TRAINING

Oil & Gas Training Services

Open Air Events

www.tracs.com

"By tailoring content to specific client needs, TRACS Training delivers Open Air events that are superior to the standard offered in the marketplace. The TRACS training style, which embraces experiential learning and interactive delivery, combined with a history of teaching in 45 countries, enables us to offer distinct learning and development programmes globally."

Arndt Peterhänsel
Global Head of Training, TRACS International

Open Air

The Open Air Series takes training programmes to outdoor locations, combining classroom teaching with outdoor sessions on rock outcrops which serve as analogues for oil and gas reservoirs.

The Open Air Series is based on the idea that effective learning need not be classroom-based, and that courses with aspects of rock outcrop fieldwork should not be limited to geologists.

The Open Air courses are therefore pitched at multi-disciplinary audiences as well as traditional geoscience groups, and most courses from the other Series can be offered in this format. Geoscience, petrophysics, reservoir engineering and well-based training have all been delivered this way, sometimes in combination.

Typical Open Air courses are based at locations with conference facilities which are close to the analogue rock outcrops. The schedules are a blend of classroom- and outdoor-based teaching, the balance of which depends on the location, content and weather.

Open Air courses have ranged from short three-day programmes to two-week courses covering a range of discipline areas, and can be themed according to client needs. Previous course themes include basin analysis, field development planning and reservoir modelling, all of which have been run for multidiscipline groups.

Existing locations

Most Open Air Series courses have been based in the UK to date, but can be staged at any location with appropriate analogue rock outcrops and local access to suitable conference facilities and international air transport connections.

Programmes to date have been run at the following locations:

- Moray Firth-based Events (Scotland)
- Northumberland-based Events (England)
- Yorkshire-based Events (England)
- Derbyshire -based Events (England)
- Dorset-based Events (England)
- Pembrokeshire-based Events (SW Wales)
- Somerset-based Events (England)
- County Clare-based Events (Ireland)
- Annot-based Events (France)
- Provence-based Events (France)
- Tabernas-based Events (Spain)
- Pyrenees-based Events (Spain)
- Utah-based Events (USA)
- East Kentucky-based Events (USA)
- Sicily-based Events (Italy)
- East Coast Scotland -based Events (Scotland)

The TRACS tutor pool also has oil industry-based field experience to be able to run similar programmes in Myanmar, Argentina, Tunisia, Alaska, Canada, Norway, Australia, Trinidad, the Spanish Pyrenees, Southern Germany, the Italian Dolomites, South Africa, Azerbaijan, Egypt and Oman

People
The tutor group of over 40 experienced staff members and close associates work from TRACS offices in Aberdeen and London.

Open Air Series locations around the World

People

The tutor group of more than 40 experienced staff members and close associates works from TRACS offices in Aberdeen and London. The profiles below introduce a selection of the group involved in the development and delivery of new Open Air material and in the organisation and maintenance of the portfolio.

Mark Bentley PhD

Main Series tutoring:
Reservoir, E&P Overview, Open Air and Master Class

Industry experience:
over 30 years, geoscience

Career background:
Shell, AGR and TRACS

Personal:
Author 'Reservoir Model Design', SPE and EAGE distinguished lecturer, AGR (Training Director) & TRACS Training Director, Associate Professor Heriot-Watt University

Mark Cook BSc, MBA

Main Series tutoring:
Early Development, Business & Risk, Reservoir Enginering

Industry experience:
over 40 years, reservoir engineering, economics and risk analysis

Career background:
Shell, TRACS (Director) and AGR (VP)

Personal:
Author, 'Author, 'Petroleum Economics and Risk Analysis' (2021) 'Hydrocarbon Exploration and Production' (2008) SPE distinguished lecturer on Risk Analysis, Guest lecturer at Heriot-Watt University

Dr Edmund Stephens MA (Oxon), DPhil

Main Series tutoring:
Reservoir, Open Air, Master Class (reservoir modelling, fractured reservoir)

Industry experience:
over 15 years, reservoir/petroleum engineering

Career background:
Shell, AGR and TRACS

Personal:
PESGB, SPE, AAPG conferences on reservoir modelling

Mark Bramwell BSc,PhD

Main Series tutoring:
Reservoir, Early Development, E&P Overview, Open Air

Industry experience:
over 35 years, geoscience

Career background:
Shell, KUFPEC, AGR and TRACS

Personal:
Programme manager for the Early Development Series

Jenny Garnham PhD

Main Series tutoring:
Reservoir, Open Air

Industry experience:
over 30 years, petrophysics

Career background:
Enterprise Oil, AGR and TRACS

Personal:
Technical author, SPWLA active member, PESGB/SPE

Jonathan Bellerby BSc (Hons), MEng

Main Series:
Wells, Early Development

Industry experience: over 30 years, well technology

Career background: TBP, ICE, AGR, TRACS

Personal: Author, 'Well Completion Design'

Arndt Peterhänsel PhD

Main Series tutoring:
E&P Overview, Reservoir, Open Air

Industry experience:
over 20 years, geoscience

Career background:
University of Cambridge, Universität Potsdam, Saudi Aramco, Lukoil and TRACS

Personal:
Technical author, Global Head of Training (TRACS), Expert to The European Commission on Horizon Europe 2020 research programme

Richard Oxlade MEng

Main Series tutoring:
Reservoir, Early Development, Master Class (business)

Industry experience:
over 30 years commercial, reservoir engineering

Career background:
BP, AGR and TRACS

Personal:
Global advisor, business planning & economic analysis

Liz Chellingsworth BSc, MSc

Main Series tutoring:
Reservoir - Introduction to Geophysics, Interpretation Masterclass

Industry experience:
over 20 years, Geoscience

Career background:
Hydrosearch Fugro, Foster Findlay Associates, AGR and TRACS

Personal:
Technical Author, presenter at EAGE

John Howell PhD

Main Series tutoring:
Reservoir, Open Air

Industry experience:
over 25 years, geoscience

Career background:
Gaps, University of Liverpool, University of Bergen, Rocksource ASA, University of Aberdeen

Personal:
Published over 120 scientific articles and edited 5 books

Tim Wynn PhD

Main Series tutoring:
Reservoir, Master Class (fractured reservoirs)

