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TÜV SÜD

Produced Water Workshop

Wednesday 24 & Thursday 25 May 2006

Training Course - Environmental Impact Assessment of Offshore E&P Discharges; Approaches, Techniques and Tools

Tuesday 23 May 2006

Aberdeen Marriott Hotel
ABERDEEN, UK

Organised by
TUV NEL, United Kingdom
BOOKING HOTLINE: +44 (0) 1355 272858

Produced Water Workshop

24 - 25 May 2006

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Introduction

Water production is now a major environmental, as well as an economic, issue for both operators and regulators from the offshore oil and gas industry worldwide.

Following the success of previous Produced Water Workshops, TUV NEL is planning its fourth Workshop on 24 and 25 May 2006 in Aberdeen.

This Workshop has invited leading experts in the field to help address the following questions:

- Where will legislation go from here and beyond year 2006?
- Where are we with the new UK OPPC regulations?
- What will happen with Produced Water Trading?
- What are the latest surface treatment technologies?
- Do 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 tools available for assessing environmental impact as a result of produced water discharges?
- How are we going to implement the new GC based reference oil-in-water analysis method?

The Workshop will be preceded by an optional training course. Further details are overleaf.

Workshop Objectives

The objective of the Workshop 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.

The Workshop will allow delegates the opportunity to network, interact and cross-share experiences with operators, suppliers and contractors from around the globe.

Topics and Themes

The event will cover the following:

- Legislation update and implications
- New and emerging surface treatment technologies and field experiences
- Integrated water management
- PWRI, reservoir souring, and corrosion
- Environment risk assessment and monitoring
- Produced water flow and oil concentration measurements
- 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 offshore oil and gas production processing, in particular produced water management, treatment and handling, as well as discharge and re-injection. It is also designed for those who supply technologies and services to offshore oil and gas production.

Workshop Discussion Periods

There will be open discussion periods concentrating respectively on:

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

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

Exhibition Opportunities

Suppliers of equipment and services are invited to sponsor and exhibit at the Workshop. 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.

Workshop Fees

The registration fee for the Workshop is £730 plus VAT. Registration fees covers delegate attendance, lunch, refreshments, and workshop documentation comprising a bound set of all papers presented.

The registration fee for the Training Course is £415 plus VAT which incorporates attendance, lunch, refreshments and a set of course notes.

A combined package for both events is available at a cost of for £1065 plus VAT. For TUV NEL's Oil-In-Water Monitoring and Produced Water Club Members, a discounted rate of £960 for attendance at both events is available.

Accommodation has been reserved at a nearby hotel for nights of 23rd and 24th May at £90 bed & breakfast per night. This includes transport to and from the Marriott. This accommodation is very limited and will be allocated on a first come first served basis.

Produced Water Workshop

24 - 25 May 2006

Aberdeen Marriott Hotel
ABERDEEN, UK

Technical Programme

Day 1 – Wednesday 24 May

08:20 – 08:50 Registration and Coffee

08:50 – 09:00 Chairman's Welcome and Introduction
Gordon Graham, Maersk Oil North Sea UK Limited, UK

09:00 – 09:30 An Update on Produced Water Legislation Issues
Katie McCabe, DTI, UK

09:30 – 10:00 Regulatory Approach to NORMs Associated with the Discharge of Produced Water – Recent Consultation with the Oil and Gas Industry
David Orr, SEPA, UK

10:00 – 10:45 Overview of Current US Produced Water Management Requirements and Practices
John Veil, Argonne National Laboratory, USA

10:45 – 11:05 Coffee and Exhibition

11:05 – 11:10 Chairman's Introduction
Paul Verbeek, Shell Global Solutions, The Netherlands

11:10 – 11:40 Produced Water Re-Injection Design Considerations
Frank Sweeney, BP, UK

11:40 – 12:10 External Filter Cake Erosion & Injectivity Prediction for PWRI
Pavel Bedrikovestky and R Paiva, State North Fluminense University, Brazil
Firas Al-Abduwani and P Currie, Delft University of Technology, The Netherlands
Antonio de Souza, Claudio Furtado, A Squiera and R Lomba, Petrobras, Brazil

12:10 – 12:40 Open Discussion Period

12:40 – 13:40 Lunch

13:40 – 13:45 Chairman's Introduction
Paul Verbeek, Shell Global Solutions, The Netherlands

