Workshop

Integrated Production Modelling – Maximising Asset Value

Why should you attend?

• To gain insights on the key elements of integrated production modelling, best practices, case studies and lessons learnt.
• To discuss how production modelling is an essential tool that assists in maximising reservoir production potential, and designing and constructing a cost-optimised production system.
• To explore how production modelling serves as a practical process to continuously manage and optimise production operation.
• To understand the value of multidisciplinary teams to develop integrated production models and the role of each discipline.
• To engage with subject-matter experts, and share experiences with peers and industry professionals.

Who should attend

• Production engineers, managers and team leaders
• Reservoir engineers, managers and team leaders
• Petroleum engineers, managers and team leaders
• Process-facilities engineers, managers and team leaders
• Geoscience engineers, managers and team leaders
• Flow assurance engineers, managers and team leaders
• Operators and services companies
• University staff and academia

For further information on this workshop, please go to [http://www.spe.org/events/15adel](http://www.spe.org/events/15adel)
Workshop Description

Integrated production modelling has become increasingly important to the petroleum industry, as it is used to model the oil and gas production system. It combines reservoir, production and surface engineering modelling into an asset management tool that allows the simulation of the entire oil and gas system for generation of production forecasts, identification of optimisation opportunities, surveillance, and development planning. Production modelling when developed well leverages in maximised reservoir production potential, optimised production costs and asset value.

Workshop Objectives

This workshop will focus on the key elements of integrated production modelling, best practices, case studies and lessons learnt. Key areas to be covered include:

- Total production system pressure and energy analysis (from sand-face to sale-line) i.e. Problem identification
- Well production performance and modelling – history match and production sensitivity analysis e.g. Nodal analysis models
- Surface support facilities back-pressure optimisation e.g. Debottlenecking
- Life cycle well fluid gradient change and flow optimisation e.g. Artificial lift evaluation
- Offshore deepwater field complex production flow system analysis
- Minimum production system for marginal fields e.g. Optimum modelling benchmark
- Value of the integrated production systems and the role of engineers of different disciplines
- Sharing experiences about gathering systems debottlenecking, compression projects, pipeline sizing, development plans, etc.
- Understand uncertainties and limitations of the integrated production models
- Value of real-time field management using integrated production modelling

Technical Programme Committee

Co-chairperson
Thomas Foo
Shell Australia Pty. Ltd.

Co-chairperson
Mark Jackson
BHP Billiton

Antony Corrie-Keilig
LR Senergy

Andrew Duncan
Gaffney, Cline & Associates

Steven Lee
BP Developments Australia Pty. Ltd.

Dan Macey
KBC Advanced Technologies/FEESA

Don Merritt
Enersight Australia

Renita Rehbock
Chevron Australia Pty. Ltd.

Roumen Sankoff
Apache Energy Ltd.

Arman Vahedi
PetroAus Pty. Ltd.

Wiens van Zeil
Chevron Australia Pty. Ltd.

Register Online at http://www.spe.org/events/15adel
### Preliminary Daily Activities and Technical Agenda

For updated technical information, visit [http://www.spe.org/events/15adel](http://www.spe.org/events/15adel)

**Sunday, 16 August 2015**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500 hours</td>
<td>Hotel Check-in</td>
</tr>
<tr>
<td>1400 – 1600 hours</td>
<td>Final Programme Committee Meeting</td>
</tr>
<tr>
<td>1700 – 1900 hours</td>
<td>SPE Registration/Poster Setup</td>
</tr>
<tr>
<td>1800 – 1900 hours</td>
<td>Discussion Leaders and Session Managers Briefing</td>
</tr>
</tbody>
</table>

