

ADVANCED EOR 2014: THE COST EFFICIENT RECOVERY OF NORTH SEA OIL

Institution of
**MECHANICAL
ENGINEERS**

Conference

25–26 June 2014

Aberdeen Marriott Hotel

www.imeche.org/events/C1404

In partnership with:



Department
of Energy &
Climate Change

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INTRODUCTION

EOR techniques have grown to make deep sea recovery easier, cheaper and more attractive to those organisations and companies seeking to exploit the opportunity the North Sea continues to present.

Advanced EOR 2014 will explore the growing potential which the North Sea Continental Shelf offers as technical advances make the recovery of previously hard to reach oil reserves possible.

This event will update engineers on methods of extracting oil (including chemical EOR, low salinity, miscible gas injection and CO₂-EOR) which have the potential to drastically increase the percentage of oil recovered from the sea bed.

With the demand for oil ever high and the requirements for more cost efficient extraction growing, investment in EOR has never been so crucial. Ultimately

this event will be able to answer the key question facing the North Sea oil community: 'what next for EOR?'



THIS CONFERENCE WILL PROVIDE AN IDEAL FORUM TO LEARN MORE ABOUT THE PRACTICAL CHALLENGES OF DELIVERING OFFSHORE EOR AND THE OPPORTUNITY TO MEET WITH THE INDUSTRY LEADERS WHO ARE DRIVING EOR ACTIVITY FORWARD.

JONATHAN THOMAS
SENIOR RESERVOIR ENGINEER, DECC

BENEFITS OF ATTENDANCE:

- Find out from DECC how the maturity of the North Sea is still presenting EOR potential
- Learn from TAOA how to minimise the risks associated with a chemical EOR project
- Identify cost effective methods of sustaining an offshore supply of desalinated water
- Understand the latest economics attached to CO₂-EOR
- Discuss the potential marrying of UK CCS programmes to new and existing EOR projects

WHEN

25–26 June 2014

WHERE

Aberdeen Marriott Hotel, Overton Cir, Dyce, Aberdeen AB21 7AZ

BOOK ONLINE

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SUPPORTING ORGANISATIONS



MEDIA PARTNER



ADVANCED EOR 2014 ADVISORY BOARD

Stephen Goodyear
Team Lead EOR
Deployment, Shell

Jonathan Thomas
Senior Reservoir
Engineer, DECC

Alex Kemp
Director ACREEF,
University of Aberdeen
Business School

Jon Gibbins
Professor CCS,
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PROGRAMME

DAY 1

WEDNESDAY 25 JUNE 2014

SESSION 1: SETTING THE EOR SCENE

08:30

COFFEE AND REGISTRATION

09:00

CHAIRMAN'S OPENING REMARKS

Tim Fox, Head of Energy and Environment, Institution of Mechanical Engineers

UNDERSTAND THE POTENTIAL OF THE NORTH SEA'S UNTAPPED OIL RESERVES AND HOW LOCAL AND INTERNATIONAL INDUSTRIES ARE SUPPORTING GLOBAL EOR OPERATIONS

09:10

KEYNOTE ADDRESS: DEVELOPMENTS IN SHELL'S EOR PORTFOLIO

Stephen Goodyear, Team Lead for EOR Deployment, Shell

- The EOR toolkit – mature and developing technologies
- Implementing EOR in the business
- CCS, CO2 EOR and the challenge of the offshore environment

09:50

ENCOURAGING MORE EOR DEVELOPMENT IN THE UK

Jonathan Thomas, Senior Reservoir Engineer, Energy Development Unit, DECC

- The overall "Size and Geographic Distribution of the EOR Prize" in the UK North Sea
- The most promising EOR technologies for use offshore and a brief summary of existing North Sea EOR projects
- The DECC strategy for increasing EOR activity

10:30

NETWORKING REFRESHMENT BREAK

11:00

SETTING THE SCOTTISH EOR SCENE

David Rennie, International Sector Head for Oil and Gas, Thermal Generation and CCS, Scottish Enterprise

