

THE ILLUSTRATED
PETROLEUM
REFERENCE
DICTIONARY

THIRD EDITION

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THE ILLUSTRATED
**PETROLEUM
REFERENCE
DICTIONARY**

THIRD EDITION

EDITED BY

ROBERT D. LANGENKAMP

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FOREWORD

A petroleum reference dictionary with thousands of entries and hundreds of illustrations can be more than a collection of words and pictures. Rightly, it should be a rich and informative distillation of the history of the industry. From the expressions and the descriptions of tools, jobs, and processes, one should be able to trace the growth of oil from a "cottage industry" to one of the giants of the industrial world whose activities affect nearly everyone.

It all began 120 years ago, in 1859, when Colonel Edwin Drake drilled his now historic well near Titusville, Pennsylvania. Since then every person who ever drilled for oil must have felt some mystical kinship with the world's first and most famous "wildcatter" who "kicked down" his well to a depth of 69½ ft and found oil.

Following Drake's discovery there was a frantic rush to get in on the "play." The new "oil men" were hastily converted farmers, tradesmen, blacksmiths, and draymen plus a liberal sprinkling of gamblers and adventurers looking for quick fortunes.

From this mixed bag of "diggers" working along the creeks and in the hollows of western Pennsylvania and West Virginia came an expressive and colorful vocabulary describing the still-unfamiliar business of prospecting for oil with improvised tools.

By the turn of the century, the industry had gathered some momentum, and a measure of know-how and had spread into the Southwest, Texas, Oklahoma, and then California. Cable tool rigs, steam boilers and engines, wooden derricks, and horses and mules were still doing the work and providing the bulk of the transportation. Among those whose vernacular and idiomatic phrases few non-oil people understood were the drillers, "roughnecks," tool dressers, mule skimmers, well shooters, pipeliners, and tankies. These and others of the hardy breed, in greasy overalls and with a quid of tobacco in the jaw, made up the rough and profane world of the boom town.

During the ensuing decades, the search for "black gold" intensified and grew progressively more sophisticated. Operators relied more on scientific methods than "creekology" as more advanced tools and instruments were developed. The rotary rig was gradually displacing the lower and less efficient cable tool rigs; steam power was giving way to the diesel and gas engine.

The petroleum geologist, the geophysicist, the well logger took a lot of the guesswork out of exploration, drilling, and well completion. But even today there are many questions still unanswered concerning where and how.

Beginning in the late 1930s the search for more and cheaper oil to keep pace with the nation's ever-increasing demands sent the oil men overseas where they were rewarded by the discovery of huge new reserves of oil. As a result we have words relating to oil in a global context, reflecting the industry's multi-national character. Terms such as *consortium*, *concession*, *fixer's fee*, *participation*, *buy-back oil*, and the portentous acronym *OPEC* are a few of the new additions to oil's ever-expanding vocabulary.

Yes, the petroleum industry has assumed an international character—its exploration activities are global in scope, its advanced technology has an influence worldwide. As a prime energy supplier, it is a dynamic force in the Free World. Today, oil men and women are at work on many frontiers, each as demanding in energy and innovation as any encountered in the industry's 120-year history. The physical frontiers of deep water offshore, the Arctic, the deserts, and remote, uncharted jungles—environments as varied as the world's geography affords—are awesome and call for good measures of courage and fortitude.

Equally demanding are the scientific and technological frontiers, where efforts are concentrated in developing synthetic fuels, recovering more oil from known reservoirs, and furthering the development of exploration techniques for new discoveries deeper in the earth. As even the casual observer is aware, these physical and technological challenges are being met head-on as notable advances are being made in all segments of the industry. And with these advances come words to describe new concepts, new processes, new tools, and new procedures.

To make note of and record what is new in the growing lexicon of oil, the second edition of the *Illustrated Petroleum Reference Dictionary* has been revised and considerably enlarged. There are now more than 3,000 entries, a sizable increase in the number of definitions and descriptions, plus hundreds of additional illustrations to aid in understanding and appreciating the colorful and expressive language of the oil patch. Also included are Steven Gerolde's *Universal Conversion Factors* and the Desk & Derrick Club's *Abbreviator*, bringing together all that is venerable and historic plus the newest in oil terminology and measurement.

