

# Appendix A

## Vocabulary

AAPG 美国石油地质家学会  
abbreviation 缩写  
Abscissa [数][天] 横坐标; 横线  
absurdity 荒谬, 不合理  
accessory 附件  
accretion 增大, 堆积  
acquisition 采集  
adjacent 相邻  
advent 来临  
affinity 亲和力, 亲和性  
agent 代理  
algorithm 算法  
aligned 对齐  
alkali-lime 可溶性灰岩  
alkalinity 碱度  
alteration 变更  
ambient 周围环境  
americium 镅Am  
americium-beryllium 镅-铍  
amplitude 幅度, 振幅  
angle 角度  
angular 有角的  
angular frequency 角频率  
angularity 棱角度  
anhydrite 硬石膏  
anion 阴离子  
anisotropic 各向异性的  
anisotropy 各向异性  
annihilation 毁灭  
annulus 环  
anode 阳极

anomalies 异常  
 anomaly 异常, 反常事物  
 anormal 异常的  
 antennas 天线  
 apex 顶, 顶点  
 approximation 近似值  
 aquifer 含水层  
 aragonite 霏石  
 Archie equation 阿尔奇公式  
 argillaceous 泥质的, 粘土的  
 ascent 提升  
 assembly 装配, 组装  
 asymmetric 不对称的  
 atomic 原子  
 attenuate 衰减  
 attenuation 衰减  
 avalanche 雪崩  
 axially 轴向的  
 axis 轴  
 azimuth 方位  
 azimuthal 方位角的, 方位的  
 barite 重晶石  
 barren 贫瘠的  
 baseline 基线  
 bauxites 铝土矿  
 beryllium 铍Be  
 BHC 井底油嘴  
 billiard ball 台球, 撞球  
 bisecting 二等分  
 bitumen 沥青  
 bituminous 沥青的  
 blade 叶片  
 blurred 模糊  
 borehole-to-borehole 井壁稳定  
 breccia-dolomite 角砾云岩  
 brittle 易碎的, 脆弱的  
 burial 埋葬的  
 bypass 旁路  
 calcite 方解石  
 calcium 钙  
 calcium 钙  
 calibrate 校准  
 calibration 刻度, 校正  
 caliper 卡尺, 测量, 井径仪  
 compass 指南针

capacitance 电容  
capillary-bound 毛管束缚  
capture 捕捉  
carbonate 碳酸盐  
cased-hole 套管井  
casing collar locator 套管接箍定位器  
category 范畴, 种类  
cathode-ray 阴极射线管  
cation 阳离子  
cavern 孔穴  
cement bond evaluation 水泥胶结评价  
centipoise 厘泊(粘度单位)  
centralizer 扶正器  
ceramic 陶瓷  
cesium 铯  
chamber 室  
chip 芯片  
chloride 氯化物  
Chlorine 氯  
chronostratigraphic 年代地层的  
circuitry 线路, 电路  
circumference 围  
clastic 碎屑岩  
CMR 可组合的核磁共振测井仪  
co-axial 共轴的  
coefficient 系数  
cohesional 内聚力的  
coil 线圈  
coincide 一致  
collaboration 合作  
collapse 倒塌, 坍塌  
collision 碰撞, 冲突  
colloidal 胶体  
commonest 常见, common 的变形  
compatible 兼容  
compensate 补偿  
completion 完成  
compression 压缩  
computed 计算  
conclusively 终局  
confinement 限制  
conglomerate 砾岩  
conical 锥形  
conjunction 连接  
connate 原生的

consensus 共识  
constituent 组成  
constraint 约束  
contaminate 污染  
contaminate 污染, 污染物  
content 内容  
correlate 相关  
correlation 相关  
correlation 对比, 相关  
cosine 余弦  
coupling 耦合  
criss-cross 纵横交错的  
critical 临界的, 关键性的  
crossed-dipole 交叉偶极子  
crossover 交叉  
crossplot 交会图  
crucial 至关重要的  
crystal 水晶  
cumulative 累积  
cutoff 截止  
cylindrical 圆柱  
dampening 打击  
dazzle 炫目的  
decay 腐烂  
decentralize 权力下放  
decomposition 分解  
decontamination 去污  
deferred 延迟的  
deflect 使偏斜  
deflection 挠度  
deformation 变形  
deformed 变形  
degrade 降解  
delineated 划定  
densitometer 用浓度  
departure 离开  
depict 描绘  
depletion 损耗  
deployment 部署  
deposit 存款, 寄存  
depositional 沉积  
derivable 可以  
derive 汲取  
desiccation 干燥  
detection 检测