- The role of Scottish Development International and Scottish Enterprise in the Scottish oil and gas industry: making the most of the natural resource
- Working with local industry: building the supply chain
- EOR: understanding Scottish Enterprise's current priorities to support development of the technologies

11:40

EOR DEVELOPMENTS IN NORWAY

Mariann Dalland, Head Improved Oil Recovery, Norwegian Petroleum Directorate

- A brief history of NPD's involvement in EOR
- Supporting Norwegian industry across the NCS
- Current areas of research to enhance EOR techniques

12:20

NETWORKING LUNCH

13:20

THE ECONOMICS OF EOR

Alexander Kemp, Director ACREEF, University of Aberdeen

- The benefits of investing in mature oil fields across the North Sea
- Understanding incentives to explore undiscovered oil fields in the North Sea
- UK petroleum tax system; what this means for EOR projects

14:00

HEALTH AND SAFETY EXECUTIVE'S OFFSHORE DIRECTIVE

Jim Neilson, Head Offshore, Pipelines and Diving Policy, HSE

- The objective and benefits of the Offshore Directive
- The core elements; licensing, environmental protection, emergency response, liability and safety
- Working with DECC on a timeline for implementation

14:40

NETWORKING REFRESHMENT BREAK

SESSION 2: LOW SALINITY EOR

15:10

HOW COMPANIES ARE ACHIEVING HIGHER PERCENTAGES OF EXTRACTION THROUGH FLOODING RESERVOIRS WITH LOW SALINITY WATER SOLUTIONS

LOW SALINITY: A WORK IN PROGRESS

Patrick O'Brien, Chief Executive Officer, ITF

- A breakdown of the low salinity EOR process: what it is and what it can do
- Sustaining a cost effective offshore source of desalinated water
- Utilising low salinity EOR to ensure greater productivity on the UKCS

PROGRAMME CONTINUED**SESSION 3: 15:50
ROUNDTABLES**

Meet and network with your fellow delegates away from the traditional lecture format. Discussions will be facilitated by experts, but guided by you.

**ROUNDTABLE 1
CAN AN EXPANDED UK CCS PROGRAMME DRIVE CO₂-EOR PROJECTS ACROSS THE NORTH SEA?**

**ROUNDTABLE 2
HOW CAN YOU IDENTIFY THE RIGHT CHEMICALS TO SUPPORT MAXIMUM EXTRACTION?**

**ROUNDTABLE 3
REDUCING HUMAN INVOLVEMENT: HOW WILL ADVANCED METHODS INCREASE THE EXTRACTION PERCENTAGE OF OIL?**

**ROUNDTABLE 4
HOW CAN THE UK EOR ECONOMIC CASE BE IMPROVED?**

16:50

CHAIRMAN'S CLOSING REMARKS

Tim Fox, Head of Energy and Environment, Institution of Mechanical Engineers

17:00

END OF CONFERENCE DAY ONE**DAY 2****THURSDAY 26 JUNE 2014****SESSION 4: 08:30
CHEMICAL
EOR
PROCESSES
AND CASE
STUDIES****COFFEE AND REGISTRATION**

09:00

CHAIRMAN'S RECAP

Tim Fox, Head of Energy and Environment, Institution of Mechanical Engineers

THE CHALLENGES AND INCREASED BENEFITS OF INJECTING CHEMICALS INTO OIL RESERVES TO INCREASE RECOVERY RATES

09:10

SURFACE FACILITIES LESSON LEARNED ON THE PLANNING AND INSTALLATION OF A POLYMER PILOT IN THE UK NORTH SEA – CAPTAIN EOR PILOT

Senior representative from Chevron

09:50

CHEMICAL EOR: THE NEED FOR INTEGRATION

Pierre-Yves Chenet, Director, EOR Alliance

- P, SP and foam with CO₂: pushing the limits of applicability, some examples
- How to de-risk a chemical EOR project integrating reservoir simulation, surface facilities and laboratory work
- Managing waters: coping with seawater and treating produced water containing chemicals