The author, with more than 30 years in the business, hopes that this book will prove useful as well as interesting to those in the oil business, to writers, students, lawyers, and investors, as well as members of the public who would like to learn more about an industry that along with automobile, has affected their lives profoundly.

Robert D. Langenkamp

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A

AAODC

American Association of Oilwell Drilling Contractors.

AAPG

American Association of Petroleum Geologists.

ABANDONED OIL

Oil permitted to escape from storage tanks or pipeline by an operator. If the operator makes no effort to recover the oil, the landowner on whose property the oil has run may trap the oil for his own use.

ABANDONED WELL

A well no longer in use; a dry hole that, in most states, must be properly plugged.

ABSOLUTE ALCOHOL

One hundred percent ethyl alcohol.

ABSOLUTE PERMEABILITY

The ability of a rock or a formation to conduct a fluid (oil, gas, or water) when 100 percent saturated, i.e., at 100 percent saturation.

ABSORPTION

The taking in or assimilation of a gas by a liquid; soaking up of a substance by another. See Absorption Plant.

ABSORPTION OIL

An oil with a high affinity for light hydrocarbons but containing few if any of the light compounds composing gasoline or natural gas. The oil used in an absorption plant.

ABSORPTION PLANT

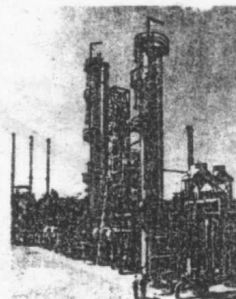
An oilfield facility that removes liquid hydrocarbons from natural gas, especially casinghead gas. The gas is run through oil of a proper character that absorbs the liquid components of the gas. The liquids are then recovered from the oil by distillation.

ABSORPTION TOWER

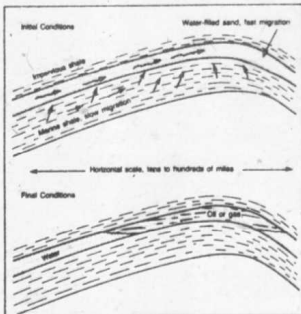
A tower or column in which contact is made between a rising gas and a falling liquid so that part of the gas is taken up or absorbed by the liquid.

ABSTRACT OF TITLE

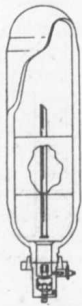
A collection of all recorded instruments affecting the title to a tract of land. Some abstracts contain complete copies of instruments on record, but others are summaries of the effect of the various instruments. In most states, title examination is made using an abstract of title.



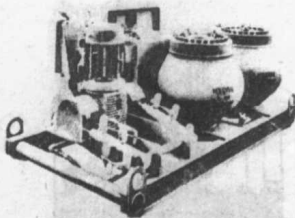
Absorption tower



Oil or gas migration and accumulation



Accumulator bottle



Accumulator system
(Courtesy Hydril)

ACCELERATED AGING TEST

A procedure whereby an oil product may be subjected to intensified but controlled conditions of heat, pressure, radiation, or other variables to produce, in a short time, the effects of long-time storage or use under normal conditions.

ACCOMMODATION RIG

See Rig, Accommodation.

ACCUMULATION OF OIL AND GAS

Hydrocarbons accumulate in porous and permeable formations and stratify or form in layers; gas at the highest level, oil in the second level beneath the gas, and water (if there is any) on the bottom level. Oil and gas accumulate in the highest parts of a reservoir, which makes the top and upper flanks of an anticline a good place to drill for oil. Petroleum accumulations require a great deal of time (a million years or so) to form as the oil and gas percolate upward from their source beds through more-or-less permeable rock to the reservoir rock where, with luck, it is discovered by a wildcatter.

ACCUMULATOR

A small tank or vessel to hold air or liquid under pressure for use in a hydraulic or air-actuated system. Accumulators in effect store a source of pressure for use at a regulated rate in mechanisms or equipment in a plant or in drilling or production operations.

ACCUMULATOR SYSTEM

A hydraulic system designed to provide power to all closure elements of the rig's blowout preventer stack. Hydraulic oil is forced into one or more vessels by a high-pressure, small-volume pump and its charge of inert gas, usually nitrogen. The gas is compressed and stores potential energy. When the system is actuated, the oil under high pressure is released and opens or closes the valves on the BOP stack.

