

GLOSSARY OF TERMS USED IN THE OIL AND GAS WELL DRILLING INDUSTRY

- acid fracture A combination of oil and acid or water and acid under high pressure used to separate or fracture hard limestone formations.
- acidize To treat oil-bearing limestone or other formations, using a chemical reaction with acid, to increase production. Hydrochloric acid or other acid is injected into the formation under pressure. The acid etches the rock, enlarging the pore spaces and passages through which the reservoir fluids flow. The acid is then pumped out and the well swabbed and put back into production.
- air drilling A method of rotary drilling that uses compressed air as its circulation medium. This method of removing cuttings from the well bore is as efficient or more efficient than the traditional methods using water or drilling mud; in addition, the rate of penetration is increased considerably when air drilling is used. However, a principal problem in air drilling is the penetration of formations containing water, since the entry of water into the system reduces its efficiency.
- annular blowout A large valve, usually installed above the ram preventers, that forms a seal in the annular space between the pipe and well bore or, if no pipe is present, on the well bore itself.
- annular space The space around a pipe in a well bore, the outer wall of which may be the wall of either the bore hole or the casing; sometimes termed the annulus.
- artificial lift Any method used to raise oil to the surface through a well after reservoir pressure has declined to the point at which the well no longer produces by means of natural energy. The most common methods of artificial lift are sucker rod pumps, hydraulic pumps, submersible pumps, and gas lifts.
- automatic slips An air or hydraulic fluid operated device that fits into the opening in the rotary table when the drill stem must be suspended in the well bore (as when a connection, or trip, is being made). Automatic slips, also called power

	slips, eliminate the need for roughnecks to set and take out slips manually.
backoff joint	A section of pipe with left-hand threads on one end and conventional right-hand threads on the other.
backup post	A post, column or stanchion secured to the derrick, derrick floor, or derrick foundation, the purpose of which is to make secure the dead end of the safety line.
bail	A cylindrical steel bar (similar to the handle or bail of a bucket, only much larger) that supports the swivel and connects it to the hook. The two cylindrical bars that support the elevators and attach them to the hook are sometimes called bails.
bailer	A long cylindrical container, fitted with a valve at its lower end, used to remove water, sand, mud, or oil from a well.
bailing	To recover bottomhole fluids, samples, or drill cuttings by lowering a cylindrical vessel called a bailer to the bottom of a well, filling it, and retrieving it.
barite or baryte	Barium sulfate, $BaSO_4$; a mineral used to increase the weight of drilling mud.
belly buster	A rope/belt retaining device used on stabbing boards. It allows the derrickman to lean past his overbalance point to handle pipe. Not to be confused with fall protection equipment.
belt	A flexible band or cord connecting and passing about each of two or more pulleys to transmit power or impart motion.
bentonite	A colloidal clay, composed of montmorillonite, which swells when wet. Because of its gel-forming properties, bentonite is a major component of drilling muds.
bit	The cutting or boring element used in drilling oil and gas wells. Most bits used in rotary drilling are roller-cone bits. The bit consists of the cutting elements and the circulating element. The circulating element permits the passage of drilling fluid and utilizes the hydraulic force of the fluid stream to improve drilling rates.
bit breaker	A heavy plate that fits in the rotary table and holds the drill bit while it is being made up in or broken out of the drill stem.