10:30

NETWORKING REFRESHMENT BREAK

11:00

TAQA'S EXPERIENCES IN EVALUATING EOR OPPORTUNITIES IN ITS MATURE NNS OIL FIELDS

Chris Charnley, Appraisal Engineering Manager, TAQA

- Selecting the appropriate EOR technique and the appropriate EOR chemical
- Proving the technical concept
- Scale, facilities, costs, timeline, risks and their implications on economic viability

**SESSION 5:
CO₂-EOR**

MARRYING CCS PROJECTS WITH EOR PROGRAMMES. UNDERSTANDING THE SUPPLY AND DEMAND OF CO₂ AND THE ULTIMATE BENEFITS TO THE EOR PROCESS

11:40

SUPPORTING UK EOR PROJECTS

David Rutland, Head of Market Development, Office of Carbon Capture and Storage, DECC

- UK Government CCS Programme
- The role of OCCS in UK EOR projects
- Identifying the potential of marrying CCS and future EOR

12:20

QUICK START FOR CO₂-EOR USING EXISTING CO₂ SOURCES AND SOLVING THE CARBON BALANCE PROBLEM

Stuart Haszeldine, Director, SCCS

- Rapid start up of CO₂-EOR using existing low cost industrial CO₂ sources
- CO₂-EOR: exploring carbon negative possibilities
- Using CO₂-EOR to start saline aquifer development at no public cost

PROGRAMME CONTINUED

13:00	NETWORKING LUNCH
14:00	A DECADE OF WORLD-LEADING RESEARCH ASSOCIATED WITH WEYBURN-MIDALE OILFIELDS IN SOUTHERN SASKATCHEWAN Neil Wildgust, Chief Project Officer, PTRC <ul style="list-style-type: none">• Relationship between CO₂-EOR operations and CO₂ geological storage• Key findings of the research project• Best practice guidelines for reservoir and environmental monitoring• Media and public outreach
14:40	SUPPLY & DEMAND: CO₂ EOR AND THE NORTH SEA John Gluyas, Professor of Geoenergy and CCS, University of Durham <ul style="list-style-type: none">• Current opportunities to use CO₂ EOR in the North Sea• Where would this CO₂ come from: single sources, clusters, air capture?• Balancing the carbon footprint: storing more in an attempt to emit less
15:20	NETWORKING REFRESHMENT BREAK
15:50	EXPLORING THE LINK BETWEEN CCS AND CO₂ EOR Ward Goldthorpe, CCS Programme Leader, The Crown Estate <ul style="list-style-type: none">• A brief overview of recent discussions in the UK EOR industry• Emerging UK CCS cluster infrastructure and EOR: understanding the opportunities• Viewing CCS as an economic source of CO₂
16:30	Q&A SESSION
16:50	CHAIRMAN'S CLOSING REMARKS Tim Fox, Head of Energy and Environment, Institution of Mechanical Engineers
17:00	END OF CONFERENCE

Find out more about our speakers at www.imeche.org/events/C1404

- This programme is subject to change.
- The Institution is not responsible for the views or opinions expressed by individual speakers.

SPEAKERS AND CONTRIBUTORS



TIM FOX CHAIRMAN

HEAD OF ENERGY AND ENVIRONMENT, INSTITUTION OF MECHANICAL ENGINEERS

Tim Fox has a wide range of research and engineering practice experience gained across many industrial sectors including power generation, chemical processing, the built environment and renewable energy. He has worked in commercial enterprises, government agencies and educational institutions in the UK, Australia, Canada and The Netherlands. Tim is currently Head of Energy and Environment at the Institution of Mechanical Engineers.