ACETONE

A flammable, liquid compound used widely in industry as a solvent for many organic substances.

ACETYLENE

A colorless, highly flammable gas with a sweetish odor used with oxygen in oxyacetylene welding. It is produced synthetically by incomplete combustion of coal gas and also by the action of water on calcium carbide (CaC_2). Also can be made from natural gas.

ACID-BOTTLE INCLINOMETER

A device used in a well to determine the degree of deviation from the vertical of the wellbore. The acid is used to etch a horizontal line on the container. From the angle the line makes with the wall of the container, the angle of the well's course can be determined. See Incliner.

ACIDIZING A WELL

A technique for increasing the flow of oil from a well. Hydrochloric acid is

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pumped into the well under high pressure to reopen and enlarge the pores in the oil-bearing limestone formations.

ACID OIL

Sour oil, i.e., oil with a high concentration of hydrogen sulfide (H_2S). Acid gas is sour gas with a high percentage of H_2S .

ACID-RECOVERY PLANT

An auxiliary facility at some refineries where acid sludge is separated into acid oil, tar, and weak sulfuric acid. The sulfuric acid is then reconcentrated.

ACID SLUDGE

The residue left after treating petroleum oil with sulfuric acid for the removal of impurities. The sludge is a black, viscous substance containing the spent acid and the impurities that the acid has removed from the oil.

ACID TREATMENT

A refining process in which unfinished petroleum products such as gasoline, kerosene, diesel fuels, and lubricating stocks are treated with sulfuric acid to improve color, odor, and other properties.

ACOUSTIC PLENUM

A soundproof room; an office or "sanctuary" aboard an offshore drilling platform protected from the noise of drilling engines and pipe handling.

ACOUSTIC REENTRY

A method used in deepwater operations offshore to reposition a drillship over a borehole previously drilled and cased. The technique employs acoustic signals to locate the pipe and guide the ship into position.

ACRE-FOOT

A unit of measurement applied to petroleum reserves; an acre of producing formation one foot thick.

A.C.S.

American Chemical Society.

A.C.T. SYSTEM

Automatic Custody Transfer System. See Lease Automatic Custody Transfer.

ACTUATOR

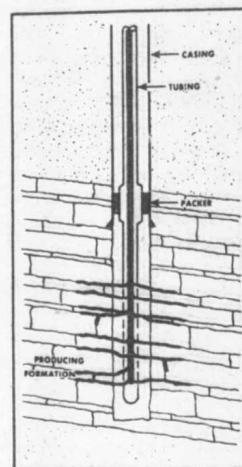
See Operator.

A.C.V.

Air-cushion vehicle. See Air-Cushion Transport.

ADAMANTINE LUSTER

A brilliant mineral luster characteristic of minerals with a high index of refraction (deflects a ray of light with little change in the light ray's velocity). Diamonds have such a luster, as does cerussite.



Acidizing



Actuator (Courtesy Fisher Controls Co.)

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A.D.A. MUD

A material that may be added to drilling mud to condition it in order to obtain satisfactory core samples.

ADAPTER

A device to provide a connection between two dissimilar parts or between similar parts of different sizes. *See* Swage.

ADDITIVE

A chemical added to oil, gasoline, or other products to enhance certain characteristics or to give them other desirable properties.

ADOLESCENT ROCK

See Immature Rock.

ADSORPTION

The attraction exhibited by the surface of a solid for a liquid or a gas when they are in contact. *Compare with* Absorption.

ADVANCE PAYMENT AGREEMENT

A transaction in which one operator advances a sum of money or credit to another operator to assist in developing an oil or gas field. The agreement provides an option to the "lender" to buy a portion or all of the production resulting from the development work.

A.E.C.

Atomic Energy Commission.

AEOLIAN

See Eolian.

AERIFY

To change into a gaseous form; to infuse with or force air into; gasify.

A.F.R.A.

Average Freight Rate Assessment (for tankers).

