

SPE/IATMI WORKSHOP:

A Novel Approach to EOR Implementation

26 – 27 SEPTEMBER 2018 | PULLMAN JAKARTA, INDONESIA



**SIGN UP BEFORE 24 August 2018
FOR EARLY BIRD DISCOUNT!**

Who Should Attend

Professionals involved in:

- Asset Management
- Drilling
- EOR Research and Development
- EOR Technology/Solutions
- Field Development Planning
- Geology
- Geophysics
- Geoscience
- Oil and Gas Authority/Regulators
- Production Engineering
- Production Surveillance
- Production Technology
- Project Management
- Reservoir Engineering
- Reservoir Management
- Subsurface Engineering



Over two-thirds of the world's daily oil production comes from mature fields. The sole key to sustaining production from these mature fields, or even reversing the production decline, is through implementation of Enhanced Oil Recovery (EOR) methods. Ongoing large scale EOR projects can be observed all around the world. In the United States, the first large scale CO₂ EOR project in the western Texas Permian Basin installed in 1972, remains the country's most productive project amongst approximately 70 other oil fields in terms of daily oil production. The Tapis EOR project in Malaysia that utilises immiscible water-alternating-gas process to recover remaining oil reserves from the field is one of the largest offshore EOR projects in Southeast Asia. In the case of Indonesia, the Duri Steam Flood managed to lift in excess of an additional 2 billion barrels of oil within the past two decades. These EOR projects are expected to become the basis for implementation of EOR on a large scale on such oil field assets and contribute to the industry's technical know-hows.

Reducing costs and accelerating EOR projects have been challenging for the industry, especially when exacerbated by the complexity of the reservoir. In addition, finding a way for the home country to adjust its regulation to support EOR, and enhancing experiences on EOR projects in terms of project delivery and management have also been challenging. To address these challenges, this workshop aims to provide a platform for sharing knowledge, technical solutions and experience amongst local and international industry stakeholders. Since the implementation of EOR is believed to be the future in sustaining the oil industry, organisations are encouraged to share their successes and lessons learnt from applications of EOR methodologies on their assets.

This workshop will discuss the latest EOR applications and methods worldwide. Topics will include recent pilot and full-scale EOR projects implemented worldwide, the latest advances, recent developments in core flooding technology and laboratory services, technology and optimisation as well as industrial scale-up, and economic applications for onshore and offshore assets.

Session Highlights

Recent Pilot and Full-Scale EOR Projects Implemented Worldwide | EOR Challenges and Opportunities

EOR Project Management and Delivery | EOR Reservoir Management | Current and Emerging EOR Technologies

Integrated EOR Technical Study | Laboratory Requirement for EOR | Surface Facility Requirements for EOR Applications

Technical Programme Committee

CO-CHAIRPERSONS

Tutuka Ariadji
Chairman
Society of Indonesian Petroleum Engineers (IATMI)

Andi W. Bachtiar
Vice President, Enhanced Oil Recovery (EOR)
PT Pertamina EP

COMMITTEE MEMBERS

Son-Huu Do
Founder and CEO
3-DOs Global Energy

Luky Hendraningrat
Independent Consultant

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ENI S.p.A.

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PT Medco E&P Indonesia

Julio G Herbas
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EOR Thermal Project Leader
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Head of Geology, Geophysics, and Reservoir
PT Pertamina Hulu Mahakam

Taweewat Prasertbordeekul
Reservoir Engineer
PTT Exploration and Production Public Company Limited

Rick Ng
Market Development Manager - Enhanced Oil Recovery
Sasol (USA) Corp.

Julian Barnes
Principal Technologist
Shell

Jacques Kieffer
Oil Field International Manager
SNF SAS

David Sorin
Vice President EOR
Solvay Novacear

WORKSHOP ADVISORS

Henricus Herwin
Head of Geosciences & Reservoir - Development Division
PT Pertamina Hulu Mahakam
Member, SPE Asia Pacific Regional Technical Advisory Committee

GROUP REGISTRATIONS AVAILABLE!
Contact us at spekl@spe.org to arrange your group.

go.spe.org/19WA03W

Workshop Objectives

The objective of this workshop is to provide knowledge and experience sharing from various perspectives on EOR field implementation, guidelines and procedures for successful EOR project management and strategy as well as technical aspects to overcome the challenges in implementing EOR and accelerating its project timeline to ultimately maximise recovery and reduce cost.

