

Water Injection Excellence

25 – 26 MARCH 2019 | KUALA LUMPUR, MALAYSIA



In Malaysia, and similarly worldwide, there are numerous brownfields with the potential to increase recovery via water injection (WI) as the secondary recovery mechanism. Currently, Malaysia has 27 WI fields that account for only 39% of discovered Stock-tank Oil Initially in Place (STOIIIP) but contribute significantly up to 55% of total Malaysian production.

WI activities are increasing despite the technical and commercial challenges, especially for marginal or stranded fields. With the tremendous experiences from oil and gas companies of managing WI fields, it is time to capture and share the additional value and knowledge within the industry for all to achieve 'best in class' operator status.

The key in managing WI is to look at a molecule to molecule (M2M) concept that encourages a wholesome and integrated approach in resolving challenges in existing and upcoming WI fields. This is inclusive of WI screening of potential fields (conceptual development), seawater lift pump, WI surface module (permanent structure, or mobile), injectors, reservoirs, producers, and surveillance, as well as an understanding of personnel skill sets required to yield good overall performance.

Session Highlights

Panel Session – Water Injection Excellence	Development Planning and Design	Water Injection Strategies and Operation Philosophies
Facilities Management and Operation Excellence	Water Injection Well Design and Management	
Water Injection and Production Surveillance	Competency Management and Digitalisation	

GROUP REGISTRATIONS AVAILABLE!
Contact us at spek1@spe.org to arrange your group.

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Who Should Attend

Professionals involved in:

- Asset Operations and Management
- Data Science and Analytics
- Drilling and Completions
- EOR and IOR Specialisation
- Field Development Planning
- Geology and Geophysics
- Production Technology
- Projects, Facilities and Constructions
- Research and Development
- Reservoir Engineering
- Talent Management
- Wells Engineering
- Water Injection Specialisation



Technical Programme Committee

CO-CHAIRS

Budi Mawardi Nasron Head – Specialised Water Injection Fast Track (SWIFT) PETRONAS	Steve Burford General Manager Subsurface Murphy Oil	Mohd Fadzil Harun Senior Reservoir Engineering / EOR Project Team Lead Schlumberger
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COMMITTEE MEMBERS

Noorbaizura Hashim General Manager AEM Energy Solutions Sdn Bhd	Sriyanta Hadi Principal - Upstream Production Planning PETRONAS
Nicholas Jackson Chief Technical Officer Influit Asia (Thailand) Ltd	Syarizan Mustapha Staff Reservoir Engineer PETRONAS
Dato' Udani Dato Seri Mohamed Daud Group Executive Chairman Max Energy Sdn Bhd	Febrian Asrul Lead Waterflood and EOR PT Medco E&P Indonesia
Steve Frew Technical Director Petrofac	Henry Lee Business Development Manager Asia Schlumberger
Mohd Faridyl Faiz Bashir Reservoir Engineer, Petroleum Engineering Department – Centre of Excellence PETRONAS	Adedayo Dada Reservoir Engineering Discipline Capability Lead and WF Consultant Shell Malaysia Shell Malaysia Exploration and Production
Nor Erza Shafina Khairuddin Head (PE – SB Cluster 3) PETRONAS	Radhakrishnan Karantharath Global Reservoir Advisor TGT Oilfield Services DMCC
Sulaiman Sidek Production Technologist PETRONAS	Abdul Rahman Yunus Chief Technology Officer Vision Petroleum

WORKSHOP ADVISOR

Rahim Masoudi
Chief Technical Officer
Custodian - Reservoir Engineering Resource Development & Management MPM, Upstream Business
PETRONAS
Member, SPE Asia Pacific Regional Technical Advisory Committee

Workshop Objectives

The aim of the workshop is to discuss requirements to improve the effectiveness in managing WI projects throughout all phases, from design stage through to reservoir surveillance and post-implementation. This workshop provides opportunities for sharing the pain points in operating WI, and discussions on success stories, lessons learnt, and value improvements through knowledge sharing from various parties including operators and service providers.

