

Criteria for Assessment

Scientific content and merit (is it an interesting oil and gas problem?)
Meets NERC criteria (rather than those of another funding body e.g. EPSRC)? i.e. is clearly aligned with earth/marine science and linkage to placing earth and environmental science at the heart of oil and gas

Exhibits a clear link to stated CDT research theme(s)
In the event of reliance on third parties, is there evidence that the project has already obtained access to the dataset(s) required to undertake the project and achieve its objectives?

Research Themes

CE - Exploitation in Challenging Environments

EIR - Environmental Impact & Regulation

MB - Extending the Life of Mature Basins

UH - Unconventional Hydrocarbons

Project Title	Supervisor	Institution	Co-supervisors	New 2018	Re-submission	Research Theme(s)	Approval
Calibrating Geothermometers: integrating field, laboratory and well data for appraising thermal maturation of organic matter	Dr D. K Muirhead	Aberdeen	Dr A. T. Brasier	Y		MB/CE	Y following supervisor clarifications
'Overthickening' of the Cretaceous along the NE Atlantic Margin by Igneous Intrusions	Dr Nick Schofield	Aberdeen	Dr D.K. Muirhead, Dr Simon Holdford (Adelaide)	Y		CE	Y following supervisor clarifications
How responsive are coastal carbonate depositional systems to relative sea-level change?	Professor Rob Butler	Aberdeen	Prof. John Howell, Dr Rosanna Maniscalco (Univ. Catania), Dr Agata di Stefano (Univ. Catania)	Y		MB	Y. Submitted 11/01/19 as possible replacement fater withdrawal of 2017 cohort student
Reducing uncertainty in the subsurface interpretation of fold-thrust structures – machine learning from outcrop	Prof Rob Butler	Aberdeen	Dr Clare Bond, Prof John Howell	Y		CE/NPIF	Y NPIF machine learning
Automated Image Analysis for Rapid Biostratigraphic Data Collection	Dr Tom Dunkley-Jones	Birmingham	Dr Stephan Lautenschlager	Y		MB/NPIF	Y NPIF digital imaging
Twenty years on: the Paleocene Planktonic Foraminiferal Atlas re-imagined	Dr Kirsty Edgar	Birmingham	Dr Tom Dunkley-Jones, Prof Bridget Wade (UCL)	Y		MB/NPIF	Y
Enhancing in-situ extraction technologies for heavy and shale oils, for improved oil recovery factor and reduced environmental impact.	Prof Joe Wood	Birmingham/Notts	Prof Sean Rigby (Nottingham)	Y		UH/MB/EIR	Y
A regional analysis of caprock integrity in the North Sea	Dr Tiago M. Alves	Cardiff	Dr Davide Gamboa (BGS Wales, Dr John Williams (BGS Keyworth)	Y		MB	Y
Numerical and physical modelling of salt diapir formation: Challenges for the Oil and Gas industry	Dr Matteo Ciantia	Dundee	Dr Marin Kirkbride, Dr Michael Brown	Y		CE	N
Effect of Marine Growth on Offshore Civil Engineering Structures	Professor Rod Jones	Dundee	Dr Sue Dawson, Dr Tom Dyer, Professor Geoff Gadd, Dr Saverio Spadea	Y		EIR/MB	Y
New insight into the internal structure of turbidites from physical modelling of relevant erosion and deposition processes during their formation	Dr Alan Cuthbertson	Dundee	Dr Sue Dawson, Dr Karl Stephen (Heriot-Watt), Professor Dorrik Stow (Heriot Watt)	Y		MB/CE/EIR	Y
Modelling Immersion Enthalpies and Contact Angles for Improved Multiscale Enhanced Oil Recovery Simulation	Prof Chris Greenwell	Durham	Dr M. Degiacomi, Dr I. Collins (BP), Dr R. Anderson (STFC), Dr E. Pyzer-Knapp (IBM)	Y		MB/UH/NPIF	Y following supervisor clarifications
The role of redox in ferruginous clay mineral and iron nanoparticle mobilisation during enhanced oil recovery	Prof Chris Greenwell	Durham	Dr A. Neumann (Environmental Engineering, Newcastle University), Professor I. Collins (BP), Dr Kate Dobson	Y		MB/UH	Y
Biostratigraphic and geochemical investigation of Jurassic source rocks of the UK and Norwegian North Sea	Dr Sev Kender	Exeter	Erik Anthonissen (Equinor); Melanie Leng (BGS); Philip Copestake (Merlin Energy Resources Ltd); Ken Miller (Rutgers University, USA)	Y		UH/MB	Y
Assisted geological interpretation based on human-like creative computing	Dr Dan Arnold	Heriot-Watt	Dr Alison Pease (Dundee), Prof Simon Coulton (Exeter), Dr Vasily Demyanov	Y		CE/NPIF (AI)	Y NPIF