detector 检波器, 探测器  
 deviate 偏离, 使偏离, 偏转, 定向井  
 dewatering 脱水  
 DFA 分布式功能体系结构  
 diagenesis 成岩作用  
 diagnosis 诊断  
 diagnostic 诊断  
 diagonal 斜线, 斜交的, 对角线  
 dielectric 介电  
 dielectric permittivity n. [电] 介电常数, [电] 电容率  
 differential 微分  
 diffuse 扩散  
 diffusion 扩散  
 dilute 稀释  
 dimension 维, 尺寸  
 diminish 递减, 减少  
 dip 浸  
 dipmeter 地层倾角测井仪  
 disastrous 灾难性的  
 discern 辨别  
 discernible 可辨  
 discrepancies 不精确的  
 discrete 离散  
 discriminate 歧视  
 discuss 讨论  
 disintegration 解体, 蜕变, 衰减  
 dislodge 驱出, 移出  
 disperse 分散  
 dispersion 色散  
 dissociate 分解, 离解  
 dissolve 溶解 vi  
 distinct 截然不同的  
 distinguish 识别  
 distortion 失真  
 dolomite 白云岩  
 dominant 主导, 显性的  
 dotted 虚线  
 downhole 井下  
 drain 排水  
 drainage 排水  
 drawn 画  
 drift 飘移  
 drillability 可钻性  
 drillstring 钻柱  
 Dual Laterolog tool 双侧向测井仪

ductility 延展性, 柔顺性  
 duplicate 复制  
 dynamics 动力学  
 Dynamics Tester 动态测试  
 eccentric 偏心  
 eccentricity 偏心  
 Ecoscope 斯伦贝谢一种随钻测井系列  
 ejected 驱逐  
 elaborated 精心制作的, 详细阐述  
 elastic 弹性  
 elasticity 弹性  
 electrical conductivity 电导率  
 electrode 电极  
 electrokinetic 电动的  
 electromagnetic 电磁  
 Electromagnetic Propagation Tool 电磁波传播测井仪  
 electromechanical 电机的  
 eliminate 消除  
 elliptical 椭圆的  
 elongate 延长, 拉长  
 elusive 难以捉摸的  
 embed 嵌入  
 EMF 电动势  
 emission 放射, 发射  
 emit 发出  
 empirically 实证  
 encompasses 包含, 包括  
 ensuing 随后  
 epithermal 超热的, 浅成低温热液  
 equilibrium 平衡  
 equipotential 等势的  
 eradicate 根除  
 erosion 侵蚀  
 erratic 飘忽不定, 古怪的  
 evaporite 蒸发岩  
 evolution 演化  
 excitation 励磁  
 excursion 偏移  
 expel 驱逐  
 exponent 指数  
 exponential 指数  
 export 出口  
 extensive 广泛的  
 extracting 提取  
 extrapolate 推断

extrusive 喷发的  
 facies 相  
 facilitate 促进  
 feldspar 长石  
 fiber-optic 光纤  
 film 电影  
 filtrate (泥浆)滤液  
 fin 翅片  
 finite 有限  
 fissures 裂缝  
 flexural 弯曲  
 flowmeter 流量计  
 fluorescence 荧光  
 Formation MicroImagertool 微电阻率成像测井  
 fraction 分数, 部分  
 fracture detection 裂缝探测  
 frictional 摩擦  
 funnel 漏斗  
 galvanometer 电流计, 检流计  
 gamma ray 伽马射线  
 gauge 表, 计量器  
 geochemical 地球化学  
 geology-geophysical 地球物理学的  
 geometry 几何  
 geosteering 地质导向  
 geothermal 地温的  
 glauconite 海绿石  
 gradient 梯度  
 gradient 梯度, 斜率  
 gradiomanometer 压差密度计  
 granite 花岗岩  
 granular 颗粒的, 颗粒状的  
 gravel-pack evaluation 砾石填充评价  
 grid 格子, 网格  
 grooves 槽  
 ground-loop 地面循环  
 guarantee 保证  
 gypsum 石膏  
 halite 岩盐  
 helical 螺旋  
 hoist 起重机, 吊起  
 homogeneous 均匀的, 同质的  
 horizontal 水平的  
 hostile 敌对  
 hydraulic-fracturing 水力压裂

