DATA ANALYTICS FOR E&P

Optimize your exploration and production operations with data-driven models

22-26 August 2016
Jakarta, Indonesia

Harness Oil and Gas BIG DATA with Analytics

Optimize Exploration and Production with Data-Driven Models
KEITH HOLDAWAY
WILEY

Attendees will receive a copy of the reference book “Oil and Gas Big Data” by Keith Holdaway

Supported By
**Course Overview**

DATA ANALYTICS FOR E&P is developed to understand the various analytical trends across the exploration and production sectors based on managed subsurface data information. Data Analytics enables to adopt data-driven methodologies to quantify uncertainty in the reservoir and optimize well and facilities performance.

Data analytics will help optimize E&P with data-driven models, and ensure attendees make better and faster business decisions that can affect the company’s success in exploration and production efficiency.

**Course Design Covers Full Spectrum of Key Exploration & Production Data**

The training is designed to introduce and educated O&G personnel with the key principles of data analytics and management. We shall investigate the value of data-driven analysis in areas such as Attribute Analysis, Reservoir Characterization and Simulation, Drilling and Completion, Production Forecasting, and Production Optimization. Predictive Data Analytics and Big Data Analytics will also be taught in the program.

**Includes Practical Case Studies and Workflows**

This program will help attendees to learn how to access and quickly draw insights from different subsurface data sets, without getting lost in the amount of information that is present. Specific examples and case studies will be covered along with learning practical

**How Does This Course Benefit You?**

**DEVELOP KEY SKILLS IN DATA ANALYTICS AND MANAGEMENT**

Learn the key oilfield analytics methodologies and application to the various subsurface data that are required during exploration and production. Apply the best practices in data management including subsurface data profiling, quality control, integration, enrichment, and monitoring.

**APPLY DATA ANALYTICS TO KEY STAGES OF EXPLORATION AND PRODUCTION**

Learn the key techniques in how to apply data analytics to various subsurface data during seismic analysis, reservoir characterization, simulation, drilling, completion, and modelling. Attendees will be able to gain practical insights through the various analytical models, workflow, and case studies that will be discussed during the program.

**INTEGRATE DATASETS FOR BIG DATA ANALYTICS**

Aggregate all key learning points with a practical hands-on Lab for Data Analysis of Big Data for critical issues in project lifecycle and developing effective negotiation skills.
PetroSync Distinguished Instructor

Keith R. Holdaway
Advisory Industry Consultant, SAS
Author, “Harness Oil and Gas Big Data with Analytics”

Keith is a renowned subject matter expert in oil and gas data management and analytics. He has 17 extensive years of experience in the Oil and Gas industry as a geophysicist processing and interpreting seismic data. He is an upstream domain expert across the global oil and gas industry practice, provides clients with his consulting expertise based on his experience in BP, Shell and several consultancy companies, living in London, Dubai, Muscat and Houston.

Keith has authored a book published by Wiley on Data Driven Analytics in O&G as well as 12 SPE technical papers.

Training
Keith has presented trainings and consulted for major oil and gas companies including ConocoPhillips, Devon Energy, Shell, BP, Statoil, Aramco (where he has developed a probabilistic Decline Curve Analysis solution), Arrow Energy, Origin, Arco as well as Schlumberger and PGS.

Who Needs This Program

- This training program is developed and designed for those who are involved with managing subsurface data information from exploration to production stages. This includes, but not limited to, Technical Data Information Executives.

Job Titles Include:
- Subsurface Data Analysts
- Data Management Specialists
- Upstream Geoscientists
- Technical Data Information Executives
- Data Management, Heads/Managers

Course Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00—09:00</td>
<td>Registration (Day 1)</td>
</tr>
<tr>
<td>09:00—11:00</td>
<td>Session I</td>
</tr>
<tr>
<td>11:00—11.15</td>
<td>Refreshment Session I</td>
</tr>
<tr>
<td>11:15—13:00</td>
<td>Session II</td>
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<tr>
<td>13:00—14:00</td>
<td>Lunch</td>
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<td>14:00—15:30</td>
<td>Session III</td>
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<tr>
<td>15:30—15:45</td>
<td>Refreshment Session II</td>
</tr>
<tr>
<td>15:45—17:00</td>
<td>Session IV (Last Session)</td>
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PetroSync Quality Assurance

All PetroSync courses are developed with top quality to address all your training needs and purposes. Our courses are vetted strictly to ensure that we always deliver the best courses with the best industry expert.