blind ram	An integral part of a blowout preventer, serving as the closing element. Its ends do not fit around the drill pipe but seal against each other and shut off the space below completely.
block	Any assembly of pulleys on a common framework; in mechanics, one or more pulleys, or sheaves, mounted to rotate on a common axis. The crown block is an assembly of sheaves mounted on beams at the top of the derrick. The drilling line is reeved over the sheaves of the crown block alternately with the sheaves of the traveling block, which is hoisted and lowered in the derrick by the drilling line. When elevators are attached to a hook on the traveling block and when drill pipe is latched in the elevators, the pipe can be raised or lowered in the derrick or mast.
blooey line	The discharge pipe from a well being drilled by air drilling, which conducts the air or gas used for circulation away from the rig to reduce the danger of fire and to transport the cuttings a suitable distance from the well.
blowout	An uncontrolled flow of gas, oil, or other well fluids occurring when formation pressure exceeds the pressure applied to it by the column of drilling fluid.
blowout preventer (BOP)	One of several valves installed at the wellhead to prevent the escape of pressure either in the annular space between the casing and drill pipe or in open hole (i.e., hole with no drill pipe) during drilling or completion operations.
bore hole	The well bore; the hole made by drilling or boring.
break out	To unscrew one section of pipe from another section, especially drill pipe while it is being withdrawn from the well bore. During this operation, the breakout tongs are used to start the unscrewing operation.
breakout cathead	A device attached to the shaft of the drawworks that is used as a power source for unscrewing drill pipe; usually located opposite the driller's side of the drawworks.
breakout tongs	Tongs that are used to start unscrewing one section of pipe from another section, especially drill pipe coming out of the hole; also called lead tongs.
bullet perforator	A tubular device that, when lowered to a selected depth within a well, fires bullets through the casing to provide holes through which the well fluids may enter.

cable-tool drilling A drilling method in which the hole is drilled by dropping a sharply pointed bit on the bottom of the hole. The bit is attached to a cable, and the cable is repeatedly picked up and dropped as the hole is drilled.

casing Steel pipe placed in an oil or gas well as drilling progresses to prevent the wall of the hole from caving in during drilling and to provide a means of extracting petroleum if the well is productive.

casing string The entire length of all the joints of casing run in a well. Casing is manufactured in lengths of about 30 feet, each length or joint being joined to another as casing is run in a well.

cathead A spool-shaped attachment on a winch around which rope for hoisting and pulling is wound.

catline A hoisting or pulling line powered by the cathead and used to lift heavy equipment on the rig.

cellar A pit in the ground to provide additional height between the rig floor and the well head to accommodate the installation of blowout preventers, ratholes, mouseholes, and so forth. It also collects drainage water and other fluids for subsequent disposal.

cement casing To fill the annulus between the casing and hole with cement to support the casing and prevent fluid migration between permeable zones.

cementing The application of a liquid slurry of cement and water to various points inside or outside the casing.

cementing materials A slurry of portland cement and water and sometimes one or more additives. They affect either the density of the mixture or its setting time. Additives include accelerators (such as calcium chloride), retarders (such as gypsum), weighting materials (such as barium sulfate), lightweight additives (such as bentonite), and a variety of lost circulation materials (such as mica flakes).

chain drive A drive system using a chain and chain gears to transmit power. Power transmissions use a roller chain, in which each link is made of side bars, transverse pins, and rollers on the pins. A double roller chain is made of two connected rows of links, a triple roller chain of three, and so forth.

chain tongs A tool consisting of a handle and a releasable chain that is used for turning pipe or fittings that are too large

in diameter to use a pipe wrench. The chain is tightened around the pipe or fitting.

- choke An orifice installed in a line to restrict the flow and control the rate of production. Surface chokes are part of the Christmas tree and contain a choke nipple, or bean, with a small-diameter bore that serves to restrict the flow. Chokes are also used to control the rate of flow of the drilling mud out of the hole when the well is closed in with the blowout preventer and when a kick is being circulated out of the hole.
- choke line An extension of pipe from the blowout preventer assembly used to direct well fluids from the annulus to the choke manifold.
- choke manifold The arrangement of piping and special valves, called chokes, through which drilling mud is circulated when the blowout preventers are closed to control the pressures encountered during a kick.
- Christmas tree The control valves, pressure gauges, and chokes assembled at the top of a well to control the flow of oil and gas after the well has been drilled and completed.
- combination string A casing that has joints of various collapse resistance, internal yield strength, and tensile strength designed for various depths in a specific well to best withstand the conditions of that well. In deep wells, high tensile strength is required in the top casing joints to carry the load, whereas high collapse resistance and internal yield strength are needed for the bottom joints. In the middle of the casing, average qualities are usually sufficient. The most suitable combination of types and weights of pipe helps to ensure efficient production at a minimum cost.
- coming out the hole To pull the drill stem out of the well bore. This withdrawal is necessary to change the bit, change from a core barrel to the bit, run electric logs, prepare for a drill-stem test, run casing, and so on.
- complete a well To finish work on a well and bring it to productive status.
- completion rig A portable servicing or workover rig that is selfpropelled, using the hoisting engines for motive power. Because the driver's cab is mounted on the end opposite the mast support, the unit must be backed up to the well head. Also known as a backover rig.

