PARAFFIN, ASPHALTENE AND SCALES IN CRUDE OILS: THEORY, PROBLEMS AND SOLUTIONS

DATE: 12 TO 16 MAY 2008

VENUE: HOLIDAY VILLA, SUBANG, MALAYSIA

INTRODUCTION:

This course discusses the latest results in characterization of paraffin, asphaltene and scales in crude oils. Differential paraffin deposition theory, and analysis of the mechanisms of paraffin, asphaltene and scales deposition are included. Field strategies for the production of crude oils with differential paraffin deposition is presented. Special attention is given to the description, construction and interpretation of P-T-ADE envelopes to establish production strategies to produce asphaltenic crude oil and avoid or minimize formation damage thought asphaltene control deposition.

A review of the conventional methods to control paraffin, asphaltene and scale is included. Design and quality control of Microbial Methods, and Downhole and surface magnetic and electromagnetic tools are discussed in depth. Additive/Activate Technology to control paraffin is study in detail as well as coating technology and field applications cases. A comparative study of Methods/Technologies: Advantages and disadvantages. is discussed in details. Laboratory studies and Field cases are part of the course.

At the end of the course is given an introduction to the P-T-Compositional 3-D- Diagram-Crystallization/Flocculation curves and their determination of the phase envelopes by the advanced laboratory technique Near-Infrared Spectroscopy and Ultraviolet rays.

ADMINISTRATIVE DETAILS:

Venue : Holiday Villa, Subang, Malaysia
Date : 25 to 29 February 2008
Time : 8.30am to 5.30pm
Check in: 24 February 2008 after 2pm
Check out: 1 March 2008 before noon
Others: HRDF Claimable (applicable for Malaysian companies only)

For more information kindly contact :

- Jo - +84 908261828 (Vietnam)
- Christina – 0173838255 (Malaysia)

LEARNING OBJECTIVES:

To study the modern characterization of Paraffin, Asphaltene and Scale with the object to present the new technology and its principles available for controlling and/or eliminating their deposition.

TRAINER'S PROFILE:

Dr. Charles F. Alcocer holds a Doctoral degree from Oklahoma University (1982) and conducted Post-Doctoral research at the same university (1983). He was an associate professor at Louisiana University at Lafayette, Associate Professor at Montana University System and Professor at Central University of Venezuela. He was a visiting professor at Louisiana State University (LSU)(1989-90).

He was a scientific consultant for the National Institute of Energy (DOE). Dr. Alcocer is a very active consultant for the petroleum industry and other industries, including environmental technology.

During 1997-1998 Dr. Alcocer was a consultant in residency with Shell Offshore, Inc. at New Orleans, LA-USA.

He is author/co-author of more than 38 technical papers. He has several patents. He is the inventor of the Electromagnetic Fluid Conditioner (EFC) used in the prevention of the buildup of Paraffin, Asphaltene and Scale.

Dr. Alcocer was a three years member of SPE national committee for student development in USA.

At present he is the president of the American Institute of Paraffin, Asphaltene and Scale (AIPAS), a technology and research Center and a non-profit organization with headquarter in The United States of America devoted to the dissemination of knowledge, training and sponsoring research at higher learning institutions.

COURSE PROGRAMME:

Topic 1: INTRODUCTION

Objective: Discussion of the Evolution of the technology to control deposition and the economic impact of Paraffin, Asphaltene and Scale in the industry.

- Introduction and scope of the course
- Brief History of paraffin problems in crude oil production
- Economic Impact of the Problem
- Economic History Case
- Significant Breakthroughs in the field of paraffin treatment

Topic 2: PARAFFIN DEPOSITION AND PREVENTION/CHARACTERIZATION

Objective: To learn Modern characterization of Paraffin, Asphaltene and Scale

- Chemical Composition and physical characteristics
- Production Optimization aspects of paraffin problems.
- Cloud point techniques and potential paraffin deposition ranges
- Viscosity-temperature relationship in crude oils with paraffin content
- Paraffin Solubility curves/laboratory curves and its use in field applications
- Particles distribution of paraffin with respect to temperature
- Differential paraffin theory
- Field case of differential deposition theory and field strategies for treatment

Topic 3: PARAFFIN CONVENTIONAL CONTROL METHODS

Objective: To study and practical use of all the methods available in field operations for Paraffin methods of control and/or elimination.

