

## An LDI Training Webinar

# **UPSTREAM PETROLEUM ECONOMICS, RISK AND FISCAL ANALYSIS**

**By Guy Allinson**

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### **AIMS**

This is a practical course aimed at giving participants the ability to -

- Understand and construct petroleum industry cash flow projections.
- Calculate, understand, and know how to apply economic indicators.
- Understand and apply risk analysis to exploration & production investments.
- Evaluate and model fiscal/PSC terms of countries worldwide.
- Value oil and gas properties.

This course is very practical and is filled with many detailed examples of petroleum economic analysis. Guy Allinson has deep knowledge and experience to share with participants. Participants can apply what they learn in this training immediately when they return to their job.

### **CONTENTS**

The contents of the course are shown below. The presenter reserves the right to modify the contents depending on the background of those attending and the progress of the course.

#### **DAY 1**

#### **CASH FLOW ANALYSIS**

##### **Net Cash Flow**

Discussion of the main components and relative importance of components of cash flow for an oil and gas investment (production, oil

and gas prices, revenue, operating costs, capital costs, abandonment costs and fiscal costs). Discussion of typical net cash flow projections for petroleum

### **Economic Life and Reserves**

How net cash flow projections are critical in determining economic life and reserves.

### **Distinction between Cash Flow and Profit**

How cash flow is distinguished from profit. The role of depreciation. When we use cash flow and when we use profit.

### **Cash Flow and Tax**

How tax is incorporated into cash flow projections. The basic rules for calculating tax worldwide. Loss carry forward and the effect of different petroleum tax regimes.

### **Cash Flow and PSCs**

The basic economic distinction between tax regimes and production sharing contract regimes. How to make cash flow projections for production sharing systems worldwide. Cost recovery and profit-sharing arrangements.

### **Sunk Costs**

The treatment and mistreatment of sunk costs in cash flow analyses and petroleum property acquisitions.

### **Incorporating Inflation into Cash Flow Projections.**

How to inflate the components of cash flows. The conventions and the jargon. Worked examples of the effects of inflation. Fiscal Drag.

## **DAY 2**

### **ECONOMIC INDICATORS**

#### **Introduction**

The need to measure net cash flow projections with single indicators. The indicators used in the oil and gas industry. The importance of time.

#### **Net Present Value (NPV)**

The time value of money. Compounding and discounting. Using a discount factor table and measuring the effect of time and discount rate. Discounting a cash flow projection and calculating NPV. Understanding the meaning, uses and features of NPV. Valuing petroleum properties using NPV.

### **Internal Rate of Return (IRR)**

The definition and application of IRR. Calculating the IRR.

### **Problems with IRR**

Multiple IRRs – when, how often and how they arise. How the NPV and IRR measures can give conflicting results and how to resolve this. The effect of project delays and the use of IRR

### **Payback**

Calculation and use of payback and discounted payback indicators. The use of discounted payback in petroleum fiscal regimes. Problems with payback.

### **Capital Productivity Index (CPI).**

Calculation and use of CPI. The use of CPI in oil companies and petroleum fiscal regimes. Capital rationing. Problems with CPI.

## **DAY 3**

### **EXAMPLE ECONOMIC EVALUATIONS**

#### **Comparing Investments**

Using economic analysis to choose between alternative mutually exclusive investments.

#### **Accelerated Production**

Analysis of an accelerated production example to illustrate the economics of incremental projects for existing developments. The effect of fiscal terms.

#### **Analysis of example fiscal terms**

Detailed analysis of one of more petroleum fiscal regime in the Asia-Pacific region. How to judge the severity, efficiency and the economic effects of individual fiscal regimes.

## **DAY 4**

### **RISK ANALYSIS**

#### **Sensitivity Analysis**

Analysing the sensitivity of investment decisions to variations in input parameters. Interpreting sensitivity diagrams. Problems with sensitivity analysis.

#### **Probability Analysis**

Defining and using probability distributions. Means, standard deviations, levels of confidence. Industry standard reserves definitions and classifications. Using probability in oil and gas industry practice – the pitfalls and requirements.

#### **Monte Carlo Simulation**

The mechanics of Monte Carlo simulation. The pitfalls of Monte Carlo simulation and how to avoid them. Reserves estimation using Monte Carlo simulation. Investment decisions using Monte Carlo simulation.

#### **Exploration decisions**

The definition, meaning, and examples of Expected Value (EV) in oil and gas drilling decisions. EV versus probability of success lines. Using EV to compare drilling and farmout decisions. Common problems with using EV and choosing probabilities of success. Valuing properties using EV. The effect of petroleum fiscal terms.

### **COMPUTERS**

Participants will carry out exercises on computers during the course. Familiarity with spreadsheets would be an advantage.

### **YOUR COURSE LEADER**

**Guy Allinson** is an upstream oil and gas industry consultant and a visiting lecturer at the School of Minerals and Energy Resources Engineering, University of New South Wales ("UNSW").

Guy has held various petroleum economics and commercial positions in the oil and gas industry in Europe and the Asia / Pacific regions. He has advised companies and governments in the Asia / Pacific region

on petroleum PSC and fiscal terms. He has valued many petroleum properties and companies for acquisition and sale, prepared economics research reports on the oil and gas industry, and has provided commercial support for oil field operations and investments worldwide.

Guy has presented courses in petroleum economic analysis since the early 1990s and has presented these courses over 230 times to oil industry professionals in many countries including USA, UK, Denmark, Switzerland, Australia, New Zealand, Indonesia, India, Iran, Malaysia, Thailand, Vietnam, Brunei, Egypt, Libya, and South Africa.

### **DELIVERY METHOD**

This is an online course delivered using Zoom.

### **DAILY SCHEDULE**

Session 1 - 8:00 am to 9:30 am

Session 2 - 10:00 am to 11:30

Session 3 - 13:00 to 14:00

Western Indonesia Time (WIB) +0700 UTC/GMT

### **REGISTRATION INFORMATION**

**Webinar Date** : November 2 - 5, 2020

**Webinar Fees**: IDR 29,500,000. Per person

Two ways to enroll:

1. Enroll online at [www.lditraining.com](http://www.lditraining.com)
2. Email your enrollment message to LDI Training at [lditrain@indo.net.id](mailto:lditrain@indo.net.id)

**For more information please contact to:**

**PT. Loka Datamas Indah**  
**LDI Training**

**Telephone: +62 21 6326911**  
**E-mail : [Lditrain@indo.net.id](mailto:Lditrain@indo.net.id)**  
**Web site : [www.Lditraining.com](http://www.Lditraining.com)**