

A LDI Training Course

Petroleum Economic Evaluation, Project Cost Estimation and Risk Analysis

by

Sjafri Joenoes & Pulung Susilo Rahardjo

Introduction

The purpose of decision analysis is to help a decision maker think systematically about complex problems and to improve the quality of the resulting decisions. In this regard, it is important to distinguish between a good decision and a lucky outcome. A good decision is one that is made based on a thorough understanding of the problem and careful thought regarding the importance issues. Outcomes, on the other hand, may be unlucky, regardless of decision quality. Therefore, decision analysis allows making effective decisions more consistently.

Course Overview

This course is prepared in 2 phases where first phase will explain regarding project financial understanding when valuing oil and gas assets. Executing a petroleum related project such as field development, evaluate various investment opportunities by determining economic indicators and sensitivity analysis. Understanding techniques for predicting profit, production, costs, and cash flow for optimum result. Familiar with economic indicators, risk and uncertainty, gain knowledge on different economic structures such as tax regimes and production sharing contracts.

This 1st phase course is also designed to give a better understanding of Reserves and Resource Definitions and Guidelines for Classifications. Various aspects of the evaluation of hydrocarbon reserves as well as learn how to use reserves reports and studies.

2nd phase of the course will explain regarding to manage a complex and risk-laden project successfully you may need a comprehensive and effective management tool. This course will give you the latest concepts, methods and practices used by progressive companies worldwide to manage projects to achieve technical and financial success.

The content of this course phase is based on a structured gate approach to develop a business case, project scope definition and execution planning for successfully result

in developing complex projects. The course participants will use Front End Loading (FEL.) method to apply the project management techniques discussed in the course.

The course of whole project from the beginning to the end will take time for 5 days as follow; 2,5 days for Projects Economics and 2.5 days for Project Management.

What You'll Learn

1st phase of the course.

- Understand various economic terms used in the oil & gas industry
- Understand how to develop economic models of various petroleum fiscal regimes
- Carry out cash flow analysis and determine economic indicators
- Carry out different economic analysis for petroleum related projects
- Carry out a comprehensive economic evaluation study for any petroleum related project including risk analysis and sensitivity study using spreadsheet
- Understand reserves measurement methodology
- Understand reserves and resource definitions and guidelines for classification
- Understand the relation between technical and commercial aspects of resources
- Understand the process performed by independent evaluator in performing reserves certification
- Case Study

2nd phase of the course

- Select leadership techniques to increase the probability of your success
- Apply the concept of complexity science to project management
- "Determine the true complexity, with a clear understanding of variables involved and move forward to develop a plan that provides the right level of control and flexibility for success
- Use a stage-gate methods and Independent Project Analysis (IPA) database to access your goals & business case for better results in developing complex projects
- Determine a new approach to applying already know project management knowledge, skills, tools and techniques, and it will enable you to assess your projects complexity
- To deploy the most relevant techniques to achieve project success.

Course Outline

DAY 1: By. Sjafri Joenoes

Economics on Reserves

Economic Indicators

- Discounted Cash Flows
- Present Value
- Cost of Capital
- Internal Rate of Return
- Payback Period
- Profit Investment Ratio
- Maximum Cash in Red

Sensitivity Analysis

Risk and Uncertainties

- Source of Risk
- Source of Uncertainty
- Risk versus Uncertainty
- Decision Tree Analysis
- Spider and Tornado Diagrams
- Quantifying Uncertainty
- Probability Distribution

Production Sharing Contract (PSC)

- PSC Definitions and Guidelines
- Upstream Oil and Gas Activity
- Develop PSC Model

DAY 2: By. Sjafri Joenoes

Petroleum Resources Management System (PRMS)

- PRMS Definitions and Guidelines

Reserves Reporting Requirement

- Reserves Reporting System
- Security Exchange Commission (SEC)
- Due Diligence and Audit Process
- Valuation of Reserves
- PSC Economic Model for Reserve Audit

Net Sharing (PSC) vs Gross Sharing

DAY 3: by Pulung Susilo Rahardjo

Essential Project Background

- What is project & their characteristics
- Project goals and objectives
- Dynamics of the project life cycle & Phase of system life cycle
- Building the project organization & WBS
- Developing project network, cost, schedules and project plan included risk assessment
- Developing cost measurement & control, and performance criteria to success with EVM

Project Cost Estimating & Process

- Common categories of cost
- Purpose of project cost estimating
- Cost estimate types & descriptions
- Cost estimating process
- Ground rules, assumptions and collect data
- Selecting estimating methodology
- Perform & verify the estimate
- Review & documented the cost estimate

DAY 4: by Pulung Susilo Rahardjo

Cost Elements and Cost Pools

- Understanding cost behaviors
- Direct & Indirect costs
- Variable & fixed costs
- Semivariable costs
- Recurring vs. Nonrecurring costs
- Relationships among cost behaviors
- Types of costs included in estimates

Introduction to Estimating Methodologies

- Estimating methodologies
- Estimating by analogy & Developing complexity factors
- Parametric cost estimating
- Quantitative relationships
- Catalogs, Vendor quotes and Analogy

DAY 5: by Pulung Susilo Rahardjo

Cost Uncertainty Analysis

- Introduction Risk Analysis & Montecarlo Simulation
- A Typical project cost estimate
- An Alternative: a range of estimates & a cost probability distribution function
- Cost Uncertainty Analysis
- Life-cycle cost & commitment, and decision making
- Time value of money
- Inflation & Interest adjustments
- Design to cost

Case Study

- Project cost estimation process
- Hands on simulation with Monte Carlo Software

Who Should Attend

Oil & gas professionals such as project managers, project engineers, project support managers & their staff, project planning & cost controller, auditors, inspector, geologists, economists, accountants, technicians who need to learn how to conduct economic evaluation and to understand the role of petroleum economics in investment decision making and also to understand the oil & gas project management. This program is also recommended for non-technical financial professionals whose work relates to the petroleum industry, supervisors & managers in the Exploration, Production, Financing and Bank & Insurance Company.

Your Course Instructor

Sjafri Joenoos

He received Bachelor degree from Mechanical Engineering Department, Industrial Engineering Faculty, Bandung Institute of Technology (ITB) on 1979 and also he has Business Master from Prasetya Mulya Business School on 2004. He Has a professional and Practice experiences as various disciplines such as; Drilling, Reservoir Management, Planning & Budgeting more than 35 years in National & Multinational Company Specially Oil & Gas Industry. He retires from PT. Medco E&P Indonesia on year 2013 and focused in Strategic Planning & Budgeting and Specialist of Reserves Management and Reporting

Pulung Susilo Rahardjo

He received Bachelor degree in Aeronautical Engineering Sub-department from Mechanical Engineering Department, Industrial Engineering Faculty, Bandung Institute of Technology (ITB) on 1981. He has a professional and practice experiences as Project Management Senior Staff more than 35 years in National & Multinational Company Special Oil & Gas Onshore & Offshore Industry. He also attended at many project management seminar & course program at Indonesian & overseas institution. He retired from PETRONAS Indonesia (PCINO) on year 2014 and focused in Project Management Advisor.

NOTE: CONDUCTED IN BAHASA INDONESIA

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