PetroSync Inhouse Solutions

PetroSync can tailor our courses to meet your specific needs at your preferred location and schedule. Contact us for more information at +65 6415 4500 or email to feona.l@petrosync.com
Course Agenda — 5 Days

DAY 1
FUNDAMENTALS OF SOFT COMPUTING (AM)

Current Landscape in Upstream Data Analysis
- Big Data: Definition
- First Principals
- Data Driven Models
- Soft Computing Techniques
- Artificial Neural Networks
- Genetic Algorithms

Evolution from Plato to Aristotle
Descriptive and Predictive Models
SEMMA Process

High Performance Analytics
- In-Memory Analytics
- In-Database Analytics
- Grid Computing

The Three Tenets of Upstream Data
- Data Management
- Quantification of Uncertainty
- Risk Assessment

DAY 2
SEISMIC ATTRIBUTE ANALYSIS (AM)

Introduction
Exploration and Production Value Propositions
Reservoir Characterization
Reservoir Management
Seismic Trace Analysis
- Single Trace Analysis
- Data Mining And Pattern Recognition
- Seismic Trace Feature Identification
- Reservoir Characterization Analytical Model
- 3d Seismic Data Comparisons
- Analytical Vs. Forecasted Results

Case Studies:
- Reservoir Properties Defined By Seismic Attributes
- Singular Spectrum Analysis
- Unsupervised Seismic Analysis

Deep Learning: Seismic Profile Pattern Recognition Workflows

RESERVOIR CHARACTERIZATION AND SIMULATION (PM)

Introduction
Exploration and Production Value Propositions
Exploratory Data Analysis
Reservoir Simulation Models
- Analytical Simulation Workflow
  - Dividing Fields into Regions
  - Assisted and/or Optimized History Matching
  - Identifying Critical Uncertainty Factors
- Surrogate Reservoir Models

Case Studies
- Predicting Reservoir Properties
- Maximizing Recovery Factors

DATA MANAGEMENT (PM)

Introduction
Exploration and Production Value Propositions
Data Management Platform
- Four-Tiered DM Architecture
Structured and Unstructured Data
Big Data, Big Analytics
Case Study: Production Data Quality Control Framework
Best Practices
- Data Profiling
- Data Quality
- Data Integration
- Data Enrichment
- Data Monitoring

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DAY 3

DRILLING & COMPLETION OPTIMIZATION (AM)
Introduction
Exploration and Production Value Propositions
Workflow One: Mitigation of Non-Productive Time
  • Stuck-Pipe Model
Workflow Two: Drilling Parameter Optimization
  • Self-Organizing Map
  • Genetic Algorithms and Fuzzy Logic
Case Studies
  • Steam Assisted Gravity Drainage (SAGD) Completion
  • Drilling time series pattern recognition
  • Unconventional Completion Best Practices

PRODUCTION FORECASTING (PM)
Introduction
Exploration and Production Value Propositions
Web-Based Decline Curve Analysis Solution
  • Bootstrapping Module
  • Cluster Analysis Module
  • Data Mining Module
  • Rate-Time Analysis
  • Rate-Cum Analysis
  • Automated Time Series Selection
Unconventional Reserves Estimation
Stretched-Exponential Decline Model (SEDM)
  • Duong Model
  • Case Study
  • Oil Production Prediction for Infill Well

DAY 4

PRODUCTION OPTIMIZATION (AM)
Introduction
Exploration and Production Value Propositions
Case Studies:
  • Artificial Lift: Optimization of Gas-Injected Oil Wells
  • Maximize Production in Unconventional Reservoirs
  • Bakken Formation
  • Pinedale
  • Innovative Analytical Workflow in Mature Fields
  • Recovery Factor Analysis

EXPLORATORY AND PREDICTIVE DATA ANALYSIS (PM)
Introduction
Exploration and Production Value Propositions
EDA Components
  • Univariate Analysis
  • Bivariate Analysis
  • Multivariate Analysis
  • Data Transformation
  • Discretization

EDA Statistical Graphs and Plots
  • Box and Whiskers
  • Histograms
  • Probability Plots
  • Scatter Plots
  • Heat Maps
  • Bubble Plots
  • Tree Maps
Ensemble Segmentations
Ensemble Methods
  • Ensemble Clusters
  • Ensemble Segments
  • Data Visualization
Case Studies
  • Unconventional Reservoir Characterization

DAY 5

BIG DATA: STRUCTURED AND UNSTRUCTURED (AM)
Introduction
Exploration and Production Value Propositions
  • Content Categorization
  • Ontology Management
  • Sentiment Analysis
  • Text Mining
• Hybrid Expert and Data Driven System
  • Artificial Lift
• Case Studies:
  • Deep-water Electric Submersible Pumps
  • Text Analytics in Oil and Gas

Multivariate Geostatistics
Big Data Workflows
Integration of Soft Computing Techniques
References

BIG DATA: STRUCTURED AND UNSTRUCTURED (PM)
Wrap-up session to aggregate all the key learning points with a hands-on Lab for EDA of Big Data in an Unconventional Reservoir (PRACTICAL)

Q&A
Group Discussion
COURSE DETAILS
Title: DATA ANALYTICS FOR E&P
Date: 22-26 August 2016
Location: Jakarta, Indonesia

INVESTMENT PACKAGES (Please Circle)

<table>
<thead>
<tr>
<th>INVESTMENT PACKAGE</th>
<th>DEADLINE</th>
<th>FULL MASTERCLASS</th>
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</thead>
<tbody>
<tr>
<td>Standard Price</td>
<td>19 August</td>
<td>USD 3,395</td>
</tr>
<tr>
<td>Early Bird Offer</td>
<td>22 July</td>
<td>USD 3,195</td>
</tr>
<tr>
<td>Group Discount (3 or more Delegates)</td>
<td>19 August</td>
<td>USD 3,055</td>
</tr>
</tbody>
</table>

Group Discount is based on Standard Price

*To enjoy the promotion & discount offer, payment must be made before deadline

* For 7 or more delegates, please inquire for more attractive package.

