As a follow-up to the successful workshop in the year 2013 in Dubai on Advanced Carbonate Reservoir Characterisation, the SPE Reservoir Characterisation Workshop will take place in Doha, Qatar. The aim of this workshop is to take you on a journey to address some of the key challenges in developing carbonate reservoirs. The intention is that every participant walks away with a useful toolbox of ideas, thoughts and potential solutions to some tough questions that we are presented with in today’s low oil price world. Each session addresses how reservoir characterisation ties into well, reservoir, facility management and how we can maximise recovery for each of the challenges described below.

The journey starts with “Difficult Oil” and “Difficult Gas”, where we look at how reservoir characterisation affects our perception of what difficult oil is and how it can be extracted, focusing on enhanced oil recovery techniques. “Difficult Gas” is more concerned with trying to define what difficult gas actually is, how to locate it and then to characterise it in order to see whether it is connected and can be extracted.

Moving forward, a hot topic, especially in this region is “Condensate Banking” and the methods to bank it. Reservoir characterisation is primarily understanding how much condensate there is and whether it can be extracted. The volumes of condensate impacted are huge and are a valuable contribution to any gas development. The subsequent session looks at “Production Potential” stressing on precise evaluation of reservoir characterisation to determine the productivity or injectivity of a formation in order to maximise potential.

After revealing insights to maximise productivity, we look into “Water Flooding” which nowadays is a key driving mechanism in improving oil recovery. It incorporates many challenges and issues from selecting a candidate for water flooding through to which is the best technique to optimise recovery. Finally, we take a step back and bring all these topics together in the final session on “Reservoir Management”. Here we look at factors affecting reservoir management the most, so that we develop an appropriate reservoir management strategy.

Overall, the programme has been developed so that each individual leaves with valuable tools, experiences and a support network to maximise productivity and reserves, in a safe, sustainable, and cost effective manner.

**WHO SHOULD ATTEND**
- Reservoir Engineers/Managers
- Reservoir Geologists
- Geoscientists
- Petrophysicists
- Geomechanic Experts
- Production Engineers/Managers
- Seismic Interpreters
- Software Developers
- Project Managers
- Sub-Surface Team Leaders
- Exploration Engineers/Managers
- Recovery and Remediation Engineers/Managers
- Production Technologists (Well Doctors)

**GOLD SPONSOR**

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  - Al-Shaheen Weatherford

- Sharon Finlay
  - Maersk Oil Qatar

- Vasilios Kelessidis
  - Texas A&M University at Qatar/Technical University of Crete

- Anton Leemhuis
  - TNO

- Rashed Noman
  - Qatar Petroleum
Some people would say that there is no easy oil left in the world. So in contrast what is difficult oil? In this session, we will try to define what difficult oil means and how to get it out of the ground. We will narrow the field of reservoir characterisation of heavy oil in carbonate reservoirs to be more relevant to the region. Taking this into consideration, we begin with discovering the tools needed to evaluate formation and fluid properties, both initially and in later field life. We can assess whether 4D seismic is a useful tool in these circumstances or should we just rely on more traditional open hole or cased hole logs, or perhaps special core analysis. Having established that difficult oil exists, we then need to assess how best to get it out, what is the best recovery mechanism? How well does enhanced oil recovery work in this environment, when you consider thermal, steam or alternative techniques? At the end of this session, you will attain an array of tools and techniques that will address these questions which you can then apply to your own reservoirs.

### Session 2: Difficult Gas

**Session Chairs:** Haytham Almeer, Qatar Gas; Hesham Hassanein, Al-Shaheen Weatherford

This session asks the question what is difficult gas? We address the issue of how to define the cut-off for difficult gas, to assess how we can locate the gas and ways get it out of the ground, these are two of the key factors connected to this topic. With the help of expertise in the workshop, we will attempt to find solutions, which are feasible and practical, based on industry experience and new technology. Furthermore focusing on low porosity and permeability, means to characterise the reservoir and the methods required to identify these pockets of gas, we then need to determine if these pockets of gas are connected and finally develop a strategy to unlock their potential. The objective of this session is to give you the key knowledge to unlock difficult gas.