A-FRAME

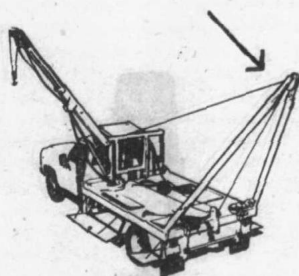
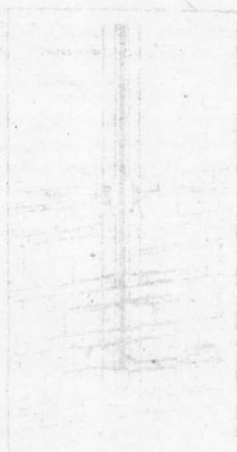
A two-legged metal or wooden support in the form of the letter A for hoisting or exerting a vertical pull with block and tackle or winch line attached to the apex of the A-frame.

A.G.A.

American Gas Association.

AGENCY CONTRACT

A type of agreement that in many cases has replaced the concession as the form of petroleum development agreement in the Middle East and with OPEC countries elsewhere. Under an agency contract, title to oil installations and oil produced is held by the host government, but the government bears none of the costs of initial exploration. Also, the foreign company does not have a long-term, exclusive right to exploit the minerals as is the case under a concession agreement.



A-frame

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A.I.Ch.E.

American Institute of Chemical Engineers.

A.I.M.M.E.

American Institute of Mining and Metallurgical Engineers.

AIR-BALANCED PUMPING UNIT

See Pumping Unit, Air-Balanced.

AIR BOTTLE

A cylinder of oxygen for oxyacetylene welding; an air chamber.

AIR BURSTS

A geophysical technique used in marine seismic work in which bursts of compressed air from an air gun towed by the seismographic vessel are used to produce sound waves. Air bursts do not destroy marine life as did explosive charges.

AIR CHAMBER

A small tank or "bottle" connected to a reciprocating pump's discharge chamber or line to absorb and dampen the surges in pressure from the rhythmic pumping action. Air chambers are charged with sufficient air pressure to provide an air cushion that minimizes the pounding and vibration associated with the pumping of fluids with plunger pumps.

AIR-COOLED ENGINE

An engine in which heat from the combustion chamber and friction is dissipated to the atmosphere through metal fins integral to the engine's cylinder head and block assemblies. The heat generated flows through the engine head and cylinder walls and into the fins by conductance and is given off by the fins acting as radiators. A small, two-cycle engine without water jacketing, water pump, or conventional radiator.

AIR-CUSHION TRANSPORT

A vehicle employing the hovercraft principle of downthrusting air-stream support, developed to transport equipment and supplies in the Arctic regions. The air cushion protects the tundra from being cut by the wheels or treads of conventional vehicles.

AIR DRILLING

See Drilling, Air.

AIRIED UP

Refers to a condition in a plunger pump when the suction chamber is full of air or gas blocking the intake of oil into the chamber. Before the pump will operate efficiently, the air must be bled off—vented to the atmosphere—through a bleeder line or by loosening the suction valve covers to permit the escape of the air.

AIR GUN

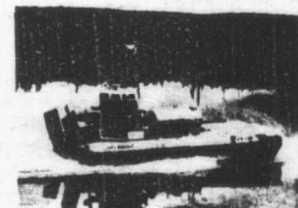
A device used in geophysical or seismic surveys in a water environment that creates seismic signals (sound waves) with bursts of compressed air.



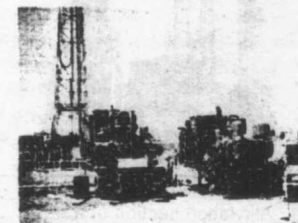
Air-balanced pumping unit



Underwater seismic explosion, now replaced by air bursts



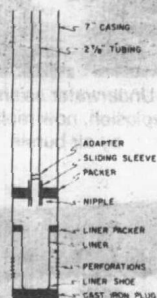
Air-cushion transport
(Courtesy Bell Aerospace Co.)



Air drilling rig



Air hoist (Courtesy Ingersoll-Rand)



Air-injection well (After Franco)



Alkylation section of a refinery (Courtesy Econo-Therm Corp.)

Air bursts from air guns trailed behind a geophysical ship are as effective as explosive detonations but do not damage marine life. See Seismic Sea Streamer.

AIR HOIST

A hoist; a mechanism for lifting operated by a compressed air motor; pneumatic hoist.

AIR-INJECTION METHOD

A type of secondary recovery to increase production by forcing the oil from the reservoir into the wellbore. Because of the dangers inherent in the use of air, this method is not a common practice except in areas where there is insufficient gas for repressuring.

AIR WRENCH

See Impact Wrench.