WORKSHOP STATISTICS



10+
hours of peer-to-peer
networking opportunities



30+
hours of knowledge sharing
and technical discussion



30
expert-led technical
discussion topics



ATTENTION NON-MEMBERS: Join our worldwide membership!

Non-member full workshop attendees can join SPE at no additional cost. Look for your exclusive offer by email shortly after the event.

LEAGUE OF VOLUNTEERS



Engage • Support • Contribute

Join our league of dedicated members who provide the energy that makes our society work.

- Enhance your leadership skills
- Contribute to programmes and activities with your knowledge and experience
- Meet and network with members near you and around the globe
- Demonstrate thought leadership in your area of expertise and interest at both local and international levels

www.spe.org/volunteer



Contact us at volunteer@spe.org for more information

Technical Programme Preview

WEDNESDAY, 26 SEPTEMBER 2018

0800 – 0850 Arrival of Delegates and Registration

0850 – 0900 Safety Announcement by Hotel

0900 – 0930 **Session 1: Welcome and Introduction**

Co-Chairs: Tutuka Ariadji, **Society of Indonesian Petroleum Engineers (IATMI)**; Andi W. Bachtiar, **PT Pertamina EP**

0930 – 1000 Keynote Session

1000 – 1030 Group Photo / Coffee and Tea Break

1030 – 1230 **Session 2: EOR Pilot and Projects in the Last 10 Years/ EOR Full Scale Projects in the Last 10 Years**

Session Managers: Puti Permata, **PT Medco E&P Indonesia**; Julio G Herbas, **Mineaol Ltd.**

Throughout a project's life cycle, people learn lessons and discover opportunities for improvement. This session will include EOR pilot and project designs and implementations focusing on lessons learnt with the aim of identifying what has actually been achieved or planned for real field case studies, things that could have been done differently, the root causes of problems that occurred, and ways to avoid those problems. The intent is to define the current state-of-the-art practices in developing EOR projects.

Participants are encouraged to present their actual EOR pilot and project experiences, and discuss successes of the project, unintended outcomes, and recommendations for others involved in similar future projects.

1230 – 1330 Networking Luncheon

1330 – 1530 **Session 3: EOR Challenges and Opportunities**

Session Managers: Juhaidi Jaafar, **PETRONAS**; Mohammed Al-Riyami, **Petroleum Development Oman LLC**

Mindset challenges as well as high investment costs are the hurdles we need to overcome to realise EOR projects in this region. Experience has been mixed and confidence needs to be increased via injection of innovative ideas and new technologies. The rewards will be high and impactful for all interested parties. Collaborations and integration of efforts are a must to ensure higher efficiency and sharing of risks.

Experts and current EOR operators will highlight their strategies and share their stories in this session.

1530 – 1545 Coffee and Tea Break

1545 – 1745 **Session 4: EOR Project Management and Delivery**

Session Manager: Son-Huu Do, **3-DOs Global Energy**; David Sorin, **Solvay Novocare**

Why is EOR project management and delivery critical to the successful implementation of EOR? Too often, these issues are overlooked in EOR studies and planning, but like any other E&P projects, they are required to successfully deliver a project. Inexperienced companies often put too much emphasis on issues such as lab and technical studies and not enough on project management's "big picture" issues such as roadmap for project delivery, integrating data collection with a de-risking strategy, and more.

Participants are encouraged to share experiences in successfully delivering EOR projects. Equally valuable are lessons learnt from failed EOR projects due to the lack of project management and planning.

1745 – 1845 **Session 5: EOR Reservoir Management**

Session Managers: Zamri Ghoror, **ExxonMobil Exploration and Production Malaysia Inc.**; Son-Huu Do, **3-DOs Global Energy**

Why is reservoir management a critical component of any economically successful EOR project? By some estimates, 30% or more of the booked reserve can be attributed to having an effective reservoir management. Effective reservoir management in EOR is even more critical than in conventional development because

POSTER SOLICITATION & INFORMATION

All participants are encouraged to prepare a poster for the Workshop. Presentations on both research and field experience are welcomed. Posters, including unconfirmed / partial results, are to be presented at an assigned time and are open for discussion. Posters will be on display for the entire Workshop period.

