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## Produced Water - Best Management Practices

Wednesday 29 & Thursday 30 November 2006

Training Courses - Tuesday 28 November 2006:

- (A) Produced Water Re-Injection (PWRI)
- (B) Measurement of Oil-in-Produced Water

Sheraton Imperial, Kuala Lumpur, Malaysia

Organised by  
TUV NEL, United Kingdom  
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## Introduction

Increasing water production is now a major environmental, as well as an economic, issue for the oil and gas producers. It's also an issue for the regulators who are responsible for setting up produced water discharge requirements around the globe.

Following the success of previous Produced Water and Oil-in-Water Monitoring Workshops, TUV NEL is planning its first Malaysian Produced Water - Best Management Practices event on 29 and 30 November 2006 in Kuala Lumpur.

Leading experts in the field have been invited to help address the following questions:

- What are regulatory requirements for discharge of produced water?
- How should we manage increasing water production?
- What are the latest surface treatment technologies and experiences?
- Should we treat and discharge produced water or do we treat and re-inject it?
- What are the benefits of using an integrated approach?
- How should we go about produced water re-injection (PWRI)?
- What are the options to reduce water production?
- What is oil-in-produced water and how should we measure it?
- What new online oil-in-water monitoring technologies are available?

The main event will be preceded by two optional training courses. Further details are overleaf.

## Objectives

The objective of the main event is for interested parties to find out and to keep abreast of the latest technological and legislative developments as well as current practices and trends in produced water management, treatment and handling.

Delegates will be given the opportunity to network, interact and cross-share experiences with operators, technology and

equipment suppliers and contractors from around the globe.

## Topics and Themes

The event will cover the following:

- Regulatory requirements and implications
- Integrated water management
- New and emerging surface treatment technologies and field experiences
- Produced Water Re-Injection
- Oil in produced water measurement
- Environment risk assessment and monitoring
- Open discussion

Speakers from government bodies, offshore operators, service companies, technology and equipment suppliers as well as consultancy and R&D organisations have been invited.

## Who Should Attend

The event is designed for those who are concerned with oil and gas production processing, in particular produced water management, treatment and handling. It is also designed for those who supply technologies and services to offshore oil and gas production.

## Discussion Periods

There will be open discussion periods concentrating respectively on:

- Legislation and its implications
- Surface treatment technologies
- PWRI
- Produced water oil concentration measurement

The discussion periods are geared to allow delegates to share their knowledge and gain perspective in this growing industry sector.

## TUV NEL

TUV NEL is a leading provider of pipeline fluid management services to the global petroleum industry. We have an impressive track record in the development, design and application of leading-edge technology in order to reduce production costs and increase profitability, whilst maintaining safety.

We provide consulting, training, R&D and laboratory testing services in the following areas:

- Flow Measurement (oil, gas, water, wet gas & multiphase)
- Produced Water Systems
- Computation Fluid Dynamics Modelling and Interpretation
- Thermal Engineering & Heat Transfer
- Erosion Assessment and Validation
- Umbilical Acceleration Life Testing
- Calibration in National Test Facility

TUV NEL is part of the TÜV SÜD Group, the leading global technical services organisation for test, certification and consulting in industry with over 10,000 employees at 60 locations around the globe.

For further details on how TUV NEL can help your business, please visit our website: [www.tuvnel.com](http://www.tuvnel.com) or contact us directly.

## Exhibition Opportunities

Suppliers of equipment and services are invited to sponsor and exhibit at the main event. This will give your company a profile in the final programme in addition to a stand at the exhibition. Please contact the address on the back page for further details.

## Fees

The registration fee for the main event is £695 including taxes. This covers delegate attendance, lunches, refreshments, and the main event documentation comprising a printed set of all papers presented and a CD containing all the main event proceedings.

The registration fee for each Training Course is £275 including taxes which incorporates attendance, refreshments and a printed set of course notes.

Accommodation is not included in the fees.

There are discounts available for multiple bookings. For further details see the booking form.