Industry experience:
Over 25 years, geoscience

Career background:
British Gas, GeoScience, ICE, AGR and TRACS

Personal:
SPE technical editor, technical paper author, geoscience publications

Huw Williams PhD

Main Series tutoring:
Open Air

Industry experience:
over 35 years, geology

Career background:
Shell, Reservoir Geology Consultants

Personal:
Published over 40 scientific papers, Asscociate lecturer at University of Derby (Applied Petroleum Geoscience)

Maggie Hystad Murison

Main Series tutoring:
Open Air

Industry experience:
over 25 years

Career background:
KLM Airlines, Kings Foods, Peckhams Ltd, AGR and TRACS

Personal:
Training Business Manager (TRACS), Open Air events lead & course coordinator, HSE certified for field events, Volunteer – Cyrenians Aberdeen

Paul Davies PhD

Main Series tutoring:
Open Air

Industry experience:
over 35 years, geology

Career background:
British Geological Survey, Shell, Reservoir Geology Consultants

Personal:
Published over 30 scientific publications

Steve Adams BSc, MSc, MBA

Main Series tutoring:
Open Air

Industry experience:
over 35 years, geoscience

Career background:
BP, Lasmo, CNR, Murphy, TRACS, Sasol

Personal:
Author, geoscience, exploration, development advisor, Honorary Research Fellow – University of Aberdeen.

Jerry Hadwin BSc, MEng

Main Series tutoring:
Early Development, Reservoir, Open Air

Industry experience:
over 35 years, reservoir engineering

Career background:
Shell, TRACS and AGR

Personal:
Co-author "Adventure Trekking in Oman"

Fieldwork Access and HSE

Managing your safety is at the forefront of our field-based training.

Field logistics

The Training Management team will plan and organise the course logistics based on requirements of the group and bespoke details of the course content.

A Field Safety Representative will be present for the duration of the course and will provide logistical support for the group in addition to HSE coverage.

Access

A full risk assessment is undertaken for each field locality and planned activity and a reconnaissance of all field localities (by the tutor and Field rep) before the course begins.

The physical demands of the course are discussed with the client. See below for the physical exertion ratings of our field courses.

Transport to field locations is either by bus or self-drive (hired locally) with suitable vehicles used for the terrain to be encountered.

Equipment

The Field Safety Representative will have available a comprehensive First Aid kit and Vehicle first aid kits.

Personal protective equipment is supplied and used where required.

In-vehicle communications are used to ensure group safety.

Safety

At least one Field Safety Representative attends every field course and has control over all safety aspects of the course and works with the tutor (s) and client lead as part of the field leadership team.

The Field Safety Representative can call a safety time-out if required and performs continuous dynamic risk assessment based on changing environmental conditions throughout the course.

The Field Safety Representative is First Aid trained and may also be trained in specific skills such as mountain leadership.

Physical Exertion Rating (PER)

Each field course has an overall PER but the actual rating of the course you attend, may change, due to the field locations to be visited.

Low

Participants require a basic level of fitness to be able to undertake short walks, up to 3 km in length, on flat or gentling undulating terrain. Terrain types include cliff top paths, beaches and rock platforms, at altitudes under 500 metres.

Medium

Participants require a moderate level of fitness to be able to undertake walks of up to 5 km on mixed terrain that might include rocky paths with a loose surface generally under 1000 m altitude. Participants will encounter terrain elevation gain/loss of no more than 250 metres.

High

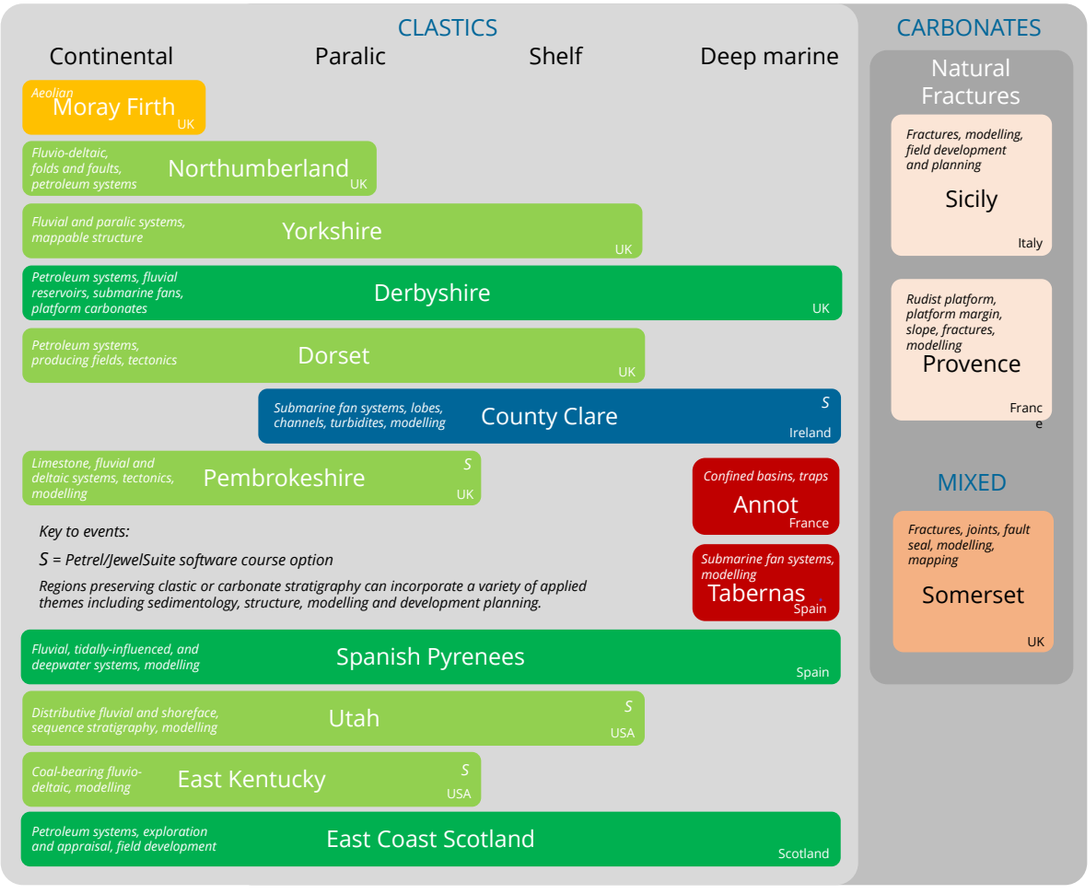
Participants require a high level of fitness and be capable of sustained periods of physical activity including walks of over 5 km in duration on terrain that could include rock steps, loose ground and steep paths at altitudes potentially over 2000 m. Participants will expect to encounter an elevation gain/loss of over 250 metres.

