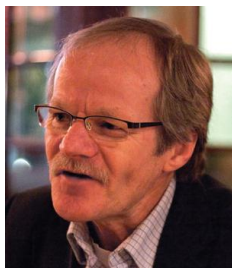


PROSPECT EVALUATION, RISK & VOLUME ASSESSMENT

2 – 6 July 2012, Kuala Lumpur

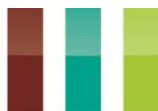


Your Expert Trainer: Dr. Jan de Jager

Jan de Jager draws on more than 30 years of experience as an exploration geologist. Prior to his current role he was with Shell International where he held a variety of positions as Senior Exploration Advisor. In addition as Shell's Global Principle Technical Expert for Risk & Volume Assessment he was responsible for developing and rolling out global guidelines and practices for a consistent and geologically realistic assessment of prospect risks and volumes.

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Kuala Lumpur, Malaysia



PGCE 2012

Petroleum Geoscience Conference & Exhibition



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About this training course

A decision to drill an exploration well with the objective to find a new oil or gas field must be based on a sound assessment of the prospect's risks and of the volumes:

- *what is the chance that a well will find hydrocarbons, and*
- *how much could it be?*

Risk and volume assessments form the basis for decisions to drill a well or not, and as such form the link between subsurface evaluation and the business aspects of the petroleum industry. This 5 day course explains how risks and volumes can be assessed in a realistic manner based on a sound understanding of the geological details of the prospect as well as of its regional geological setting and current play understanding.

What this course will cover in 5 days

The course will demonstrate that realistic risk and volume assessment is not a "black box" operation but needs geological understanding of the prospect, and the regional setting.

Specific topics that will be discussed include the following:

- ❖ The statistical fundamentals for risk and volume assessment will be presented, with practical exercises for understanding the results of a risk & volume assessment displayed in expectation curves.
- ❖ The difference between risk and uncertainty.
- ❖ A discussion of the essential requirements for a working petroleum system: trap, reservoir, seal and charge.
- ❖ Exercises in and guidelines for estimating uncertainties for prospect parameters, including practical advice for meaningful distributions for uncertainty ranges. Particular emphasis will be given to estimating hydrocarbon column lengths with their associated uncertainties in undrilled prospects.
- ❖ Prospects and plays; the value of play maps and how these should be used for assessment of prospect risks and for ranking of prospects within a play.
- ❖ Calculating volume ranges for prospects.
- ❖ Calculating volumes for groups of prospects; how to add risked prospect volumes for a statistically correct representation of the volume promise of a portfolio of prospects.
- ❖ Geophysical evidence: incorporating geophysical evidence (DHIs) consistently and realistically in a risk assessment. An understandable and geology-based workflow, consistent with Bayes theorem, will be presented

Who should attend

This course is designed in the first place for geoscientists working in exploration, for prospect portfolio analysts and for their direct supervisors. It is also a very instructive course for staff from disciplines working closely with exploration staff, such as reservoir engineers, petrophysicists and geophysicists.

Learning, methods and tools

At the end of the course the participants will have a good understanding of the essentials for realistic risk and volume assessments of exploration prospects. The course should allow participants to produce well-considered and realistic assessments for prospects they may be working on, and to understand and constructively challenge risk and volume assessments of colleagues and/or partners/competitors.

Each topic is introduced by a lecture, and learning is re-enforced by practical exercises and discussions. Hand-out material in paper and/or electronic format will be provided.

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Course Outline in Detail

DAY 1

Theme: Risks, Volumes and Uncertainty

09:00 Welcome and Introduction

An outline of the programme, the objective of the course and participants' goals.
Introduction to Risk & Volume assessment: the main concepts and discussion of how the results of risk & volume assessments are used in the business

10: 30 Coffee & refreshment break

10:45 Risks, Volumes and Uncertainty

The difference between risk and uncertainty, basics of essential statistical concepts, the play elements and workflow to assess prospect risks, biases in estimating uncertainties, the results of probabilistic volume assessments and their representation in expectation curves and frequency plots, exercises to enhance understanding of introduced concepts

12:00 Lunch

13:00 Prospects and Plays

Play maps and demonstration of how understanding of the regional geology, petroleum systems and hydrocarbon plays is an essential element in the assessment of risks & volumes for individual prospects, exercises on the use of play maps for risk assessment

15:00 Coffee & refreshment break

15:15 Prospects and Portfolios

Prospect maturation workflow, risk profiles and ranking of prospects, risk mitigation, scenarios in prospect assessment: when to use them and when not

16.30 Summarising the day

17.00 Close

DAY 2

Theme: Traps and Reservoirs

09:00 Reflections on Day 1

Re-cap of insights gained

09: 30 Traps

Risks and uncertainties associated with hydrocarbon traps, the difference between spill and leak points, how to deal with sealing faults and overpressures, what are the risks of stratigraphic traps, how to estimate realistic uncertainty ranges for hydrocarbon column length, exercises

10:30 Coffee & refreshment break

10:45 Traps in important hydrocarbon settings

Trap types in rifts, passive margins, deltas, carbonate provinces and deep water settings, and their typical characteristics and risks