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## Technical Programme

### Day 1 – Wednesday 29 November

08:20 – 08:50	Registration and Coffee	12:30 – 13:30	Lunch
08:50 – 09:00	Chairperson's Welcome and Introduction Gabrielyn Lee, Shell EP Asia Pacific - Malaysia Paul Jones, Chevron Energy Technology Co. - USA	13:30 – 14:00	Complete Turbidity Removal Using Ultrafiltration in Produced Water Treatment for Re-Injection I Gede Wenten, Institut Teknologi Bandung - Indonesia
09:00 – 09:30	The Discharge of Produced Water from Oil and Gas Production: Legislation Requirement in Malaysia Ismail Ithnin, Department of Environment Sarawak - Malaysia	14:00 – 14:30	Solving the Impact of High Toxic Loads in the Produced Water at the Kollsnes Gas Terminal by Applying the MPPE Technology Lars Bergersen and Jesper Jacobsson, Statoil - Norway Dick Meijer, Akzo Nobel MPP Systems BV - The Netherlands
09:30 – 10:00	Produced Water: Its Characteristics, Distribution and Fate in the Marine Environment Around the Malaysia Seas Mohamad Pauzi Zakaria, Universiti Putra Malaysia - Malaysia Hideshige Takada, Tokyo University of Agriculture and Technology - Japan	14:30 – 15:00	Updates and Further Results in the Advances in Total Oil Remediation and Recovery Technology for Produced Water De-Oiling in Offshore Upstream Oil & Gas Environments Marc Saad, Antti Valikangas and MJ Plebon, TORR Canada Inc. - Canada
10:00 – 10:30	Identifying the Best Management Strategy for Dealing with Sangu Produced Water Challenges Babur Khan and Philip Dolan, Cairn Energy Sangu Field Ltd - Bangladesh Paul Barron, Cairn Energy plc - Bangladesh	15:00 – 15:30	Coffee and Exhibition
10:30 – 11:00	Coffee and Exhibition	15:30 – 16:00	Treatment of Produced Water (for Re-Injection) at SAFAH Using Skim Tanks Hassan Al Beloushi, Occidental of Oman Inc. - Sultanate of Oman
11:00 – 11:30	Produced Water - Best Management Practices Wally Georgie and Brian McErlean, Maxoil Asset Management - UK	16:00 – 16:30	Produced Water Re-Injection Treatment Basis - Sweet or Sour or Both? Norman McLeod, Chevron Energy Technology Co. - USA
11:30 – 12:00	Integrated Produced Water Management Giles Davies, Oil Plus Ltd - UK	16:30 – 17:00	Open Discussion
12:00 – 12:30	Open Discussion	17:00	Chairperson's Closing Remarks

## Who Should Attend

- Production engineers and chemists
- Environmental engineers / advisers / officers
- Produced water management, treatment, handling specialists
- Process engineers and chemists
- Consultants
- Researchers

## Technical Programme Day 2 – Thursday 30 November

08:45 – 09:00 Coffee and Exhibition

09:00 – 09:10 Chairperson's Welcome and Introduction  
Paul Jones, Chevron Energy Technology Co. - USA  
Gabrielyn Lee, Shell EP Asia Pacific - Malaysia

09:10 – 09:40 Effluent Water Disposal Experiences in the Burgan/Magwa Fields in South & East Kuwait  
Hamad Al-Ajmi, Issa Al-Jadi, Feras Al-Ruhaimani and Budiarto Wahyu, Kuwait Oil Company - Kuwait

09:40 – 10:10 Optimising the Selection of Corrosion Inhibitors at TATUN Field as an Alternative to Improve Produced Water Quality for Discharge  
Sigit Wibisono and Desy Santhyani, Total E&P Indonesia - Indonesia

10:10 – 10:40 Coffee and Exhibition

10:40 – 11:10 Use of the PROTEUS System for the Management of the Environmental Impact of Industrial Offshore Discharges in the West Java Sea  
Ben Ridley, BMT Cordah Asia, Hong Kong - China  
Zoheir Sabeur, BMT Cordah Ltd - UK

11:10 – 11:40 Assessing the Risk from Discharging Produced Water to the Marine Environment  
Rob Phillips, Rob Phillips Consulting Pty Ltd - Australia  
Anita Rios, Sustainable Solutions Services - Singapore  
Arphee Caymo, Shell Philippines Exploration B.V. - Philippines