compound The mechanism used to transmit power from the engines to the pump, drawworks, and other machinery on a drilling rig. It is composed of clutches, chains and sprockets, belts and pulleys, and a number of shafts, both driven and driving. Also used to connect two or more power-producing devices such as engines to run one piece of driven equipment such as the drawworks.

crown block An assembly of sheaves or pulleys mounted on beams at the top of the derrick over which the drilling line is reeved.

cuttings The fragments of rock dislodged by the bit and brought to the surface in the drilling mud. Washed and dried samples of the cuttings are analyzed by geologists to obtain information about the formations drilled.

deadline The drilling line from the crown block sheave to the anchor, so called because it does not move.

deadline
tiedown anchor A device to which the deadline is attached to the mast or derrick substructure. Also called a deadline anchor.

degasser The equipment used to remove unwanted gas from a liquid, especially from drilling fluid.

derrick A large load-bearing structure, usually of bolted construction. In drilling, the standard derrick has four legs standing at the corners of the substructure and reaching to the crown block. The substructure is an assembly of heavy beams used to elevate the derrick and provide space to install blowout preventers, casing heads, and so forth. Because the standard derrick must be assembled piece by piece, it has largely been replaced by the mast, which can be lowered and raised without disassembly.

derrick climber A counterweighted device to assist the derrickman in climbing on derricks. Attached to a safety harness running on a wire rope cable, the device has adjustable counterweights and physically assists workers climbing and descending the derrick.

derrickman The crew member who handles the upper end of the drill stem as it is being hoisted out of or lowered into the hole. He is also responsible for the conditioning of the drilling fluid and the circulation machinery.

desander A centrifugal device for removing sand from drilling fluid to prevent abrasion of the pumps. It may be operated mechanically or by a fast-moving stream of fluid

inside a special cone-shaped vessel, in which case it is sometimes called a hydrocyclone.

- desilter** A centrifugal device, similar to a desander, used to remove very fine particles, or silt, from drilling fluid to keep the amount of solids in the fluid to the lowest possible level.
- diesel-electric power** The power supplied to a drilling rig by diesel engines driving electric generators, used widely offshore and gaining popularity onshore.
- diesel engine** A high-compression, internal-combustion engine used extensively for powering drilling rigs. In a diesel engine, air is drawn into the cylinders and compressed to very high pressures; ignition occurs as fuel is injected into the compressed and heated air. Combustion takes place within the cylinder above the piston, and expansion of the combustion products imparts power to the piston.
- directional drilling** Intentional deviation of a well bore from the vertical. Controlled directional drilling makes it possible to reach subsurface areas laterally remote from the point where the bit enters the earth, and involves the use of turbo-drills, Dyna-Drills, whipstocks, or other deflecting tools.
- doghouse** A small enclosure on the rig floor used as an office for the driller or as a storehouse for small objects. Also, any small building used as an office or for storage.
- drawworks** The hoisting mechanism on a drilling rig. It is essentially a large winch that spools off or takes in the drilling line and thus raises or lowers the drill stem and bit.
- drill collar** A heavy, thick-walled tube, usually steel, used between the drill pipe and the bit in the drill stem, used to put weight on the bit so that the bit can drill.
- drill pipe** The heavy seamless tubing used to rotate the bit and circulate the drilling fluid. Joints of pipe 30 feet long are coupled together by means of tool joints.
- drill stem** All members in the assembly used for drilling by the rotary method from the swivel to the bit, including the kelly, drill pipe and tool joints, drill collars, stabilizers, and various subsequent items.
- drill string** The column, or string, of drill pipe, not including the drill collars or kelly. Often, however, the term is

loosely applied to include both the drill pipe and drill collars.

