

Final Programme

Wednesday 6th June 2018

07:00 - 07:50 Conference registration – Alpine Meadows

07:00 - 08:00 Delegate's breakfast – Chinook Restaurant

08:00 - 08:10

Conference Chairman Welcome

Dr Tom Danielson, Conocophillips, USA

Tom Danielson has a BSc (University of Minnesota) and a PhD (University of Massachusetts), both in chemical engineering. Tom started his career at ConocoPhillips in 1991, in Conoco's Production Research department; his career focus has been on multiphase flow and related flow assurance phenomena. Over the course of his career, Tom has written over 100 internal reports, and dozens of external papers for journals and conference proceedings. Tom has served as the technical monitor to both domestic and international JIPs, including the LEDAFlow JIP - a 16-year partnership between ConocoPhillips, Total, SINTEF, and Kongsberg Digital.



08:10 - 08:30



Opening Presentation

J A R Muir, Retired BHR Group CEO, UK

So how did it all begin?

SESSION 1: Modelling in the Field – Part 1

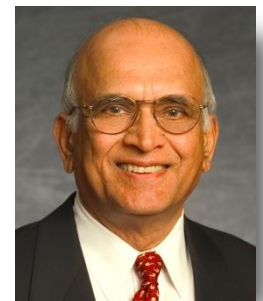
SESSION CHAIRMAN; Professor Cem Sarica, TUFFP, The University of Tulsa, USA

08:30 - 09:00

Keynote Presentation

**Emeritus Professor, Khalid Aziz, Energy Resources Engineering,
Stanford University, USA**

Developments in Multiphase Flow in Pipes and the Impact of Jim Brill on this Field



09:00 - 09:25 Surveillance and optimization of unpiggable lines through real time modeling

B L Keinath, S R Hickman, ExxonMobil, USA

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09:25 - 09:50 A comprehensive engineering simulator for SAGD process optimization and real-time monitoring

P Kalghatgi, D Erickson, D Golczynski, Wood Automation & Control, Flow Assurance and Process Solutions, USA

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09:50 - 10:15 Pipeline management system provides virtual multi-phase flow metering to deepwater operations for operational decision-making

O van Wolfswinkel, Schlumberger, The Netherlands; M Espeland, J Zhao, Schlumberger, Norway

Pres. only

SESSION 2: Diverse Multiphase**SESSION CHAIRMAN; Assistant Professor Luis Zerpa, Colorado School of Mines, USA**

- 10:45 - 11:10** Experimental investigation of vertical downward two-phase flow in annulus
R P Coutinho, P J Waltrich, Louisiana State University, USA Page 23
- 11:10 - 11:35** Investigation of churn/annular and pseudo-slug flow characteristics before and after pipe elbows
A Asgharpour, P Zahedi, S A Shirazi, B S McLaury, The University of Tulsa, USA; R Vieira, MSI International Inc., USA; M Parsi, DNV GL North USA, Inc. – North America Oil & Gas, USA Page 39
- 11:35 - 12:00** Multiphase flow in flexible pipes: simulations and small scale experiments
J Vieiro, O J Nydal, Norwegian University of Science and Technology, Norway; Z Wang, Southwest Petroleum University, China Page 57
- 12:00 - 12:05** Exhibitor's presentation - Kongsberg
- 12:05 - 13:00** Lunch – Glacier Salon



KONGSBERG

SESSION 3: Flow Assurance – Part 1**SESSION CHAIRMAN; Dr Eduardo Pereyra, The University of Tulsa, USA****13:00 - 13:30****Keynote Presentation****Trevor John Hill, Flow Assurance Consultant, UK**Research in multiphase flow developed into new global discipline of flow assurance - an oil industry perspective Page 7

- 13:30 - 13:55** Studies of parameters that influence hydrate plugging tendencies in a gas condensate subsea tieback
Y Wang, C A Koh, L E Zerpa, Colorado School of Mines, USA Page 115
- 13:55 - 14:20** Evaluation of Anti-Agglomerant hydrate inhibitors in gas-dominated system under different flow regimes
A Sinquin, M Gainville, C Cassar, IFP Energies nouvelles, France; J Boxall, Chevron Australia Pty Ltd, Australia; D Estanga, Chevron Energy Technology Company, USA Page 125
- 14:20 - 14:45** Measurements of dispersant additive on hydrate/ice slurry transport
A Melchuna, A K Sum, Colorado School of Mines, USA; P Glénat, Total Exploration-Production, France; M Rivero, Total E&P Research and Technology, USA Page 143
- 14:45 - 14:50** Exhibitor's presentation – Tridiagonal Solutions