Tutors ●●●●○ ***Course Duration (Days)***

Open Air Geological Themes

Regions preserving clastic or carbonate stratigraphy can incorporate a variety of applied themes including sedimentology, structure, modelling and development planning.

Reservoir Geology Subject Map



A field lecture with a reservoir modelling group, Swanlake Bay, Pembrokeshire.

Moray Firth-based Events (Scotland)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers, Well Engineers, team leaders and managers. Ideally structured for groups working in multi-discipline teams, especially those engaged in reservoir and simulation modelling exercises of Aeolian reservoirs.

John Howell, Mark Bentley, Jerry Hadwin
Liz Chellingsworth, Richard Oxlade

Aeolian Systems

What's here?

Field-scale outcrops of fractured Permian Rotliegendes sand dunes and interdune deposits. Smaller outcrops of Triassic fluvial braided fluvial systems. Both directly analogous to North Sea reservoirs.

Fractures: both sealing faults and open joint systems.

Varied diagenetic history overprinting the depositional architecture.

Supported by oil and gas field log and core data which has been scaled to the outcrops and supplemented by outcrop minipermeametry. The data has been used to build outcrop-based static and dynamic reservoirs models for a range of fluid fills.

An ideal backdrop for discussions on scales of heterogeneity, and can easily be combined with class-based sessions as the outcrops are only a short drive from the hotels in Elgin.

Access

All coastal but key outcrops are not tide-dependent. Coach access to the coast and short walks along coastal paths.

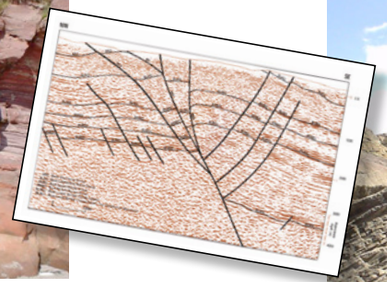
Logistics

Fly in to Aberdeen or Inverness; coach or train transfer to the Elgin area.

Hotels in Elgin: The Mansfield or The Mansion House Hotels, or both, depending on group size; groups from 9 to 90 people catered for.

Duration

1 - 5 days, depending on content and whether attached to class-based sessions.



Northumberland-based Events (England)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams.

Richard Oxlade, Mark Bramwell,
Mark Bentley, Jenny Garnham

Faults and Fault Damage Zones, Deltas and Ephemeral Fluvial Systems

What's here?

Well exposed fault systems in heterogeneous clastic rocks.

Fold systems showing fold-fracture relationships.

Fluvio-deltaic environments.

Basin-scale petroleum systems.

The Northumberland Basin can be regarded as a Palaeozoic analogue for the evolution of a petroleum system in an intra-cratonic continental half-graben.

The 'Basin' as described here is not a single structural feature but combines the small Northern Tweed Basin around Berwick with the larger Northumberland Trough to the South.

The area affords the opportunity to investigate the varied igneous and sedimentary rock intervals which fill the Basin, look at the development and modification of structures which occurred during inversion and consider the consequent exploration potential of the Basin. The Basin serves as an analogue for 'small' continental basins elsewhere (e.g. the Barmer Basin).

Access

The outcrops are largely coastal sections comprising cliffs and foreshore rock platforms. Walking is limited with minimal ascents and descents.

Logistics

Accommodations in Alnwick or Morpeth

Fly in/out Newcastle or Edinburgh.

Duration

2 - 3 days, can be combined with Yorkshire events.

Yorkshire-based Events (England)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams.

Richard Oxlade, Mark Bramwell,
Mark Bentley, Jenny Garnham

Fluvial systems, mappable structure

What's here?

Heterogeneous fluvial and paralic systems.

Seismic-scale faulting.

Folds exposed on map-scale.

The Cleveland Basin, during Early to Middle Jurassic times, was a large-scale extensional depocentre that was structurally linked to the North Sea Basin. and comprised deltaic environments and a shallow inland sea.

The area therefore offers a chance to view outcrop comparable to a variety of Jurassic North Sea reservoirs, with a particular focus on applied stratigraphy (e.g. correlation, depositional modelling) and the interplay of marine and non-marine environments.

Access

The outcrops are all coastal cliff sections and rocky foreshores and require minimal walking distances.

Logistics

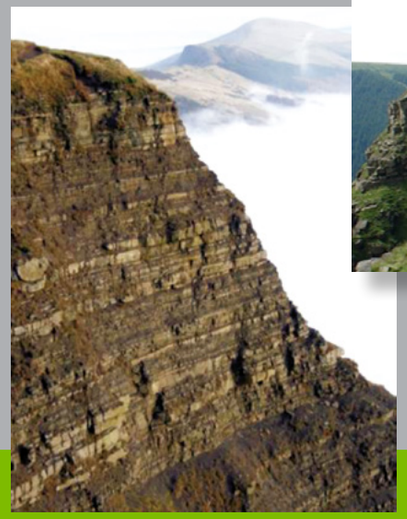
Whitby-Robin Hood's Bay - Ravenscar coastline.

Accommodations in Ravenscar or Whitby/Robin Hood's Bay for smaller groups.

Fly in/out Tees Valley or Leeds/Bradford.

Duration

2 - 3 days.



Derbyshire-based Events (England)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams.

Richard Oxlade, Mark Bramwell,
Mark Bentley, Jenny Garnham

Petroleum systems, fluvial reservoirs, submarine fans and platform carbonates

What's here?

Contrasting high - and low -net submarine fans systems including basin-floor fan channels and hybrid event beds.

Platform carbonates and platform-margin reef build-ups.

Transition to fluvio-deltaic environments including pro-delta deposits, mouth bar sandstones, delta top and braided fluvial complexes.

Source rock/shale gas reservoir at outcrop.

Complete exhumed petroleum system - exposed: source, reservoir, seal, trap.

