

Wellsite Operations Training Courses 2022

Wellsite Geology
Mudlogging
Formation Evaluation
Drilling Technology

Stag Geological Services Ltd.
3 Fortuna Court, Calleva Park
Aldermaston, Reading
RG7 8UB, United Kingdom

tel +44 (0) 118 982 0151

Aberdeen Office:
Westpoint House,
Pavilion 2 Prospect Park,
Prospect Road,
Arnhall Business Park,
Westhill AB32 6FJ
Aberdeen

tel: +44 (0) 1224 766949

Australia Office:
Stag Geological Pty Ltd
Como Corporate Centre
Suite 22, 11 Preston Street
Como
WA 6152
Australia

tel: +61 (0) 8 9368 9468

South Africa Office:
Palazzo Towers West,
Montecasino,
William Nicol Drive, Fourways
Johannesburg 2086,
South Africa

tel: +27 11 510 0036



www.stag-geological.com

Training Overview

Scheduled Open Courses

Since 1995 Stag have been providing wellsite operations and formation evaluation training courses for personnel from Major Operators and Service Companies throughout the world.

Our courses are currently being offered as online presentations using suitable conference meeting software applications. Classroom sessions will begin from April 2022

Course Structure

All our programmes follow the same format and over the same number of days as our traditional classroom courses. The only difference being that we cannot do any hands-on work with drill cuttings.

Bespoke Course Design

We can design programmes to suit your specific needs for presentation at any time, for online presentation.

Course Accreditation

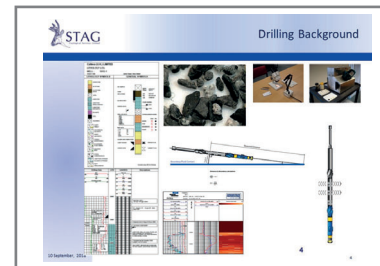
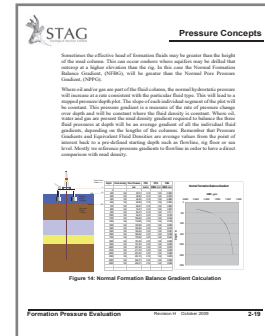


The
Geological
Society

accredited training course

We have received accreditation from The Geological Society of the United Kingdom for the following courses:

- WO1: Introduction to Drilling & Wellsite Geology
- G2: Operations & Wellsite Geologist
- FE1: Basic Log Interpretation
- P1: Formation Pressure Evaluation



Bespoke Training

- All our scheduled public courses are available to organisations on a proprietary basis for presentation at a mutually convenient date. Currently due to Covid19 these will be online presentations.

- Rates for proprietary courses are based upon location, course length, numbers of participants and the need for any re-design to suit specific requirements

In-House Programmes



STAG
The Geological Society

Wellsite Operations Training

WO1: Introduction to Drilling & Wellsite Geology

accredited training course

Target Audience

- Geologists
- Operations Technicians
- Well Engineers
- Wellsite Supervisors
- Wellsite Engineers
- Wellsite Support Staff

Course Length

5 days

Course Fee

£2500 (VAT)

Drilling Technology

- Well Planning & Design
- Drilling Equipment & Technology
- Drilling Fluids & Mud Technology
- Drilling & Completion
- Drilling & Completion

Wellsite Geology & Wellbore

- Wellsite Geology & Wellbore
- Wellsite Geology & Wellbore
- Wellsite Geology & Wellbore
- Wellsite Geology & Wellbore
- Wellsite Geology & Wellbore

Formation Evaluation

- Formation Evaluation
- Formation Evaluation
- Formation Evaluation
- Formation Evaluation
- Formation Evaluation



STAG
The Geological Society

Wellsite Operations Training

G2: Operations & Wellsite Geology

accredited training course

Target Audience

- Geologists
- Operations Technicians
- Well Engineers
- Wellsite Supervisors
- Wellsite Engineers
- Wellsite Support Staff

Course Length

4 days

Course Fee

£1950 (VAT)

