one non-producing block could not be deducted against income for tax calculation purposes in another block. Under a PSC ringfencing acts in the same way—cost incurred in one ringfenced block cannot be *recovered* from another block outside the ringfence. Most countries use ringfencing.

Ringfencing ordinarily refers to "space" (i.e. area and/or depth) but it can also be based on "time" and categories of costs. It can also apply to specific reservoirs or reservoir depths and exploration vs. development expenditures.

Risk capital – Typically the drilling, seismic, signature bonuses, and costs associated with the first phase of exploration. The money placed at risk to see if hydrocarbons can be found. Often these costs have very little chance of being recovered if hydrocarbons are not found.

Royalty holiday – A form of fiscal incentive to encourage investment and particularly marginal field development. A specified period of time, in years or months, during which royalties are not payable to the government. After the holiday period the standard royalty rates are applicable. (see Tax Holiday)

Royalty leakage – In Newfoundland the "incentive" payment portion of the fees for Haliburton services which would be deductible for calculating royalty was referred to as a possible source of "leakage" i.e. it would reduce Government revenue from the royalty that allowed such deductions.

Royalty oil – A percentage of the production (or revenue) paid to the mineral rights owner (Government typically) free and clear of the costs of production. This represents the Government oil entitlement as a result of the royalty rate in the contract between the Government and the International oil company (IOC).

"R" factors – Some tax rates (and royalties, DMO, Gvt. Participation) are governed by pre-determined "payout" thresholds. "R" stands for "ratio". Typically the contract defines "R" as the ratio of "X" divided by "Y". And "X" is defined as "cumulative receipts" and "Y" is defined as "cumulative expenditures". Cumulative expenditures include both capital as well as operating costs. When "R" equals 1 (one) this is the point at which the company has achieved "payout". Usually multiple thresholds are established. For example:

"R"	**Tax Rate**
0 - 1	40%

1 - 1.5	50
1.5 - 2	60
> 2	70

At the end of each accounting period the "R" factor is calculated and when a threshold is crossed, then in the next accounting period the new tax rate would apply.

Saturation – This term applies to accounting periods where there are unrecovered costs carried forward. The cost recovery mechanism is at it's maximum (saturated).

Seal – An impermeable rock capable of trapping hydrocarbons in a porous reservoir rock.

Seismic – A petroleum exploration method in which acoustic (sound) energy is put into the earth with a source such as dynamite, vibrating trucks, or air guns. The sound energy reflects off subsurface rock layers and is recorded by detectors (geophones) at the earth's surface. Images of the subsurface rock layers is made with seismic to locate geological structures.

Two-dimensional (2-D) seismic is where data is acquired along a single line of geophones. This has been the way data has been acquired for many years.

Three-dimensional (3-D) seismic is where data is acquired with a "grid" of geophones – multiple lines. This is a newer, more costly technology but results have typically been quite good in terms of the quality of the data acquired.

Seismic option – A contractual arrangement between a host government and a contractor. The arrangement provides the contractor exclusive rights over a geographic area where it is obligated to shoot seismic data. After data acquisition, processing and interpretation the contractor has the right to enter into an additional phase of the agreement or a more formal contract with the government for the area, which usually includes a drilling commitment.

Seismic reflectors – When seismic data is acquired there are some rocks in the subsurface that yield stronger responses "echoes" when the sound energy bounces back to the detectors (geophones) at the surface. These make it easier to "see" how the geological horizons or formations in the subsurface are folded or faulted.

Severance tax – A tax on the removal of minerals or petroleum from the ground, usually levied as a percentage of the gross value of the minerals removed. The tax can also be levied on the basis of so many cents per barrel or per million cubic feet of gas.

Shelf company – An incorporated entity, which has no assets and or income but has gone through the process of registration and licensing. Some operations in foreign countries are started with acquisition of a shelf company because of the long delays that can be experienced setting up and incorporating a company.

Sinking fund – Money accumulated on a regular basis in a separate account for the purpose of paying off an obligation or debt.

Sliding scales – A mechanism in a fiscal system that increases effective taxes, and/or royalties based upon profitability or some proxy for profitability such as increased levels of oil or gas production (most common). Ordinarily each tranche of production is subject to a specific rate and the term "incremental" sliding scale is sometimes used to further identify this.

Example:

Typical Sliding Scale Royalty:

		Royalty
First Tranche	Up to 10,000 BOPD	5%
Second Tranche	10,001 - 20,000 BOPD	10%
Third Tranche	20,001 - 40,000 BOPD	15%
Fourth Tranche	> 40,001 BOPD	20%

Rare but also referred to as "Gliding scales" (Kazakhstan).

Sovereign risk – Also called country risk or political risk--refers to the risks of doing business in a foreign country where the government may not honor its obligations or may default on commitments. Encompasses a variety of possibilities including nationalization, confiscation, expropriation, etc.

Spot market – Commodities market where oil (or other commodities) is sold for cash and the buyer takes physical delivery immediately. Futures trades for the current month are also called spot market trades. The spot market is mostly an over-the-counter market conducted by telephone and not on the floor of an organized commodity exchange.