11:40 – 12:10 Open Discussion

12:10 – 13:10 Lunch

13:10 – 13:40 Natural Occurred Radioactive Material in Produced Water - Dose Rate Calculations and Comparison with Dose Rates in the Nuclear Industry  
Peter Michael Hamel, TÜV SÜD Philippines Inc. - Philippines  
Paul Grant, Shell Philippines Exploration - Philippines

13:40 – 14:10 Current Practices and Future Trend of Oil in Produced Water Measurement in the North Sea  
Ming Yang, TUV NEL - UK

14:10 – 14:40 Coffee and Exhibition

14:40 – 15:10 Produced Water Characterisation Using Ultrasonic Oil-in-Water Monitoring, Geir Aanensen and Thor Ole Gulsrud, Roxar Flow Measurement - Norway

15:10 – 15:40 Field Experiences with the Jorin ViPA On-line Oil-in-Water Monitor  
Augustin Coppey, Ipedex (SEA) Sdn Bhd - Malaysia  
Nick Roth and Gayathri Ariaratnam, Jorin Limited - UK

15:40 – 16:10 Open Discussion

16:10 Chairperson's Closing Remarks

# Training Course (A) – Produced Water Re-Injection (PWRI) – From Field Selection to Design and Implementation

Tuesday 28 November  
09:00 - 12:30

## Introduction & Objectives

Increasing water cuts hence increased produced water volume and capacity constraints are often key drivers in the decision to implement Produced Water Re-Injection (PWRI). Whilst relatively common practise in the North Sea and Middle East it is still in it's infancy in the Asia Pacific region. Although Water Injection (WI) is well established as a secondary or enhanced recovery technique, common practice is to treat produced water for disposal rather than re-injection.

Environmental policy and discharge constraints set the fallback standard for Produced Water Treatment (PWT). The reservoir characteristics dictate the basis for the injection water quality specifications, with the utilisation of natural fractures and the control of induced fractures helping to define the level of treatment to be considered by engineering and water specialists.

Successful PWRI requires the integration of many disciplines, taking into account:

- Corporate policy and environmental regulations
- Reservoir and petroleum engineering
- Process engineering
- Production chemistry

This training course will consider the different source waters available (seawater, aquifer water and produced water) and highlight the specific challenges faced for PWRI. Worked field examples will discuss the disposal options available and the equipment choices for Produced Water Treatment for disposal and/or re-injection.

Operational examples will be used to illustrate the challenges presented by real PWT and PWRI systems.

## Who Should Attend?

Production engineers and chemists  
Reservoir engineers  
Water management and water injection specialists  
Process engineers and chemists

## Course Instructor

Giles Davies is the Regional Sales Manager of Oil Plus Limited. Although based in the UK he works extensively in the Asia Pacific region. With a long history in solid/liquid and liquid/liquid separation Giles has spent much of the last five years understanding water management issues and developing solutions with major clients in the region. With well established long term relationships, Oil Plus works on a huge variety of water management and production issues ranging from initial data gathering through to full implementation and operational support.

## Topics Covered

Introduction to PWRI  
Source Water Characteristics  
Reservoir Requirements  
Water Quality Specifications  
Equipment Options and Selection  
PWT Process Technology  
Achieving value through sustained performance

# Training Course (B) – Measurement of Oil-in-Produced Water

Tuesday 28 November  
13:30 - 17:00

## Introduction & Objectives

Oil in produced water measurement is important both for process control and reporting to the regulatory authorities.

- What is oil-in-produced water?
- Why is measurement of oil-in-produced water important?
- What standard analysis methods are available?
- What field measurement techniques are there?
- How can we accept a method that is different from the officially approved reference method?
- What are the things that we need to be careful of when we do a calibration?
- How should produced water samples be taken and handled?
- What is the future trend in oil-in-produced water analysis and measurement?

This training course aims to answer these questions. It will enable delegates to gain a good understanding of the definition of oil-in-produced water, analysis and measurement methods available, issues related to method calibration and acceptance of non reference methods, sample taking and sample handling, as well as future oil-in-produced water measurement trend.