CHRIS CHARNLEY

APPRAISAL ENGINEERING MANAGER, TAOA

Chris Charnley is the Appraisal Engineering Manager at TAOA Bratani in Westhill, Scotland. His team is currently managing a wide variety of studies centred on the late-life field challenges in the Northern North Sea, including EOR, and major project work in the Central North Sea. Chris is a chartered Mechanical Engineer and has worked for over 30 years in the on and offshore oil and gas industry.



DAVID RENNIE

INTERNATIONAL SECTOR HEAD FOR OIL AND GAS, THERMAL GENERATION AND CCS, SCOTTISH ENTERPRISE

David Rennie is the International Sector Head for Oil and Gas, Thermal Generation and Carbon Capture and Storage (CCS) which brings together the Scottish Enterprise sector team and the Scottish Development International trade and investment teams. His main focus is on continuing to deliver the industry led and owned oil and gas strategy to achieve strong and measurable growth for the sector, engaging with senior industry representatives from Scotland as well as internationally and securing buy-in and input from other strategic partners across Government and industry.



JONATHAN THOMAS

SENIOR RESERVOIR ENGINEER, DECC

Jonathan Thomas is a Senior Reservoir Engineer for the Energy Development Unit at the UK Department of Energy and Climate Change. Jonathan is responsible for managing the Government's EOR support programme and also advises on the reservoir engineering aspects of offshore carbon sequestration in the UK.

PIERRE-YVES CHENET

DIRECTOR, EOR ALLIANCE

Pierre-Yves Chenet graduated from the Paris School of Mines and holds a PhD in geological sciences. After a research engineer career at the French Institute of Petroleum, he moved to Beicip-Franlab where he held positions as project manager for various exploration and reservoir studies, manager of the petroleum software division and business development for North and Latin America. He is currently in charge of developing integrated studies in EOR and is principal advisor for E&P studies.

JON GLUYASPROFESSOR OF GEOENERGY AND CCS,
UNIVERSITY OF DURHAM

Jon Gluyas spent 28 years in the oil industry before moving to academia in 2009. Jon is Professor of Geoenergy and CCS at Durham University as well as being Head of the Earth Sciences Department. Jon's research interests include CO₂-EOR, geothermal energy and carbon storage.

STEPHEN GOODYEAR

TEAM LEAD EOR DEPLOYMENT, SHELL

Dr Stephen Goodyear has, for the past 11 years, been a reservoir engineer for Shell. He is currently the Team Lead for EOR Deployment and is a subject matter expert in Gas Injection. Prior to his time at Shell, Dr Goodyear worked at AEA Technology and graduated from the University of Edinburgh with a PhD in Theoretical and Mathematical Physics in 1985.

ALEXANDER KEMP

DIRECTOR ACREEF, UNIVERSITY OF ABERDEEN

Alexander G. Kemp is Professor of Petroleum Economics and Director of Aberdeen Centre for Research in Energy Economics and Finance (ACREEF) at the University of Aberdeen. He previously worked for Shell, the University of Strathclyde and the University of Nairobi. For many years he has specialised in research into petroleum economics with special reference to licensing and taxation issues. He has had published over 200 papers and books in this field.

JIM NEILSON

HEAD OFFSHORE, PIPELINES AND DIVING POLICY, HSE

Jim has worked at HSE for 22 years. For the last five years, he has led the offshore, pipelines and diving policy team in HSE, and was part of the UK Negotiation Team for the Directive on the Safety of Offshore Oil and Gas Operations. Jim is responsible for project managing the HSE work to implement the Directive; and he is currently involved in ensuring a robust regulatory regime is in place for addressing health and safety during shale gas exploration.

DAVID RUTLANDHEAD OF MARKET DEVELOPMENT, OFFICE OF CARBON
CAPTURE AND STORAGE, DECC

David has held a number of different roles within DECC all of which have looked at cost effective decarbonisation and include the role played by nuclear, offshore wind as well as CCS within this. He has also had extensive input into Electricity Market Reform policy. He took up the role of Head of Market Development within the OCCS in 2013.