ALGAL LIMESTONE

(1) A limestone made up largely of the remains of calcium carbonate-producing algae. (2) A limestone in which algae bind together the fragments of other calcium carbonate-producing organisms.

ALGAL REEF

An organic reef in which algae were the principal organisms; secreting calcium carbonate to build the reef.

ALIPHATICS

One of the two classes of organic petrochemicals; the other is the aromatics. The most important aliphatics are the gases ethylene, butylene, acetylene, and propylene.

ALKYLATION

A refining process that, simply stated, is the reverse of cracking. The alkylation process starts with small molecules and ends up with larger ones. To a refining engineer, alkylation is the reaction of butylene or propylene with isobutane to form an isoparaffin, alkylate—a superior gasoline blending component.

ALLOWABLE

The amount of oil or gas a well or a leasehold is permitted to produce under proration orders of a state regulatory body.

ALL-THREAD NIPPLE

A short piece of small-diameter pipe with threads over its entire length; a close nipple.

ALLUVIAL FAN

(1) A fan-shaped area of soil and small rock sediment deposited by mountain or highland streams as their flow meets the relatively flat desert floor. (2) The silt, clay, sand, and other sediment deposited by a stream or river as it spreads out on a plain or continental shelf. Alluvial fans are usually cut by numerous distributary channels that divide the main stream

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to form the common fan shapes similar to those occurring in deltas. Large alluvial fans are a feature of the southwest U.S., where fast-flowing mountain streams meet the flat land, slow down to a crawl, and drop their suspended bed load—load of sediment.

ALLUVIAL TALUS

An accumulation of pebbles and rock fragments deposited by rainwash after a storm or by melting snow.

ALTERNATE FUELS

Fuels—gas, gasoline, heating oil—made from coal, oil shales, or tar sands by various methods. Alternate fuels may also include steam from geothermal wells where superheated water deep in the earth is used to generate steam for electric power generation.

ALUMINUM CHLORIDE

A chemical used as a catalytic agent in oil refining and for the removal of odor and color from cracked gasoline.

AMERIPOL

The trade name for products made from a type of synthetic rubber.

AMINE

Organic base used in refining operations to absorb acidic gases (H_2S , COS , CO_2) occurring in process streams. Two common amines are monoethanolamine (MEA) and diethanolamine (DEA).

AMINE UNIT

A natural gas treatment unit for removing contaminants— H_2S , COS , CO_2 —by the use of amines. Amine units are often skid-mounted so they can be moved to the site of new gas production. Gas containing H_2S and other impurities must be cleaned up before it is acceptable to gas transmission pipelines.

AMMONIA (FERTILIZER)

An extremely pungent, colorless, gaseous alkaline compound of nitrogen and hydrogen (NH_3) that is soluble in water. The gas can be condensed to a liquid by severe cooling and pressure. Ammonia is one of the valuable products made principally from natural gas (CH_4).

AMMONIUM SULFATE

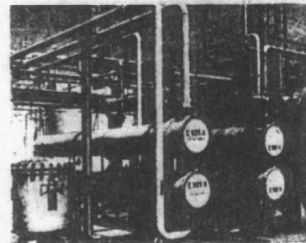
A salt having commercial value, which is obtained in the distillation of shale oils.

AMORPHOUS

A mineral or other substance that lacks a crystalline structure or whose internal arrangement is so irregular that there is no characteristic external form. A term once used to describe a mass of rock with no apparent divisions.

AMPHIBOLE

A group of dark, ferromagnesian silicate minerals widely distributed in igneous and metamorphic rocks. Hornblende is a member of this group.



Refinery coolers for a stream of DEA

AMYL HYDRIDE

This fraction in the distillation of petroleum was used as an anesthetic by J. Bigelow and B. Richardson in 1865.

ANCHOR BOLT

A stud bolt; a large bolt for securing an engine or other item of equipment to its foundation.

ANCHOR, PIPELINE

See Pipeline Anchor.

ANCHOR STRING

A short string of casing run in the hole in offshore wells that serves as an anchor or base for the installation of wellhead equipment. On land, an anchor string is called *surface pipe*, which may be from 200 to 2,000 feet long. It also serves as the foundation or anchor for all subsequent drilling activity. The anchor string is cemented securely before the borehole is taken on down to guard against a blowout should high downhole pressure be encountered. A blowout around the anchor string is a near disaster because there is no way, short of heroic measures, to control the escaping pressure. See Killer Well.