Access

Roadside stops and moderately strenuous walks, depending on locations selected.

Logistics

Hope Valley locations.

Accommodations in Buxton, Sheffield or Castleton for smaller groups.

Fly in/out Manchester.

Duration

3 - 5 days.

Dorset-based Events (England)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams.

Richard Oxlade, Mark Bramwell,
Mark Bentley, Jenny Garnham

Petroleum systems, producing fields

What's here?

Classic outcrops showing all elements of a petroleum system.

Locally producing oil fields from reservoir rocks also exposed at the coast.

Source rocks.

Shoreface reservoirs.

Fluvial systems and reservoirs.

Regional tectonics.

The area affords the ability to explore a variety of themes using the world famous Jurassic Coast Petroleum System in the Wessex Basin of Southern England including:

An Introduction to Petroleum Geology

Play Fairway Analysis

Prospect Evaluation and Volumetrics

Production Geology

Petrophysics in the field: rocks and fluids.

The Wessex Basin covers the counties of Dorset, Devon and Hampshire, but also extends into the offshore into the English Channel. It is the most important onshore hydrocarbon province in the British Isles. The basin provides a variety of rock types from several geological periods including clastics and carbonates. It was formed during the Mesozoic and subsequently modified by Cretaceous and later tectonic events. This is also the location of one of the largest European onshore oil fields; the Wytch Farm oil field.

Access

Mostly coastal sections – limited walking.

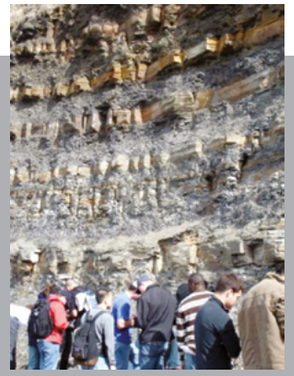
Logistics

Accommodations in Portland or Wareham

Fly in/out London or Southampton.

Duration

1 - 5 days.



Pembrokeshire-based Events (SW Wales)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams.

Mark Bentley, Jenny Garnham
Mark Cook, John Howell

Limestone, deltas, fluvial systems, tectonics

What's here?

Contrasting high - and low -net submarine fans Outstanding structural features in clastics and carbonates.

Carboniferous fluvio-deltaic sequence stratigraphy.

Old Red Sandstone fluvial systems and palaeosols fluvial systems.

Platform carbonates - reservoir scale outcrops.

The region offers an opportunity to explore the process of reservoir model design and simulation model-building. The thread through the training is a model design for the 'Pembroke Field' – a synthetic field constructed from local reservoir analogue outcrops.

Access

The fieldwork takes place on coastal sections around the Pembrokeshire Coast National Park. The fieldwork involves easy walks of up to a kilometre on coastal paths, sandy/pebbly beaches and rocky foreshores.

Logistics

Tenby – Lamphey area, motorway access from Cardiff airport or direct from London Heathrow.

Optional train access from London.

Duration

3 - 5 days, depending on content.
One day travel in, one day return.

Pembrokeshire-based Events (SW Wales) using JewelSuite ™

The course is designed for Geoscientists modelling fluvio-deltaic systems.

Huw Williams, Paul Davies

Fluvio-deltaic sedimentary architecture and modelling

This is a reservoir characterisation and 3-D geological modelling course focused on capturing the geological knowledge necessary to build realistic, predictive models of fluvio-deltaic channel and lobe sediment body architecture using JewelSuite.

The course follows the typical workflow of a sub-surface 3-D modelling study and is aimed at deltaic channel and lobe reservoir characterisation and making realistic predictive models of sedimentary geometries and architecture by incorporating detailed knowledge of sedimentology and sequence stratigraphic concepts.

What's here?

Outcrops, core photographs and well logs are studied to characterise both small and large-scale patterns of sedimentary architecture within a sequence stratigraphic framework in the Upper Carboniferous sedimentary system exposed along the Pembrokeshire coastline.

The primary topics covered in the course are:

Diagnostic outcrop, core and log interpretation of fluvio-deltaic environments and facies

Building a sequence stratigraphic framework in fluvio-deltaic sediments for reservoir modelling

Deltaic sheet and channel correlation techniques from well data

Deterministic modelling techniques for fluvio-deltaic channel and lobe sediments using PetroSigns Earth

Using JewelSuite hierarchy and layering

Comparison of results from using different modelling techniques.

Access

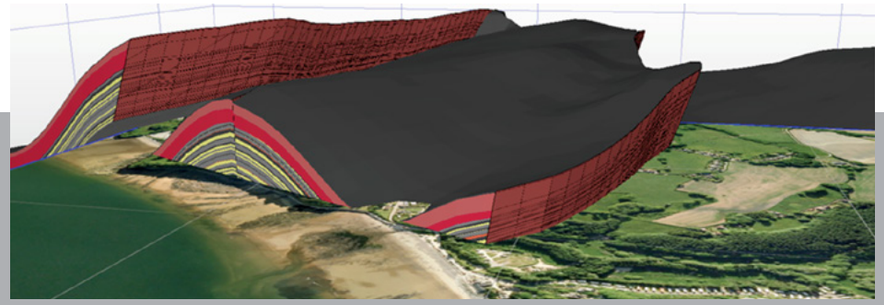
Coastal section, moderate walking.

Logistics

Tenby – Lamphey area, motorway access from Cardiff airport or direct from London Heathrow. Optional train access from London.

Duration

5 day, field and classroom-based reservoir geology and modelling course.



Somerset-based Events (England)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams with structurally complex reservoirs.

Mark Bentley

Natural fractures, fault analysis

What's here?

Superb exposures of fault systems within the Triassic/Lower Jurassic of the East Bristol Channel and Central Somerset Basins.

3D seismic scale fault systems including a variety of fault geometries, fabrics and networks.

Supported by materials on stress, strain and fracture development as well as fault seal and trap analysis.

The region as a whole offers an excellent backdrop for the inclusion of a variety of structural fault analysis technical themes including:

Methods for quantification of fault properties

Sealing capacity and threshold pressure

Impact on well design (trajectories) and well planning

Mapping and QC of mapped fault networks

Quantification of fault transmissibilities

Representation of open fault damage zones in reservoir simulations

Risking and uncertainty based on understanding of fault seal and trap analysis

Well planning in compartmentalised reservoirs

Pore pressure prediction

Impact on exploration, appraisal and development decisions in E&P.