**Monday, 17 August 2015**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0730 – 0830 hours</td>
<td>Breakfast</td>
</tr>
<tr>
<td>0830 – 0930 hours</td>
<td>Session 1: Introduction/Opening/Keynote Address</td>
</tr>
<tr>
<td>0930 – 1000 hours</td>
<td>Group Photo/Coffee Break</td>
</tr>
<tr>
<td>1000 – 1200 hours</td>
<td>Session 2: Value of Integrated Production Systems</td>
</tr>
<tr>
<td>1200 – 1300 hours</td>
<td>Lunch</td>
</tr>
<tr>
<td>1300 – 1500 hours</td>
<td>Session 3: Integrated Production System Modelling as Part of the Field Development Planning</td>
</tr>
<tr>
<td>1500 – 1515 hours</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>1515 – 1715 hours</td>
<td>Session 4: Early Production Systems</td>
</tr>
<tr>
<td>1715 – 1815 hours</td>
<td>Session 5: Poster Session</td>
</tr>
<tr>
<td>1900 hours</td>
<td>Group Dinner</td>
</tr>
</tbody>
</table>

**Tuesday, 18 August 2015**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0730 – 0830 hours</td>
<td>Breakfast</td>
</tr>
<tr>
<td>0830 – 1030 hours</td>
<td>Session 6: Production Modelling: Best Practices</td>
</tr>
<tr>
<td>1030 – 1045 hours</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>1045 – 1245 hours</td>
<td>Session 7: Flow Assurance and Process Modelling</td>
</tr>
<tr>
<td>1245 – 1345 hours</td>
<td>Lunch</td>
</tr>
</tbody>
</table>
### Workshop

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>1345 – 1545 hours</td>
<td><strong>Session 8: Production Optimisation: Best Practices</strong>&lt;br&gt;Optimisation is defined as finding the “best” way to do a specified task. This session considers how careful definition of both the task and optimum outcomes are essential for success. Case studies will contrast tools and approaches for range of real world optimisation applications.</td>
</tr>
<tr>
<td>1545 – 1600 hours</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>1600 – 1800 hours</td>
<td><strong>Session 9: Delivering Value by Understanding Uncertainties and Sensitivity</strong>&lt;br&gt;Realistic characterisation of the range of uncertainties affecting a field development, and their potential impact on value, can have a significant impact on a development plan, and highlight both critical risks and opportunities. This session will focus on practical approaches to handle uncertainty in economic modelling, discuss appropriate commercial and contractual responses, and emphasise the need for team integration in this area.</td>
</tr>
<tr>
<td>1830 hours</td>
<td>Group Dinner</td>
</tr>
</tbody>
</table>

#### Wednesday, 19 August 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>0730 – 0830 hours</td>
<td>Breakfast</td>
</tr>
<tr>
<td>0830 – 1030 hours</td>
<td><strong>Session 10: Unconventional Reservoirs</strong>&lt;br&gt;Discussion on production forecasting and integrated production modelling specific to unconventional resources including Coal Seam Gas (CSG), and shale gas/oil. Papers will include production techniques (empirical and rate transient) as well as case studies of end-to-end integrated systems (production forecasting, facilities and economics). Although unconventionals have some commonality with conventional oil and gas systems, production and system modelling techniques can vary widely.</td>
</tr>
<tr>
<td>1030 – 1045 hours</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>1045 – 1245 hours</td>
<td><strong>Session 11: New Technology Considerations</strong>&lt;br&gt;Technology is changing the way we integrate models and our ability to process vast amounts of data. This has a significant impact on the way we approach production system integration, data mining and data processing. This session will look at some of these emerging technologies and how this can shape the future of field management.</td>
</tr>
<tr>
<td>1245 – 1315 hours</td>
<td>Lunch/Check out</td>
</tr>
<tr>
<td>1315 hours</td>
<td><strong>Session 12: Summary &amp; Wrap Up</strong></td>
</tr>
</tbody>
</table>

### Poster Solicitation and Information

All participants are encouraged to prepare a poster for the Workshop. Posters will be presented during the poster session and will be on display for the entire duration of the Workshop. Presentations on both research and field experience are solicited.