ILD 深感应测井  
 Illite 伊利石  
 illustrative 说明性的  
 impart 传授, 给予, 告知  
 impedance 阻抗  
 impeller 叶轮  
 imperceptible 未知的, 不能感知的  
 impermeable 渗  
 impervious 非渗透的  
 implementation 实施  
 improper 不适当的, 错误的  
 inclination 倾向  
 inclinometer 倾角罗盘, 井斜计  
 incompatible 不相容的  
 incorporate 纳入  
 incorporate 结合, 混合  
 increment 间隔值, 增量  
 induction 感应  
 induction log 感应测井  
 inelastic 弹性  
 influx 涌入  
 inherent 固有  
 in-situ 原位  
 insofar 在...的范围  
 instantaneous 瞬时  
 insulate 绝缘  
 insulator 绝缘体  
 integral 整体  
 integrity 完整, 完整性  
 intensive 加强的, 深入仔细的  
 interbedded 互层的  
 intercept 拦截  
 intercrystalline 晶体粒间  
 interface 界面  
 intergranular 粒间的, 晶粒间的  
 intergrity 完整性  
 intermediate 中间  
 intersection 路口  
 interstitial 间隙的, 孔隙间的  
 interval 区间  
 interwell 井间  
 intrinsic 本质的, 固有的  
 intrusive 侵入的  
 invade 侵入  
 invasion 侵入层



inversely 相反  
 iodine 碘  
 ionization 电离  
 ironically 具有讽刺意味的是  
 irreducible 不可消滅的  
 irreducible 束縛的  
 isotope 同位素  
 isotropically 呈现等向分布之电磁波  
 kaolinite 高岭石  
 kinetic 动力学  
 laminate 分层, 薄层  
 Laterolog 侧向测井  
 layered clay structure 层状粘土构造  
 lead 铅  
 leakage 泄漏  
 leakoff 漏气  
 lignosulfonate 木质素磺酸盐  
 likelihood 可能  
 liquid-junction potential 液体接触电位(扩散电动势)  
 lithification 岩化(作用)  
 lithium 锂  
 lithology 岩性  
 lithology determination 岩性识别  
 Lithology-independent 与岩性无关的  
 LLD 深侧向测井  
 locales 地区  
 localize 地方化  
 logarithmic 对数的  
 logging-testing-logging 测-注-测  
 logging-while-drilling 随钻测井  
 longitudinal 纵向  
 longitudinal wave 纵波  
 LWD NMR 随钻核磁共振测井  
 LWD-specific 特殊的随钻测井  
 magmatic 岩浆的  
 magnesium 镁  
 magnet 磁铁  
 magnetic 磁性的  
 magnetic permeability 导磁率(性, 系数)  
 magnetometer 磁力仪  
 magnetostrictive 磁致伸缩的  
 magnitude 级  
 malfunctioning 故障  
 mandrel 芯轴  
 manner 方式

manometer 计  
 mantle 地幔  
 marble 大理石  
 marginal 边缘的, 界限的  
 matrix 骨架  
 mechanical 机械的, 力学的  
 membrane Potential 薄膜电势  
 Membrane 薄膜  
 menu 菜单  
 metallic ion 金属离子  
 metamorphic 变质  
 metastable 亚稳态的, 相对稳定的  
 methodology 方法论  
 mica 云母  
 microlaterolog 微侧向测井  
 microlog 微电极测井  
 microscanner 微扫描仪  
 microSFL 微球形聚焦测井  
 millivolt 毫伏  
 mineralogy 矿物学  
 miscible 可溶的  
 mitigate 减轻  
 mobility 活动性, 可动性  
 moderation 适度  
 monochromatic 单色的, 单频的  
 monopole 单极  
 montmorillonite 蒙脱石  
 morphology 形态  
 MRIL-B B型核磁共振测井  
 MRIL-C C型核磁共振测井  
 MRIL-Prime P型核磁共振成像测井  
 multiple 多重的, 倍数, 并联  
 multisensor 多传感器  
 multistage fracturing 多次断裂  
 N.B. abbr. (拉)注意(Nota Bene)  
 necessitate 迫使, 使...成为必要  
 negatron 负电子  
 negligible 可忽略不计的, 不计的  
 neuron 神经元  
 neutron 中子  
 neutron-neutron log 中子-中子测井曲线  
 nil n. 无, 零  
 notion 观念  
 novice 无经验者, 新手  
 nuclear magnetic resonance 核磁共振