ANEMOMETER

An instrument for measuring and indicating the force or speed of the wind.

ANGLE BUILDING

The technique of drilling slanted or directional boreholes. This is accomplished by special bottom-hole assemblies, i.e., drilling, stabilizing, and reaming tools attached to the drillstring in a certain sequence. This permits the hole to be drilled at a predetermined angle from the vertical. See Angle-building Assemblies.

ANGLE-BUILDING ASSEMBLIES

Special bottom-hole assemblies used in the field for directional or slant-hole drilling and for drilling near-horizontal drain holes. Three assemblies in general use are the turbo drill or positive displacement mud motor with a bent sub; a drill bit, a near-bit reamer or stabilizer, and a drill collar of reduced diameter; and a bit, a reamer, and a knuckle-joint assembly.

A.N.G.T.S.

Alaska Natural Gas Transmission System. At this writing, 10 companies are involved in the ANGTS system, which is to move natural gas from the Prudhoe Bay area and across the southwestern corner of Canada to the Lower 48.

ANGULAR

Having sharp angles or edges. Refers to sedimentary particles showing little or no evidence of abrasion, their corners and edges still sharp.

ANGULAR DISCORDANCE

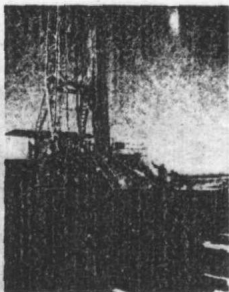
See Nonconformity.

ANGULAR UNCONFORMITY

See Unconformity, Angular.



Installing pipeline anchors



Large-diameter well casing; surface pipe

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ANHYDRITE

A mineral (CaSO_4) closely related to gypsum that occurs in thick layers comparable to beds of limestone. Geologists assume that anhydrite was crystallized from solution when a shallow sea or arm of the sea evaporated during ages past.

ANHYDROUS

Refers to a mineral that is without water. Anhydrous minerals contain no water in their chemical makeup.

ANNULAR BLOWOUT PREVENTER

See Spherical Blowout Preventer.

ANNULAR SPACE

The space between the well's casing and the wall of the borehole.

ANNULUS OF A WELL

The space between the surface casing and the producing or wellbore casing.

ANNUNCIATOR

An electronically controlled device that signals or sounds an alarm when conditions deviate from normal or from predetermined levels of pressure, heat, or speed in a process or in operating equipment.

ANODE

A block of nonferrous metal buried near a pipeline, storage tank, or other facility and connected to the structure to be protected. The anode sets up a weak electric current that flows to the structure, thus reversing the flow of current that is associated with the corrosion of iron and steel. See Rectifier Bed.

ANODE, BUOYANT

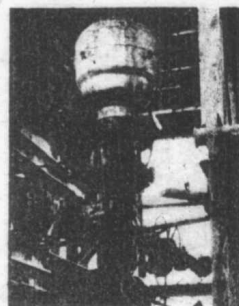
A source of electric current (DC) for protecting offshore platforms and other steel structures resting on the seafloor against corrosion. The anode is anchored to the seafloor a few hundred feet away from a structure but is held off bottom by its buoyancy. The anode is connected to a source of DC current on the platform by an insulated cable. The weak current is supplied by a transformer-rectifier, the negative terminal of which is grounded to the steel structure. Thus the completion of the circuit from rectifier to anode to structure is through the seawater. The weak current moving from anode to the structure reverses the flow of current associated with the corrosion of metal. See Rectifier Bed.

ANOMALY

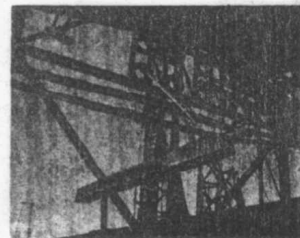
Something that is different from the normal or the expected; a geological feature, especially in the subsurface, that is identified by geological, geochemical, or geophysical methods to be different from the general surroundings. This quite often indicates the presence of a salt pillar, salt dome, anticline, or other type of stratigraphic trap, which could mean an accumulation of oil and gas.