Spot price – Also called the cash price. The delivery price of a commodity traded on the spot market.

Spud – The commencement of drilling operations when a drilling rig is in-place and a drill bit begins to penetrate the earth.

State take – The government share of profits also referred to as Government take. (Although there are some consulting firms that make a distinction between Government take and State take.) There are a number of definitions but the most succinct is: State take = State cash flow/Gross project cash flow.

Subsidiary – A company legally separated from but controlled by a parent company who owns more than 50% of the voting shares. A subsidiary is always by definition an affiliate company. Subsidiary companies are normally taxed as profits are distributed as opposed to branch profits which are taxed as they accrue. (see Affiliate)

Sunk costs – Accumulated costs at any point in time – past costs. There are a number of categories of sunk costs:

Tax loss carry forward (TLCF)
Depreciation balance
Amortization balance
Cost recovery carry forward

These costs represent previously incurred costs that will ultimately flow through cost recovery or will be available as deductions against various taxes (if eligible).

Surrender – Surrender is often synonymous with relinquishment in the context of area reduction. However the term also is used to describe a contractor's option to withdraw from a license or contract at or after various stages in a contract. (see Relinquishment)

Swanson's Rule – A statistical method for estimating the mean of a distribution. The focus on the mean is because it is the one single value that best represents the complete distribution. And only the "means" from one distribution to another can be added. The mean is estimated by taking a "weighting" the 10^{th}, 50^{th} and 90^{th} percentile reserve estimates 30%, 40% and 30% respectively and taking the weighted average.

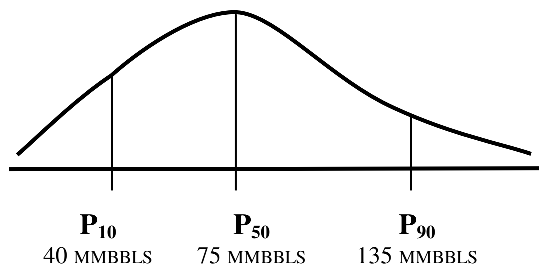
Swanson's Rule for finding the mean in low to medium-variance cases:

30% * P_{10} value
\+ 40% * P_{50} value
\+ 30% * P_{90} value

Swanson's estimated mean:

30% *	40 MMBBLS	=	12
40% *	75 MMBBLS	=	30
30% *	135 MMBBLS	=	40.5
Estimated mean:			**82.5 MMBBLS**

Assume the field size distribution is as follows, with an estimated chance of success of 20%.



For medium to high-variance (highly skewed) cases, a graphical solution is best for finding the mean.

Take-or-pay contract – A type of contract where specific quantities of gas (usually daily or annual rates) must be paid for, even if delivery is not taken. The purchaser may have the right in following years to take gas that had been paid for but not taken.

Tax – A compulsory payment pursuant to the authority of a foreign government. Fines, penalties, interest and customs duties are not taxes.

Tax haven – A country where certain taxes are low or nonexistent, in order to increase commercial and financial activity.

Tax holiday – A form of fiscal incentive to encourage investment. A specified period of time, in years or months, during which income taxes are not payable to the government. After the holiday period the standard tax rates apply.

Tax loss carry-forward (TLCF) – In systems where expensing of pre-production costs is allowed, a negative tax base can arise which is referred to as a tax loss carry-forward. Also a TLCF can originate in systems where bonuses are deductible for tax calculation purposes and may be expensed.

Tax treaty – A treaty between two (bilateral) or more (multilateral) nations which lowers or abolishes withholding taxes on interest and dividends, or grants creditability of income taxes to thus avoiding double taxation.

Technical cost factor – A cost index per unit such as barrels, mcf or BOE at some parity between oil and gas. The index is based upon the capital costs per barrel plus one-half of all operating costs per barrel. For example, if a field development is expected to cost US$300MM for 100 MMBBLS of recoverable oil, the capital costs amount to $3.00/BBL. If Operating costs over the life of the field are expected to amount to $600 MM then the technical cost factor would be $5.00/BBL. ($300 MM capital cost + $400 MM operating costs (full cycle)/2 = $500 MM "technical costs") Technical cost factor then would be $500 MM/100 MMBBLS (or $5.00/BBL).

Tender – This can represent an act (of tendering) or it can represent a document (a tender) submitted to a government as a bid for exploration rights. The same usage applies to a tender submitted to an oil company by a service company bidding for the right to provide goods and/or services.

Thin capitalization rules – In countries where interest cost is recoverable or deductible the Government may introduce a backstop against the practice where overseas shareholders load the balance sheets of their in-country operations with debt, with the object of reducing host country tax exposure. Typically the Government will impose an artificial (or "imputed') capitalization structure such as 75% debt, or limit the debt/equity ratio to a certain percentage.