Access

All coastal localities that are largely tide dependent. Coach access to the coast and short walks along coastal paths, beaches and wave cut platforms.

Logistics

Somerset and North Devon, England: fly in/out Bristol. Accommodation in Holford.

Duration

3 - 4 days, depending on outcrop to be visited.

County Clare-based Events (Ireland) using Petrel™ and JewelSuite™

This course is for geoscientists who are interested in characterising and realistically modeling turbidite sedimentary architecture to support hydrocarbon exploration and production.

Huw Williams, Paul Davies

Submarine fan systems, lobes and channels, turbidites, modelling

This is a reservoir characterisation and 3-D modeling course focused on capturing the geological knowledge necessary to build realistic models of turbidite channel and lobe sediment body architecture using Petrel/JewelSuite.

The course blends instruction at outcrop with corresponding classroom instruction in building 3-D models of the same outcrops. Generally, the mornings are spent in the field with afternoon classroom-based modelling sessions.

What's here?

Outcrops, core photographs and well logs are studied to characterise both small and large-scale patterns of sedimentary architecture within a sequence stratigraphic framework in the Carboniferous Ross Formation turbidite sedimentary system.

The primary topics covered in the course are:

Diagnostic outcrop, core photographs and log interpretation of turbidite environments and facies

Building a sequence stratigraphic framework in turbidite sediments for reservoir modeling

Turbidite sheet/lobe and channel correlation techniques from well data

Deterministic modeling techniques for turbidite channel and sheet/lobe sediments using Petrel

Using Petrel/JewelSuite hierarchical modeling

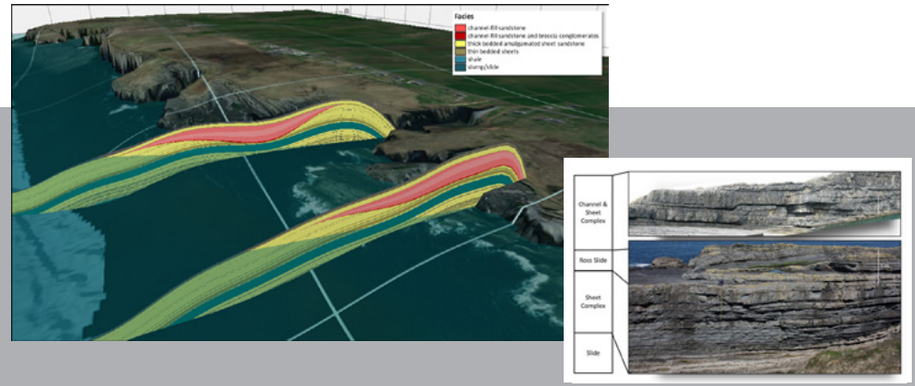
Comparison of modeling results from different Petrel/JewelSuite techniques.

Access

There will be walks of up to 2 km (1 mile) along rocky beaches and foreshore rock platforms. There will be one boat trip (weather dependent) to view key cliff exposures.

Duration

5 days



Annot-based Events (SE France)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams focusing on stratigraphic traps in deep marine confined basins.

Mark Bentley, John Howell, Richard Oxlade
Liz Chellingsworth, Ed Stephens, Jerry Hadwin

Sand-rich fan systems

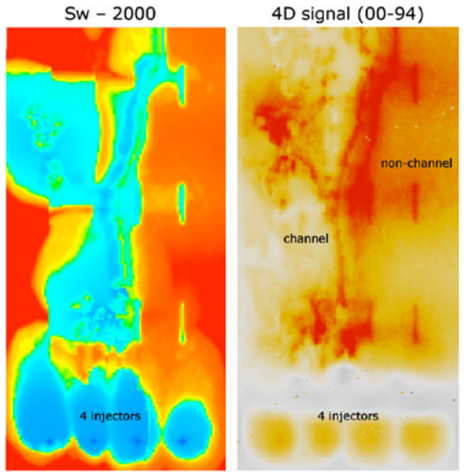
What's here?

Excellent exposures of deep marine clastics systems in a linked mini-basin setting.

Reservoir architecture of submarine fans in confined basins with high net-to-gross reservoirs.

Spectacular examples of reservoir margins (particularly onlaps) in stratigraphically trapped fields.

Supported by outcrop-based static, dynamic and seismic models, including 4D forward-modelling for production performance.



Access

Partly road-side, some local near-town walks, some strenuous walking. The field area is in the French Alps with elevations up to 2500 m (7500 ft); this may lead to unexpected fatigue for some participants.

Logistics

Annot, SE France; fly in/out Nice.

Optional night in Nice (depending on flights).

Drive in to Annot on day 1 taking in outcrops around St Antonin.

2 - 3 nights in Annot.

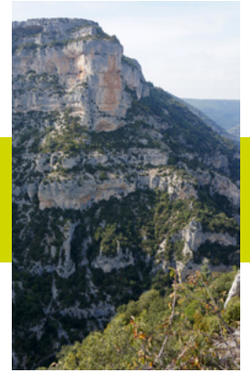
Optional last night in Nice.

Duration

3 - 5 days, depending on content. One day travel in UK-Nice, one day return.

Provence Area-based Events (France)

Geoscientists, Petrophysicists, Reservoir Engineers, Well engineers, Team Leaders, Managers. Ideally structured for groups working in multi-discipline asset-based teams in carbonate fields.



Mark Bentley, Richard Oxlade,
Ed Stephens, Mark Cook

Carbonate reservoirs: modelling and field development planning

What's here?

Cretaceous carbonates from the Northern Tethyan margin representing a range of environments from rudist-bearing platform build up to platform margin and slope; limestones, marls and chalks exhibiting combinations of matrix and fracture porosity. Directly analogous to the Shuaiba & Kharaib reservoirs of the Middle East.

Published work from the University of Provence provides quantitative field data, which has been used as the basis for static/dynamic outcrop models at a variety of scales.

Model results are presented in the field as the basis for discussions on development planning and the right-sizing of reservoir models used to support development decisions.

Particular themes are heterogeneity, multi-scale modelling and world-class examples of natural fracture systems in carbonates.