- driller The employee directly in charge of a drilling rig and crew. His main duty is operation of the drilling rig and hoisting equipment, but he is also responsible for the downhole condition of the well, operation of downhole tools, and pipe measurements.
- drilling fluid Circulating fluid, one function of which is to force cuttings out of the wellbore and to the surface. While a mixture of clay, water, and other chemical additives is the most common drilling fluid, wells can also be drilled using air, gas, or water as the drilling fluid. Also called circulating fluid.
- drilling line A wire rope hoisting line, reeved on sheaves of the crown block and traveling block (in effect a block and tackle), the primary purpose of which is to hoist or lower drill pipe or casing from or into a well. Also, a wire rope used to support the drilling tools.
- drum A cylinder around which wire rope is wound in the drawworks. The drawworks drum is that part of the hoist upon which the drilling line is wound.
- elevators A set of clamps that grip a stand, or column, of casing, tubing, drill pipe, or sucker rods, so that the stand can be raised or lowered into the hole.
- fastline The end of the drilling line that is affixed to the drum or reel of the drawworks, so called because it travels with greater velocity than any other portion of the line.
- finger Steel, fingerlike projection that forms a slot in the finger board.
- finger board A rack that supports the tops of the stands of pipe being stacked in the derrick or mast. It has several steel fingerlike projections that form a series of slots into which the derrickman can set a stand of drill pipe as it is pulled out of the hole.
- finger brace Any structural member either in direct or indirect contact with the finger to resist either horizontal, vertical, or diagonal movement of the finger.
- fish An object left in the well bore during drilling operations that must be recovered or drilled around before work can proceed. It can be anything from a piece of scrap metal to a part of the drill stem. To recover

	<p>from a well any equipment left there during drilling operations, such as a lost bit or drill collar or a part of the drill string. To remove from an older well certain pieces of equipment, such as packers, liners, or screen pipe, to allow reconditioning of the well.</p>
fishing	<p>To recover from a well any equipment left there during drilling operations, such as a lost bit or drill collar or part of the drill string; to remove from an older well certain pieces of equipment, such as packers, liners, or screen pipe, to allow reconditioning of the well.</p>
foaming agent	<p>A chemical used to lighten the water column in gas wells, in oil wells producing gas, and in drilling wells in which air or gas is used as the drilling fluid so that the water can be forced out with the air or gas to prevent its impeding the production or drilling rate.</p>
formation fracturing	<p>A method of stimulating production by increasing the permeability of the producing formation. Under extremely high hydraulic pressure, a fluid (such as water, oil, alcohol, dilute hydrochloric acid, liquefied petroleum gas, or foam) is pumped downward through tubing or drill pipe and forced into the perforations in the casing. The fluid enters the formation and parts or fractures it. Sand grains, aluminum pellets, glass beads, or similar materials are carried in suspension by the fluid into the fractures. These are called propping agents or proppants. When the pressure is released at the surface, the fracturing fluid returns to the well and the fractures partially close on the proppants, leaving channels for oil to flow through them to the well. This process is often called a frac job.</p>
formation pressure	<p>The force exerted by fluids in a formation, recorded in the hole at the level of the formation with the well shut in. It is also called reservoir pressure or shut-in bottomhole pressure.</p>
formation testing	<p>The gathering of data on a formation to determine its potential productivity before installing casing in a well. The conventional method is the drill-stem test. Incorporated in the drill-stem testing tool are a packer, valves or ports that may be opened and closed from the surface, and a pressure recording device. The tool is lowered to bottom on a string of drill pipe and the packer set, isolating the formation to be tested from the formations above and supporting the fluid column above the packer. A port on the tool is opened to allow the trapped pressure below the packer to bleed off into the drill pipe, gradually exposing the formation to</p>

atmospheric pressure and allowing the well to produce to the surface, where the well fluids may be sampled and inspected.