13:45 – 14:15 Partial Separation to Support Produced Water Re-Injection (PWRI)
Paul Verbeek, Shell Global Solutions, The Netherlands

14:15 – 14:45 Produced Water Filtration in Order to Allow for Re-Injection and / Pre-Treatment For Disposal
Eric Leegwater and Yoram Pinner, Amiad Filtration Systems, The Netherlands

14:45 - 15:15 Reservoir Souring – State-of-the-Art in Water Injection
Cor Kuijvenhoven, Shell International Exploration and Production B.V., The Netherlands

15:15 – 15:35 Coffee and Exhibition

15:35 – 15:40 Chairman's Introduction
Angus Laurie, DTI, UK

15:40 – 16:10 Sheens Associated with Produced Water Effluents – Review of Causes and Mitigation Options
Laurie Hammond and Jim Ireland, ERIN Consulting Ltd, Canada
Scott MacKnight, OCL Services Ltd, Canada

16:10 – 16:40 World Wide Survey on the Amount of Oils Discarded via the Discharges of Produced Waters
Steve Robertson, Douglas-Westwood, UK
Lasse Jahnsen, EPCON Offshore, Norway

16:40 – 17:00 Open Discussion Period

17.00 Chairman'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 25 May

08:45 – 09:00 Coffee and Exhibition

09:00 – 09:10 Chairman's Introduction
Gordon Harvey, BP, UK

09:10 – 09:40 Management of Produced Water on Offshore Oil Installations:
A Comparative Assessment
Paul Dymond, UKOOA, UK
Paul Ekins, Robin Vanner and James Firebrace, Policy Studies Institute (PSI), UK

09:40 – 10:10 Advances in Environmental Impact Assessment of Offshore E&P Discharges
Mathijs Smith and Chris Karman, TNO, Norway
Steinar Sanni, IRIS-Akvamiljo, Norway

10:10 – 10:40 Waste Water Polishing: Offshore Bulk Phase Separation and Hydrocarbon Extraction of LSA Contaminated Sludge and Aqueous Effluent Streams
Lee Bridson and Sarah McGillivray, CETCO Oilfield Services Company

10:40 – 11:10 Coffee and Exhibition

11:10 – 11:40 Development and Field Trials of the Sequential Reverse Ceramic Filtration Process for Produced Water Treatment
Chris Sweeney, Pell Frischmann Process Technology Ltd, UK

11:40 – 12:10 Photocatalytic Treatment of Produced Water – The Challenges
Peter Robertson and Neil Foster, UVPS Environmental Solutions, UK

12:10 – 12:40 Open Discussion Period

12:40 – 14:00 Lunch

14:00 – 14:05 Chairman's Introduction
Angus Laurie, DTI, UK

14:05 – 14:35 Produced Water Treatment Integrated Management System
David Lloyd, Alderley plc, UK
Matt Bird, Siemens Process Instruments, UK

14:35 – 15:05 Produced Water Flow Measurements – Meeting OPPC Regulations
Danny Ronson and Derek Moore, Siemens, UK

15:05 – 15:35 Understanding the DTI Guidance Notes on the Sampling and Analysis of Produced Water and Other Hydrocarbon Discharges
Ming Yang, TUV NEL, UK
Angus Laurie, DTI, UK

15:35 – 16:05 Open Discussion Period

16:05 Chairman's Closing Remarks

Produced Water Training Course

23 May 2006

Aberdeen Marriott Hotel
ABERDEEN, UK

Environmental Impact Assessment Of Offshore E&P Discharges; Approaches, Techniques And Tools

Introduction

OSPAR has recognised that a coordinated chemical and biological effects monitoring programme is essential for identifying the nature and extent of environmental impacts. A guidance document for the design and conduct of monitoring programmes has been published. However, not all the tools and methods needed for the undertaking of such monitoring (e.g. water column impacts) have yet been fully developed or validated.

The training course will focus on approaches, techniques and tools for environmental impact assessment related to offshore E&P discharges. Current practice and new developments of field monitoring and risk assessment will be examined. In addition to describing more traditional physical, chemical and biological field monitoring routines, this will include findings from laboratory and field experiments, with special emphasise on the use of biomarkers, and the development of and implementation of biomarkers into practical field monitoring. Several tools for risk assessment, such as the current status and further development of computation models (DREAM, PROTEUS, CHARM etc) and environmental management systems will be addressed. An integrated framework for environmental impact assessment will be presented.