- Operational Methods
- Physical methods
- Chemical Methods
- Combination Methods
- Formation Damage related to Hot Oiling field technique
- Prevention from Hot Oiling Damage
- Case History and discussion.

Topic 4: MATHEMATICAL ASPECTS OF PARAFFIN

Objective: A systematic study of the mathematical aspects of paraffin deposition lateral mechanisms

- Mathematical/Experimental prediction of paraffin deposition rate
- Analysis of mechanisms of deposition of paraffin
- Equations to describe Mechanisms of lateral transport and deposition of paraffin
- Rate of deposition of paraffin for combined mechanisms
- Comparison of laboratory measured and predicted deposition rates
- Study of a major field case. Discussion
- New Software available for prediction of paraffin deposition

Topic 5: NEW TECHNOLOGY TO ONTROL / PREVENT PARAFFIN

Objective: To study the new technology and benefits to control/eliminate paraffin deposition.

- *Microbial Control of Paraffin at reservoir level*
- *Influence of Magnetic and Electromagnetic field on Paraffin*
- *Review magnetic and electromagnetic application*
- *Magneto-Hydro-Dynamic principle and research associated to the principle*
- *Lorenz's Law applied to Petroleum Engineering*
- *Aggregate/disaggregated theory applied to magnetic/electromagnetic devices*
- *Analysis of Laboratory results with magnetic/electromagnetic devices*
- *Field Application of magnetic/electromagnetic devices*
- *Quality Control in Microbial and Magnetic/Electromagnetic field application*
- *Final discussion and conclusions on new methods to control/prevent paraffin*

ORGANISED BY:

Jfam

Synergy Sdn. Bhd

IN ASSOCIATION WITH:

AIPAS

American Institute of Paraffin, Asphaltene & Scale

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Topic 6: PRODUCING ASPHALTENE IN CRUDE OILS: PROBLEMS AND SOLUTIONS

Objective: **To systematically study of the characterization of Asphaltene and application to field conditions of the new technology and application of the new revolutionary Concepts to control/minimize/ eliminate asphaltene flocculation and deposition.**

- Introduction
- Asphaltene composition- The molecular nature of petroleum asphaltene
- Asphaltene structures
- Thermodynamic Colloidal Model for asphaltene
- Peptization and depeptization process in asphaltene
- Molecular-Thermodynamic Model for asphaltene
- Mechanisms of flocculation and deposition for asphaltene
- Influence of temperature, composition and pressure on asphaltene flocculation
- State of the art sampling technology
- P-T ADE envelops: Description, Construction and interpretation
- Production Strategies to produce Asphaltenic crude oil base on P-T-ADE envelops
- Formation Damage prevention through control deposition
- Asphaltene precipitation from heavy-medium oils by gas injection-miscible and/or immiscible flooding.
- Conventional Methods to control Asphaltene
- Microbial and Magnetic/Electromagnetic methods for control and prevention of deposition of asphaltene.

Topic 7: SCALE CONTROL- A GLOBAL PROBLEM (Optional)

Objective: **To systematically study of the characterization of Scale and application to field conditions of the new technology and application of the new revolutionary Concepts to control/minimize/ eliminate scale Crystallization and deposition.**

- Water Properties and Components
- Water properties determine by analysis (Acidity, pH, Alkalinity, TSS)
- Units of concentration use in the Oil Industry for Water
- Examples of Water analysis patterns and interpretation
- Mineral scale and water Compatibility

Topic 8: SCALE PREDICTION INDEXES, METHODS TO PREVENT/CONTROL SCALES AND STUDY OF *THE* MECHANISMS OF SCALE DEPOSITION.

