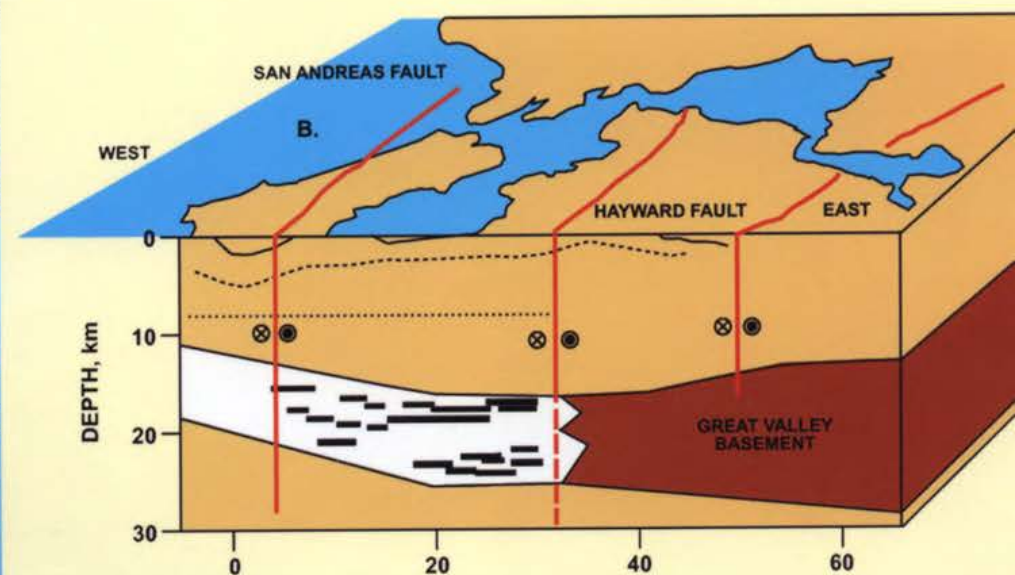
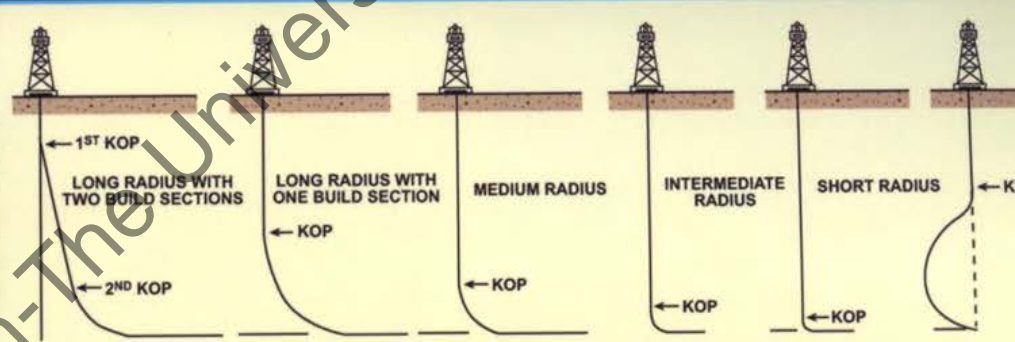
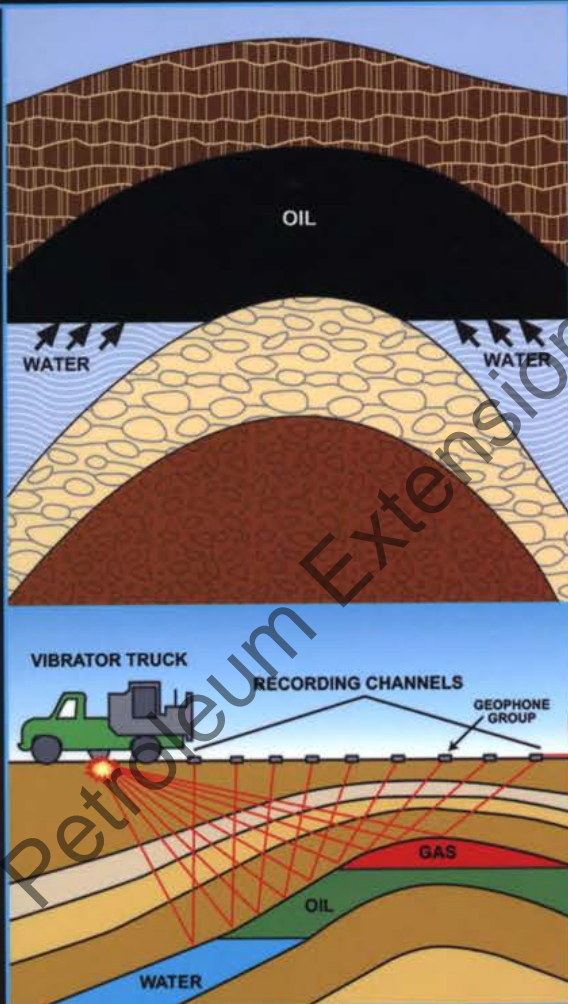