Operations & Well Planning

- Well Planning & Design
- Drilling Equipment & Technology
- Drilling Fluids & Mud Technology
- Drilling & Completion
- Drilling & Completion

Wellsite Geology

- Wellsite Geology & Wellbore
- Wellsite Geology & Wellbore
- Wellsite Geology & Wellbore
- Wellsite Geology & Wellbore
- Wellsite Geology & Wellbore


Geological Control & Geosensing

- Geological Control & Geosensing
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Course Dates 2022

February

07-10 G2: Operations & Wellsite Geologist
28-04 March WO1: Introduction to Drilling & WSG

Reading 
Reading 



March

21-24 G2: Operations & Wellsite Geologist

Reading 

April

04-08 WO1: Introduction to Drilling & WSG
25-27 FE1: Basic Log Interpretation

Reading 
Reading 


May

23-26 G2: Operations & Wellsite Geologist

Reading 



June

13-15 P1: Formation Pressure Evaluation

Reading 



September

05-08 G2: Operations & Wellsite Geologist
26-28 P1: Formation Pressure Evaluation

Reading 
Reading 



October

17-19 FE1: Basic Log Interpretation
24-28 WO1: Introduction to Drilling & WSG

Reading 
Reading 

November

14-17 G2: Operations & Wellsite Geologist
21-23 P1: Formation Pressure Evaluation

Reading 
Reading 

December

05-08 G2: Operations & Wellsite Geologist

Reading 



G2: Operations & Wellsite Geology

Target Audience

- Wellsite Geologists
- Operations Geologists
- Mud Loggers
- MWD Operators
- Directional Drillers
- Technical & Support Staff

Course Length

4 days

Course Fee

£1950 (+VAT)

Operations & Well Planning

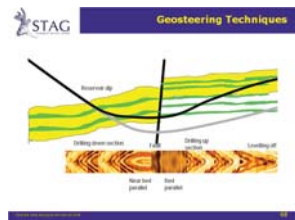
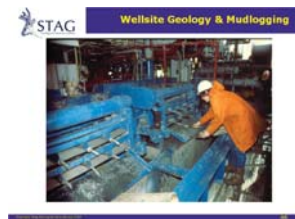
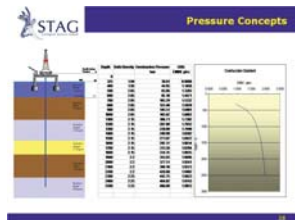
Well Planning Processes
Reservoir Evaluation
Geology & Stratigraphy
 Pressure Profile
 Site Survey & Shallow Gas
 Geological Hazards
Data Acquisition Procedures

Wellsite Geology

Duties and Responsibilities
Supervision of Wellsite Services
Mudlogging
Coring
Wireline Logs
MWD

Geosteering & Geological Control

Strategies & Teamwork
Horizontal Formation Evaluation
Geological Targets
Structural & Well Path control
Landing the Well
Drilling the Reservoir
Calling T.D.



G2: Operations & Wellsite Geology

Course Aims

To provide an overview of the role of Operations and Wellsite Geologists in Well Planning and Drilling Surveillance phases. To provide practical instruction in wellsite geological techniques and geosteering co-ordination.

Delegates will learn how to:

- Describe & Evaluate drill cuttings
- Produce a Formation Pressure Profile to include estimated pore pressure and fracture gradient data
- Determine Lithology and Reservoir information from well logs
- Use Mudlogging and MWD data to perform real-time geosteering co-ordination