An Artificial Intelligence Approach to Revisit History Matching	Dr Romain Chassagne	Heriot-Watt	Dr Hamed Amini, Prof Colin Macbeth	Y		CE/NPIF (AI)	Y NPIF
Machine Learning Enhanced Subsurface Mapping	Dr Vasily Demyanov	Heriot-Watt	Dr Dave McCarthy (BGS), Dr Dan Arnold	Y		CE/NPIF (AI)	Y following supervisor clarifications NPIF
Mesozoic-Recent sediment routing and reservoir distribution in the offshore basins of the Falkland Islands using a source-to-sink approach	Dr Uisdean Nicholson	Heriot-Watt	Prof Dorrik Stow, Dr Dave McCarthy (BGS)	Y		CE	Y following supervisor clarifications
<i>The tectono-sedimentary evolution of the Cretaceous Equatorial Atlantic Gateway</i>	Dr Uisdean Nicholson	Heriot-Watt	Dr Tom Dunkley-Jones (Birmingham)	Y	Reserve	CE	N
De-risking unconventional hydrocarbon exploration and production through novel biogeochemical approaches: towards a systematic understanding of organic matter processes in the subsurface environment	Dr Ryan Pereira	Heriot-Watt	Dr Julia R. de Rezende, Prof Tom Wagner, Dr Onoriode Esegbue	Y		UH/EIR	Y
Critically evaluating the geological case for shale gas extraction in the UK	Prof John Underhill	Heriot-Watt		Y		UH /NPIF	Y
Tectonic and Stratigraphic Controls on Petroleum Systems of the Faroe-Shetland Basin	Prof John Underhill	Heriot-Watt	Dr Rachel Jamieson	Y	Y	MB / CE	Y
Techno-economic and environmental optimisation of combined Liquefied Natural Gas (LNG) and Liquefied Petroleum Gas (LPG) production and transport with CO ₂ capture and storage/CO ₂ -EOR deployment in Brazil	Prof Anna Korre	Imperial	Dr Zhenggang Nie, Petrobras/Shell group representative (tbc), Edmilson dos Santos (Institute of Energy and Environment, University of Sao Paolo)	Y		CE / EIR	Y submitted 21/12/18 as candidate identified
Origins of deepwater anoxia in Lower Carboniferous basins of northern England	Prof Mark Sephton	Imperial	Prof Al Fraser	Y		UH	Y
The development of lake margins, their interactions with contemporaneous continental environments and the implications for their reservoir potential	Dr Stuart Clarke	Keele	Prof Phil Richards, Tom Dodd (BGS)	Y		MB	Y
Geological Uncertainty of CO ₂ -EOR in North Sea Tertiary Oil Fields: the Nelson Reservoir Case Study	Dr Mahmoud Babaei	Manchester	Prof Mads Huuse, Prof Jonathan Redfern, Dr Caroline Gill (Shell)	N	Approved 2017	MB	Y
A slippery slope... Controls of mass wasting on sedimentation processes and heterogeneity in slope mudstone reservoirs	Dr Rhodri Jerrett	Manchester	Dr Ian Kane, Prof Kevin Taylor, Matthew Watkinson (Plymouth)	Y		UH/MB	Y
Evolution of the West Africa Margin: seismic-stratigraphic study of the Mauritania-Senegal-Guinea Bissau Basin	Prof Jonathan Redfern	Manchester	Prof Mads Huuse	Y		MB	Y
Impact of provenance on syn-rift fluvial reservoir distribution and quality: assessing the controls and contribution of local versus regional drainage systems, Upper Triassic fluvial deposits, Morocco	Prof Jonathan Redfern	Manchester	Prof Stefan Schroeder, Dr Shane Tyrell (UCGalway)	Y		MB	Y submitted 5/9/18 as candidate identified
Unconventional Energy Sources	Prof Sean Rigby	Nottingham	Prof Joseph Wood (Birmingham)	Y		UH	Y
Granular Rock-Analogue Materials (GRAM) for simulation of multi-scale fault-fracture processes	Prof Jurgen Adam	RHUL	Dr Nicola Scarselli	Y		UH/CE/EIR	N
Constraining the role of faults as seal-bypass systems	Prof Zoe Shipton	Strathclyde	Dr Becky Lunn, Liz Petrie (Western State University), Jim Evans (Utah State University), Davie Richie (Anadarko)	Y		MB/UH	Y
Understanding uncertainty in human and environmental exposure assessment for oil and gas contaminants of potential concern	Dr Christine Switzer	Strathclyde	Dr Tara Beattie	Y		EIR	N
Using long-range probabilistic forecasts to support cost-effective offshore decommissioning	Dr Chris White	Strathclyde	Prof Vernon Phoenix, Dr Fredrick Wetterhall (ECMWF), Prof Daniela Domeisen (ETH Zurich)	Y		EIR	Y
<i>Nano/Micro Response of Shale Rock to Pressure and Temperature by Molecular Dynamics Simulation</i>	Dr Shangtong Yang	Strathclyde	Prof Zoe Shipton	Y	Reserve	UH	N