Business & Risk Series

Risk Analysis

Designed for:
The course is designed for staff in engineering and commercial functions, who already have an understanding of petroleum economics (discounted cashflow, NPV, EMV) and are involved in the quantification of risk for either exploration or production projects.

Duration
(days)
1 2

Learning Level:
Skills
Knowledge
Awareness

By the end of the course participants will be able to:

- Distinguish risk from uncertainty
- Apply a systematic approach to identifing uncertainties
- Describe uncertainty using probability distributions
- Combine technical and commercial uncertainties
- Incorporate technical and commercial uncertainties in decision making
- Describe methods for reducing risk
- Evaluate the benefit of risk reduction methods
- Understand how portfolio theory applies to E& P companies
- Discuss the human behavioural aspects of risk and uncertainty estimation

Identify relevant parameters

Estimate their uncertainties

Express uncertainties in suitable form

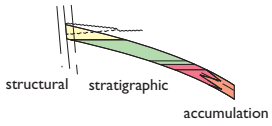
Combine uncertainties

Analyse uncertainties using suitable tools

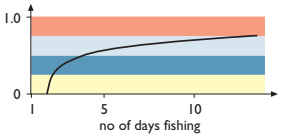
sensitivity analysis
decision tree analysis
simulation

Make recommendation based on analysis

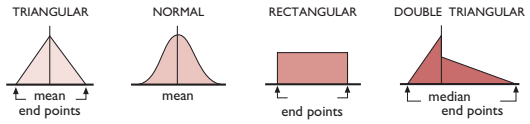
Main causes of volume uncertainty



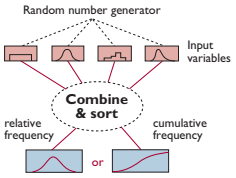
Success rate for fishing



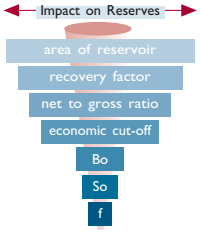
Types of distribution for input parameters



Monte Carlo Simulation



Tornado Diagram



Early Development
E&P Overview
Reservoir
Wells

Business & Risk
Open Air
Coaching
Master Class

Business & Risk Series

Risk Analysis continued

Course Content:

Introduction

- Defining risk and uncertainty
- Identifying uncertainties in the E&P business
- Expressing uncertainty
- Combining uncertainties
- Dependent and independent variables
- The Monte Carlo method
- The Parametric method
- Three point distributions

Tools for quantifying risk

- Sensitivity analysis
- Decision tree analysis
- Simulation

Technical uncertainties and their management

- Exploration
- Appraisal and feasibility studies
- Development planning
- Production

Commercial uncertainties and their management

- Market factors
- Human factors

Portfolio Management

- Overview
- The budget line
- Indifference curves
- Market and taste combined
- The efficient frontier with respect to risk and value
- Impact of diversification on total portfolio risk

Course Duration:

Duration is 1 - 2 days.

Courses available from this series:

Strategy & Performance Management
Petroleum Economics
Oil and Gas Business Decisions
Risk Analysis
Petroleum Economics and Risk Analysis
Oil and Gas Risk Management
E&P Business Simulation (Panacea)
Asset Trading Game
Petroleum Risk and Portfolio Management

Course Tutors

Mark Cook BSc, MBA

Main Series tutoring: Early Development, Business & Risk, Reservoir Engineering
Industry experience: 40 years, reservoir engineering, economics and risk analysis
Career background: Shell, TRACS (Director) and AGR (VP)
Personal: Author, "Hydrocarbon Exploration and Production' (Elsevier 2008), 'Petroleum Economics and Risk Analysis' (Elsevier 2021), SPE distinguished lecturer on Risk Analysis

Mark Bentley PhD

Main Series tutoring: Reservoir, E&P Overview, Open Air and Master Class
Industry experience: over 25 years, geoscience
Career background: Shell, AGR and TRACS
Personal: Author 'Reservoir Model Design', SPE and EAGE distinguished lecturer, AGR & TRACS Training director, associate professor Heriot-Watt University

Richard Oxlade MEng

Main Series tutoring: Reservoir, Early Development, Master Class (business)
Industry experience: over 30 years, commercial, reservoir engineering
Career background: BP, AGR and TRACS
Personal: Global advisor, business planning & economic analysis

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