Operations Geology Overview

Duties & Responsibilities

Well Planning Processes

G&G Chapter of Drilling Programme

Geology & Stratigraphy

Pressure Profile

Site Survey & Shallow Gas

Geological Hazards

Data Acquisition Procedures

Provision of Wellsite Services

Identification & Selection

Logging Programmes

Provision of Shorebase Services

Data Management & Distribution

Technical Support

Wellsite Geology

Duties and Responsibilities

Supervision of Wellsite Services

Mudlogging Services

Mudlogging Units

Sensors

Data Acquisition

Gas Detection

Sampling and Cuttings Evaluation

Depth and ROP

Coring Services

Conventional

Sidewall

Coring Procedures

Retrieval and Packing

Wireline Logs

Witnessing & QA Procedures

Quick-Look Log Interpretation

MWD/LWD Services

Directional Surveys

Formation Evaluation Services

Drilling Engineering Assistance

Wellsite Communications & Decision Making

Documentation & Reports

Daily/Weekly

Lithlog & Composite Log Preparation

End-of-Well Report

Practical Wellsite Geology

Description & Evaluation of Drill Cuttings

Oil Show Evaluation

Basic Log Interpretation

Geosteering & Geological Control

Strategies & Teamwork

Horizontal & ERD Formation Evaluation

Geological Targets

Structural & Well Path control

Landing the Well

Drilling the Reservoir

Calling T.D.

Geosteering Case Study

Real-time geosteering case study using LWD, MWD & Mudlogging data in a role-play exercise

WO1: Introduction to Wellsite Operations

Target Audience

- Wellsite Geologists
- Operations Geologists
- Mud Loggers
- Drilling Engineers
- Directional Drillers
- MWD Operators
- Technical & Support Staff

Course Length

5 days

Course Fee

£2050 (+VAT)

Drilling Technology

Well Planning & Rig Selection
Drilling Equipment & Techniques
 Drillstring Design & Bit Technology
 Drilling Fluids & Well Control
 Casing, Cementing & Completions
 Directional Drilling

Wellsite Geology & Mudlogging

Data Acquisition Systems
Evaluation of Drill Cuttings
Gas Detection Equipment
Lithology Logs
Safety Monitoring

Formation Evaluation

Cuttings Descriptions
Coring Procedures
Wireline Logging
Measurement While Drilling
Oil & Gas Show Evaluation
Geosteering Techniques

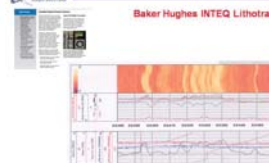
STAG Pipe Handling/Motion Compensation



STAG Wellsite Geology & Mudlogging



STAG MWD Overview



WO1: Introduction to Wellsite Operations

Course Aims

To provide an introduction to drilling technology and wellsite formation evaluation techniques for those personnel new to the industry or transferring from non-operational roles.

Delegates will learn:

- About well planning and rig selection
- About the drillstring, bits, drilling fluids, casing and cementing, completions, well control and directional drilling
- How wellsite geologists & mudloggers collect & interpret geological & drilling data
- About Coring, Wireline Logs and MWD Services
- How to evaluate and describe drill cuttings and oil shows from practical work

Drilling Rigs

Land Rigs
Offshore Rigs
Platforms

Drilling Technologies

Bit Technology

Design: Roller cone; PDC
Applications

BHA Design, Drill Pipe
Hoisting, Rotating, Motion Compensation
Well Control Equipment
Drilling Fluids

Properties & Specifications
Fluid Systems:

Oil Based Mud
Water Based Mud
Polymer Fluids
Synthetic Systems

Fluid Circulation System
Hydraulics Calculations
Casing and Cementing
Directional Drilling

Applications
Steering Systems
Formation Evaluation
Survey Processes/calculations

Drill Returns Logging

Mud Logging Services
Cuttings Recovery
Lag Time Calculations
Depth and ROP Recording
Hydrocarbon Gas Evaluation
Total Gas
Chromatographic Analysis
Interpretation of Gas Shows

Wellsite Geology

Cuttings Sampling and Preparation
Cuttings Description
Clastics
Carbonates
Evaporites
Reporting Procedures
Lithology Logs
Oil and Gas Show Evaluation
UV Light and Solvent tests

Coring Operations

Conventional Coring
Sidewall Cores

Formation Evaluation

Wireline Logging Operations
MWD Operations

FE1: Basic Log Interpretation

Target Audience

- Wellsite Geologists
- Operations Geologists
- Mud Loggers
- MWD Operators
- Directional Drillers
- Technical & Support Staff