When preparing your poster:

- Avoid commercialism. No mention of trademarks / product name
- Poster size should be approximately 0.8m x 1.2m (W x H) or size AO in portrait layout
- Identify topic by title, affiliation, address, and phone number
- Include a brief abstract that summarises the technology to be addressed
- Make the display as self-explanatory as possible
- Place the information in sequence: beginning with the main idea or problem, method used, results, etc. (Draw a plan keeping the size and number of illustrations in mind)
- Keep illustrations simple by using charts, graphs, drawings, and pictures to create interest and visually explain a point
- Use contrasting colours
- Use large print for narrative materials. (We suggest a minimum of 24 points or 3" high letters for the title)

*Note that the Workshop Programme Committee will review all poster abstracts / materials prior to display, and reserves the right to refuse permission to display any poster considered to be commercial in nature. If you are interested to participate, please email your proposed topic with a short abstract (between 200-300 words) to **Renee Wong** at rwong@spe.org by **24 August 2018**.

The Society of Petroleum Engineers (SPE) is a not-for-profit organisation. Income from this event will be invested back into SPE to support many other Society programmes. When you attend an SPE event, you help provide even more opportunities for industry professionals to enhance their technical and professional competence. Scholarships, certification, the Distinguished Lecturer programmes, and SPE's energy education programmes Energy4me are just a few examples of programmes that are supported by SPE.

the injectants such as gas, chemical, steam, etc. are usually costlier. Therefore, ineffective EOR reservoir management often play a key role in failed EOR projects. Key elements of an effective reservoir management programme include surveillance and EOR-specific data acquisitions, flood performance diagnostics, injection and production policies, and managing uncertainties. Given that EOR is new to Southeast Asia, with little indigenous reservoir management experiences, there may be opportunities for collaborations with companies/regions that have more experience. Participants are encouraged to present their experiences in various aspects of EOR reservoir management especially actual case studies.

1845 onwards Networking Dinner

THURSDAY, 27 SEPTEMBER 2018

0830 – 1030 **Session 6: Current and Emerging EOR Technologies**

Session Managers: Rick Ng, **Sasol (USA) Corp.**; Luky Hendraningrat, **Independent Consultant**

Oil and gas companies have implemented various EOR techniques, both matured and emerging technologies, over the years to increase production and recovery. These include chemical (polymer, surfactant polymer, alkaline surfactant polymer) flooding, immiscible and miscible gas/WAG (CO₂/Hydrocarbon/N₂) flooding, and thermal EOR. Promising EOR technologies such as nano-EOR, smart water, and other technologies are emerging. Some of the challenges facing operators are finding the suitable technology to use for their reservoirs, deciding at what stage of the field lifecycle to apply, and understanding the economic impacts of these technologies.

This session will explore several EOR technology options. Discussions will focus on why a particular technology is chosen, the screening methodology, selection criteria based on reservoir conditions, economic benefits, and limitations of the specific EOR technology (offshore, facility, availability of injectants, etc.). Technology that will be discussed include:

- Chemical
 - Polymer, Surfactant or Surfactant Polymer (S/SP), Alkaline Surfactant Polymer (ASP)
- Immiscible/Miscible Gas/WAG
 - CO₂, Hydrocarbon, N₂
- Thermal EOR
- Emerging and promising EOR technologies, e.g. Nano-EOR

1030 – 1045 Coffee and Tea Break

1045 – 1245 **Session 7: Integrated EOR Technical Study**

Session Managers: Tawewat Prasertbordeekul, **PTT Exploration and Production Public Company Limited**; Steve Flew, **Petrofac**; Julian Barnes, **Shell**

For a successful evaluation and implementation of EOR, comprehensive studies are critical from the initial phase of EOR screening, laboratory works, pilot design and execution, to full-field implementation. Various input data is required, from geological information of the reservoir to engineering data such as fluid and surface facilities. These studies require a multi-disciplinary and integrated approach to ensure all information are correctly evaluated and subsequently applied to the field.

This session will explore studies that support the EOR technical evaluation, from screening of the viable processes, to pilot and field implementation. The session will also cover the appropriate numerical and analytical modelling techniques that are required to ensure both

the rock fabric as well as the dynamic response are adequately captured and is able to provide the required evaluation of uncertainties and risks associated with the EOR project.