## Who Should Attend?

Production engineers and chemists  
Environmental engineers/advisers/officers  
Produced water management, treatment, handling specialists  
Process engineers and chemists  
Regulators  
Consultants  
Researchers

## Course Instructor

Ming Yang is a consultant at TUV NEL. He has established and run TUV NEL's two well known Oil-in-Water Monitoring and Produced Water Clubs. Both Clubs have some 35 international members, which include government bodies, oil and gas operators, equipment suppliers, and service and R&D organisations. Ming has also been technically responsible for 15 Oil-in-Water and Produced Water Workshops, Conferences and Seminars. Ming has been carrying out many projects on the subject of oil-in-water and produced water and is one of two authors in drafting UK Government guidance notes on sampling and analysis of produced water and other hydrocarbon discharges. Ming has 15 years experience working on oil-in-water measurement, produced water handling and multiphase separation subject areas since he gained his PhD in Chemical Engineering.

## Topics Covered

Definition of oil-in-produced water  
Legislation and discharge limits  
Sample taking and sample handling  
Standard measurement methods  
Field measurement methods (bench top and on-line)  
Calibration, acceptance of alternative methods  
Future trend

Please tick the event(s) you will be attending

- Training Course A     Training Course B  
 Produced Water - Best Management Practices

28 November 2006  
29-30 November 2006

Full name (inc. title)	_____	
Preferred Name for Badge (eg KLAUS LINGS)	_____	
Job title	_____	
Company	_____	
Address	_____ _____ _____	
Postcode	Country	_____
Telephone	_____	
E-mail	_____	

We expect the event to be heavily subscribed. Places are strictly limited and are allocated on a first come, first served basis. Your place will be confirmed upon receipt of a completed booking form. If you do not receive confirmation within five working days please contact TUV NEL.

### Method of Payment

(Full payment must be received before the event date)

Main Event: £695     Training Course A: £275     Training Course B: £275     Main Event & Training Courses A & B: £1155  
 Main Event & Training Course A: £910     Main Event & Training Course B: £910     Training Courses A & B: £520

Invoice to company named above  
 Cheque, made payable to TUV NEL Ltd, enclosed with this form  
 Bank Transfer to National Westminster Bank Plc, 52 West Street, Fareham PO16 0JX.  
Account No: 11300175, Sort Code: 52-41-32, Swift Code: NWBKGB2L, IBAN Number: GB26NWBK52413211300175  
Account Name: TUV NEL Limited.  
Please advise your bank to include the event code COF197 and the delegate's surname in the transfer instructions.  
Company VAT number (EC member states only- COMPULSORY) \_\_\_\_\_

Visa     Mastercard     Amex     Diners Card    Start Date \_\_\_\_\_    Expiry Date \_\_\_\_\_

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Where did you hear about this event? \_\_\_\_\_

<b>Cancellation Policy</b> <p>Any cancellations must be received in writing at least 14 days prior to the commencement of the event. A cancellation fee of 25% will be incurred. Once within this period the booking cannot be cancelled or any fees refunded, but a substitute delegate can be named at any time before the programme begins, provided that TUV NEL Ltd is notified in advance. TUV NEL Ltd reserves the right to cancel the event due to unforeseen circumstances. TUV NEL Ltd is not liable for any expenses incurred by the delegate. This programme may be subject to change due to circumstances beyond the control of the organisers.</p>	<b>Venue Details</b> <p>Sheraton Imperial Hotel, Jalan Sultan Ismail, Kuala Lumpur 50250, Malaysia. Tel: +603 2717 9900 Fax: +603 2717 9955 Web: <a href="http://www.luxurycollection.com/kualalumpur">www.luxurycollection.com/kualalumpur</a></p>	<p>Please complete and return this form to the Events Team Fax back on: <b>+44 (0) 1355 272999</b></p> <p>TUV NEL East Kilbride, Glasgow G75 0QF, UK</p> <p>Booking Hotline: +44 (0) 1355 272858 Email: <a href="mailto:events@tuvnel.com">events@tuvnel.com</a> Online Booking: <a href="http://www.tuvnel.com/events.aspx">www.tuvnel.com/events.aspx</a></p>
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Signed: \_\_\_\_\_ Date: \_\_\_\_\_