# A Dictionary for the Oil and Gas Industry

Second Edition



Petroleum Extension-The University of Texas at Austin

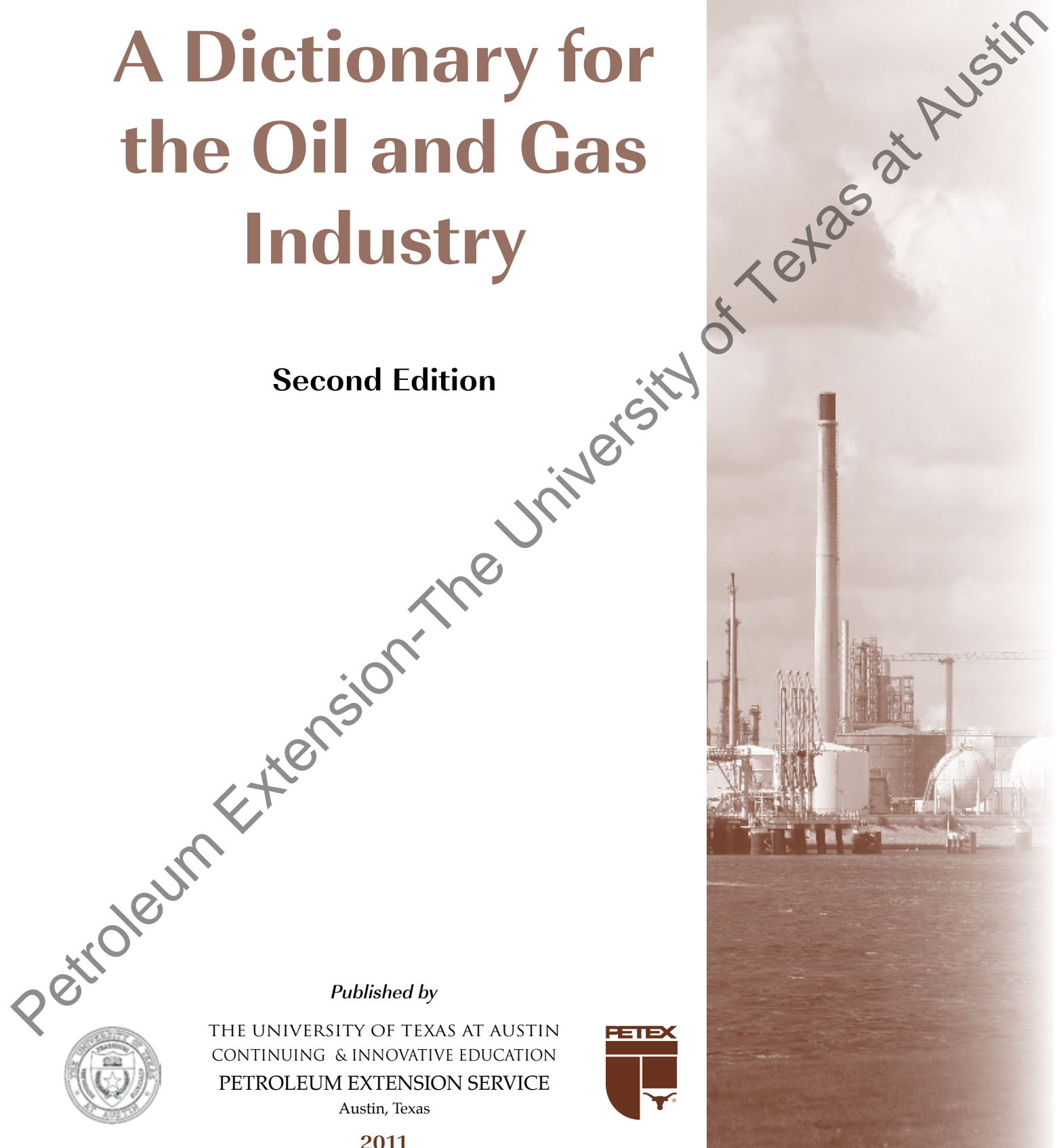
# A Dictionary for the Oil and Gas Industry