### Session 3: Critical Challenges in Condensate Banking

**Session Chairs:** Mohamed Al-Buainain, RasGas Company Limited; Mischa Haaker, Qatar Shell

A vast amount of knowledge is currently available in the industry related to the phenomenon of condensate banking and its effect on well deliverability especially in rich gas condensate and low reservoir permeability environment. In such cases, successful modelling of the complex phase behaviour and flow characteristics of gas condensate fluids near the wellbore area are vital for reliable prediction of well deliverability. This session will focus on the advancements in the modelling techniques of the condensate banking phenomenon; analytical, semi-analytical and numerical simulation. The discussion on this subject in this session will attempt to highlight the type of data input, application boundaries, and prediction capabilities of these modelling techniques.

### Session 4: Production Potential

**Session Chairs:** Ali Ghalambor, Oil Center Research International; Vassilios Kelessidis, Texas A&M University/University of Crete

The technologies and techniques in reservoir characterisation continue to advance. Industry professionals now have many options at their disposal to predict the production potential of a reservoir. This session will attempt to shed light on the limitations and applications of these technologies and techniques. Discussions on the topics in this session will centre on the data needed to input for a desirable output. Topics such as, what is the extent of a damaged zone, what do various measurements of skin mean and how they should be interpreted, these output and interpretations will form the basis for an evaluation that is representative of the quality of the reservoir and its production potentials.

### Schedule

**Tuesday, 11 October 2016**

- **0800–0900 | Welcome Coffee, Registration, Collection of Badges and Delegate Packs**
- **0900–0915 | Safety Announcement and Opening Remarks by Workshop Co-Chairpersons**
- **0915–0945 | Opening Keynote Address**
- **1000–1030 | Session 1: Difficult Oil**
  **Session Chairs:** Sharon Finlay, Maersk Oil Qatar; Hesham Hassanein, Al-Shaheen Weatherford

**Wednesday, 12 October 2016**

- **0800–0830 | Welcome Coffee**
- **0845–0900 | Opening Remarks and Review of Day One**
- **0900–0930 | Session 4: Production Potential**
  **Session Chairs:** Ali Ghalambor, Oil Center Research International; Vassilios Kelessidis, Texas A&M University/University of Crete

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1100–1130 | Session 5: Water Flooding
Session Chairs: Thierry Charles, Total; Jassim Mohamed Al-Khori, Maersk Oil
In this session, we take the industry’s most common form of secondary oil recovery and bring it into the 21st century. This is an opportunity to bring together the key drivers for water flooding in terms of reservoir characterisation so that we can maximise recovery. The input parameters for water flooding, such as data requirements, injectivity, sweep efficiency, souring and pattern selection will be analysed to see what we have learnt about water flooding to identify the best technique for water flooding. There may not be a standard solution for the optimum technique but a synergy can be formed to determine the optimum solution. This session gives you a chance to share experiences and learn from each other, rather than reinventing the wheel in order for you to optimise your water flooding.

1130–1200 | Luncheon

1230–1330 | Session 6: Reservoir Management
Session Chairs: Mike Gunningham, Maersk Oil Qatar; Anton Leemhuis, TNO
Well, Reservoir and Facility Management (WRFM) aims to maximise production and recovery in a safe, sustainable and environmentally conscious manner. In order to maximise production every day, we need to gather data, analyse it, identify opportunities to ensure both production and recovery are being improved. As a result, we need to develop a reservoir management strategy, which allows us to do this without breaking the bank. The primary challenge is to come up with such strategies in the face of ever present subsurface uncertainties in our fields.

• Are you going to pre-invest with Capex and have lower Opex, or do you reduce the Capex and pay for it later with higher Opex?
• How can integration of data from production, reservoir engineers and geologists help to improve our understanding in models of complex reservoirs?
• What are the effective ways to balance the conflicting requirement of NPV and ultimate recovery?

In this session we will look at how you develop a reservoir management strategy to address these issues, which can be applied to both greenfield and brownfield scenarios. At the end of the session, you will acquire methods that you can apply on your own fields.

1400–1430 | Coffee Break and Poster Presentations

1430–1530 | Session 6: Continued (Breakout Groups)

1530–1600 | Closing Remarks and Workshop Wrap-Up by Workshop Co-Chairpersons, Sponsor Appreciation, and Raffle Draw

GENERAL INFORMATION

Format – Two days of informal discussions prompted by selected keynote presentations and discussions. Focused topics and issues critical to advancing both technology and best practices. Majority of the presentations are in the form of case studies, highlighting engineering achievements, and lessons learnt. In order to stimulate frank discussion, no proceedings are published and the press is not invited to attend.