1245 – 1345 Networking Luncheon

1345 – 1545 **Session 8: Laboratory Requirement for EOR**

Session Managers: Franco Masserano, **ENI S.p.A.**; Jacques Kieffer, **SNF SAS**

After the initial screening phase to select more viable EOR methods, it is important to evaluate the feasibility of the process for a given field and to optimise the process first at lab scale. Parameters such as temperature, oil composition and viscosity, gas injection composition, pressure, water salinity and quality on one side and geological formation type and heterogeneities on the other, are key parameters that need to be carefully investigated from the beginning of any EOR project in order to ensure its robustness at pilot and full-field scale.

The session will explore advances and new methodologies in designing laboratory experiments for different EOR processes: gas injection, chemical EOR, thermal and innovative processes (nanotechnologies).

1545 – 1600 Coffee and Tea Break

1600 – 1700 **Session 9: Surface Facility Requirements for EOR Applications**

Session Managers: Iswahyuni Fifthana-Hayati, **PT Pertamina Hulu Mahakam**; Basir Samsudin, **PETRONAS**

Implementation of EOR methods is considered key in sustaining production for mature fields. However, applying EOR methods from the start of development is becoming more common too. Ongoing large scale EOR projects are observed all over the world – gas, WAG, thermal and chemical EOR, from onshore to offshore field applications. The success of its application is strongly influenced by the compatibility and the robustness of the surface facilities.

There are certainly operational aspects that need to be considered before planning to implement EOR in oil fields. For an offshore environment, the requirement for logistics and surface facilities has to be explored. In an onshore environment, even though less complicated than offshore, there are certain aspects that need to be looked at, such as logistics. The integration of surface facility designs with reservoir studies allows for useful insights into the advantages, risks and drawbacks of each EOR technology, and provides the basis for high quality project decisions. The session will explore:

- The common surface facilities required for each EOR type
 - Best practices in handling and processing of injection schemes on onshore and offshore facilities
 - Constraints and limitation on onshore and offshore facilities
- How to screen the most optimum EOR technology that fits the field's reservoir and fluid characteristics
 - Factors to be considered in the screening process (logistics, subsurface efficiency, injection, production, environment)
- EOR application for later stage vs early stage of field development and implications to surface facilities requirements
- New technology on surface facilities for EOR implementation

1700 – 1730

Session 10: Workshop Summary and Closing Remarks

Co-Chairs: Tutuka Ariadji, **Society of Indonesian Petroleum Engineers (IATMI)**; Andi W. Bachtiar, **PT Pertamina EP**

SPONSORSHIP SUPPORT INFORMATION

Sponsorship support of the event helps offset the cost of producing workshops and allows SPE to keep the attendance price within reach of operation-level individuals, those who benefit most from these technical workshops.

Supporters benefit both directly and indirectly by having their names associated with a specific workshop. While SPE prohibits any type of commercialism within the workshop room itself, the Society recognises that supporting companies offer valuable information to attendees outside the technical sessions.

SPONSORSHIP CATEGORIES

Sponsorship categories are offered on a first-come basis. Please contact SPE to enquire and verify the availability of categories. Existing supporters have the opportunity to renew the same level of support for annual workshops.

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In addition to onsite recognition, SPE will recognise sponsors on the SPE website and in all printed materials for the workshop. Based on the category selected, supporting companies also receive logo visibility on promotional workshop items.

FOR MORE INFORMATION

For a detailed list of available sponsorship opportunities, including benefits and pricing, contact **Renee Wong** at rwong@spe.org

GENERAL INFORMATION

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.
- Note-taking by attendees is encouraged. However, to ensure free and open discussions, no formal records will be kept.

WORKSHOP DELIVERABLES

- The committee will prepare a full report containing highlights of the Workshop and the report will be circulated to all attendees.
- Powerpoint presentations will be posted online and provided to attendees after the Workshop. Provision of the materials by Discussion Leaders will signify their permission for SPE to do so.

COMMERCIALISM

In keeping with the Workshop objectives and the SPE mission, excessive commercialism in posters or presentations is not permitted. Company logos must be limited to the title slide and used only to indicate the affiliation of the presenter.

ATTENDANCE CERTIFICATE

All attendees will receive a Workshop attendance certificate. This certificate will be provided in exchange for a complete Attendee Survey Form.