WORKSHOP STATISTICS



10+
hours of peer-to-peer
networking opportunities



30+
hours of knowledge sharing
and technical discussion



30
expert-led technical
discussion topics

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Technical Programme Preview

MONDAY, 25 MARCH 2019

0800 – 0850 Arrival of Delegates and Registration

0850 – 0900 Safety Announcement by Hotel

0900 – 0945 **Session 1: Welcome and Introduction**

Co-Chairs: Budi Mawardi Nasron, **PETRONAS**; Steve Burford, **Murphy Oil**; Mohd Fadzil Harun, **Schlumberger**

0945 – 1015 Group Photo/Coffee and Tea Break

1015 - 1215 **Session 2: Panel Session – Water Injection Excellence**

Session Manager: Budi Mawardi Nasron, **PETRONAS**; Mohd Fadzil Harun, **Schlumberger**

In Malaysia, and similarly worldwide, there are numerous brownfields with the potential to increase recovery via WI as the secondary recovery mechanism. Currently, Malaysia has 27 fields, associated with WI, that account for about 39% of the In-Place volumes in discovered oil fields, with about 70% of the estimated ultimate recovery (EUR) coming from the WI assets. As such they significantly contribute up to 55% of total Malaysian production today. Potential assessments indicate that there are significant additional value and volumes associated with WI in Malaysian oil assets to be realised.

This session will feature a panel of speakers who will share their thoughts on current best practices, innovative technologies, success stories or lessons learnt in WI management.

Technical challenges:

1. Managing WI at molecule to molecule (M2M) concept that encourages a wholesome and integrated approach
2. Managing reservoir souring and other production and flow assurance challenges

Business challenges:

1. Getting Petroleum Arrangement Contractors (PACs) interest to invest in innovative WI solutions and technologies (e.g. Water Taxi Technology)
2. Making WI programmes economical for marginal and stranded fields

1215 – 1315 Networking Luncheon

1315 – 1515 **Session 3: Development Planning and Design**

Session Managers: Nicholas Jackson, **Influit Asia (Thailand) Ltd**; Febrian Asrul, **PT Medco E&P Indonesia**

Like any project, planning and designing are crucial for WI. Inappropriate design may result in a big loss due to irreversible effects that occurred in the reservoirs. In reality, WI design may be far from effective and efficient, especially when there is oversize or undersize capacity, delayed decision-making and placing facilities where WI is not required.

The objective of this session is to focus on the fundamental inputs required to assure the successful and timely implementation of a technically suitable WI project. The lessons learnt need to be captured and new approaches must be adopted to avoid repetitive mistakes. Modularisation and standardisation options should be considered to derive the best value from WI. Deciding on the best injection strategy involves not only analysing the surface of WI capabilities but also subsurface aspects, such as geology and geomechanics.

This session will cover topics related to improving methods, innovations of planning, and designing WI programmes based on lessons learnt and field applications.

Topics of discussion will include:

- Timescale, technical needs and rigorous workflow considerations during the planning phase
- Achieving maximum production performance by successfully planning with data, historical information, a clear understanding of reservoir parameters and characteristics, and assessment of current and future reservoir requirements
- New parameters, those historically ignored, that now need to be considered when implementing WI projects
- Innovative or different ways of creating waterflood designs
- Available and suitable waterflood technology, implementation assets (Fixed platforms, MOPU, marine assets) and related investment considerations
- Designs for operational flexibility
- Know the location and its environmental issues

1515 – 1530 Coffee and Tea Break

1530 – 1730 **Session 4: Water Injection Strategies and Operation Philosophies**

Session Managers: Sriyanta Hadi, **PETRONAS**; Steve Flew, **Petrofac**

This session will discuss water quality specifications, and whether these can change

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 A0 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 **Angelina Lee** at aclee@spe.org by **22 February 2019**.