- gas lift The process of raising or lifting fluid from a well by injecting gas down the well through tubing or through the tubing-casing annulus. Injected gas aerates the fluid to make it exert less pressure than the formation does; consequently, the higher formation pressure forces the fluid out of the well bore.
- geronimo An emergency escape line affixed to the monkey board section of a derrick. In the event of an impending blowout or structural collapse, an employee may grab a slide attached to the wire rope cable and escape to the ground.
- gin pole A structural framework erected on top of the derrick for lifting material to the top of the derrick.
- gun perforate To create holes in casing and cement set through a productive formation. A perforation gun is lowered into the hole and fired to detonate high-powered jets or shoot steel projectiles (bullets) through the casing and cement and into the productive formation. This process allows the flow of formation fluids from the reservoir into the well bore.
- guy line A wire line attached to a mast or derrick to stabilize it. Load guys provide the main support for the structure; wind guys attached to ground anchors provide lateral support.
- hoist An arrangement of pulleys and wire rope or chain used for lifting heavy objects; a winch or similar device; the drawworks.
- hoisting drum The large, flanged spool in the drawworks on which the hoisting cable is wound.
- hook A large, hook-shaped device from which the elevator bails or the swivel is suspended. It is designed to carry maximum loads ranging from 100 to 650 tons and turns on bearings in its supporting housing.
- hydraulic
fracturing The forcing into a formation of liquids under high pressure to open passages for oil and gas to flow through and into the well bore.
- hydrogen sulfide A gaseous compound, H_2S , of sulfur and hydrogen commonly found in petroleum, which causes the foul smell of sour petroleum fractions.

intermediate casing string The string of casing set in a well after the surface casing to keep the hole from caving in and to seal off troublesome formations. Sometimes called protection casing.

jackknife mast A structural steel, open-sided tower raised vertically by special lifting tackle attached to the traveling block.

jet A hydraulic device operated by pump pressure to clean mud pits and tanks in rotary drilling and to mix mud components. Also, in a perforation gun using shaped charges, a highly penetrating stream of exploded particles that cuts a hole in the casing, cement, and formation.

jet perforate To create a hole through the casing with a shaped charge of high explosives instead of a gun that fires projectiles. Once detonated, the charges emit short, penetrating jets of high-velocity gases that cut holes in the casing and cement and some distance into the formation. Formation fluids then flow into the well bore through these perforations.

joint A single length (about 30 feet) of drill pipe or drill collar, casing, or tubing that has threaded connections at both ends.

kelly The heavy square or hexagonal steel member suspended from the swivel through the rotary table and connected to the topmost joint of drill pipe to turn the drill stem as the rotary table turns.

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

kelly cock A valve installed between the swivel and the kelly. When a high-pressure backflow begins inside the drill stem, the valve is closed to keep pressure off the swivel and rotary hose.

kelly spinner A pneumatically operated device mounted on top of the kelly that, when actuated, causes the kelly to turn or spin. It is useful when the kelly or a joint of pipe attached to it must be spun up; that is, rotated rapidly in order to make it up.

kick An entry of water, gas, oil, or other formation fluid into the well bore. It occurs because the pressure exerted by the column of drilling fluid is not great enough to overcome the pressure exerted by the fluids in

the formation drilled. If prompt action is not taken to control the kick or kill the well, a blowout will occur.

lead tongs The pipe tongs suspended in the derrick and operated by a wire line connected to the breakout cathead. Also called breakout tongs.

log A systematic recording of data, as from the driller's log, mud log, electrical well log, or radioactivity log run in wells being produced or drilled to obtain various characteristics of downhole formations.

logging The recording of information about subsurface geologic formations.

make a connection To attach a joint of drill pipe onto the drill stem suspended in the well bore to permit deepening of the well bore.

make a trip To hoist the drill stem out of the well bore to perform one of a number of operations such as changing bits, taking a core, and so forth, and then to return the drill stem to the well bore.

make up To assemble and join parts to form a complete unit (as to make up a string of casing) or to screw together two threaded pieces.

makeup cathead The cathead used as a power source for screwing together joints of pipe.

making hole To deepen the hole made by the bit; to drill ahead.