nucleus 核  
obtain 获得  
occupy 占据  
oil-based mud 油基泥浆  
oil-bearing 含油的  
oil-saturated 饱和油  
optimization 优化  
optimum 最佳的  
ordinate n. 纵座标; 纵线  
ore 矿  
orient 东方, 向东方, 使适应  
orthogonal 正交  
oscillate 振荡  
oscillation 振荡  
oscillator 振荡器  
oscilloscope 示波器  
osmotic 渗透的  
OT 操作时间; 输出变压器  
outcrop 露头  
ovalization 成椭圆形的  
overlapped 重叠  
overlying 叠压  
pack 填塞, 充填  
paleostress 古应力  
parallel 平行  
patches 补丁  
pattern 组合  
Pattern 组合  
peak 峰值, 波峰  
penetrate 穿透  
penetrated 浸透, 穿透  
penetration 渗透  
perforate 射孔  
perforation 射孔  
permeable beds 渗透层  
perpendicular 垂直  
perturb 扰乱  
pessimistic 悲观  
phosphor 磷  
phosphorite 磷灰石  
photocathode 光电极  
photon 光子  
pH-sensitivity PH 敏感性  
Picowatt 皮瓦; 微微瓦; 百亿分之一瓦  
piecewise 分段的

piezoelectric 压电的  
 pitch 沥青, 音高, 投掷, 向前倾倒  
 pitfall 陷阱  
 placement 位置, 方位  
 plateau 曲线的平直段  
 plug 塞子, 插头接点  
 plunger 柱塞  
 plutonium 钚Pu  
 pointless 钝的  
 poise 使...平衡  
 polarities 极性  
 polarize 使极化  
 polycrystalline 多晶硅  
 polymer 聚合物  
 porosity 孔隙度, 孔隙性  
 porous 多孔的  
 positive 正的, 阳极的  
 positron 正电子  
 potash 钾肥, 钾化合物  
 potassium 钾  
 potential 电位, 位能  
 potentiometer 电位器  
 precise 精确的  
 precision 精度  
 predominant 主要的  
 pretest 预测试  
 prior 先前的, 以前的  
 probe 探针  
 procedure 程序  
 prompt 及时的, 敏捷的; 提示, 初进  
 propagate 传播, 扩散  
 proportional 成比例的  
 propping 支撑  
 prospect 勘探  
 proton 质子  
 proximity 接近, 亲近  
 pseudostatic 伪静态的  
 pulse 脉冲  
 pulse height 脉冲高度  
 pulsed-neutron 脉冲中子  
 pulse-echo 脉波-回波  
 quadrant 象限, 四分之一圆  
 quadrupole 四极子  
 quantification 量化  
 quantify 确定...数量

quantitative 定量的  
quantitatively 定量  
quartz 石英  
quick-look method 快速检测法  
radial 径向  
radial-differential-temperature log 径向微差井温测井  
radiating 辐射  
radii 半径(复数)  
radioactive-tracer 放射性示踪剂  
rarefaction 膨胀  
ratio 比值, 比率  
reciprocal 倒数, 可逆的  
reconcile 调和  
reconstitute 重新组成  
refracted wave 折射波  
regime 政权  
regional 区域  
relaxation 弛豫  
remedial 补救  
remnant 余剩的人  
render 渲染, 给与补偿  
repartition 分配, 划分  
reprecipitation 再沉淀  
represent 描述  
representation 表示  
resemble 类似, 象  
residual 残余  
resistivity 电阻率  
resolution 决议  
resonance 共振  
resultant 合成  
retrieval 检索, 取回  
retrofit 改造  
retrograde 逆行  
reverberation 混响  
reverse 反面, 背面, 倒退  
rim 边缘  
robust 鲁棒  
rotary 扶轮  
rotate 旋转  
roundness 圆度  
rugose 粗糙的, 有褶皱的  
rugosity 粗糙度  
salinity 盐度, 矿化度  
sandwich 层状结构的