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, presenter, 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 sequentially; beginning with the main idea or problem, method used, result, 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. Consider using 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 by the committee to be commercial in nature.

If you are interested in participating, please email your proposed topic with a short abstract (between 200-300 words) to SPE Event Manager, Lesley Chua, at lchua@spe.org by 16 June 2015.
Workshop Venue:
Four Points by Sheraton Perth
707 Wellington Street, Perth, Western Australia 6000, Australia
Tel: 61.8.9327.7000
Website: http://www.starwoodhotels.com/fourpoints

Documentation:
1. Proceedings will not be published; therefore, formal papers and handouts are not expected from speakers.
2. Work in progress, new ideas, and interesting projects are sought.
3. Note-taking by participants 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 discussions. This report will be circulated to all attendees.
• PowerPoint presentation materials will be posted online 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 will not be permitted. Company logos must be limited to the title slide and used only to indicate the affiliation of the presenter and others involved in the work.

Attendance Certificate:
All attendees will receive an attendance certificate attesting to their participation in the Workshop. This certificate will be provided in exchange for a completed Workshop 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.

Attendee Information:
General and detailed accommodation information will be posted on the workshop website by June 2015.

Transportation/Visa:
Attendees are advised to book their international/domestic airline tickets early. Further detailed transportation information will be available on the Workshop website by June 2015.

Attendees are advised to note the visa requirements for their travel to Australia. All travellers to Australia must be in possession of passports valid for at least six (6) months with proof of onward passage.

Dress Code:
Casual clothing is recommended. The Workshop atmosphere is informal.

Workshop Registration Fees
Early Bird Registration submitted on/before 16 June 2015
• SPE MEMBER: US$2,700.00/person
• NON-MEMBER: US$2,900.00/person

Registration Deadline: 16 July 2015
• SPE MEMBER: US$2,800.00/person after 16 June 2015
• NON-MEMBER: US$3,000.00/person after 16 June 2015

Fee includes the following:
• Full registration fee for all Workshop sessions;
• Three (3) nights’ accommodation based on single occupancy with breakfast. Arrival on Sunday, 16 August 2015, and departure on Wednesday, 19 August 2015;
• Welcome reception followed by dinner (Sunday evening);
• Daily coffee breaks, lunches and dinners (except Wednesday);
• Workshop Workbook and Certificate of Continuing Education Units (CEU).

Training Course Registration Fees:
Early Bird Registration submitted on/before 16 June 2015
• SPE MEMBER: US$1,900.00/person
• NON-MEMBER: US$2,100.00/person

Registration Deadline: 16 July 2015
• SPE MEMBER: US$2,000.00/person after 16 June 2015
• NON-MEMBER: US$2,200.00/person after 16 June 2015

Fee includes the following:
• Two–day registration fee for Training Course sessions;
• Two (2) nights’ accommodation based on single occupancy with breakfast. Arrival on Friday, 14 August 2015, and departure on Sunday, 16 August 2015;
• Two (2) lunches and daily coffee breaks;
• Training workbook and Certificate of Attendance.

Registration Policy
• Registration fee MUST be paid in advance for attending the Workshop and/or Training Course.
• Full fixed fee is charged regardless of the length of time the registrant attends the Workshop and/or Training Course.
• Fixed fee cannot be prorated or reduced for anyone (Workshop chairpersons, committee members, speakers, discussion leaders, students and registrants).
• The Workshop is designed to be fully residential. Attendees are expected to attend all Workshop sessions and not on a partial basis.
• Registration fee does not include hotel accommodation and meal costs for additional family member(s).

Note:
• A discount fee of US$200 will be offered to registrants attending both the Workshop on “Integrated Production Modelling – Maximising Asset Value” and the Training Course on “Introduction to Integrated Asset Modelling, Integrating Reservoir to Economic Models.”
• If attendance is not sufficient for the Training Course by 31 July 2015, SPE reserves the right to cancel the course.
• Substitutions will not be accepted without prior Programme Committee approval.
• No refund will be issued if a registrant fails to show up.