Second Edition

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body wave; dip-slip fault;  
downthrow; nuclear log; shear  
wave; slip plane; solid solution;  
stratigraphic unit; surface wave;  
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based on or adapted from  
definitions of arm's length  
bargaining; branded distributor;  
swing producer

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compression wave; critical  
angle; Joule's law

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*McGraw-Hill Dictionary of Scientific  
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York: McGraw-Hill, 1978. Used with  
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caliper; micrometer

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Langenkamp, *Handbook of Oil Industry  
Terms and Phrases*, fourth ed. Tulsa:

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middle distillate; straight-run

Langenkamp, *Illustrated Petroleum*

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carrier bar; charge stock; gas oil;  
process stream; Seven Sisters;  
sling; swag



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# Preface

Compiling a dictionary of petroleum terms is a daunting task. PETEX staff first began collecting petroleum terms in the 1950s when they realized the value of a comprehensive dictionary for the petroleum industry. PETEX issued the first edition of *A Dictionary of Petroleum Terms* in the 1970s; it contained about 500 terms. Shortly, however, we realized that this edition had merely scratched the surface. So it was that PETEX released a second edition in the 1980s. The second edition had over twice the number of terms as the first. In 1991, the manual was renamed *A Dictionary for the Petroleum Industry* and we compiled over 5,000 words for it. By 1997, the second edition listed over 7,000 entries. Foolishly, we believed that 7,000 terms would hold us for awhile. Nothing could have been further from the truth, for users of the dictionary quickly informed us of terms we had failed to define. One user in particular, Tom Thomas, who is Transocean's modular training coordinator, sent us hundreds of words that we overlooked. Thus, the third edition grew to over 8,700 terms. The third edition, revised, included almost 9,000 definitions. This first edition has over 11,000 definitions.

We've now reconciled ourselves to the fact that a dictionary of petroleum terms is never going to be finished. Instead, it will continue to grow and change as the industry itself grows, changes, and becomes more technical. Readers are invited and encouraged to send us entries for possible inclusion in future editions.

Definitions in this dictionary come from many sources—writers and editors, industry personnel, PETEX instructors and coordinators, and various published works. Although this dictionary could not have been compiled without these sources, PETEX is solely responsible for its content. Further, while we worked very hard to ensure that our information is accurate and up-to-date, bear in mind that this dictionary is intended for training purposes only. Nothing in it is to be considered approval or disapproval of any product or practice.



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# A

**A abbr:** 1. ampere. 2. cross-sectional area, in.<sup>2</sup> 3. well spacing, acres.

**AA abbr:** antiagglomerant.

**AAPG abbr:** American Association of Petroleum Geologists.

**AAPL abbr:** American Association of Petroleum Landmen.

**AAR abbr:** Association of American Railroads.

**abaft adv:** 1. toward the stern of a ship or mobile offshore drilling rig. 2. behind. 3. farther aft than. See *aft*.

**abandon v:** to cease producing oil and gas from a well when it becomes unprofitable or to cease further work on a newly drilled well when it proves not to contain profitable quantities of oil or gas. Several steps are involved: part of the casing may be removed and salvaged; one or more cement plugs are placed in the borehole to prevent migration of fluids between the different formations penetrated by the borehole; and the well is abandoned. In most oil-producing states, it is necessary to secure permission from official agencies before a well may be abandoned.