Documentation
• Proceedings will not be published; therefore, formal papers and handouts are not expected from speakers.
• Work in progress, new ideas, and interesting projects are sought.

Poster Session – The Steering Committee encourages registrations from professionals who are able to prepare and present a poster on a relevant project.

Attendance – Registrations will be accepted on a first-come, first-serve basis. The Steering Committee encourages attendance from those who can contribute effectively either in discussions or with posters.

Workshop Deliverables
• The Steering Committee will appoint a “scribe” to record the discussions and to produce the full workshop report for SPE.

Commercialism – Commercialism in posters or presentations will not be permitted.

Attendance Certificate – All attendees will receive an attendance certificate attesting to their participation in the workshop.

Continuing Education Units – Attendees at this workshop qualify for SPE Continuing Education Units (CEU) at the rate of 0.1 CEU per hour of the workshop.

Registration Information – This is a nonresidential workshop and therefore hotel accommodation is not included in the registration fees. The registration fees include all workshop sessions, coffee breaks, and luncheons.

Cancellation and Refund Policy
• A processing fee of USD 100 will be charged for cancellations received before the registration deadline 11 September 2016.
• For cancellations received after the registration deadline, 11 September 2016, 25% refund will be made to the registrant.
• No refund on cancellations received within seven (7) days prior to the workshop date, i.e. on or after 4 October 2016.
• No refund will be issued if a registrant fails to attend the workshop.

Registration Policy
• Registration fee MUST be paid in advance for attending the Applied Technology Workshop.
• Full fixed fee is charged regardless of the length of time that the registrant attends the workshop.
• Fixed fee cannot be prorated or reduced for anyone (workshop co-chairpersons, committee members, speakers, discussion leaders, students, and registrants).
• Delegates with no proof of advance payment are required to pay onsite by cash or cheque, present a copy of the wire transfer, or submit a letter from their company guaranteeing payment of the workshop fees.

SPONSORSHIP INFORMATION

Sponsorship support helps offset the cost of producing workshops and allows SPE to keep the attendance price within reach of operations-level individuals, those who benefit most from these technical workshops. Sponsors benefit both directly and indirectly by having their names associated with a specific workshop. While SPE prohibits any type of commercialism within the workshop hall itself, the society recognises that sponsoring companies offer valuable information to attendees outside the technical sessions.

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Sponsorships are offered on a first come basis. Please contact SPE to verify the availability of a particular sponsorship. Existing sponsors have the opportunity to renew the same level of sponsorship for annual workshops.

SPONSORSHIP BENEFITS
In addition to onsite recognition; SPE will recognise sponsors on the SPE website and in all printed material for the workshop. Based on the sponsorship selected, sponsoring companies also receive logo visibility on promotional workshop items.

FOR MORE INFORMATION
For a detailed list of available sponsorships, including benefits and pricing, contact Aswathy Prathap at aprathap@spe.org.
REGISTRATION FORM
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Attendance is limited and is not guaranteed. Early registration is recommended. Please print or type in black ink.

IMPORTANT:
Registration fee MUST be paid in advance for attending the workshop.

WORKSHOP FEE:
SPE Members:
☐ Before 27 August = USD 700
☐ After 27 August = USD 1000
Nonmembers:
☐ Before 27 August = USD 800
☐ After 27 August = USD 1300

Workshop fee includes:
Technical sessions, materials, daily coffee breaks and luncheons, certificate of Continuing Education Units (CEU), and welcome reception and dinner (if applicable). Accommodation is NOT included in the workshop registration fee.

IMPORTANT: All SPE Middle East rates are net of taxes. The fees in this form do not include any local or withholding taxes. All such taxes will be added to the invoice.

Fax or email the completed registration form with payment or credit card information to:
Online: www.spe.org/events/15adoh
Email to: registrationdubai@spe.org
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Visa: SPE Middle East, North Africa, and South Asia will assist in providing a visa invitation letter, upon request in writing, to confirmed registrants after receiving full payment of registration fees. Visa invitation letters take five days to issue from the date of request and it is the delegate’s responsibility to obtain their own visa. SPE cannot issue the visa nor can we guarantee it will be obtained.

Questions: Contact Aswathy Prathap, Event Coordinator, at aprathap@spe.org.

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☐ Yes ☐ No

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☐ Yes ☐ No

If yes, please indicate the subject on which you would like to present:

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   IBAN Number: AE180200000036217131100
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