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.

over the life of a waterflood, as well as looking at solids control technologies and any innovations in that area. With the move towards marginal fields, waterflood has a limited lifetime. The questions of the overall injection system mineralogy will include:

- How to maintain injectivity?
- What effective injectivity enhancement should be applied?
- When to consider mineralogy?
- When is plain carbon steel sufficient?

This session will also cover challenges when injecting sufficient water. Is it better to limit this to the matrix alone or to drill more to lower wells cost or should injection above Pfrac always be considered an option?

1730 - 1830 **Session 5: Poster Session**

Session Managers: Syarizan Mustapha, **PETRONAS**; Nor Erza Shafina Khairuddin, **PETRONAS**

1830 onwards Welcome Dinner

TUESDAY, 26 MARCH 2019

0830 - 1030 **Session 6: Facilities Management and Operation Excellence**

Session Managers: Sulaiman Sidek, **PETRONAS**; Abdul Rahman Yunus, **Vision Petroleum**; Nicholas Jackson, **Influit Asia (Thailand) Ltd**

This session will focus on waterflood conformance Control, which is directly linked with the Sweep Efficiency and thus the Recovery Factor. However, there has never been a reservoir that exhibited perfect conformance during a waterflooding operation. The issues that must be considered for successful waterflooding are how imperfect is the conformance for a given flooding operation in an oil field and what is the economic or other beneficial Return of Investment (ROI) if a conformance improvement flood or treatment is implemented?

Understanding conformance aspects through fit-for-purpose reservoir surveillance techniques and proactive remedial action will be covered in this session. This session will create an understanding of the importance of properly designed and executed conformance improvement flooding, or treatments to improve the effectiveness, efficiency, and profitability of an oilfield's secondary recovery operation by waterflooding.

Topics of discussion will include:

- Fit-for-purpose reservoir surveillance
- Waterflooding and reservoir souring (H₂S)
- Nano-particle injection and profile modification
- Polymer, bright water for sweep improvement

1030 - 1045 Coffee and Tea Break

1045 - 1245 **Session 7: Water Injection Well Design and Management**

Session Managers: Udani Mohamed Daud, **Max Energy Sdn Bhd**; Adedayo Dada, **Shell Malaysia Exploration and Production**

WI, as a means of secondary recovery, continues to be one of the primary candidate of choice. However, incremental production benefit is often associated with long but moderate profiles compared to producer wells. Therefore, water injector well cost optimisation driven by underlying drilling, completion and long-term operational strategy are key focus areas for a successful scheme.

Operators worldwide have developed creative means to deliver robust incremental recovery by finding ways to reduce overall water injector drilling, completion and life cycle costs by deploying various technologies, thus improving the likelihood of project sanction and maximise ultimate recovery. Technologies and techniques deployed include intelligent wells to enable multizonal completions, monitoring and zonal control; slim hole drilling and other casing optimisation technologies to improve drilling cost.

This session will delve into WI cost optimisation as a key lever to enable regulators and operators achieve their objectives in improving recovery, and reducing unit development and operating costs thus optimising profitability.

1245 - 1345 Networking Luncheon

1345 - 1545 **Session 8: Water Injection and Production Surveillance**

Session Managers: Syarizan Mustapha, **PETRONAS**; Radhakrishnan Karantharath, **TGT Oilfield Services DMCC**; Mohd Faridyl Faiz Bashir, **PETRONAS**

Waterflood undoubtedly is the cost-effective secondary recovery mechanism to improve oil recovery. However, with the challenging low oil price environment, it is of paramount importance to maximise value via improved surveillance techniques throughout overall WI asset life cycle; from Sea Water Lift Pump to Well Integrity Management (WIM) modules, pipelines, injectors, reservoirs and up to producers. The integrated role of petroleum engineers, field engineers, and asset operators need to be emphasised to deliver improved recovery and intended cash flow to the company.

This session will focus on proactive management and surveillance of WI assets; and discuss how different operators and service providers utilise new technology/tools/method to achieve these.