Marsh funnel A calibrated funnel used in field tests to determine the viscosity of drilling mud.

mast A portable derrick capable of being erected as a unit, as distinguished from a standard derrick, which cannot be raised to a working position as a unit.

master bushing A device that fits into the rotary table. It accommodates the slips and drives the kelly bushing so that the rotating motion of the rotary table can be transmitted to the kelly. Also called rotary bushing.

monkey board The derrickman's working platform. Double board, tribble board, fourble board; a monkey board located at a height in the derrick or mast equal to two, three, or four lengths of pipe, respectively.

motorman The crew member on a rotary drilling rig responsible for

the care and operation of drilling engines.

mousehole	Shallow bores under the derrick, usually lined with pipe, in which joints of drill pipe are temporarily suspended for later connection to the drill string.
mousehole connection	The addition of a length of drill pipe or tubing to the active string.
mud	The liquid circulated through the well bore during rotary drilling and workover operations. It functions to bring cuttings to the surface, to cool and lubricate the bit and drill stem, to protect against blowouts by holding back subsurface pressures, and to deposit a mud cake on the wall of the bore hole to prevent loss of fluids to the formation. The mud used in modern drilling operations is a complex, three-phase mixture of liquids, reactive solids, and inert solids. The liquid phase may be freshwater, diesel oil, or crude oil and may contain one or more conditioners.
mud logging	The recording of information derived from examination and analysis of formation cuttings made by the bit and mud circulated out of the hole.
mud pit	A series of open tanks, usually made of steel plates, through which the drilling mud is cycled to allow sand and sediments to settle out. Additives are mixed with the mud in the pit, and the fluid is temporarily stored there before being pumped back into the well. Mud pits are also called shaker pits, settling pits, and suction pits, depending on their main purpose.
mud pump	A large, reciprocating pump used to circulate the mud on a drilling rig.
mud return line	A trough or pipe, placed between the surface connections at the well bore and the shale shaker, through which drilling mud flows upon its return to the surface from the hole.
perforate	To pierce the casing wall and cement, with the use of a perforating gun, to provide holes through which formation fluids may enter.
perforating gun	A device, fitted with shaped charges or bullets, that is lowered to the desired depth in a well and fired to create penetrating holes in casing, cement, and formation.
pipe rack	A horizontal support for tubular goods.

pipe rams A sealing component for a blowout preventer that closes the annular space between the pipe and the blowout preventer or well head.

racking pipe The act of placing stands of pipe in orderly arrangement in the derrick while hoisting pipe from the well bore.

ram The closing and sealing component on a blowout preventer. One of three types--blind, pipe, or shear--may be installed in several preventers mounted in a stack on top of the well bore. Blind rams, when closed, form a seal on a hole that has no drill pipe in it; pipe rams, when closed, seal around the pipe; shear rams cut through drill pipe and then form a seal.

ram blowout preventer A blowout preventer that uses rams to seal off pressure on a hole that is with or without pipe. It is also called a ram preventer.

rathole A hole in the rig floor 30-35 feet deep, lined with casing that projects above the floor, into which the kelly and swivel are placed when hoisting operations are in progress.

rathole connection The addition of a length of drill pipe or tubing to the active string. The length to be added is placed in the rathole, made up to the kelly, pulled out of the rathole, and made up into the string.

reeve To pass (as the end of a rope) through a hole or opening in a block or similar device.

reeve the line To string a wire-rope drilling line through the sheaves of the traveling and crown blocks to the hoisting drum.

remote blowout preventer panel A set of controls used to open and close the blowout preventers; the panel is placed some distance away from the rig so that the controls can be operated without personnel present on the rig floor.

remote choke panel A set of controls, usually placed on the rig floor, that is manipulated to control the amount of drilling fluid being circulated out through the choke manifold. This procedure is necessary when a kick is being circulated out of a well.

reserve pit A mud pit in which a supply of drilling fluid has been stored. Also, a waste pit, usually an excavated, earthen-walled pit. It may be lined with plastic to prevent contamination of the soil.