Topics covered include:

Carbonate reservoir characterisation

Fracture characterisation

Model scale and upscaling

Representative elementary volumes in carbonates

Seismic forward modelling in carbonates

Well placement

Simulation and forecasting in carbonates.

Access

Near-road, or road sections, coastal footpaths and boat trip; minimal walking.

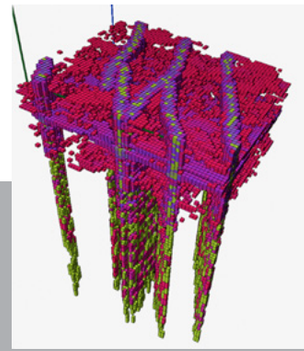
Logistics

Based around Gordes in the Luberon Valley, and on the coast at Cassis

Flights to Marseilles; transport by mini-van.

Duration

3 - 5 days, depending on content.



Tabernas-based Events (Spain)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams.

Mark Bentley, Mark Cook, Ed Stephens, Jerry Hadwin
Liz Chellingsworth, Jenny Garnham, Karl Stephen

Heterogenous fan systems

What's here?

Opportunity to see a wide variety of submarine fan types in close proximity.

Low NTG outcrops (thin beds), high NTG reservoirs, mass transport complexes.

Faulting in hi-net and low-net clastic systems.

Optional day in Sorbas Basin, including shallow marine and carbonate reservoir outcrops.

Supported by outcrop-based models for development planning discussions.

The course covers the following issues:

Types of submarine fan systems.

Influence of topography on reservoir distribution and quality.

Reservoir heterogeneity.

Reservoir modeling and simulation.

Upscaling from core to simulation scale.

Well selection and placement.

Development planning for submarine fan reservoirs.

Access

Outcrops in dry river beds, short walks; generally hot.

Logistics

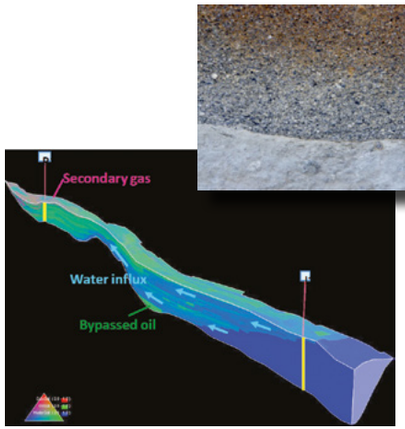
Tabernas, SE Spain; fly in/out Almeria.

Accommodation in Almeria town centre.

Duration

3 - 5 days, depending on content and optional day in Sorbas.

One day travel in UK-Almeria, one day return.



Pyrennes-based Events (Spain)

The course is designed for Geoscientists, Petrophysicists, Reservoir Engineers and Well Engineers. Ideally structured for groups working in multi-discipline asset-based teams.

John Howell, Pau Arbués

Fluvial systems, tidally-influenced systems, deepwater systems, modelling

What's here?

Ability to view a wide range of clastic depositional systems focusing on reservoir scale sandstone bodies and their architecture in a basinal context.

Deepwater turbidite channels, levee deposits and mass transport complexes of the Ainsa and Jaca basins (including core data).

Two regional scale fluvial systems 1) Eocene axial, thrust sheet-top fluvial system; 2) Oligo-Miocene transverse fluvial system feeding into the Ebro foreland basin.

Tidally influenced sandstone bodies (Roda Sandstone) of the Tremp-Graus Basin.

The region offers the ability to focus on a number of technical themes including:

The analysis and interpretation of the sedimentology, stratigraphic architecture and reservoir potential of alluvial fan, fluvial, tidal- and wave-dominated shorelines/shelves, and deepwater deposits.

The interpretation of a range of deepwater sandstone bodies from slope canyons, through basin floor channels to basin plain.

The analysis of regional scale sediment transport paths in terms of their reservoir potential, the controls that determine length scales of down-dip changes along the transport paths, and predictions that can be made in terms of reservoir presence and characteristics.

The relation between the spatial distribution of reservoir potential to the structural geometry of tectonically active basins in an exploration sense.

The differences between fluvial, shallow marine and deep marine depositional systems from a modelling perspective.

The evaluation of the use of outcrop analogue data for building better reservoir models and understanding reservoir zonation from a geological (rather than engineering) perspective (supported by outcrop-based models for development planning scenarios).

Access

Foothills of the southern Pyreness and on the Huesca Plain.

Access is by coach with short walks of up to 2 km. Participants should be aware that some localities are at an altitude of around 1000 m (3000 ft) and field temperatures may exceed 25 degrees celsius.

Logistics

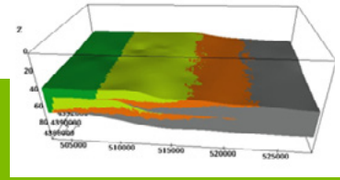
Pyrenees, Spain: fly in/out Barcelona. Accommodation in Tremp, Ainsa and Ayerbe depending on outcrops to be visited.

Duration

3-5 days depending on content required.

One day travel in UK-Barcelona, one day-return.

Utah-based Events (USA)



An intermediate-advanced level course for production geoscientists working in clastic systems, especially those in which correlation and high resolution sequence stratigraphy are relevant. Also useful for geophysicists interested in seeing seismic-scale outcrops and understanding reservoir scale heterogeneity lying 'inside the loop'.

John Howell, Karl Stephen, Mark Bentley

Distributive fluvial and shoreface analogues, sequence stratigraphy

Field visit to world-class exposures of clastic systems with sequence stratigraphic-influenced architectures. Kilometre-scale outcrops with fine-scale architectural detail, understanding of which underlies attempts to correlate and model complex clastic reservoir systems.

What's here?

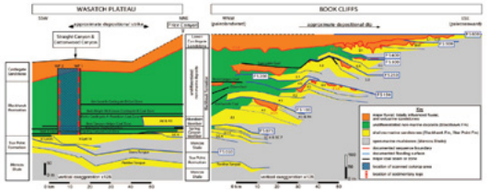
Km-scale shoreface exposures.

Incised valley fills.

Distributive fluvial sequences.

Brent Group analogues (Ness, Etive, Rannoch).

Textbook sequence stratigraphic examples.



Day 1 Salt Lake City: shoreface sedimentology and sequence stratigraphic overview.