**14:50 - 15:15** Refreshment break – Exhibition room**SESSION 4: Sand Transport and Erosion****SESSION CHAIRMAN; Dr Ergun Kuru, University of Alberta, Canada**

- 15:15 - 15:40** Measurements and modelling of spatial particle size distribution in a horizontal slurry pipeline
M Huard, K F Adane, A Fuhr, InnoTech Alberta, Canada Page 405
- 15:40 - 16:05** CFD simulations and experiments of sand erosion for liquid dominated multiphase flows in an elbow
T A Sedrez, Y R Rajkumar, S A Shirazi, The University of Tulsa, USA; K Sambath, H J Subramani, Chevron, USA Page 419
- 16:05 - 16:30** Threshold particle concentration in single-phase and multiphase flow sand transport in pipelines
S Sajeev, B S McLaury, S A Shirazi, The University of Tulsa, USA Page 431
- 16:30 - 16:55** Effect of particle size on the near wall turbulence characteristics and the critical velocity required for the particle removal from the sand bed deposited in horizontal pipelines
S K Arnipally, M M Hirpa, M Bizhani, E Kuru, University of Alberta, Canada Page 443
- 16:55 - 17:00** Exhibitor's presentation – Schlumberger

17:00 - 18:30

Glacier Salon

Wednesday Welcome Reception

Sponsored by

Schlumberger

Thursday 7th June 2018

07:00 - 08:00 Delegate's breakfast – Chinook Restaurant

SESSION 5: Experimental

SESSION CHAIRMAN: Dr. Damodaran Vedapuri, Tridiagonal Solutions Inc., USA

08:00 - 08:30

Keynote Presentation

**Emeritus Professor Yehuda Taitel, School of Mechanical Engineering,
Tel-Aviv University, Israel**

Flow in Multiple Parallel channels of evaporating fluid



08:30 - 08:55 **Experimental investigation of two-phase flow regime in an inclined pipe**

C Vieira, M Kallager, M Vassmyr, Z Yang, O Nydal, M Stanko Norwegian University of Science and Technology, Norway

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08:55 - 09:20 **The effect of a surfactant on slugs in a flowline-riser system**

E J Pronk, Delft University of Technology, The Netherlands; J H Ellepola, Shell Projects & Technology, The Netherlands; R A W M Henkes, Delft University of Technology and Shell Projects & Technology, The Netherlands

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09:20 - 10:00 **Introduced by Professor Cem Sarica, TUFFP, The University of Tulsa, USA**



Special Video Tribute to Professor Jim Brill

Professor Brill is one of the legends in the field multiphase flow and production. His pioneering work, through Tulsa University Fluid Flow Projects, on large-scale experimental analysis and mechanistic modeling of multiphase flow transformed oil and gas industry practices and helped the offshore industry expand its horizons.

Friends and colleagues have joined forces to pay their respects in this video celebrating Jim's 80th Birthday.

10:00 - 10:30 **Refreshment break – Exhibition room**

SESSION 6: Liquid Loading

SESSION CHAIRMAN; Dr Bahadir Gokcal, ConocoPhillips, USA

10:30 - 11:00

Invited Speaker Presentation

Gunnar Staff, Schlumberger Norway Technology Center, Norway

Understanding liquid accumulation in inclined pipes during ramp-down
*G Staff, C Lawrence, Schlumberger Norway Technology Center, Norway;
H Holm, Statoil ASA, Norway*

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- 11:00 - 11:25** **Existence of slug flow in vertical co-current two-phase flow**
D Roullier, H Karami, E Pereyra, C Sarica, The University of Tulsa, USA Page 203
- 11:25 - 11:50** **Liquid loading in annuli, the effect of eccentricity**
J M C van 't Westende, J Kurian, TNO, Heat Transfer and Fluid Dynamics, The Netherlands Page 219
- 11:50 - 12:15** **Investigation of the effect of gas entrainment on slug characteristics in actual fields using the slug capturing technique**
R I Issa, J Castagna, Multiphase Simulation Ltd, UK Page 229
- 12:15 - 12:40** **A new method of predicting wellbore load up**
R Shea, M Guner, G Yuan, Schlumberger, USA Page 245
- 12:40 – 12:45** **Flow Assurance Presentation**
- 12:45 - 13:45** **Lunch – Glacier Salon**