saturation 饱和度  
 sawtooth 锯齿形的  
 scatter 分散  
 schematic 简要的, 概要的  
 schistosity 片理  
 Schlumberger 斯伦贝谢  
 scintillation 闪烁, 起伏  
 secondary currents 次生电流  
 secondary 次生的  
 sediment 沉积物  
 segment 段, 层  
 segregate 分离的  
 seismic 地震  
 self(spontaneous) potential 自然电位  
 self-explanatory 不证自明的  
 self-potential 自然电位  
 semi-log 对数测井曲线  
 sensitivity 灵敏度  
 sensor 传感器  
 shaft 轴, 杆  
 shale base line 泥岩基线  
 shale-sand 泥质砂岩  
 shaliness 泥质含量  
 shaly 页岩  
 shattered 粉碎  
 sheath 鞘  
 shield 盾  
 short normal 短电位电极  
 shrinkage 收缩  
 silicone 硅树脂, 聚硅氧  
 simplicity 简单  
 simulate 模拟  
 simultaneous 同时  
 sinusoidal 正弦  
 Skin Effect 趋肤效应  
 slope 边坡  
 slug 塞  
 sodium 钠  
 solids 固体  
 sonde 探测器  
 sonic 声音的, 声波  
 sophisticated 复杂的, 精致的  
 sought 寻求, 查找  
 spatial 空间  
 specific gravity 比重

spectral 光谱  
spectrometry 光谱测定法  
spectroscopy 能谱学  
spectrum 谱  
spherical 球状, 球状的  
Spherically Focused Resistivity log 球形聚焦电阻率测井  
spike 阻止, 钉住  
spinner 转子  
spinner-flowmeter 转子流量计  
split 分裂  
spurious 假的, 不真实的  
squeeze 挤  
stabilizer 稳定器  
stimulate 刺激  
strain 应变  
stratum 地层  
streak 夹层  
strip 带  
subaerial 接近地面的  
sub-aqueous 水下的  
subscript 下标  
subsequent 衍生的  
subsidiary 子公司  
substitute 代替  
subtle 微妙的  
subtract 减去器  
sulphate 硫酸盐  
superheterodyne 超外差的  
superimpose 叠加, 重叠  
suppression 抑制, 压制  
surrounding 围岩  
symmetrical 对称的  
symmetry 对称, 对称性  
syneresis 脱水收缩作用  
tabulated 使成平板  
tag 标签  
tangential 切向  
tanglesome 复杂的, 紊乱的  
tectonic 构造的  
telemetry 遥测  
tensile 拉伸  
tension 张力  
terrestrially 中  
terrigenous 陆生的, 陆源的  
tertiary 第三纪

texture 结构  
 thermal decay time 热中子衰减时间  
 thermometer 温度计  
 thin 薄  
 thorium 钍  
 threshold 阈值  
 thumb 经验方式  
 tight 致密的  
 titanium 钛  
 tomography 断层照相  
 torque 扭矩  
 tracer 示踪剂  
 track 道, 测井曲线记录道  
 traditional 常规的  
 trajectory 轨迹  
 transducer 传感器  
 transient 瞬态  
 transmission 传输  
 transmitter 发射器  
 transverse 横向  
 transverse wave 横波  
 traverse 穿过, 横越  
 tremendous 巨大的  
 triaxial 三轴  
 turbine 涡轮  
 turbulent 湍流  
 ultra-metamorphism 超变质  
 ultrasonic 超声  
 unaltered 原封不动  
 unambiguous 明确  
 undamaged 无污染的, 原状的  
 uniform 均匀的, 一致的  
 unravel 揭开  
 uranium 铀  
 utility 效用, 作用  
 vanish 尖灭, 消失  
 variation 变化  
 velocity 速度  
 verification 验证  
 version 版本  
 versus 与...相对, 对抗  
 vertical resolution 垂向分辨率  
 viability 生存能力  
 vibration 振动  
 vice versa 反之亦然



vicinity 附近  
viscosity 粘度  
visualize 观察, 使...看得见  
void 无效  
voltage 电压  
volumetric 容积  
voyage 航海  
vug 孔洞, 晶簇  
vuggy 多孔的  
vugular 晶簇性的, 含晶簇的  
warrants 保证  
washout 冲洗, 冲洗带  
waveform 波形  
wavefront 波前  
wellsite 井场  
wildcat 预探井  
withdrawal 撤军, 撤退