Topics of interest include:

- Best practices from operators on value-based surveillance for surface and subsurface
- Reservoir health checks to improve sweep efficiency and pressure maintenance
- Leveraging new technologies to maximise asset performance
- Value of OPEX investment for data acquisition vs quick gain production enhancement
- Impact of overall WI facility maintenance plan to waterflood effectiveness
- Proactive operating philosophy to maximise uptime

1545 - 1600 Coffee and Tea Break

1600 - 1800 **Session 9: Competency Management and Digitalisation**

Session Managers: Noorbaizura Hashim, **AEM Energy Solutions Sdn Bhd**; Henry Lee, **Schlumberger**

Getting the right people with the right skills for the right jobs requires constant innovation. Identifying organisational competencies is critical in order for an organisation to be successful. In today's ever-changing business environment along with increasing digital technology adoptions and talent retention, an organisation's succession plan needs to be analysed and evaluated for effectiveness from time to time.

While on-boarding new talent, it is also important to drive an organisation forward. Organisation should not overlook the importance of retention strategies to maintain a strong talent pipeline internally. Making data and analytics as the backbone of the industry is necessary to help the business but talent management has to consider strategies required to ensure people are upskilled.

There are lots of conversation currently on digitalisation; Internet of Things, artificial intelligence, virtual reality, augmented reality, and more. These are new developments that need new skills to execute and support:

- Are our training modules, materials and methods keeping pace with these developments?
- Are we preparing new and old talents to adapt to these new competencies?
- What are we doing to prepare for future talent needs?
- How are we training new recruits to prepare them for success in the new era of Big Data and Analytics?
- Are we teaching them new skills to navigate WI data analytics, trends and patterns recognition, data quality assurance, actionable insights and develop predictive tools and skills?
- Are we still stuck with conventional materials and methods?

Talent acquisition, development and management must take these into account to ensure the industry continues to perform effectively, efficiently and safely. This session will provide an opportunity to hear how organisations are preparing for talent challenges based on the dynamic global workforce and technologies. These strategic ideas can be adapted within their own organisations in order to prepare organisation to "Perform into the Future".

1800 - 1830 **Session 10: Workshop Summary and Closing Remarks**

Co-Chairs: Budi Mawardi Nasron, **PETRONAS**; Steve Burford, **Murphy Oil**; Mohd Fadzil Harun, **Schlumberger**

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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.

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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 **Angelina Lee** at **aclee@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 WORKSHOP:
Water Injection Excellence
 25 – 26 March 2019 | Kuala Lumpur, Malaysia



ATTENDEE INFORMATION					
SPE Member	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Membership Number		
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<p>Do you wish to be considered a Discussion Leader (10-15 minutes presentation)? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, please indicate the subject/topic on which you would like to present:</p> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>					
<p>Please state your Technical Discipline (Select one ONLY):</p> <p> <input type="checkbox"/> Completions <input type="checkbox"/> Drilling <input type="checkbox"/> Health, Safety and Environment <input type="checkbox"/> Management and Information <input type="checkbox"/> Production and Operations <input type="checkbox"/> Projects, Facilities and Construction <input type="checkbox"/> Reservoir </p>					
<p>Please state your expectation for the Workshop, so that we can tailor a portion for the Workshop to answer attendees' concerns</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div>					
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TERMS & CONDITIONS

Registration Fee

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Cancellation Policy

- A processing fee of USD150.00 will be charged for cancellation received thirty (30) days or more prior to the first day of the workshop.
- Registration cancelled between fifteen (15) days to twenty-nine (29) days prior to the first day of the event will be refunded 25% of the registration fees.
- Registration cancelled fourteen (14) days or less prior to the first day of the workshop will not be eligible for a refund.
- Participant who failed to attend will not be eligible for a refund.
- Cancellation must be notified in writing to SPE.

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Disclaimer

- SPE reserves the right to change the speaker(s), date(s), venue or to cancel the event should circumstance beyond its control arises.
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- The Participant acknowledges and agrees that by registering for this event, the Participant accepts these Terms and Conditions and agrees to be bound by them.

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 Bank details will be provided in the invoice.

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