Objectives

The course aims to provide a complete overview of current practice and new developments in the field of environmental risk assessment and field effects monitoring related to the offshore E&P industry. It will help understand the applications of different tools for impact assessment of offshore E&P discharges.

Who Should Attend?

The course is intended for anyone who needs to base decisions on sound judgement of environmental impacts. Policy makers who need to evaluate the environmental performance of E&P industries in the light of regulations as well as HS&E managers who want to optimise the environmental performance of their activity. For the course no specific technical background is required.

The Course Organisers

Organisation of the course is in hands of TNO (NL) and IRIS-Akvamiljø (NO) (formerly known as RF-Akvamiljø). TNO will be represented by Chris Karman and Mathijs Smit. Both were involved the development of risk assessment techniques since the early 90s. They played a crucial role in the development and application of risk assessment models like CHARM, EIF, DREAM and PROTEUS. They were a member of several advisory teams for OSPAR concerning produced water management.

IRIS will be represented by Steinar Sanni and Lars Petter Myhre. IRIS-Akvamiljø is and has been a major player in developing biological field monitoring methods, particularly biomarkers, in addition to having a role in the more traditional field monitoring. The interface with and development of risk assessment tools (particularly DREAM) including field validation has also been a major task for IRIS-Akvamiljø during the last 5-10 years.

Technical Programme

08:30 Coffee and Registration

09:00 Introduction to Environmental Impact Assessment

- Prognosis vs. diagnosis
- Regulatory context
- Strategic context

09:45 Monitoring

- Techniques and tools (field and lab experiments, chemical and biological monitoring)
- Current practice and new developments (whole effluent testing, biomarkers)

10:30 Coffee Break

- Monitoring in practice (examples and case studies)
- Discussion

12:00 Lunch

13:00 Risk assessment

- Techniques and tools (PEC:PNEC, probabilistic, time-to-event and mechanistic assessment)
- Current practice and new developments (EIF, DREAM, etc)
- Risk assessment in practice (examples and case studies)
- Discussion

15:30 Coffee Break

15:45 New developments in impact assessment

- Integrated framework for monitoring and risk assessment
- Integrated HS&E risk assessment
- Environmental impact assessment of CO_2 injection

16:30 Closure

BOOKING FORM

Please tick the event(s) you will be attending

❑ Training Course — 23 May 2006
❑ Produced Water Workshop — 24 - 25 May 2006

Full name (inc. title)

Preferred Name for Badge

Job title

Company

Address

Postcode

Country

Telephone Fax

E-mail

We expect the event to be heavily subscribed. Places are strictly limited and are allocated on a first come, first served basis. Under UK excise regulations delegates from all countries are required to pay VAT at 17.5% on any conference/course taking place in the UK. Your place will be confirmed on receipt of a booking form. If you do not receive confirmation within five working days please contact NEL.

Method of Payment

(Full payment must be received before the event date)

Please tick relevant options:

❑ Workshop £730+VAT ❑ Training Course £415+VAT ❑ Workshop & Training Course £1065+VAT ❑ Workshop Dinner £40+VAT

❑ Discount Package (for members of TUV NEL's Oil-in-Water Monitoring and Produced Water Clubs attending both events) £960+VAT

❑ 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 COF194 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

Card No Security Code (on back of card)

Card Holder's Name

Signature .....

Address (if different from above)

Where did you hear about this event? .....

Cancellation Policy

Any cancellations must be received in writing at least 14 days prior to the commencement of the event. A cancellation fee of £150.00 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 are notified in advance. TUV NEL Ltd reserves the right to cancel the event due to unforeseen circumstances and 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.

Venue and Accommodation

I require accommodation for night of 23 / 24 May* (* delete as appropriate). Please contact me.

Aberdeen Marriott Hotel, Overton Circle, Dyce, Aberdeen, AB21 7AZ
Reception: +44 (0) 1224 770011, Fax: +44 (0) 1224 722347, Web: www.marriott.co.uk

Signed ..... Date .....

Booking Form

Please complete and return to
Susan Tough, fax back on:
+44 (0) 1355 272999

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Glasgow G75 0QU, UK

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