12:00 Lunch

13:00 Reservoirs

Risks and uncertainties associated with reservoir rocks, how to deal with layered reservoirs, waste zones and irregularly shaped reservoirs, facies and depth trends in reservoir characteristics, exercises

15:00 Coffee & refreshment break

15:15 Reservoirs in important hydrocarbon settings

Reservoirs in rifts, passive margins, deltas, carbonate provinces and deep-water settings, and their typical characteristics and risks

16.30 Summarising the day

17.00 Close

DAY 3

Theme: Seals, Pressures and Charge

09:00 Reflections on Day 2

Re-cap of insights gained

09: 30 Seals and pressures

Mechanisms of seal failure, how to deal with leaky seals and differential leakage of gas, overpressures and impact on seal risk and column length prediction, exercises to enhance understanding

10:30 Coffee & refreshment break

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10:45 Seals and pressures in important hydrocarbon settings

Seals and pressures in rifts, passive margins, deltas, carbonate provinces and deep-water settings, and their typical characteristics and risks

12:00 Lunch

13:00 Charge

Impact of source rock types and timing issues for charge assessment, how to deal with mixed columns (oil and gas), formation volume factors (gas expansion and oil shrinkage), hydrocarbon saturations and recovery factors, the impact of long transition zones in tight reservoir rocks

15:00 Coffee & refreshment break

15:15 Charge in important hydrocarbon settings

Source rocks and charge in rifts, passive margins, deltas, carbonate provinces and deep-water settings, and their typical characteristics and risks

16:30 Summarising the day

17:00 Close

DAY 4

Theme: Risks and Volumes

09:00 Reflections on Day 1

Re-cap of insights gained

09:30 Risk assessment

Practical exercise in small groups on prospect risk assessment, group discussion on the impact of positive and/or negative geological indications for the presence or absence of play elements

10:30 Coffee & refreshment break

10:45 Risk assessment continued

Continuation of exercise

12:00 Lunch

13:00 Volume assessment

Practical back-of-the-envelope volume calculation exercise, how to quickly calculate low, medium and high volumes for a prospect, recapitulation of how to select appropriate distributions

15:00 Coffee & refreshment break

15:15 Volumes and portfolios

The impact of dependencies between prospects in a portfolio, risking and volume assessment of prospects with stacked reservoir-seal pairs, adding probabilistic prospect volumes statistically correct

16:30 Summarising the day

17:00 Close

DAY 5

Theme: Bringing it all Together

09:00 Reflections on Day 1

Re-cap of insights gained

09:30 Exploration economics

Basics of assessing the economic value of prospects

10:30 Coffee & refreshment break

10:45 Geophysical evidence

The impact on prospect POS (probability of success) of direct hydrocarbon indicators (DHIs) and/or positive (or negative) evidence from controlled source electromagnetics (CSEM) – consistent with Bayes' theorem, exercises

12:00 Lunch

13:00 Local examples

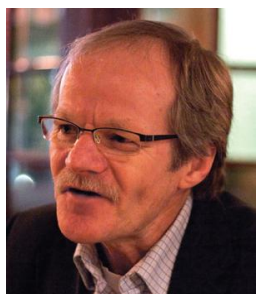
Discussion of prospect examples from course participants

15:00 Coffee & refreshment break

15:15 Local examples (continued) and course summary

17:00 Course ends

About your Expert Trainer: Dr. Jan de Jager



Jan de Jager has a PhD in Geology from the University of Utrecht. He joined Shell in 1979 as an exploration geologist, and worked in several locations around the world (Netherlands, Gabon, USA, Australia, Argentina, Malaysia) in technical and management positions. During the last ten years of his career he was responsible for the quality assurance of Shell's exploration prospects in many parts of the world and for upgrading and replenishing Shell's global exploration portfolio. During this period he has also developed extensive expertise in Prospect Risk and Volume assessments for which he ran successful internal training programmes. Following his retirement from Shell in 2010, Jan de Jager took on a position as part time professor at the University of Amsterdam and he is also working as consultant exploration advisor for various E&P companies.

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Prospect Evaluation, Risk & Volume Assessment 5 Day Training Course					PetroEdge recognises the value of learning in teams. Group bookings at the same time from the same company receive the following: 3 or more at 5% off 5 or more at 7% off 8 or more at 10% off Early bird pricing is exclusive of team discounts and other promotions.
2 – 6 July 2012, Kuala Lumpur	SGD 4599		SGD 4799		
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Mr Ms Mrs Dr Others:

Name :
Job Title :
Department :
Telephone No. :
Email :

Please note

- Indicate if you have already registered by Phone +Fax +Email +Web
- If you have not received an acknowledgement before the training course, please call us to confirm your booking.
- Photocopy this form to register multiple delegates.

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Make Payable to Asia Edge Pte. Ltd.

By Direct Transfer

Please quote your invoice number with the remittance advise
Account Name: Asia Edge Pte. Ltd.
Bank Number: 508 Account Number: 762903-001Swift Code: OCBCSGSG
All bank charges to be borne by payer.

Please ensure that Asia Edge Pte Ltd receives the full invoiced amount.

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