CONTINUING EDUCATION UNITS

This Workshop qualifies for SPE Continuing Education Units (CEU) at the rate of 0.1 CEU per hour of the Workshop.

TRAVEL/VISA

Attendees are advised to book their airline tickets early. All travellers must be in possession of passports valid for at least six (6) months with proof of onward passage. Contact your local travel agent for information on visa requirements.

DRESS CODE

Business casual clothing is recommended. The Workshop atmosphere is informal.

REGISTRATION FEE

- Registration fee ONLY includes all workshop sessions, coffee breaks and luncheons for the registrant.
- Accommodation is NOT included. SPE will provide details of recommended hotels upon receipt of your registration.
- Taxes: Registration Fees are made free and clear of, and without any deduction or withholding for and on account of, any taxes, duties or other deductions. Any such deduction or withholding, if required by the laws of any country are the sole responsibility of the Participant.

REGISTRATION POLICY

- Registration fee MUST be paid in advance for attending the Workshop.
- Full fixed fee is charged regardless of the length of time the registrant attends the Workshop, and cannot be prorated or reduced for anyone.

REGISTRATION FORM

SPE/IATMI WORKSHOP:
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SPE Member Yes No
Membership No. _____
First/Forename _____ Middle _____ Last/Family Name _____
Position _____
Company _____
Address _____
Town/City _____ Zip/Postal Code _____ Country _____
Tel _____ Fax _____ Email _____

Would you be willing to give a brief (10-15minutes) presentation? Yes No

If yes, please attach the topic with a short abstract of your proposed presentation.

One of the Programme Committee members will contact you to discuss your presentation.

***IMPORTANT: REGISTRANTS FOR SPE WORKSHOPS ARE ACCEPTED ON THE BASIS OF INFORMATION SUBMITTED BY EACH REGISTRANT.**

Technical Disciplines (Check One)

- Drilling Health, Safety, Security, Environment, and Social Responsibility Reservoir Description and Dynamics
 Completions Production and Operations Projects, Facilities and Construction
 Management and Information

Primary Responsibility (Check One)

- Drilling Economics Geology Geophysics Management
 Operation Production Reservoir Surveillance Other _____

Listing background and experience. (Use additional paper if required)

List your expectation for the Workshop, so that the committee can tailor a portion of the Workshop to answering attendees' concerns. (Use additional paper if required)

Registration Fees (Please tick appropriate box)

EARLY BIRD REGISTRATION BY 24 AUGUST 2018		REGISTRATION AFTER 24 AUGUST 2018	
SPE MEMBER	NON-MEMBER	SPE MEMBER	NON-MEMBER
<input type="checkbox"/> USD 1,600.00	<input type="checkbox"/> USD 1,800.00	<input type="checkbox"/> USD 1,700.00	<input type="checkbox"/> USD 1,900.00

Group Registration Available - Please contact us at spek1@spe.org

Note: Fee includes workshop sessions workbook, certificate, daily luncheons and coffee breaks. Registration fees do not include accommodation.

Payment Methods

Telegraphic Transfer

Bank details will be provided in the invoice

Credit Card

Payment via credit card (American Express, Visa, Mastercard and Diners Club) is available online at spe.org/go/19WA03W. Credit card payment will be processed in US Dollars only. For manual payment, an email with instruction on securely submitting your payment will be provided

Taxes: Registration Fees are made free and clear of, and without any deduction or withholding for and on account of, any taxes, duties or other deductions. Any such deduction or withholding, if required by the laws of any country are the sole responsibility of the Participant.



Cancellation Policy

- A processing fee of USD150.00 will be charged for cancellation received thirty (30) days prior to the first day of the workshop.
- 25% refund will be made for cancellation received between twenty nine (29) - fifteen (15) days prior to the first day of the workshop.
- No refund on cancellation received fourteen (14) days prior to the first day of the workshop.
- No refund will be issued if a registrant fails to show up on-site.

This form may be used as a company invoice.

Mail completed registration form with remittance and any supporting material to:

Society of Petroleum Engineers

Suite 12.01, Level 12, Menara IGB, Mid Valley City,
Lingkar Syed Putra, 59200 Kuala Lumpur Malaysia

T +60 3 2182 3000 **F** +60 3 2182 3030 **E** spek1@spe.org

Note: Forms will not be processed and seats cannot be guaranteed unless accompanied by payment for total amount due.

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