Course Length

3 days

Course Fee

£1500 (+VAT)

Obtaining Well Logs

The nature of well logs
Conveyance Methods
Tool Suites
Theory of Operation
Borehole Environment
Invasion

Log Interpretation

Log Correlation
Lithology Determination
Gamma & S.P.
Density/Neutron Logs
Crossplots
Facies & Environments

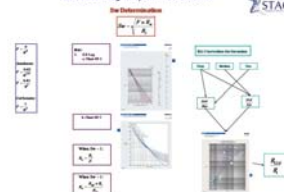
Reservoir Evaluation

Recognition of Permeability
Identification of Hydrocarbons
Fluid types & contacts
Porosity and Permeability Determination
Water Saturation (Sw) estimation

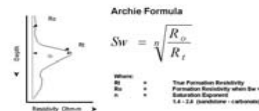
STAG Basic Log Interpretation



Quick-Look Log Interpretation Flow Chart



STAG Saturation



FE1: Basic Log Interpretation

Course Aims

To enable delegates to determine lithology, reservoir and pore fluid characteristics using Quick-Look log interpretation techniques from traditional open hole Wireline and LWD logs.

Delegates will learn how to:

- Identify lithology from well logs
- Identify and evaluate potential reservoir rocks
- Determine porosity from Sonic, Bulk Density and Neutron Porosity logs
- Identify and evaluate hydrocarbon bearing zones and calculate Sw using Archie and graphical methods
- Correct for borehole and environmental conditions

Wireline Logs: Basic Concepts

Types of Open Hole Logs
Information Required
Log Header
Relationships
Borehole Environment
Invasion Profiles
Rw & Rmf
Porosity and Permeability
Resistivity and Water Saturation
Temperature Corrections

Theory of Operation

Spontaneous Potential
Gamma Ray
Resistivity Logs
 Laterologs
 Induction Logs
 Microresistivity Logs

Neutron Porosity
Sonic
Formation Density
Dipmeter Tools

MWD & LWD Tools

Theory of Operation
Transmission Systems
Tool Configuration
Sensors
Operating Procedures and Practice
MWD/Wireline Response Comparison
Borehole Imaging Logs

Geological Interpretation

Identification of Lithology
Environment and Facies
Identification of Permeability
Identification of Porosity
Geosteering Applications

Reservoir Evaluation

Quick Look Porosity Calculations
Identification of Hydrocarbon Bearing Zones
Hydrocarbon Type Evaluation
Saturation Calculations
 Archie
 Shaly sands
 Carbonates
 Resistivity Ratio
 Cross-Plots

Imaging logs

Sonic
Density
Resistivity

Case Studies and Worked Examples

P1: Formation Pressure Evaluation

Target Audience

- Wellsite Geologists
- Operations Geologists
- Mud Loggers
- MWD Operators
- Drilling Engineers
- Directional Drillers
- Technical & Support Staff

Course Length

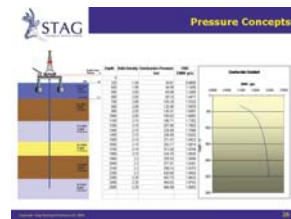
3 days

Course Fee

£1500 (+VAT)

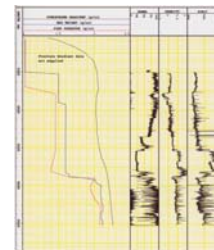
Pressure Concepts and Gradients

Definitions and Normal Pore Pressure
Overburden Pressure Calculations
Pressure Gradient Calculations
Fracture Pressure Estimations & Modelling



Abnormal Pressure

Causes of Abnormal Pore Pressure
Pore Pressure Estimates from:
Dxc, ROP, Mud-Gas relationships
Petrophysics
Borehole Stability



Fracture Pressure & Well Planning

Evaluation of Rock Fracture Pressure:
Leak-Off Tests
Mathematical Modelling
Borehole Stability
Kick Tolerance
Well Control Procedures
Well Planning Issues



P1: Formation Pressure Evaluation

Course Aims

To familiarize delegates with the challenges of planning and drilling HPHT wells and provide practical instruction in pore pressure and fracture pressure determination from direct measurements and estimation from drilling and logging data.