Attention Non-Members
Join Our Worldwide Membership!
Non-Member registrants are eligible for one (1) year SPE Membership at no additional cost. To take advantage of this offer, you must fill out the membership application form on-site.
In Conjunction with SPE Integrated Production Modelling – Maximising Asset Value Workshop

Course Description
This course provides an introduction to Integrated Production Modelling and how we can integrate different components of a production system. At the end of this course students should be able to build simple models (material balance, well and surface network models) and integrate them for forecasting and optimisation. Students will have opportunity to integrate production models to a simple economical model in Excel. Using this link students will evaluate various development plans.

Course Objectives
This training course will provide attendees with knowledge on:
• Material balance modelling basics
• Wellbore modelling fundamentals
• Network modelling fundamentals
• Integrated production modelling and forecasting
• Using economical factors to evaluate projects

Who Should Attend
• Production engineers
• Reservoir engineers
• Petroleum engineers
• Team leads (subsurface, production, facility)

CEUs
Engineers are responsible for enhancing their professional competence throughout their careers. Licensed, chartered, and/or certified engineers are sometimes required by government entities to provide proof of continued professional development and training. Training credits are defined as Continuing Education Units (CEUs) or Professional Development Hours (PDHs). Attendees of SPE training courses earn 0.8 CEUs for each day of training. We provide each attendee a certificate upon completion of the training course.

Course Instructor

ARMAN VAHEDI is a highly experienced Petroleum Engineer with more than 16 years of experience. Through his experience in Digital Oil Field implementation, production optimisation and Integrated Asset Modelling, Arman provides support for many major gas development projects in Australia and internationally.

Prior to the establishment of PetroAus in June 2008, Arman worked as a Senior Petroleum Engineer for Chevron Australia, where his expertise was used to conduct reservoir studies and evaluate various development plans. Arman has also worked in consultancy and major service companies where he provided support to numerous clients. His extensive experience includes providing reservoir/petroleum engineering support and working on:
• Reserves estimation;
• Simulation studies;
• Integrated asset modelling/optimisation.

Arman has conducted several reservoir/petroleum engineering courses as a Course Instructor and currently is PetEx representative in Australia.
Saturday, 15 August 2015

Session 1: Well Modelling
• Introduction to integrated production system and overall approach
• Pressure loss in the wellbore and reservoir
• Importance of PVT for well modelling
• VLP correlations theory
• Building a wellbore model, matching PVT and flow correlations, and generation of lift curves for integration

Session 2: Material Balance Modelling
• General material balance concept
• Graphical methods for oil and gas assets
• History matching (analytical, numerical and fraction flow)
• Production forecast using material balance models

Sunday, 16 August 2015

Session 3: Surface Network Modelling and Integration
• Why integrated production modelling
• Overall system matching to the measured data (pressure and temperature) including:
  - Tuning well models (well model validation)
  - Pipeline matching (pressure and temperature)
  - Overall system check
• Integration (material balance, well and surface network models)
• Production forecast and optimisation using integrated models

Session 4: Integration Production Models to Economical Model
• General concept
• Integrated asset models to economical model (in Excel)
• Run sensitivities for various development plans (batch runs) and select most economical
• Discussion and Q&A

For further information please visit the SPE website [http://www.spe.org/training/courses.php](http://www.spe.org/training/courses.php) for current schedule and course catalogue. You can also register online or send us an email to trainingapac@spe.org for more information. Please note that schedules are subject to change.
Name: ____________________________________________________________________________________________________________________________________
SPE Member:          Yes      Membership No. ________________________________            No
List your expectation for the Workshop, so that the committee can tailor a portion of the Workshop to answer your concerns. (Use additional paper if required.)
List background and experience. (Use additional paper if required.)
Primary Responsibility (Check One)
[ ] Production and Operations  [ ] Projects, Facilities and Construction  [ ] Reservoir Description and Dynamics
Technical Disciplines (Check One)
[ ] Drilling and Completions  [ ] Health, Safety, Security, Environment and Social Responsibility  [ ] Management and Information
[ ] Production and Operations  [ ] Projects, Facilities and Construction  [ ] Reservoir Description and Dynamics
[ ] Drilling  [ ] Economics  [ ] Geology  [ ] Geophysics  [ ] Management  [ ] Operation  [ ] Production  [ ] Reservoir  [ ] Surveillance  [ ] Other