Book Cliffs: lithostratigraphy vs. high resolution sequence stratigraphy.

Day 2 Gentile Wash: marine to non-marine correlation at the parasequence scale; fluvial vs. shoreface parasequences.

Day 3 Woodside Canyon: shoreface with estuarine incised valley; IVFs vs. distributary channels and internal heterogeneity.

Day 4 Green River: shallow marine correlation exercise supported by synthetic seismic; forced regressions and lowstands.

Day 5 Emery Sst. and Joe's Valley: growth-faulted deltaic parasequences; large scale fluvial stacking patterns.

Access

Roadside and canyon access; short to moderate walks of up to 0.5 miles most days at elevations from 1300-2200 m.

Logistics

Salt Lake City, Green River, Helper and optionally Moab. Transport by 4WD.

Duration

5 days, depending on content.

Utah - based Events (USA) using Petrel™ and JewelSuite™

Geoscientists who are interested in characterising and making realistic Petrel 3D geological models which can predict fluvio-deltaic sedimentary architecture to support hydrocarbon extraction. The class is based around fluvial and deltaic outcrop examples, many of the techniques are adaptable to other depositional environments.

Huw Williams, Paul Davies

Fluvio-deltaic sedimentary architecture and modelling

What's here?

Outcrops, cores and well logs are used by the participants to build a series of Petrel/JewelSuite models using a range of different modeling techniques. The results are then compared to outcrop reality to ascertain which techniques are the most suitable for analogous subsurface reservoir modeling studies.

The primary topics covered in the course are:

Overview of different modeling techniques and strategies.

Diagnostic outcrop, core and log interpretation of fluviodeltaic environments and facies.

Integration of core, log and reservoir properties to define genetic flow units.

Building conceptual models and sequence stratigraphic framework for reservoir modeling.

Correlation techniques from well data.

Deterministic modeling techniques in Petrel/JewelSuite.

Using hierarchy and layering in Petrel/JewelSuite.

Comparison of connectivity analyses from different Petrel/JewelSuite modeling techniques.

Access

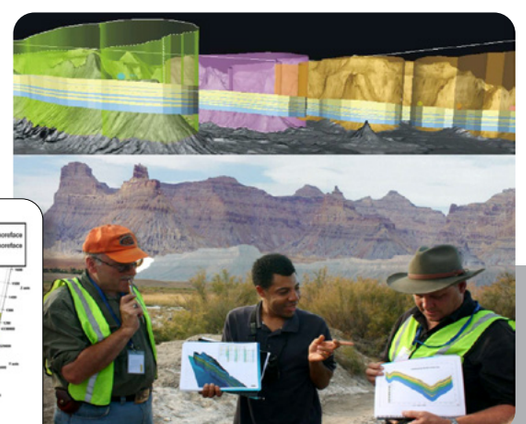
The field sites visited include national monuments, cliff-line exposures and roadside stops in the high plains desert of western Colorado and eastern Utah at altitudes of 1500-2000m, generally flat with one 2 km hike.

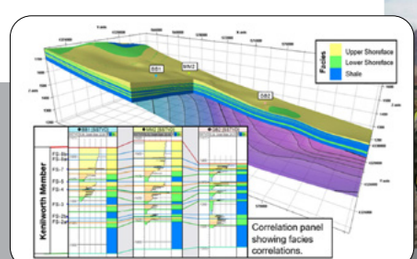
Logistics

Salt Lake City, Green River, Helper and optionally Moab. Transport is by 4WD vehicles on a variety of black-top and loose surface roads.

Duration

6 day field and classroom-based.





East Kentucky-based Events (USA)

This class is for geoscientists who are interested in characterising and realistically modelling coal-bearing sedimentary architecture to support hydrocarbon, coal-bed methane or coal extraction.

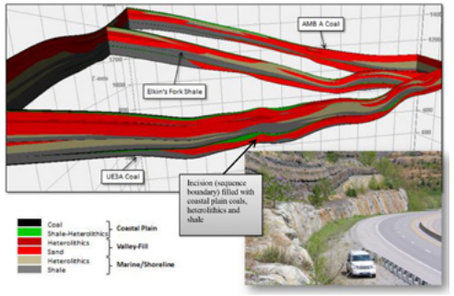
Huw Williams, Paul Davies

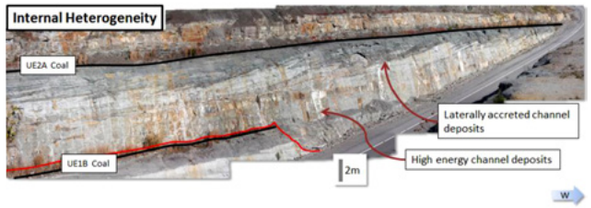
Coal-bearing fluvio-deltaic sedimentary architecture and modelling

The course follows the typical workflow of a sub-surface 3-D modelling study and is aimed at fluvio-deltaic reservoir characterisation and making realistic predictive models of sedimentary geometries and architecture by incorporating detailed knowledge of sedimentology and sequence stratigraphic concepts.

What's here?

Outcrops, cores and well logs are studied to characterise both small and large-scale patterns of sedimentary architecture within a sequence stratigraphic framework in these Carboniferous coal-bearing fluvio-deltaic sediments.





The primary topics covered in the course are:

Diagnostic outcrop, core and log interpretation of coal-bearing fluviodeltaic environments and facies.

Building a sequence stratigraphic framework in coal-bearing sediments for reservoir modelling

Coal and coal-bearing sediment correlation techniques from well data

Deterministic modelling techniques for coal-bearing sediments using Petrel

Using Petrel hierarchy, Make Horizons, Make Zones and layering

Making and using isochores to control shapes of sediment bodies

Comparison of modelling results from different Petrel techniques

Analysis of static connectivity of different facies modelling techniques

Access

Transport is by minibus on black-top roads. Minimal walking.

Logistics

Transport by minibus.

Duration

5 day field and classroom-based in Lexington and Pikeville, East Kentucky.

Sicily-based Events (Italy)

Geoscientists, petroleum engineers and decision-makers working on modelling and development of naturally fractured reservoirs: any people providing input to, or receiving output from, fractured reservoir development plans. The event is particularly useful for geoscience-engineering teams working fractured reservoir problems together.