Delegates will learn how to:

- Produce Pressure profile plots from offset data and direct measurements
- Calculate normal hydrostatic pore pressure and overburden pressure and make pressure gradient plots
- Estimate actual pore pressure from drilling, geological and petrophysics data
- Evaluate fracture pressure from Leak-off Tests and mathematical modelling

HP/HT Drilling: Definitions & Challenges

Deep Water
Well Control Equipment
High Fluid Density
Tools and Downhole Equipment
Drilling Specifications
Well Planning Processes
Correlation Wells

Drilling Hazards

Shallow Gas
Hydrates
Mud Losses
Horizontal Well Issues
Casing Design
Contingency Planning

Effective Circulating Density (ECD)

Calculation & Measurement
PWD Tools
Borehole Stability
Caliper Logs
Image Logs
Cavings

Formation Pressure Evaluation

Fundamentals
Hydrostatic Pressures
Pressure Gradients
Elevations and Datums
Formation Balance Gradient

RFT data and PZ plots
Overburden Pressure Gradient
Data Sources
Calculation methods
Applications

Origin of Geo-pressures

Compaction Disequilibrium
Aquathermal Processes
Clay Diagenesis
Stratigraphic Processes
Tectonic Processes

Practical Formation Pore Pressure Evaluation

ROP and Dxc
Formation Gas Evaluation
Borehole Behaviour
Drilling Parameters
Drill Cuttings and Cavings
Geothermal Gradients
Wireline/MWD Data

Fracture Pressure Gradients

Leak-off Tests
Mathematical Modelling
High Angle wells

Kick Tolerance

HP/HT Case Study

C1: Best Practices in Core Handling & Analysis

Target Audience

- Wellsite Geologists
- Operations Geologists
- Petrophysicists
- Exploration & Development Geologists
- Reservoir Engineers
- Technical & Support Staff

Course Length

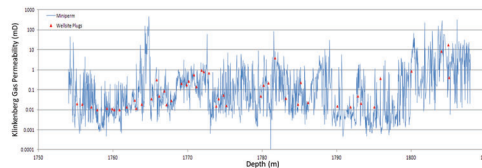
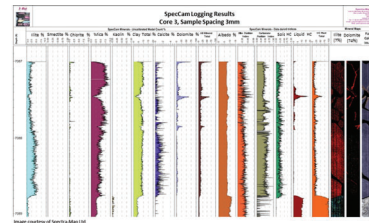
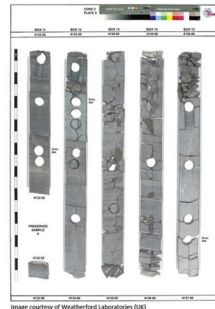
3 days

Course Fee

£1500 (+VAT)

Overview

- The course will be a combination of short lectures, practical workshops and plenary discussions to consolidate learning.
- Each topic will be presented by the expert tutor using MS PowerPoint presentations.
- Sessions will be structured carefully to ensure optimisation of learning expectations verbally and on PowerPoint, followed by practical exercises to embed understanding.
- Discussions and question and answer sessions are encouraged to ensure understanding.
- Each session will contain a practical exercise which will be either on paper and in Excel.
- Attendees should be familiar with basic calculation and charting functions in Excel.
- Attendees will have opportunities to share their own experiences, discuss data and explore any issues they may have had relating to core and core analysis data.



C1: Best Practices in Core Handling & Analysis

Course Aims

To provide an understanding and appreciation for best practice in core handling and processing.

Provide an awareness of the effects of mineralogy and heterogeneity on core and log data quality.

Be able to design a core sampling strategy and build a core analysis programme for all stakeholders.

Delegates Will Learn:

- About different coring techniques
- How to recover and process core safely and competently
- The importance of heterogeneity and mineralogy and their effects on sampling strategy
- How to design a core analysis test programme and work successfully with laboratories
- How to measure porosity, permeability and water saturation in core
- Gain an understanding of methods to integrate core analysis data with log interpretation and geological models.

