

Exploration Blocks Management

15 days
Overview

BLOCK-EN-P

LEVEL

Skilled

PURPOSE

This course provides:

the knowledge and skills required to assess and move forward with play assessment scenarios in order to set up strategies for acreage management,
a comprehensive and practical understanding of the part of the E&P value chain that deals with the technical evaluation of an exploration asset,
the fiscal framework as well as the appreciation of risk that can be factored into the economics of an exploration project, and the impact on the decision-making process.

LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:

- understand prospect definition workflow and assess the parameters involved in basins' hydrocarbon potential evaluation,
- identify the link between petroleum systems, plays and prospects in order to assess a basin's potential and to set up an adequate exploration strategy,
- acquire a practical knowledge and the workflow for reducing exploration risk by predicting proven and unproven plays performance,
- understand risks and uncertainties inherent to OHIP (Original Hydrocarbon In Place) assessment and to follow through the decision process along the E&P chain,
- review fundamental concepts of portfolio management and to use the results of assessment studies with the adequate caution,
- define the right exploration strategies and comprehend risk behavior in petroleum exploration,
- assess the value of a single prospect and the value of several independent (dependent) prospects.

WAYS AND MEANS

Short daily lectures followed by exercises and hands-on sessions.
Both individual work (exercises) and team work (short case study).

LEARNING ASSESSMENT

Knowledge assessment with multiple choice questions and open explanatory questions.

PREREQUISITES

E&P professionals.
No experience required.

Agenda

WEEK 1

OPENING WORKSHOP: SETTING UP EXPLORATION BLOCK STRATEGY

2 d

By studying a “theoretical basin”, this opening workshop will walk participants through a 2-day brainstorming session on the pros and cons of various strategies and methodologies that could be considered for setting up, delineating and promoting exploration blocks in the most efficient manner, given the state of maturity of the areas under consideration, the economic terms of the contractual framework, and the State’s strategic goals at some point in time.

The participants will work in teams and face different technical and economic situations. With the guidance of an expert moderator, they will have to walk through the decision-making process, analyze risks, discuss options, present and defend opinions.

This workshop is intended as an eye-opener on all the fundamental technical and economic issues that will be touched upon or studied and analyzed in details throughout the rest of the training program; the final objective being to build up the skills required for managing and promoting the exploration for a development of the State’s Oil & Gas resources.

PLAY ASSESSMENT: FROM BASIN ANALYSIS TO EXPLORATION OPPORTUNITIES

3 d

Petroleum play (0.25 day)

What is a petroleum play? Play concept definition, need for defining a concept.

Petroleum system and basin analysis (1 day)

Petroleum system concept and investigation. Definition of a petroleum system. Identification and naming. Geographic, stratigraphic, and time related extent. Size and mapping. Application on examples.

Workshops: basin potential assessment, regional context, petroleum trilogy .

Proven and unproven plays: basis of an exploration strategy (1.5 days)

Definition and characteristics of the various plays. Petroleum charge. Trap. Timing. Proven plays (used as analogues for unproven plays). Strictly unproven plays, Complementary plays. Relationship between the play and the petroleum system. Event charts definition.

Workshop on real case studies.

Play risk analysis and exploration opportunities (0.25 day)

Geological risk (petroleum charge, trap, timing), other risks. Classification of both proven and unproven plays. Prediction of play performance.

WEEK 2

PROSPECT GENERATION & EVALUATION: FROM SINGLE TO MULTI-PROSPECT PORTFOLIOS

5 d

Prospect analysis and evaluation (2.5 days)

Source rock estimation, seismic and well data interpretation. Cross correlation and integration with seismic data. Structural history and timing of HC expulsion and migration: importance of exploration maturity status. Parameters involved in OHIP evaluation. Evaluation of uncertainties. Assessment consistency. OHIP deterministic and stochastic assessment. Transition to dynamics.

Identification and assessment of risks and uncertainties (1.5 days)

Geological risks (reservoir, trap, HC preservation). Probability Of Success (POS). Fluid content risks (source rock, maturation, migration, timing).

Deliverables for decision-making process (1 day)

“Prospect Identification Card”. Maps, parameters estimation, reserves values (Min/Mode/Max). Calculation of recoverable reserves. Prospect’s risked reserves. Preparation of virtual FDP and production profiles.

WEEK 3

PROSPECT/BLOCK VALUATION: EXPLORATION PROJECT ECONOMICS & DECISION ANALYSIS

5 d

E&P value chain and decision process (0.5 day)

Various steps of an E&P project. Critical decision points along the E&P chain. Economic rent sharing through Oil & Gas patrimonial contracts. Bottom line for oil companies. Concepts in economic modeling of exploration-production projects. Economic criteria, investment decisions and choices.

Case study: oil field project cash flow analysis.

Exploration prospect valuation (1.5 days)

Starting from the “Prospect Identification Card”. Commercial probability of success. Main statistics and probability concepts. Expected value concepts. Expected Monetary Value (EMV). Expected Profitability Index (EPI). Performance Index (PI). Decision-tree analysis. Guidelines for designing and solving decision trees. Exploration project’s un-risked and risked economics. Exploration risked rate of return. 3-scenario approach and mean expected net present value. Criteria for decision-making. Impact of the contractual framework on the risk/reward equation. Expected Value of Perfect and Imperfect Information (EVPI and EVII).

Exploration block valuation (1.5 days)

Asset valuation in perspective. Multi-prospect aggregation. Dependent and independent prospects.

Decision-tree methodology. Monte Carlo simulation. Steps in simulation modeling. Bonus evaluation.

Overview of risk behavior in petroleum exploration (1.5 days)

Industry practices to deal with risk aversion. Ways to improve risk decisions. Risk-adjusted value, fair market value and deal making. Determining venture participation. Optimum working interest and modified risk-adjusted value. Wrap-up.