**abandoned well n:** a well not in use because it was a dry hole originally, or because it has ceased to produce. Statutes and regulations in many states require the plugging of abandoned wells to prevent the seepage of oil, gas, or water from one stratum of underlying rock to another.

**abandonment n:** termination of a jurisdictional sale or service. Under Section 7(b) of the Natural Gas Act, the Federal Energy Regulatory Commission must determine in advance that the "present or future public convenience and necessity" or depletion of gas supplies requires termination.

**abandonment pressure n:** the average reservoir pressure at which an amount of gas insufficient to permit continued economic operation of a producing gas well is expelled.

**ABC choke n:** an old-style choke, which is no longer manufactured. A steel rod went through the center of a 2-in. (50.8-mm) pipe, which a rubber boot surrounded. Hydraulic pressure expanded the boot to close the choke. It tended to wear and fail in the full-open position.

**abd, abdn abbr:** abandoned; used in drilling reports.

**abeam adv:** to or at the side of a ship, vessel, or offshore drilling rig and especially at right angles to the ship, vessel, or rig's length.

**abnormal pressure n:** strictly speaking, pressure in a formation that is less than or more than the pressure to be expected at a given depth. However, in the field, abnormal pressure is often considered to be pressure only that is higher than that which is expected at a given depth. Normal pressure increases approximately 0.465 pounds per square

inch per foot of depth or 10.5 kilopascals per metre of depth (this value may be slightly more or slightly less than 0.465 psi or 10.5 kilopascals, depending on a particular area). In general, however, normal formation pressure at 1,000 feet is 465 pounds per square inch; at 1,000 metres it is 10,500 kilopascals. See *pressure gradient*.

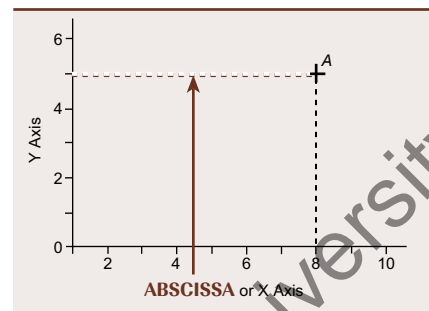
**aboard adv:** on or in a ship, offshore drilling rig, helicopter, or production platform.

**abrasion n:** wearing away by friction.

**ABS abbr:** American Bureau of Shipping.

**ABS certification n:** a one-time verification that a ship or other marine structure meets an ABS standard.

**abscissa n:** the horizontal coordinate of a point in a plane obtained by measuring parallel to the x-axis. Compare *ordinate*.



**ABS classification n:** a process that occurs over the life of a vessel, ship, offshore rig, or other structure to ensure that such structures are not only built but also maintained to ABS and industry-accepted standards.

**absolute (abs) adj:** independent or unlimited, such as an absolute condition, or completely unadulterated, such as alcohol.

**absolute density n:** the density of a solid or liquid substance at a specified temperature. Sometimes referred to as true density or density in vacuo. See *density*.

**absolute dynamic viscosity n:** the force in dynes that a stationary flat plate with a surface area of 1 square centimetre exerts on a similar parallel plate 1 centimetre away and moving in its own plane with a velocity of 1 centimetre per second, the space between the plates being filled with the liquid in question. It is a measure of the resistance that the liquid offers to shear.

**absolute error n:** the difference between the result of a measurement and the true value of the measured quantity as determined by means of a suitable standard device.

**absolute humidity n:** the amount of moisture present in the air. It may be expressed in milligrams of water per cubic metre of air. Compare *relative humidity*.

**absolute kinematic viscosity n:** the value obtained when the absolute dynamic viscosity is divided by the density (expressed in grams per cubic centimetre) of the liquid at the temperature concerned.