## Appendix B

### Nomenclature (名词术语)

AZ	井斜方位
AZ1	1号极板方位角
API	美国石油学会、自然伽马和中子测井刻度单位
$A_p$ 、 $A_s$	纵、横波的有效幅度
AST	阵列声波测井
BHC	井眼补偿声波测井
BHT	井底温度
BHTV	超声波电视测井
$C_p$	压实校正系数
$C_w$	地层水的矿化度
$C_{mf}$	泥浆滤液矿化度
CAD	环行声波测井
CAL	井径测井
CBL	水泥胶结测井
CEC	阳离子交换容量
CNL	补偿中子测井
DCA	电导率异常检测
DEN	密度测井(体积密度)
DIL-LL8	双感应—八侧向组合测井
DIL-SFL	双感应-球形聚焦组合测井
$d_h$	井径
$d_{xo}$	冲洗带直径
$d_i$	侵入带直径
$E_c$	电化学电动势
$E_k$	动电学电位,动电学电动势
ELJ	泥岩薄膜电位
EM	扩散电位
ES	自然电位回路总电动势
F	地层因素
Fa	视地层因素

FS	声波测井求得的地质因素
Fsd	砂岩夹层的地质因素
FDC	补偿地层密度测井
FIL	裂缝识别测井
FMS	微电阻扫描测井
GNT	普通中子测井
GOR	油气比
GR	自然伽马测井
GRmax	最大自然伽马
GRmin	最小自然伽马
GRsd	纯砂岩自然伽马
GRsh	泥岩自然伽马
HI	含氢指数
HDT	高分辨地层倾角测井仪
I	电阻增大系数
IGR	自然伽马相对值,自然伽马泥质指数
Isp	自然电位相对值,自然电位泥质指数
Isilt(SI)	粉砂指数
DIL	双感应测井
ILD	深感应
ILM	中感应
ISF	感应一球形聚焦测井
K	绝对渗透率
Ko	原油的有效渗透率
Kw	水的有效渗透率
Kro	油的相对渗透率
Krw	水的相对渗透率
L	源距
DLL	双侧向测井
LLd	深侧向
LLs	浅侧向
MFS	多节式流体测试器
MID	骨架岩性识别图
ML	微电极测井
MLL	微侧向测井
MSFL	微球形聚焦测井
MST	微电阻扫描测井仪
Md	粒度中值
m	孔隙度指数
n	饱和度指数
ne	电子密度
NG	中子伽马测井读数
NGS	自然伽马能谱测井
NLL	中子寿命测井
Pe	光电吸收截面指数

P	地层压力
PL	邻近侧向测井
PSP	假静止自然电位,泥质砂岩静止自然电位
Qv	单位总孔隙体积的阳离子交换容量
Ra	视电阻率
Rc、Rcorr	校正后的电阻率
RFT	地层温度下的电阻率
Ri	侵入带电阻率
RIL	感应测井电阻率
RILd	深感应电阻率
RILm	中感应电阻率
RLL	侧向测井电阻率
Rm	泥浆电阻率
Rmc	泥饼电阻率
Rmf	泥浆滤液电阻率
RMLL	微侧向测井电阻率
Ro	100%含水的地质电阻率
Rpl	邻近侧向测井电阻率
Rs	围岩电阻率
Rsd	纯砂岩(夹层)的电阻率
Rsh	泥岩电阻率
Rt	地层(真)电阻率
Rw	地层水电阻率
Rwa	视地层水电阻率
Rwe、Rweq	地层水等效电阻率
Rxo	冲洗带电阻率
RFT	重复式地层测试器
Sg	含气饱和度
Sgxo	残余天然气饱和度
Sh	含油气饱和度
Shr、(Shy)xo	残余油气饱和度
SI	粉砂指数
Smo	可动油饱和度
So	含油饱和度
Sor	残余油饱和度
Sw	含水饱和度
Swb	束缚水饱和度
Swf	自由水饱和度
Sxo	冲洗带含水饱和度
SFL	球形聚焦测井
SFT	选择性地层测试器
SHDT	地层高分辨率倾角测井仪
SNP	井壁中子孔隙度测井
SP	自然电位
SSP	静止自然电位