Mark Bentley, Maggie Murison,
Karl Stephen, Ed Stephens

Fractured reservoir development

What's here?

This event blends classroom teaching with excursions to world class, reservoir scale carbonate outcrops, allowing delegates to discuss the issues associated with interpreting and modelling fractured reservoirs. The reservoir and simulation models of the analogue outcrops are used as background case material to support these discussions.

Naturally fractured reservoirs compound the familiar modelling and development issues of matrix-only reservoirs with the complexities of open fracture systems.

The question is whether to invest time modelling the complexity with a risk of significant forecast inaccuracy or seek approximate solutions using simpler workflows. At what point does the reservoir become 'so heterogeneous, it's homogeneous'?

These issues and options will be explored during this event which will focus on the subsurface work required to make development decisions in fractured reservoirs.

Key topics to be explored include:

Fundamentals of fractured reservoirs

Characterisation and Analysis

Concepts and Modelling

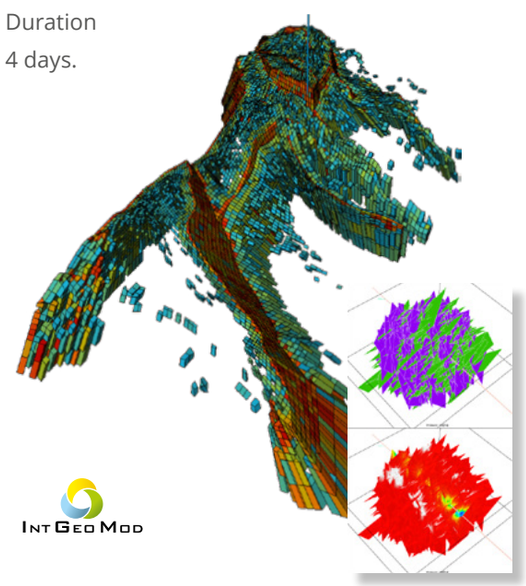
Development

Logistics

The event will be led by two tutors: one versed in structural geoscience and reservoir modelling and one experienced in petroleum engineering, simulation and commercial decision-making in fractured reservoir development.

Duration

4 days.



East Coast Scotland-based Events (Scotland)

Geoscientists, Petrophysicists, Reservoir Engineers, Well Engineers, Team Leaders, and Managers. Ideally structured for groups working in multi-discipline teams, especially those engaged in exploration, appraisal, and early development activities.

Steve Adams

Petroleum Systems, Exploration and Appraisal, Field Development

The diverse geology of Scotland's East Coast gives excellent opportunities to observe Palaeozoic and Mesozoic clastic and carbonate reservoirs in a variety of structural styles as well as world-class oil and gas source rocks.

What's here?

Over 150 coastal outcrops where a wide range of exploration, development, production, decommissioning and carbon storage topics can be addressed. Courses and coaching workshops that can be delivered include, but are not limited to:

Introduction to Hydrocarbon Exploration and Appraisal

Play Fairway Analysis

Introduction to Petroleum Geology

Prospect Evaluation & Volumetrics

Field Development Planning

#ScotlandsGeoLab

Access

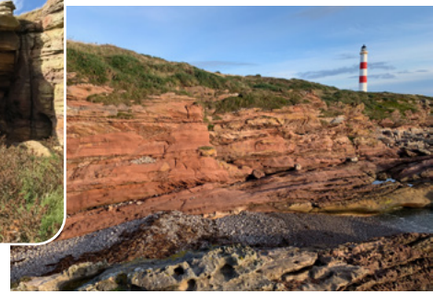
Field outcrops are located on coastal wave-cut platform and low cliff sections with some short walking required to reach the outcrops.

Logistics

Localities can be visited utilising accommodation bases in Brora, Elgin, Dundee, Edinburgh, and Dunbar. These locations can be easily accessed flying in and out of Edinburgh and Inverness or by rail through the LNER and ScotRail networks. Small executive coaches will be utilised as and when required to reach specific outcrops.

Duration

Flexible from 2 to 5 days depending on course and client requirements.



Blended Learning

TRACS Training has launched a unique e-learning provision for E&P clients around the world.

Blending learning has emerged across the industry as a means of combining different learning and development methods.

TRACS Training can efficiently combine e-learning with face-to-face events as a blended learning experience and also includes facilitated online learning when required.

TRACS Training launched its in-house e-learning platform in 2012 and by the end of the year the team at TRACS had tailored e-learning packages to accompany face-to-face and 'Open Air' events.

We can launch our e-learning experiences from client-dedicated space on our independent platform on the net, or build direct onto a client's intranet using their preferred template.

We are the only training provider who blends e-learning with bespoke packages for clients in-house, allowing us to significantly cut cost and turnaround time.

What our clients say

"I greatly appreciated your contribution to our programme for new graduates and mature hires... it was a very dynamic programme of work-place learning which we adapted as we went along. You did a great job of identifying needs, and creating and then pulling together the elements of the programme. This went well beyond my expectations."

Team leader
Shell

"Thank you for one of the most thought-provoking geomodelling courses I have attended in recent years. I have taken an enormous amount away from this session and thank you also for your time and energy."

Geoscientist
ConocoPhillips

"I would like to thank you for producing a tremendous two weeks of geoscience training for our geoscientists. It was great to hear how positive the group were on the course and for the significant impact it had on individuals, in their understanding of themselves and geoscience."

Team leader
BP

"As usual, the scores on the evaluation forms are very good. This is also my impression from speaking to some of the participants. They all say that you are 'gifted' when it comes to presenting the material in an intuitive, interesting and useful manner."

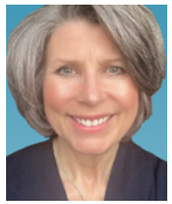
Training co-ordinator
Equinor

Reach

TRACS Training has a global reach. You specify the location, we deliver the course or programme.

● Training course locations

Training on six continents. TRACS Training provides in excess of 50 technical and commercial courses to the oil and gas industry.



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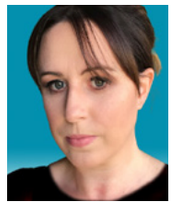
Training Business Manager

Training programme manager
events lead

Mark Bentley PhD
Training Advisor

Subject matter expert
and lead tutor



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