- Prediction of Calcium Carbonate Scaling
- Methods to control/prevent Scaling
- New technology to Characterize Scaling Deposition by Using NIR spectrographic.
- Magnetic/Electromagnetic devices
- Lorenz's Law: MHD principle
- Agregate/Dissagregate Theory
- Paramagnetic, Ferromagnetic and Diamagnetic Material and interactions
- Laboratory Studies Results and Analysis:
  - Scale Control with EDM- University of Louisiana, USA
  - Scale Control with PDM- Brunel University, London
  - Scale Control with PDM-Baylor University. USA
- Technology to Characterize Scaling Deposition by Using NIR spectrographic
- General discussion and conclusions

Topic 9: SCALE IDENTIFICATION BY MODERN LABORATORY TECHNLOGY

- Scanning Electron Microscopy (SEM) Photomicrographs Analysis
- Energy Dispersive X-Ray Spectrometry (EDX) Histograms Analysis
- X-Ray Diffraction (XRD) Diffract grams Analysis
- Example of identification of a special type of Scale by modern technology.\Solution of an specific Problem of Scale

Topic 10: WORKSHOP

The main objectives of the workshop are as follows:

- *Review course material based on student request*
- *Further group discussion on specific topic related to the course*
- *Presentation of field production/reservoir problems by the participants/students*
- *Establish and suggest work plans to be implemented in field operation*
- *Discuss team work done by other companies in other countries in relation to problems of paraffin/asphaltene/scale.*
- *Discuss student's specific field problems and methods that have been applied to solve paraffin / asphaltene/scale deposition and have failed .*

REGISTRATION FORM

PARAFFIN, ASPHALTENE AND SCALES IN CRUDE OILS: THEORY, PROBLEMS AND SOLUTIONS

12 TO 16 MAY 2008

Name of Company:_____

Name (1) : _____ **Designation (1) *:*** _____

Name (2) : _____ **Designation (2) :** _____

Name (3) : _____ **Designation (3) :** _____

Name (4) : _____ **Designation (4) :** _____

Address: _____

_____

Telephone : _____ **Facsimile :** _____

E-mail : _____

Bank/Cheque No : _____ ***Amount :*** _____

(Cheque or telegraphic transfer should be made payable to Jfam Synergy Sdn. Bhd, RHB Bank Berhad, Account No.: 21212500092451, Lot 4A, 1st Floor, Tesco Puchong, Jalan Bandar 3, Pusat Bandar Puchong, 47100, Puchong, Selangor

FIVE (5) days Workshop 25 to 29 February 2008	*Group Workshop Fee (*Minimum 3 delegates)*	**Group Residential Workshop Fee (*Minimum 3 delegates)*	*Individual Workshop Fee	**Individual Residential Workshop Fee
Fee	**RM6,580.00/person USD2,000.00/person**	**RM8,160.00/person USD2,480.00/person**	**RM7,240.00/person USD2,200.00/person**	**RM8,815.00/person USD2,680.00/person**
Closing Date	**21 April 2008**	**21 April 2008**	**21 April 2008**	**21 April 2008**

***Group and Individual Package cover workshop fee, workshop materials, 10 teabreaks, 5 buffet lunches.**

**** Group & Individual Residential Package cover workshop fee, workshop materials, 6 nights' twin-sharing accommodations including breakfasts, 10 teabreaks, 5 buffet lunches and 6 buffet dinners. If single room accommodation is required a surcharge of RM95.00 (USD30.00) nett per room night will be added to the above fee.**

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Cancellation policy: No cancellation / refund is allowed but a replacement delegate may be sent. Jfam Synergy Sdn. Bhd. reserves the right to change the venue and date or cancel the workshop at any time.