rig	The derrick or mast, drawworks, and attendant surface equipment of a drilling unit.
rig-down	To dismantle the drilling rig and auxiliary equipment following the completion of drilling operations; also called teardown.
rig-up	To prepare the drilling rig for making hole; to install tools and machinery before drilling is started.
rotary	The machine used to impart rotational power to the drill stem while permitting vertical movement of the pipe for rotary drilling.
rotary bushing	A metal lining that fits into the opening of the rotary table to reduce its size for special purposes, such as fitting the slips or the kelly bushing. It is also called the master bushing.
rotary drilling	A drilling method in which a hole is drilled by a rotating bit to which a downward force is applied. The bit is fastened to and rotated by the drill stem, which also provides a passageway through which the drilling fluid is circulated. Additional joints of drill pipe are added as drilling progresses.
rotary helper	A worker on a drilling rig, subordinate to the driller; sometimes called a roughneck, floorman, or rig crewman.
rotary hose	The hose on a rotary drilling rig that conducts the drilling fluid from the mud pump and standpipe to the swivel and kelly; also called the mud hose or the kelly hose.
rotary swivel	The swivel attached to the top of the kelly that permits the kelly to be rotated when suspended from the traveling block hook during drilling operations.
rotary table	The principal component of a rotary, or rotary machine, used to turn the drill stem and support the drilling assembly. It has a beveled gear arrangement to create the rotational motion and an opening into which bushings are fitted to drive and support the drilling assembly.
safety line	A wire rope, one end of which is fastened to the end of a pipe tong handle and the other end secured to hold the tongs while such tongs are in use.
shale shaker	A series of trays with sieves that vibrate to remove cuttings from the circulating fluid in rotary drilling operations. The size of the openings in the sieve is

selected to match the size of the solids in the drilling fluid and the anticipated size of cuttings. Also called a shaker.

- shear ram The components in a blowout preventer that cut, or shear, through drill pipe and form a seal against well pressure. Shear rams are used in mobile offshore drilling operations to provide a quick method of moving the rig away from the hole when there is no time to trip the drill stem out of the hole.
- sheave A grooved pulley.
- slips Wedge-shaped pieces of metal with teeth or other gripping elements that are used to prevent pipe from slipping down into the hole or to hold pipe in place. Rotary slips fit around the drill pipe and wedge against the master bushing to support the pipe. Power slips are pneumatically or hydraulically actuated devices that allow the crew to dispense with the manual handling of slips when making a connection. Packers and other downhole equipment are secured in position by slips that engage the pipe by action directed at the surface.
- slurry A plastic mixture of cement and water that is pumped into a well to harden; there it supports the casing and provides a seal in the well bore to prevent migration of underground fluids.
- sour gas Natural gas containing hydrogen sulfide.
- spinning cathead A spooling attachment on the makeup cathead to permit use of a spinning chain to spin up or make up drill pipe.
- spinning chain A Y-shaped chain used to spin up (tighten) one joint of drill pipe into another. In use, one end of the chain is attached to the tongs, another end is attached to the spinning cathead, and the third end is free. The free end is wrapped around the tool joint and the cathead pulls the chain off the joint, causing the joint to spin (turn) rapidly and tighten up. After the chain is pulled off the joint, the tongs are secured in the same spot, and continuous pull on the chain (and thus on the tongs) by the cathead makes the joint up to final tightness.
- spud-in To begin drilling; to start the hole.
- stab To guide the end of a pipe into a coupling or tool joint when making up a connection.
- stabbing board A temporary platform erected in the derrick or mast 20-40

feet above the derrick floor. The derrickman or another crew member works on the board while casing is being run in a well. The board may be wooden or fabricated of steel girders floored with antiskid material and powered electrically to raise or lower it to the desired level. A stabbing board serves the same purpose as a monkey board or safety platform but is temporary instead of permanent.

- stand of pipe A length of drill pipe, tubing or other pipe consisting of one or more joints in a continuous section that is stood, racked, or hung in a derrick.
- standpipe A vertical pipe rising along the side of the derrick or mast, which joins the discharge line leading from the mud pump to the rotary hose and through which mud is pumped going into the hole.
- stimulation Any process undertaken to enlarge old channels or create new ones in the producing formation of a well.
- sub A short, threaded piece of pipe used to adapt parts of the drilling string that cannot otherwise be screwed together because of differences in thread size or design. A sub may also perform a special function. Lifting subs are used with drill collars to provide a shoulder to fit the drill pipe elevators. A kelly saver sub is placed between the drill pipe and kelly to prevent excessive thread wear of the kelly and drill pipe threads. A bent sub is used when drilling a directional hole. Sub is a short expression for substitute.
- substructure The foundation on which the derrick or mast and usually the drawworks sit; contains space for storage and well control equipment.
- swab A hollow, rubber-faced cylinder mounted on a hollow mandrel with a pin joint on the upper end to connect to the swab line. A check valve that opens upward on the lower end provides a way to remove the fluid from the well when pressure is insufficient to support flow.
- swabbing Operation of a swab to bring well fluids to the surface when the well does not flow or require artificial lift or stimulation to bring oil to the surface.
- swivel A rotary tool that is hung from the rotary hook and traveling block to suspend and permit free rotation of the drill stem. It also provides a connection for the rotary hose and a passageway for the flow of drilling fluid into the drill stem.