Tranche – Usually a quantity or percentage of oil or gas production that is subject to specific fiscal criteria. (1) The Indonesian first tranche production (FTP) of 20% means that the first 20% of production is subject to the profit oil split and taxation and this tranche of production is not available for cost recovery. (2) Sliding scale terms typically subject different levels of production (tranches) to different royalty rates, tax rates or profit oil splits. Example:

Typical Sliding Scale Royalty:

		Royalty
First Tranche	Up to 10,000 BOPD	5%
Second Tranche	10,001 - 20,000 BOPD	10%
Third Tranche	20,001 - 40,000 BOPD	15%
Fourth Tranche	> 40,001 BOPD	20%

Although rare, also referred to as "slabs" (India) or "lifts" (rare).

Transfer pricing – Integrated oil companies must establish a price at which upstream segments of the company sell crude oil production to the downstream refining and marketing segments. This is done for the purpose of accounting and tax purposes. Where intra-firm (transfer) prices are different than established market prices, governments will force companies to use a marker price or a basket price for purposes of calculating cost oil and taxes.

Transfer pricing also refers to pricing of goods in transactions between associated companies. Often same as non-arms-length sales.

Trap – A high area on the reservoir rock where oil and/or gas can accumulate. It is overlain by a cap rock (seal).

Treaty shopping – Seeking tax benefits and treaties in various countries in order to structure an appropriately situated business entity in a given country that would take advantage of benefits that would not ordinarily be available.

Trend – The area along which a petroleum play occurs. Sometimes referred to as a fairway.

Turnover – A financial term that means gross revenues. The term is commonly used outside of the United States.

Under lifting – (see Over lLifting)

Unit-of-production depreciation - Method of depreciation for capital costs. This method attempts to match the costs with the production those costs are associated with.

Formula for unit-of-production method

$$\text{Annual depreciation} = (C - AD - S)\frac{P}{R}$$

Where:

C	=	Capital costs of equipment
AD	=	Accumulated depreciation
S	=	Salvage value
P	=	Barrels of oil produced during the year *
R	=	Recoverable reserves remaining at the beginning of the tax year

* If there is both oil and gas production associated with the capital costs being depreciated, then the gas can be converted to oil on a thermal basis.

Uplift – Common terminology for a fiscal incentive whereby the government allows the contractor to recover some additional percentage of tangible capital expenditure. For example if a contractor spent $10 MM on eligible expenditures and the government allowed a 20% uplift then the contractor would be able to recover $12 MM. The uplift is similar to an investment credit. However, the term often implies that all costs are eligible where the investment credit applies to certain eligible costs. The term uplift is also used at times to refer to the built-in rate of return element in a rate of return contract.

Value added tax (VAT) – A tax that is levied at each stage of the production cycle or at the point of sale. Normally associated with consumer goods. The tax is assessed in proportion to the value added at any given stage.

Indirect taxes such as the VAT [or Goods & services tax (GST)] place the company or contractor in the role of unpaid tax collector on behalf of the government. Sometimes referred to as a withholding tax.

Wildcat well – An exploratory well drilled far from any proven production. Wildcat wells involve a higher degree of risk than exploratory or development wells.

Withering clause – (see Dilution clause)

Windfall Profits – *During the American Revolutionary War, the use of any lumber, cut one foot or greater in width, was forbidden on the interior of new homes constructed by colonists. All such lumber was sent to Britain to be used in shipbuilding to support its war effort. Detection of such wall paneling or flooring by the British Army usually resulted in colonist imprisonment.*
There was, however, a clause that allowed certain lumber to be used. If a tree fell on one's property through an "Act of God," such as a severe storm, the lumber could be used for any purpose. Further, it could be sold for a great deal of money. Thus, if a number of trees fell during a Nor'easter, they could bring a sizable stipend for a colonist. This monetary reward was called "windfall profit". [Stolen word-for-word from a Chubb Insurance report for a New England home. DJ]

Windfall Profits Tax – In the petroleum industry these taxes are typically based on a price differential between actual market price and some (artificial) reference price (adjusted for inflation). The reference price can be a bid item, negotiated or statutory. Examples include the old US Windfall Profits Tax, Thailand's "Special Remuneratory Benefit", price-cap formulas (Angola, Malaysia). The term is also used in the same context as "Windfall Rent".

Withholding tax – A direct tax on a foreign corporation by a foreign government, levied on dividends or profits remitted to the parent company or to the home country, as well as interest paid on foreign loans.

Work commitment – The drilling and/or seismic data acquisition and processing obligation associated with any given phase of a PSC. This term is also used in the context of a farmin agreement.

Working interest – The percentage interest ownership a company (or government) has in a joint venture, partnership, or consortium that bears 100% of the costs of production. The expense-bearing interests of various working interest owners during exploration, development and production operations, may change at certain stages of a contract or license. For example, a partner with a 20% working interest in a concession may be required to pay 30% of exploration costs but only a 20% share of development costs (see Carried interest). With government participation, the host government usually pays no exploration expenses but will pay its pro-rata working interest share of development and operating costs and expenses.

World bank – A bank funded by approximately 130 countries which makes loans to less developed countries (LDCs). The official name of the World Bank is the International Bank for Reconstruction and Development.