Appendix K: Conversion of Units

Each of the fractions below has the value of 1, i.e., numerator and denominator are equal. Hence multiplying any dimension by one of the fractions (and cancelling terms) does not change the value.

Circular measure

$$\frac{0.01745 \text{ radians}}{\text{degree}} \quad \frac{57.30 \text{ degrees}}{\text{radian}} \quad \frac{9.55 \text{ rev/minute}}{\text{rad/s}}$$

Linear measure

$$\frac{0.3048 \text{ m}}{\text{ft}} \quad \frac{3.281 \text{ ft}}{\text{m}} \quad \frac{1.609 \text{ km}}{\text{statute mile}} \quad \frac{0.6214 \text{ statute mile}}{\text{km}} \quad \frac{1.852 \text{ km}}{\text{nautical mile}} \quad \frac{1.1516 \text{ statute mile}}{\text{nautical mile}} \quad \frac{60 \text{ nautical miles}}{\text{degree at equator}}$$

$$\frac{2.54 \text{ cm}}{\text{inch}} \quad \frac{10^6 \text{ micron}}{\text{m}} \quad \frac{10^{10} \text{ Angström}}{\text{m}} \quad \frac{9.46 \text{ m}}{10^{-15} \text{ light year}} \quad \frac{66 \text{ ft}}{\text{chain}} \quad \frac{100 \text{ link}}{\text{chain}} \quad \frac{6 \text{ ft}}{\text{fathom}} \quad \frac{1 \text{ league}}{3 \text{ statute miles}}$$

Velocity

$$\frac{1.689 \text{ ft/s}}{\text{knot}} \quad \frac{1.15157 \text{ mile/hour}}{\text{knot}} \quad \frac{0.5148 \text{ m/s}}{\text{knot}} \quad \frac{1.853 \text{ km/hour}}{\text{knot}}$$

Area

$$\frac{10^{28} \text{ barn}}{\text{m}^2} \quad \frac{640 \text{ acres}}{\text{mile}^2} \quad \frac{1 \text{ section}}{\text{mile}^2} \quad \frac{2.471 \text{ acre}}{\text{hectare}} \quad \frac{2.590 \text{ km}^2}{\text{mile}^2} \quad \frac{100 \text{ hectare}}{\text{km}^2} \quad \frac{0.4042 \text{ hectare}}{\text{acre}} \quad \frac{258.7 \text{ hectare}}{\text{mile}^2}$$

$$\frac{9 \text{ mi}^2}{\text{Gulf of Mexico (GOM) block}} \quad \frac{5760 \text{ acre}}{\text{GOM block}}$$

Volume

$$\frac{3.785 \text{ liters}}{\text{U.S. gallon}} \quad \frac{4.546 \text{ liters}}{\text{British gallon}} \quad \frac{7.4805 \text{ U.S. gallons}}{\text{ft}^3} \quad \frac{0.15899 \text{ m}^3}{\text{U.S. bbl}} \quad \frac{0.028 \text{ m}^3}{\text{ft}^3} \quad \frac{159 \text{ liter}}{\text{U.S. bbl}}$$

$$\frac{1 \text{ acre ft}}{1233.5 \text{ m}^3} \quad \frac{7758 \text{ bbl}}{\text{acre ft}} \quad \frac{5.61 \text{ ft}^3}{\text{U.S. bbl}} \quad \frac{1 \text{ U.S. bbl}}{0.159 \text{ m}^3} \quad \frac{42 \text{ U.S. gallons}}{\text{U.S. bbl}} \quad \frac{1233 \text{ m}^3}{\text{acre ft}}$$

Mass

$$\frac{2.2046 \text{ lb}}{\text{kg}} \quad \frac{0.4536 \text{ kg}}{\text{lb}} \quad \frac{1.120 \text{ short ton}}{\text{long ton}} \quad \frac{1.102 \text{ short ton}}{\text{metric tonne}} \quad \frac{0.9842 \text{ long ton}}{\text{metric tonne}}$$

Pressure

$$\frac{1.01325 \text{ pascal}}{10^{-5} \text{ atmosphere}} \quad \frac{1 \text{ bar}}{10^5 \text{ pascal}} \quad \frac{29.92 \text{ inches of Hg}}{\text{atmosphere}} \quad \frac{14.223 \text{ lb/inch}^2}{10^4 \text{ kg/m}^2} \quad \frac{1 \text{ cm of Hg}}{1333 \text{ pascal}}$$

$$\frac{14.7 \text{ psi}}{\text{atmosphere}} \quad \frac{1 \text{ newton/m}^2}{\text{pascal}} \quad \frac{0.06895 \text{ bar}}{\text{lb/inch}^2} \quad \frac{703.07 \text{ kg/m}^2}{\text{lb/inch}^2} \quad \frac{0.1333 \text{ kPa}}{\text{torr}} \quad \frac{16.018 \text{ kg/m}^3}{\text{lb/ft}^3}$$

$$\frac{0.069 \text{ bar}}{\text{psi}} \quad \frac{6.895 \text{ kilopascal}}{\text{psi}} \quad \frac{0.01014 \text{ atm}}{\text{kPa}}$$

Normal hydrostatic pressure gradient

$\frac{0.43–0.45 \text{ psi/ft}}{9.5–10.2 \text{ kPa/m}}$ $\frac{0.43–0.45 \text{ psi/ft}}{8.33–8.65 \text{ ppg EMW}}$

Work (Energy)

$\frac{1055 \text{ joules}}{\text{BTU}}$ $\frac{4186 \text{ joules}}{\text{kilocalorie}}$ $\frac{3600 \text{ joules}}{\text{watt hour}}$ $\frac{1.6020 \text{ joule}}{10^{19} \text{ electron volt}}$ $\frac{0.2930 \text{ watt/hour}}{\text{BTU}}$

$\frac{0.948 \text{ BTU}}{\text{kilojoule}}$ $\frac{1.055 \text{ kilojoule}}{\text{BTU}}$ $\frac{10^7 \text{ erg}}{\text{joule}}$ $\frac{0.06895 \text{ bar}}{\text{lb/in}^2 = \text{psi}}$ $\frac{\text{BTU in 6 MCF gas}}{\text{BTU in U.S. bbl oil}}$

Power

$\frac{745.7 \text{ watts}}{\text{horsepower}}$ $\frac{0.001341 \text{ horsepower}}{\text{watt}}$

Other

$\frac{3.7\times10^{10} \text{ becquerel}}{\text{curie}}$ $\frac{\text{abamp}}{10 \text{ amp}}$ $\frac{10^8 \text{ abvolt}}{\text{volt}}$ $\frac{299.79 \text{ volt}}{\text{statvolt}}$ $\frac{2.9979\times10^9 \text{ statamp}}{\text{amp}}$ $\frac{1°\text{F/ft}}{1.8°\text{C/m}}$ $\frac{1°\text{C/km}}{2.9°\text{F/mile}}$

$\frac{\text{mPa.s}}{\text{centipoise}}$ $\frac{\text{langley}}{\text{joule/m}^2}$ $\frac{16.018 \text{ kg/m}^3}{\text{pound/ft}^3}$ $\frac{41.86 \text{ mW/m}^2}{10^{-2}\text{cal/m}^2\text{s} = 1 \text{ HFU}}$ $\frac{1 \text{ neper}}{8.686 \text{ dB}}$ $\frac{10^5 \text{ dyne}}{\text{newton}}$ $\frac{9.869\times10^4 \mu\text{m}^2}{\text{millidarcy}}$