Day 1

Course Introduction – Why do we Core?

Introduction to Coring

Coring in 'Problematic' Formations:
Fractured, Vuggy and Unconsolidated Formations

Pressure Coring

Safe Core Recovery

Wellsite Core Handling:
inc. Core Stabilisation Methods

Core Transport to the Laboratory

Factors Effecting Core and Log data Quality

Introduction to Scales of Measurement
in Core Analysis and Logs

Day 2

The Effects of Heterogeneity on Core and Log Data

Core to Log Depth Shifting Theory and Practice

Sidewall Coring/Plugging:
Tool Types, Sample Recovery
Handling, Limitations

Designing a Core Analysis and SCAL Test Programme

Core Analysis Laboratory Selection

Core Handling in the Laboratory

Sample Selection, Plugging, Core Slabbing and Preserving

Sample Cleaning and Drying Methods

Core and Log Porosity:

Understanding Different Measurements
Factors Effecting Data Quality
and integration

Day 2

Water Saturation from Core:

Dean-Stark Measurements Theory,
Best Practice and Integration with
Log and Other Core Data

Permeability

Controlling Factors, Measurement Choices
and Quality Control

Pore Volume Compressibility and Net Overburden Pressure:
its Effects on Core Analysis Data

Mineralogy from Core.

Different Measurement Types and Integration
with Log Data

Integration of Reservoir Geology, Core Analysis and Log Data

Petrophysical Rock Types:

An Introduction to Different Rock Types
(Inc. Flow Zone Index). Integration with
Core and Log Data. Comparison with
Geological Facies.

Definition of Pore Geometry from Core using Mercury
Injection Capillary Pressure, Backscattered Electron
Microscopy and CT Imaging

Course Conclusion and Review

WPFT1: Geological control on drilling performance

Target Audience

Subsurface and Drilling personnel involved in Well Planning and Delivery:

- Well Planning Engineers
- Drilling Engineers
- Exploration Geologists
- Operations Geologists
- Wellsite Geologists

Course Length

5 Days

Course Style

A practical workshop, predominately field based using locations in and around Dorset and Somerset, southern UK.

Workshop Overview

A short field course to examine Geological control and influence on drilling predictability and performance.

This trip is suitable for all Subsurface and Drilling personnel involved in Well Planning and Delivery.

Course Summary

The standard workshop is based in Dorset and travels to other locations in Somerset.

Bespoke workshops can be designed around other areas of relevant geology specific to client requirements. This is particularly useful if a team wants to gain an appreciation of drilling considerations around a particular stratigraphy, structure or lithology, or perhaps to gain a better understanding of perceived or historically recognised problems.



WPFT1: Geological control on drilling performance

Course Aims

To examine rocks in the field and build a mutual understanding, within the team, of why rocks drill the way they do.

- To understand the geological significance to drillers.
- To understand the drilling significance to geologists.
- To appreciate geology that is predictable and what is not.
- To help reduce uncertainty and geological NPT.
- To promote the value of field and outcrop analogue, in the well planning process.
- To improve performance in a cost challenged environment.

Delegates will learn that:

- During post-well evaluation of drilling problems it is often apparent that warning signs were missed, not recognised or ignored.
- Inappropriate reaction to observed warning signs often exacerbate or escalate problems.
- Many geology related issues experienced while drilling, or geological NPT, can be predicted and mitigated during well planning.
- Appropriate mitigation to unforeseen geological events experienced while drilling can be developed and promoted within a team to ultimately yield improved performance.

Common Scenarios

Scenarios that are considered and measured during this workshop:

- An event that was identified and predicted during the well planning process that became managed.
- An event that was identified and predicted during the well planning process but was worse than anticipated while drilling, but with appropriate planning as actively managed with little NPT.
- An event that was not predicted during planning, but due to enhanced reaction and mitigation planning, was managed with some NPT, but a significant event was avoided.
- An event that was not predicted during planning, was difficult to manage and resulted in significant NPT.