List your expectation for the Workshop, so that the committee can tailor a portion of the Workshop to answer your concerns. (Use additional paper if required.)

REGISTRATION FEES (Please select appropriate box.)
Early Bird Registration on/before 16 June 2015 Registration after 16 June 2015
Workshop Only (Fee includes all workshop sessions, workbook, certificate, 3 nights SINGLE accommodation with daily breakfast, 1 welcome reception/dinner, 3 lunches, 2 dinners and daily coffee breaks.)
[ ] SPE Member  US$2,700.00       US$2,800.00
[ ] Non-member  US$2,900.00       US$3,000.00
Training Course Only (Fee includes 2-day training course, training workbook, certificate, 2 nights SINGLE accommodation with daily breakfast, 2 lunches and daily coffee breaks.)
[ ] SPE Member  US$1,900.00       US$2,000.00
[ ] Non-member  US$2,100.00       US$2,200.00
Workshop and Training Course (Fee includes all workshop sessions, 2-day training course, workbooks, certificates, 5 nights SINGLE accommodation with daily breakfast, 1 welcome reception/dinner, 5 lunches, 2 dinners and daily coffee breaks.)
[ ] SPE Member  US$4,400.00       US$4,600.00
[ ] Non-member  US$4,800.00       US$5,000.00

NON-RESIDENTIAL REGISTRATION FEES (Please select appropriate box.)
Early Bird Registration on/before 16 June 2015 Registration after 16 June 2015
Workshop Only (Fee includes all workshop sessions, workbook, certificate, 1 welcome reception/dinner, 3 lunches, 2 dinners and daily coffee breaks.)
[ ] SPE Member  US$2,000.00       US$2,100.00
[ ] Non-member  US$2,200.00       US$2,300.00
Training Course Only (Fee includes 2-day training course, training workbook, certificate, 2 lunches and daily coffee breaks.)
[ ] SPE Member  US$1,500.00       US$1,600.00
[ ] Non-member  US$1,700.00       US$1,800.00
Workshop and Training Course (Fee includes all workshop sessions, 2-day training course, workbooks, certificates, 1 welcome reception/dinner, 5 lunches, 2 dinners and daily coffee breaks.)
[ ] SPE Member  US$3,300.00       US$3,500.00
[ ] Non-member  US$3,700.00       US$3,900.00

Payment Options
[ ] Telegraphic Transfer (Bank details will be provided on the tax invoice).
[ ] Credit Card Payment will be in U.S. Dollars only
[ ] American Express  [ ] MasterCard  [ ] Visa  [ ] Diners Club
Card Number ________________________________
Expiration Date (mm/yy) /
Security Code (3 digits on back of card / 4 digits on the front of Amex)

Credit Card Billing Address & Zip/Postal Code

Name of Card Holder

Signature

Note: Forms will not be processed and space cannot be guaranteed unless accompanied by payment for total amount due.

Cancellation Policy:
a) A processing fee of US$150.00 will be charged for cancellations received before the registration deadline of 16 July 2015.
b) Cancellation received after the registration deadline of 16 July 2015 will be entitled to a 25% refund.

This form may be used as a company invoice.
Mail completed registration form with remittance and any supporting material to:
Society of Petroleum Engineers
Level 35, The Gardens South Tower, Midvalley City
Lingkaran Syed Putra, 59200 Kuala Lumpur, Malaysia.
Tel: 60.3.2182.3000    Fax: 60.3.2182.3030    Email: spekl@spe.org