TDT	热中子衰减时间测井,中子寿命测井(NLL)
U	光电吸收体积截面
$U_{\text{maa}}$	视骨架体积截面
$v_f$	流体的声波速度
$v_{\text{ma}}$	岩石骨架中的声波速度
$V_{\text{sh}}$	泥岩中的声波速度
$v_p, v_s$	声波的纵、横波速度
$V_{\text{clay}}$	粘土的相对体积
$V_{\Phi}$	孔隙体积
VDL	声波变密度测井
$W_{\text{clay}}$	粘土含水量
WF	声波全波波形(显示)
WOR	油水比
$\Delta_t$	声波间隔传播时间,声波时差
$\Delta_{\text{tma}}$	岩石骨架的声波时差
$\Delta_{\text{tsd}}$	砂岩的声波时差
$\Delta_{\text{tsh}}$	泥岩的声波时差
$\Delta\Phi_N$	中子孔隙度校正值
$\Delta\rho$	密度测井泥饼补偿量
$\Delta\rho_b$	密度校正值
$\rho_a$	视密度,密度测井读数
$\rho_b$	地层体积密度
$\sum$	中子俘获截面、伽马射线的光电效应截面、光电吸收系数
$\sum_f$	流体的俘获截面
$\sum_{\text{ma}}$	骨架的俘获截面
$\tau$	中子寿命(热中子衰减时间)
$\Phi$	孔隙度
$\Phi_D$	密度测井孔隙度
$\Phi_{DC}$	油气的密度测井孔隙度
$\Phi_e$	有效孔隙度
$\Phi_f$	缝洞孔隙度
$\Phi_N$	中子测井孔隙度
$\Phi_{ND}$	中子—密度测井交会孔隙度
$\Phi_o$	含油孔隙度
$\Phi_S$	声波测井孔隙度
$\Phi_2$	次生孔隙度
$\Phi_t$	总孔隙度
$\Phi_{CNL}$	补偿中子孔隙度
$\Phi_W$	含水孔隙度
$\Phi_{XO}$	冲洗带含水孔隙度

# Appendix C

## Conversion Factors and Tables

### Length

$$1 \text{ m} = 3.281 \text{ ft}$$

### Volume

$$1 \text{ barrel} = 0.15899 \text{ m}^3 = 5.614 \text{ cubic feet} = 42 \text{ US gallons}$$

$$1 \text{ US gallon} = 0.1337 \text{ cuft}$$

### Pressure/Density

$$1 \text{ psi} = 0.06895 \text{ bar} = 0.068065 \text{ atm} = 6895 \text{ N/m}^2 \text{ (Pascal)}$$

$$1 \text{ psi/ft} = 2.3095 \text{ g/cc} = 22.6 \text{ kPa/m}$$

$$1 \text{ g/cc} = 8.35 \text{ lb/gal}$$

### Temperature

$$\text{Conversion from } ^\circ\text{C to } ^\circ\text{F: } ^\circ\text{C} = (^\circ\text{F} - 32) * 5/9$$

$$^\circ\text{C} = ^\circ\text{K} + 273.16$$

$$^\circ\text{Rankine} = 1.8 * ^\circ\text{K} = ^\circ\text{F} + 460$$

### Permeability

$$1 \text{ darcy} = 10^{-12} \text{ m}^2$$

## Appendix D

### Typical Parameters' Physical Value

Lithology	GR (API)	$\rho_b$ (g/cc)	CNL (NPU)	AC ( $\mu\text{s}/\text{ft}$ )	Resistivity ( $\Omega$ )	Pe	$\rho_e$ (g/cc)	U (barn/cc)
Sandstone	Low	2.65	-5 to -3	51-56	High	1.8	2.65	4.79
Limestone	Low	2.71	0	44-48	High	5.1	2.71	13.77
Dolomite	Low	2.88	2-6	39-44	High	3.1-3.2	2.86	9.00
Anhydrite	Low	2.98	0	45-55	High	5-5.1	2.96	4.95
Salt	Low	2.03	100	180-190	High	4.65		
Chlorite	High	2.79	30-40	50-150	Low	6.3	2.79	17.58
Illite	High	2.52	30-40	50-150	Low	1-5	2.52	8.69
Kaolinite	High	2.41	30-40	50-150	Low	1-5	2.41	4.41
Montmorillonite	High	2.12	30-40	50-150	Low	1-5	2.12	4.32
Brine	0	1-1.1	100	189	0- $\infty$	0.36	1.185	0.96
Oil	0	0.60-1.0	70-100	210-240	Very high	0.12-0.13	0.95-0.97	0.11-0.12
Gas	0	0.1-0.5	10-50	500-1500	Very high	Low	0.1-0.5	Low

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