tag line A utility rope or cable that is attached to unwieldy loads being hoisted by a crane to allow a load handler better control of the movement of the load.

thribble Three sections of drill pipe removed from the hole (while joined) during a trip.

throw the chain To flip the spinning chain up from a tool joint box so that the chain wraps around the tool joint pin after it is stabbed into the box. The stand or joint of drill pipe is turned or spun by a pull on the spinning chain from the cathead on the drawworks.

tongs The large wrenches used for turning when making up or breaking out drill pipe, casing, tubing, or other pipe; variously called casing tongs, rotary tongs, and so forth according to the specific use. Power tongs are pneumatically or hydraulically operated tools that serve to spin the pipe up and, in some instances, to apply the final makeup torque.

tool joint A heavy coupling element for drill pipe made of special alloy steel. Tool joints have coarse, tapered threads and seating shoulders designed to sustain the weight of the drill stem, withstand the strain of frequent coupling and uncoupling, and provide a leakproof seal. The male section of the joint, or the pin, is attached to one end of a length of drill pipe, and the female section, or box, is attached to the other end. The tool joint may be welded to the end of the pipe or screwed on, or both. A hard metal facing is often applied in a band around the outside of the tool joint to enable it to resist abrasion from the walls of the bore hole.

tool pusher A employee of a drilling contractor who is in charge of the entire drilling crew and the drilling rig. Also called a drilling crew foreman, manager, supervisor, or rig superintendent.

torque The turning force that is applied to a shaft or other rotary mechanism to cause it to rotate or tend to do so. Torque is measured in foot-pounds, joules, meter-kilograms, and so forth.

transmission The gear or chain arrangement by which power is transmitted from the prime mover to the drawworks, mud pump, or rotary table of a drilling rig.

traveling block An arrangement of pulleys, or sheaves, through which drilling cable is reeved, which moves up and down in the derrick or mast.

Vee-door An opening in a side of a derrick at the floor level having the form of an inverted "V." This opening is opposite the drawworks. It is used as an entry to bring in drill pipe and casing from the pipe rack.

well bore A bore hole; the hole drilled by the bit. A well bore may have casing in it or may be open (i.e., uncased), or a portion of it may be cased and a portion of it may be open. Also called bore hole or hole.

well completion The activities and methods necessary to prepare a well for the production of oil and gas; the method by which a flow line for hydrocarbons is established between the reservoir and the surface. The method of well completion used by the operator depends on the individual characteristics of the producing formation or formations. These techniques include the following types of completions: open-hole, sand exclusion, tubingless, multiple, and miniaturized.

well head The equipment installed at the surface of the well bore. A well head includes such equipment as the casing head and tubing head.

whipstock A long, steel casing that uses an inclined plane to cause the bit to deflect from the original borehole at a slight angle.

wildcat A well drilled in an area where no oil or gas production exists. With present-day exploration methods and equipment, about one wildcat out of every nine proves to be productive although not necessarily profitable. Also, to drill wildcat wells.

wire rope A cable composed of steel wires twisted around a central core of hemp or other fiber to create a rope of great strength and considerable flexibility. Wire rope is used as drilling line (in rotary and cable-tool rigs), coring line, servicing line, winch line, and so on.

workover To perform one or more of a variety of remedial operations on a producing oil well with hope of restoring or increasing production. Examples of workover operations are deepening, plugging back, pulling and resetting the liner, squeeze cementing, shooting, and acidizing.

From: References [1, 73, 91].

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