MARIANN DALLANDTEAM LEADER EOR, NORWEGIAN PETROLEUM
DIRECTORATE

Mariann Dalland has more than 25 years of experience in EOR. She started out working for Rogaland Research, now IRIS, mainly on projects with foam for gas mobility control. She joined NPD in 1999 as a reservoir engineer working on reservoir simulation on new developments along with a focus on EOR. For ten years she worked with the Troll field optimizing the oil production from the thin oil zone.

WARD GOLDTHORPE

CCS PROGRAMME LEADER, THE CROWN ESTATE

Dr Ward Goldthorpe leads the CO₂ and Natural Gas storage programmes at The Crown Estate, which is the owner of storage rights on the UK Continental Shelf. His role involves managing the leasing of storage sites and commercialising the CO₂ storage resource. He has 33 years of experience in the international petroleum industry, a large part of which has been in developing upstream and midstream natural gas and LNG projects in Australia, South America, South Asia and the Middle East. This experience has included technical, commercial and business development roles with Shell, Woodside and BHP Billiton.

STUART HASZELDINE

DIRECTOR, SCOTTISH CARBON CAPTURE & STORAGE

Stuart Haszeldine is the current Director of SCCS and the first Professor of Carbon Capture and Storage. He is one of the key driving forces behind establishing CCS as a new industry in the UK, EU and worldwide. He is lead scientist on CO₂ storage for the UK Energy Research Centre and co-leader of the academic network UKCCSC. Stuart provides advice to both UK and Scottish governments. He was the expert advisor to the UK Parliament Science and Technology Committee inquiry on carbon capture and storage and is an active part of the current DECC CCS development and PILOT EOR programmes. Stuart is on the Scottish Government CCS development advisory panel.

SIMON MATHIASDEPARTMENT OF EARTH SCIENCES,
UNIVERSITY OF DURHAM

Simon Mathias is a Reader in Computational Geoscience in the Department of Earth Sciences at Durham University. He also serves on the Editorial Board of the Quarterly Journal of Engineering Geology and Hydrogeology. His principal expertise lies in the development of mathematical models to describe flow and transport of reactive contaminants in porous and fractured porous media.

PATRICK O'BRIEN

CHIEF EXECUTIVE OFFICER, ITF

A Chartered Engineer with close to 30 years' oil and gas industry experience, Dr O'Brien started his career in a university spin-out company, MCS, which he helped to lead through successful product commercialisation, international growth and subsequently integration into a large service company. In April 2013 Dr O'Brien joined ITF as Chief Executive Officer and is responsible for driving forward ambitious global growth plans and strengthening the development and deployment of innovative technology for the oil and gas industry's most pertinent challenges through collaborative projects involving its members.

NEIL WILDGUST

CHIEF PROJECT OFFICER, PTRC

Neil Wildgust is a chartered geologist with over 25 years of industrial and research experience encompassing CO₂ geological storage, hydrogeology, contaminated land and industrial minerals. Neil has managed final reporting from the 12 years of world leading research conducted by the IEAGHG Weyburn-Midale CO₂ Monitoring and Storage Project and served as a Managing Guest Editor of the International Journal of Greenhouse Gas Control.

BOOKING FORM

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C1404ABC

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**ADVANCED EOR 2014:
THE COST EFFICIENT
RECOVERY OF NORTH SEA OIL**
25-26 JUNE 2014

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www.imeche.org/events/C1402

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23 September 2014, Aberdeen

OFFSHORE WEIGHT CONTROL: MANAGING DESIGN, INSTALLATION AND COST

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www.imeche.org/events/S1819

7 October 2014, London

AGEING ONSHORE STRUCTURES: MINIMISING HAZARDS THROUGH BETTER DETECTION TECHNIQUES

To get the best out of structures that are highly susceptible to deterioration, a greater emphasis must be placed on detection. This event will provide case studies showcasing the various different types of detection techniques that ultimately are able to reduce operating costs, reduce hazards and ensure compliance with latest guidance.

www.imeche.org/events/S1826

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