**Volumetrics**

Stock tank oil initially in place

\[
\text{STOIP} = A \times T \times G \times N \times G \times \phi \times S_0 \times \frac{1}{B_o}
\]

Typical \(B_o\): high GOR oil 1.4, low GOR oil 1.2, bitumen 1.05

**Darcy equation**

Fluid flux in \(\text{m}^3 \cdot \text{m}^{-2} \cdot \text{s}^{-1}\)

\[
F = \nabla P \cdot k / \mu = v \cdot \phi
\]

Area \(A\), mean thickness \(T\), Geometric correction factor \(G\), Net to Gross \(N\), GOR \(G\), porosity \(\phi\), saturation \(S_0\), volume factor \(B_o\)

**Conversion factors**

<table>
<thead>
<tr>
<th>from</th>
<th>to</th>
<th>x by</th>
</tr>
</thead>
<tbody>
<tr>
<td>ft</td>
<td>m</td>
<td>0.3048</td>
</tr>
<tr>
<td>m</td>
<td>ft</td>
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</tr>
<tr>
<td>in</td>
<td>mm</td>
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</tr>
<tr>
<td>mile</td>
<td>km</td>
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<tr>
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<tr>
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<tr>
<td>sq mi</td>
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<td>scf</td>
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<tr>
<td>m³</td>
<td>scf</td>
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</tr>
</tbody>
</table>

boe \(^1\) Btu ca. \(5.80 \times 10^9\)

sct \(^2\) Btu ca. 1050

scf \(\text{boe} \(^3\)\) ca. \(1.79 \times 10^{-4}\)

lb \(\text{kg}\) 0.4536

Pa Nm\(^2\) 1

bar kPa 100

psi kPa 6895

atm kPa 98.07

Torr kPa 0.1333

\(^1\) See note above

\(^2\) Some sources round to 6000.

\(^3\) http://en.wikipedia.org/wiki/Technical_atmosphere

**Gravity & density**

API gravity = \(141.5 / \rho - 131.5\)

for density \(\rho [\text{g/cm}^3]\) @ 15°C

**Categories**

One petroleum system

Two plays

Depending on the circumstances, you might count sand & as a third

Two prospects

Six segments

**Trivia**

Number of wells drilled since 1859 7 million

Percentage of well in the United States 50%

Number of producing wells worldwide 1 million

Average production of US oil wells 20 bpd

Average production of Middle East oil wells 7000 bpd

Number of producing fields worldwide 40 000

Number of drilling rigs worldwide 5000

Annual global oil consumption 30 Gbce

Annual discovery rate 4–8 Gbce

Cumulative global consumption 1050 Gbce

Conventional global reserves Campbell & Lathams 1998 850 Gbce

Conventional global reserves BP Statistical Review 2007 1208 Gbce

Conventional global reserves 2008 1240 Gbce

Conventional global reserves USGS 2009 2311 Gbce

Unconventional global reserves 1900 Gbce

1. See note above

2. Some sources round to 6000.