ANOMALY, NEGATIVE-GRAVITY

With the use of a gravity meter (gravimeter), the differences in the earth's



Blowout preventer stack with spherical BOP at the top



An anode attached to an offshore platform

gravity can be measured over areas of the surface. When there is a significant difference in the gravitational pull (as over a salt dome, for example) compared to the surrounding area, the lower reading identifies the area over the salt dome as a negative-gravity anomaly.

A.N.S.I.

American National Standards Institute.

ANTICLINAL FOLD

A subsurface formation resembling an anticline.

ANTICLINAL THEORY

The theory first set forth by I.C. White in 1885 that oil and gas tend to accumulate in anticlines or anticlinal structures.

ANTICLINE

A subsurface geological structure in the form of a sine curve or an elongated dome. The formation is favorable to the accumulation of oil and/or gas.

ANTICLINE, BALD-HEADED

An anticline whose crest has been eroded before the deposit of sedimentary layers above it, which results in an overlying unconformity. See Unconformity.

ANTICLINE, BREACHED

An anticline whose top or crest has been so deeply eroded that all that remains of the structure are the inward-leaning flanks or sides.

ANTIKNOCK COMPOUNDS

Certain chemicals that are added to automotive gasolines to improve their performance—to reduce "ping" or knock—in high-compression internal-combustion engines. Tetraethyl lead is one well-known antiknock compound.

ANTI-TWO-BLOCK WARNING SYSTEM

An electronic device that sounds a warning if two blocks in a block and tackle or other hoisting rig-up are in danger of coming together or if a block is about to pull up to the end of a boom. This could cause loss of the load and other serious damage as the cable breaks. There is no simple name for this system.

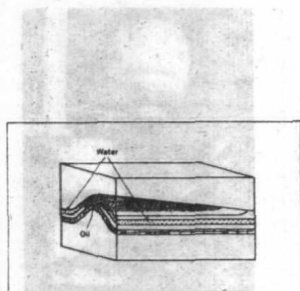
A.P.I.

(1) The American Petroleum Institute. (2) the proper way to do a job; "strictly API."

A.P.I. BID SHEET AND WELL SPECIFICATIONS

A form many operators use in soliciting bids on a well to be drilled and completed. The form is submitted to the drilling contractors in the area of the proposed well. The operator asking for bids fills out the part of the form giving name and location of the proposed well, commencement date, depth or formation to be drilled to, and other information.

When the drilling contractor submits a bid, he lists the rig and equipment to be furnished by him; drawworks, mud pumps, derrick or mast



Anticline



API logo

ILLUSTRATED PETROLEUM REFERENCE DICTIONARY

size, make and capacity, drillpipe, tool joints, etc. The bid sheet brings operator and contractor together, as it were; they then arrive at rates and other matters.

A.P.I. GRAVITY

Gravity (weight per unit of volume) of crude oil or other liquid hydrocarbon as measured by a system recommended by the API. API gravity bears a relationship to true specific gravity but is more convenient to work with than the decimal fractions that would result if petroleum were expressed in specific gravity.

APPRAISAL DRILLING

Wells drilled in the vicinity of a discovery or wildcat well in order to evaluate the extent and the importance of the find.

APRON RING

The bottommost ring of steel plates in the wall of an upright cylindrical tank.

AQUAGEL

A specifically prepared bentonite (clay) widely used as a conditioning material in drilling mud.

AQUIFER

Water-bearing rock strata. In a water-drive oil field, the aquifer is the water zone of the reservoir.

ARABIAN LIGHT

A marker crude oil produced in Saudi Arabia that is high quality and against which other crudes, particularly those in the Middle East, are measured for quality and price.

ARBITRAGE, PRODUCT

The buying, selling, or trading of petroleum or products in various markets to make a profit from short-term differences in prices in one market as compared to those in another. A sophisticated method of trading in world petroleum markets.

ARC WELDER

(1) An electric welding unit consisting of an engine and DC generator, usually skid-mounted. (2) A person who uses such a machine in making welds.

AREAL GEOLOGY

The branch of geology that pertains to the distribution, position, and form of the areas of the earth's surface occupied by different types of rocks or geologic formations; also, the making of maps of such areas.

AREAL MAP

See Map, Areal.

AREA OF INTEREST

The area immediately surrounding a successful well in which the investors (in the good well) have an implied right to participate in any future wells drilled by the same operator.



Welder adjusting
automatic arc welding
machines