# SI Units

Quantity	Unit Name	Symbol	Formula
<i>Base Units</i>			
Length	metre	m	
Mass	kilogram	kg	
Time	second	s	
Electric current	ampere	A	
Temperature	kelvin	K	
Amount of substance	mole	mol	
Luminous intensity	candela	cd	
<i>Supplementary Units</i>			
Plane angle	radian	rad	
Solid angle	steradian	sr	
<i>Derived Units</i>			
Area	square metre		m <sup>2</sup>
Volume	cubic metre		m <sup>3</sup>
Speed, velocity	metre per second		m/s
Acceleration	metre per second squared		m/s <sup>2</sup>
Density	kilogram per cubic metre		kg/m <sup>3</sup>
Concentration	mole per cubic metre		mol/m <sup>3</sup>
Specific volume	cubic metre per kilogram		m <sup>3</sup> /kg
Luminance	candela per square metre		cd/m <sup>2</sup>
Moment of force	newton metre		N•m
<i>Derived Units With Special Names</i>			
Frequency	hertz	Hz	1/s
Force	newton	N	kg•m/s <sup>2</sup>
Pressure, stress	pascal	Pa	N/m <sup>2</sup>
Energy, work, quantity of heat	joule	J	N•m
Power	watt	W	J/s
Electric charge	coulomb	C	A•s
Electric potential	volt	V	W/A
Electric resistance	ohm	Ω	V/A
Electric conductance	siemens	S	A/V
Electric capacitance	farad	F	C/V
Magnetic flux	weber	Wb	V•s
Inductance	henry	H	Wb/A
Magnetic flux density	tesla	T	Wb/m <sup>2</sup>
Luminous flux	lumen	lm	cd•sr
Illuminance	lux	lx	lm/m <sup>2</sup>
Activity of radionuclides	becquerel	Bq	s <sup>-1</sup>
Absorbed dose of ionizing radiation	gray	Gy	J/kg



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Quantity	Unit Name	Symbol	Formula
<i>Non-SI units allowable with SI</i>			
Time	minute	min	1 min = 60s
	hour	h	1 h = 3 600s
	day	d	1 d = 86 400s
	year	a	
Plane angle	degree	°	1° = $\pi/180$ rad
	minute	'	1' = $\pi/10\,800$ rad
	second	"	1" = $\pi/648\,000$ rad
Capacity or volume	litre	L	1 L = 1 dm <sup>3</sup>
Temperature	degree Celsius	°C	interval of 1°C=1K
Mass	tonne	t	1 t = 1 000 kg
Revolution	revolution	r	1 r = 2 rad
Marine and aerial distance	nautical mile		1 nautical mile = 1 852 m
Marine and aerial velocity	knot	kn	1 nautical mile per hour = (1 852 600) m/s
Land area	hectare	ha	1 ha = 10 000 m <sup>2</sup>
Pressure	standard atmosphere	atm	1 atm = 101.325 kPa



# SI Units for Drilling

Quantity or Property	Conventional Units	SI Unit	Symbol	Multiply by
Depth	feet	metres	m	0.3048
Hole and pipe diameters	inches	millimetres	mm	25.4
Bit size				
Weight on bit	pounds	decanewtons	daN	0.445
Nozzle size	32ds inch	millimetres	mm	0.794
Drill rate	feet/hour	metres/hour	m/h	0.3048
Volume	barrels	cubic metres	m <sup>3</sup>	0.1590
	U.S. gals/ stroke	cubic metres per stroke	m <sup>3</sup> /stroke	0.00378
Pump output and flow rate	U.S. gpm	cubic metres per minute	m <sup>3</sup> /min	0.00378
	bbbl/stroke	cubic metres per stroke	m <sup>3</sup> /stroke	0.159
	bbbl/min	cubic metres per minute	m <sup>3</sup> /min	0.159
Annular velocity	feet/min	metres per minute	m/min	0.3048
Slip velocity				
Liner length and diameter	inches	millimetres	mm	25.4
Pressure	psi	kilopascals	kPa	6.895
		megapascals	MPa	0.006895
Bentonite yield	bbbl/ton	cubic metres per tonne	m <sup>3</sup> /t	0.175
Particle size	microns	micrometres	Mm	1
Temperature	°Fahrenheit	°Celsius	°C	(°F - 32)/1.8
Mud density	ppg (U.S.)	kilograms per cubic metre	kg/m <sup>3</sup>	119.82
Mud gradient	psi/foot	kilopascals per metre	kPa/m	22.621
Funnel viscosity	s/quart (U.S.)	seconds per litre	s/L	1.057
Apparent and plastic viscosity	centipoise	millipascal seconds	mPa•s	1
Yield point Gel strength and stress	lb <sub>f</sub> /100 ft <sup>2</sup>	pascals	Pa	0.4788 (0.5 for field use)