* Prices include lunches, refreshments and materials. Promotion & discount cannot be combined with other promotional offers.

* Important: Please note that registration without payment will incur a SGD 200 administration fee.

DELEGATES DETAILS

1st Delegate Name: ____________________________  Mr ☐ Mrs ☐ Ms ☐ Dr ☐ Others ☐
Direct Line Number: ____________________________  Email: _______________________
Job Title: ____________________________  Department: _______________________
Head of Department: ____________________________

2nd Delegate Name: ____________________________  Mr ☐ Mrs ☐ Ms ☐ Dr ☐ Others ☐
Direct Line Number: ____________________________  Email: _______________________
Job Title: ____________________________  Department: _______________________
Head of Department: ____________________________

3rd Delegate Name: ____________________________  Mr ☐ Mrs ☐ Ms ☐ Dr ☐ Others ☐
Direct Line Number: ____________________________  Email: _______________________
Job Title: ____________________________  Department: _______________________
Head of Department: ____________________________

INVOICE DETAILS

Attention Invoice to: ____________________________
Direct Line Number: ____________________________  Fax: _______________________
Company: ____________________________  Industry: _______________________
Address: ____________________________  Postcode: _______________________
Country: ____________________________  Email: _______________________

Please note:
- If you have already registered by Phone ☐ Fax ☐ Email ☐ Web ☐, please contact us to confirm your booking.
- If you have not yet received an acknowledgement before the training, please call us to confirm your booking.

PAYMENT METHOD

☐ By Credit Card:
Card Number: ___________  Visa ☐  MasterCard ☐  AMEX ☐  Security Code: ___________  Expiry Date: ___________
Name Printed on Card: ____________________________

☐ By Direct Transfer: Please quote invoice number(s) on remittance advice.
PetroSync Global Pte Ltd Bank Details:
Account Name: PetroSync Global Pte Ltd
Bank Name: DBS Bank Ltd
Account No: SGD: 288-901898-0  USD: 0288-022682-01-6

All bank charges to be borne by payer. Please ensure that PetroSync Global Pte Ltd receives the full invoiced amount.

CONFIRMATION
I agree to PetroSync's terms & conditions, payment terms and cancellation policy.

Authorized Signature: ____________________________

PAYMENT TERMS: Payment is due in full at the time of registration. Full payment is mandatory for event attendance.

TERMS AND CONDITIONS

DISCLAIMER
Please note that trainers and topics were confirmed at the time of publishing; however, PetroSync may necessitate substitutions, alterations or cancellations of the trainers or topics. As such, PetroSync reserves the right to change or cancel any part of its published course due to unforeseen circumstances. Any substitutions or alterations will be updated on our web page as soon as possible.

DATA PROTECTION
The information you provide will be safeguarded by PetroSync that may be used to keep you informed of relevant products and services. As an international group we may transfer your data on a global basis for the purpose indicated above. If you do not wish to have your data shared, please tick this box.

CANCELLATION POLICY
You may substitute delegates at any time as long as reasonable advance notice is given to PetroSync. For any cancellation received in writing not less than fourteen (14) working days prior to the training course, you will receive credit voucher less a SGD $200 administration fee and any related bank or credit card charges.

Delegates who cancel less than fourteen (14) working days of the training course, or who do not attend the course, are liable to pay the full course fee and no refunds will be granted.

In the event that PetroSync cancels or postpones an event for any reason and that the delegate is unable or unwilling to attend on the rescheduled date, you will receive a credit voucher for 100% of the contract fee paid. You may use this credit voucher for another PetroSync course, which must occur within a year from the date of postponement.

PetroSync is not responsible for any loss or damage as a result of the cancellation policy. PetroSync will assume no liability whatsoever in the event this event is cancelled, rescheduled or postponed due to any Act of God, fire, act of government or state, war, civil commotion, insurrection, embargo, industrial action, or any other reason beyond management control.

CERTIFICATE OF ATTENDANCE
70% attendance is required for PetroSync’s Certificate of Attendance.

DETAILS
Please accept our apologies for mail or email that is incorrectly addressed.
Please email us at registration@petrosync.com and inform us of any incorrect details. We will amend them accordingly.

CHARGES & FEE(S)

- For Payment by Direct Telegraphic Transfer, client has to bear both local and overseas bank charges.
- For credit card payment, there is additional 4% credit card processing fee.

PAYMENT TERMS: Payment is due in full at the time of registration. Full payment is mandatory for event attendance.

I agree to PetroSync’s terms & conditions, payment terms and cancellation policy.

Authorized Signature: ____________________________