WPFT1: Geological control on drilling performance

Discussion Topics

- Drilling unconsolidated, and poorly cemented sands
- Mudrocks matter to drillers!, and getting to grips with gumbo
- Sandstones, Chalk, Marl and Limestone - Planning for and managing losses
- Geological Scale -Seismic vs log resolution vs outcrop scale
- Faults, folds and other geological structures at various scales, and the problems that they can cause
- Bedding, Joints and other discontinuities and their influence on drilling
- Hard bands and negative drill breaks
- Geological control on directional drilling and geosteering
- Ledging, Key-seating and wellbore geometry
- Considerations for casing running and shoe positioning
- Predicting and mitigating drilling problems during the well planning process
- Using drilling data to interpret geology in the absence of logs
- Geosteering, geostopping and geology at the bit
- Predicting and mitigating wellbore Instability
- Understanding how geological uncertainty adds to the challenge of drilling
- Reservoir, Source and Seal rocks, Oil seeps



Instructor Profiles



Martin B. Saunders
Training Manager

has over forty years experience as wellsite geologist and technical training manager. He specializes in wellsite operations and petroleum geology training and has been teaching oilfield courses for twenty five years. Martin holds a B.Sc. (Hons.) degree in geology from the University of Wales, Aberystwyth and began his career with EXLOG (now Baker Hughes Inteq) in 1974 and worked at the wellsite before joining the training department of Baker Hughes in the UK in 1982. Here he was responsible for all internal technical training for the Europe/Africa/Middle East Division and was also responsible for the expansion of its external, commercial training operations.

He has presented courses throughout the world to personnel from major operators and service companies including BP, Exxon, Anadarko, MOL, Chevron, Maersk, Total, Wintershall, Perenco, ADNOC, Saudi Aramco, GDF Suez, Tullow Oil, Spirit Energy, Ophir Energy, Baker Hughes and Halliburton among many others.

Instructor Profile



Dr. Adam K. Moss
Core Analysis Expert

Adam is a core analysis expert with over 25 years' experience working in petrophysics. He has designed and presented training courses internationally on a wide range of topics, including:

Special Core Analysis for Reservoir Modelling, Guildford, UK, NAMCOR, September 2017

An Introduction to Special Core Analysis, Reading, UK, BG Group, January 2016

Unconventional Reservoir Core Analysis, Brisbane, Australia, Queensland Gas Company, November 2013.

NMR – Basic to Expert User, Abu Dhabi, UAE, Public Course, December 2003

In 2017 Adam formed AKM Geoconsulting Ltd, to offer core and special core analysis consulting services to industry. From 2006 to 2016, he was the Global Group Technical Authority for Core Analysis at BG Group. He was responsible for all aspects of BG Group's coring and core analysis projects worldwide. This included defining best practice workflows and working with assets and multi-functional teams to ensure core analysis data was of the best quality and used appropriately. Prior to joining BG Group, he was the Senior NMR Petrophysicist at ResLab UK, and responsible for all aspects for the company's NMR core analysis services.

Adam has an established track record in teaching and research in academia, working at the Royal School of Mines: Imperial College (1995-2001) and since 2015, as Honorary Assistant Professor at Heriot-Watt University. He served as president of the London Petrophysical Society (LPS) from 2010-2012.

He holds a PhD on the 'Characterisation and Modelling of the Pore Structure of Reservoir Sandstones.

Training Centre Locations

Reading, Berkshire, U.K.

3 Fortuna Court, Calleva Park
Aldermaston, Reading
RG7 8UB, United Kingdom

tel +44 (0) 118 982 0151



Aberdeen, Scotland, U.K.

Westpoint House
Prospect Road
Arnhall Business Park
Westhill
Aberdeen
AB32 6FE

tel +44 (0) 1224 766949

Perth, Australia

Como Corporate Centre,
Suite 22, 11 Preston Street,
Como, Perth,
WA 6152 West Australia,
Australia

tel +61 8 9368 7468