Quantity or Property	Conventional Units	SI Unit	Symbol	Multiply by
Cake thickness	32ds inch	millimetres	mm	0.794
Filter loss	millimetres or cubic centimetres	cubic centimetres	cm <sup>3</sup>	1
MBT (bentonite equivalent)	lb/bbl	kilograms per cubic metre	kg/m <sup>3</sup>	2.85
Material concentration	lb/bbl	kilograms per cubic metre	kg/m <sup>3</sup>	2.85
Shear rate	reciprocal seconds	reciprocal seconds	s <sup>-1</sup>	1
Torque	foot-pounds	newton metres	N•m	1.3558
Table speed	revolutions per minute	revolutions per minute	r/min	1
Ionic concentration in water	equivalents per million	moles per cubic metre	mol/m <sup>3</sup>	1
Corrosion rates	lb/ft <sup>2</sup> /year	grams per square metre per day	g/m <sup>2</sup> •d	13.377
	mils per year	millimetres per year	mm/a	0.0254



# SI Equivalents

## Length

1 millimetre = 0.04 inch  
 1 centimetre = 0.39 inch  
 1 metre = 39.37 inches = 1.09 yards  
 1 inch = 2.54 centimetres  
 1 foot = 3.05 decimetres  
 1 yard = 0.91 metre  
 1 mile = 1.61 kilometres  
 1 foot = .305 metre

## Area

1 square centimetre = 0.15 square inch  
 1 square decimetre = 0.11 square foot  
 1 square metre = 1.20 square yards  
 1 hectare = 2.47 acres  
 1 square kilometre = 0.39 square mile  
 1 square inch = 6.45 square centimetres  
 1 square foot = 9.29 square decimetres  
 1 square yard = 0.83 square metre  
 1 acre = 0.40 hectare  
 1 square mile = 2.59 square kilometres

## Pressure

1 kilopascal = 0.145 pound per square inch  
 1 kilopascal per metre = 0.044 pound per square inch per foot  
 1 pound per square inch = 6.894 kilopascals  
 1 pound per square inch per foot = 22.62 kilopascals per metre

## Volume

1 cubic centimetre = 0.06 inch  
 1 cubic metre (stere) = 1.31 cubic yards  
 1 cubic inch = 16.39 cubic centimetres  
 1 cubic foot = 0.28 cubic decimetre  
 1 cubic yard = 0.75 cubic metre

## Capacity

1 millilitre = 0.06 cubic inch  
 1 litre = 61.02 cubic inches = 1.507 liquid quarts  
 1 decalitre = 0.35 cubic foot = 2.64 liquid gallons  
 1 fluid ounce = 29.57 millilitres  
 1 U.S. gallon = 3.785 litres  
 1 barrel (oil) = 159 litres

## Weight

1 gram = 0.04 ounce  
 1 kilogram = 2.20 pounds  
 1 metric ton (tonne) = 0.98 English ton  
 1 ounce = 28.35 grams  
 1 pound = 0.45 kilogram  
 1 English ton = 1.02 metric tons

## Density

1 kilogram per litre = 8.34 pounds per gallon  
 1 kilogram per litre = 62.5 pounds per cubic foot  
 1 pound per gallon = 0.119 kilogram per litre  
 1 pound per cubic foot = 0.016 kilogram per litre

## SI PREFIXES

Value	Prefix	Symbol
$10^{18}$	exa	E
$10^{15}$	peta	P
$10^{12}$	tera	T
$10^9$	giga	G
$10^6$	mega	M
$10^3$	kilo	k
$10^2$	hecto	h
$10^1$	deca	da

Value	Prefix	Symbol
$10^{-1}$	deci	d
$10^{-2}$	centi	c
$10^{-3}$	milli	m
$10^{-6}$	micro	M
$10^{-9}$	nano	n
$10^{-12}$	pico	p
$10^{-15}$	femto	f
$10^{-18}$	atto	a



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