SESSION 7: Modelling in the Field – Part 2

SESSION CHAIRMAN; Professor Cem Sarica, TUFFP, The University of Tulsa, USA

- 13:45 - 14:10** **A comparative study of the performance of multiphase flow pipeline simulators in a hilly terrain pipeline**
P Dhoorjaty, D Erickson, R Kowta, Wood Automation & Control, USA Page 281
- 14:10 - 14:35** **High CO₂ content effect on the flow of crude oils in production transient operations**
M J Rempto, M A Pasqualette, E M G Fontalvo, J N E Carneiro, ISDB FlowTech, Brazil; R Fonseca, J R P Ciambelli, Petrobras, Brazil; S T Johansen, B T Løvfall, SINTEF Industry, Norway Page 297
- 14:35 – 15:00** **Instantaneous liquid and gas leakage flow during plunger lifting process in vertical wells**
K Zhao, B Bai, Xi'an Jiaotong University, China Page 313
- 15:00 - 15:25** **Multiphase optimization of gas kick transient characteristics in drilling applications**
H Karami, University of Oklahoma, USA; B Akbari, Louisiana State University, USA Page 323
- 15:25 – 15:50** **Refreshment break – Exhibition room**

SESSION 8: Flow Assurance – Part 2

SESSION CHAIRMAN; Dr Eduardo Pereyra, The University of Tulsa, USA

15:50 – 16:20

Invited Speaker Presentation

Jefferson L Creek, Colorado School of Mines, USA
 Slurry Flow of Hydrates as a Multiphase Flow Problem



- 16:20 - 16:45** **Experimental study of wax deposition under two-phase gas-oil stratified flow**
Y Chi, N Daraboina, C Sarica, The University of Tulsa, USA; S Zhou, The University of Tulsa, USA and Changzhou University, PR China Page 153
- 16:45 - 17:10** **Wax deposition testing in a large-scale flow loop**
R Venkatesan, Chevron Energy Technology Company, USA; R Tanti, V Subramani, D Vedapuri, Tridiagonal Solutions Inc., USA; E Akparu, K Johnson, Chevron Africa and Latin America Exploration and Production Company, USA Page 169
- 17:10 – 17:15** **Exhibitor's presentation – Assured Flow Solutions**



19:00 –

Dress code – smart casual

Conference Dinner The Bison Restaurant & Terrace

Dinner Drinks sponsored by;



We will meet in the hotel lobby at 19:00 to walk to the restaurant

07:00 - 08:00 Delegate's breakfast – Chinook Restaurant

SESSION 9: Experiments in Modelling

SESSION CHAIRMAN: Steven Smith, Schlumberger, Canada

08:00 – 08:30



Keynote Presentation

Emeritus Professor René Oliemans, Director Multiphase Flow BV, TU Delft, The Netherlands

The history of multiphase pipe flows science and technology. Research response to industrial pull

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08:30 - 08:55 **Liquid entrainment in gas at high pressure. Part 2: experimental data and model improvement**
F Viana, Southwest Research Institute®, USA; R Mohan, O Shoham, The University of Tulsa, USA

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08:55 - 09:00 **Multiphase flow SPE Presentation**
Stretch Break



SESSION 10: Viscosity Effects

SESSION CHAIRMAN: Yongqian Fan, BP America, USA

09:00 - 09:25 **Pseudo slug flow in viscous oil systems – experiments and modelling with LedaFlow**
J Kjølaas, I E Smith, C Brekken, SINTEF, Norway

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09:25 - 09:50 **Experimental and modelling study of the wall shear stress profile in horizontal pipes for highly viscous two-phase slug flow**
T Kim, E Pereyra, C Sarica, The University of Tulsa, USA

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09:50 – 10:15 **Refreshment break – Exhibition room**

SESSION 11: Multiphase Modelling

SESSION CHAIRMAN; Mack Shippen, Schlumberger, USA

10:15 - 10:45

Invited Speaker Presentation

Omar K. Matar, Imperial College London, UK

(One possible) future of multiphase flow modelling and simulation

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10:45 - 11:10 **Thermal behavior in wells**
T J Danielson, B Gokcal, ConocoPhillips Co., USA

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11:10 - 11:35 **Numerical simulation of roll waves in pipelines using the two-fluid model**
B Sanderse, S Dubinkina, Centrum Wiskunde & Informatica, Amsterdam, The Netherlands; S Misra, C W Oosterlee, Centrum Wiskunde & Informatica, Amsterdam, and Delft University of Technology, The Netherlands; R A W M Henkes, Delft University of Technology and Shell Technology Centre Amsterdam, The Netherlands

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11:35 - 12:00 **Onshore gathering systems: multiphase flow modeling accuracy challenges**
E Kempton, G Hegde, E Smith, Assured Flow Solutions, USA

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12:00 - 12:05 **Best Paper Award – Sponsored by BHR Group**



Conference close with Chairman's comments

12:05 – 13:00 **Lunch – Glacier Salon**

Organiser Contact Information:

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