



# N154: Orientation to the E&P Business for the New Petrotechnical Professional

Tutor(s): Randy McQueen and Tim Deines

2 Days

Competence Level:  
Awareness



Classroom Course

## Summary

This course will orient new petrotechnical professionals (geologists, geophysicists, petrophysicists, engineers, and technicians) to the vocabulary, practices, and career opportunities of the exploration, production refining and marketing business. It includes an introduction to the full exploration and production life cycle and of the value chain it generates.

## Learning Outcomes

Participants will learn to:

1. Describe the different operations required to explore for, develop, produce, refine and market oil and natural gas.
2. Explain the steps required for oil and gas to accumulate in subsurface traps.
3. Describe some of the methods used when exploring for oil and gas.
4. Explain how mineral and surface rights are identified and contractually secured.
5. Recognize general types of onshore and offshore rotary rigs.
6. Discuss basic economics of drilling a well.
7. Discuss production techniques.
8. List secondary recovery techniques.
9. Describe how crude oils are refined.
10. Review methods of selling petroleum products to the consumer.

## Duration and Training Method

A two-day classroom course comprising of lectures punctuated with case studies illustrating concepts.

## Who Should Attend

Anyone new to the exploration and production business.

## Prerequisites and Linking Courses

There are no prerequisites. This course provides an introduction to the industry that will allow participants to understand where other Nautilus Training Alliance courses fit into the the E&P lifecycle. Participants may also be interested in N316 (Petroleum Geology for Non-Geologists). Participants looking for a more detailed examination of any of the E&P topics discussed should look to the Nautilus Training Alliance Program Competency maps to find an appropriate course.

## Course Content

This course provides an introduction to the full life cycle of the E&P business, from basic petroleum geology through generation of a prospect, acquiring the rights to explore, land leasing, permitting, drilling, producing and abandoning after the hydrocarbon production depletes. Participants will gain an appreciation of the various roles required to explore for, find, and produce oil and natural gas and the multi-disciplinary nature of work teams. This course introduces the key economic business drivers and discusses the risks and uncertainties present at key decision points along the life cycle value chain.



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## Agenda

### Day 1:

#### 1. Overview

- Basic definitions
- World petroleum statistics
- Worldwide petroleum producers
- Types of operations
  - Exploration, Production, Transportation, Refining and Marketing
- Careers in the E&P business

#### 2. Petroleum Chemistry

- Gas, Condensates and Liquid
- Physical properties
- Characteristics of Natural gas
- Characteristics of Crude oil

#### 3. Exploration for Oil and Gas

- Origin of oil and gas
- Occurrence of oil and gas
- Finding the reservoir
- Defining a prospect to drill
- Worldwide exploration facts
- Summary of desired Learning Outcomes for exploration for oil and gas

#### 4. Leasing the Prospect

- Onshore US, offshore US, on and offshore international opportunities
- Summary of desired Learning Outcomes for leasing the prospect

#### 5. Drilling for Hydrocarbons and Completing a Well

- Drilling rig components
  - Hoisting system
  - Drill string and bit
  - Fluid circulation
  - Power plant
  - Blow-out prevention
- Drilling vertical or directional
- Onshore and offshore
- Well logging
- Drill stem testing
- Completing a well
- Summary of desired Learning Outcomes for the drilling and completion section



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## Day 2:

### 6. Production of Oil and Natural Gas

- Reverses cash flow
- Natural flow and artificial lift
- Well equipment
- Oil, natural gas and water – removal of contaminants
- Separation of fluids and gases
- Well servicing and workovers
- Improving hydrocarbon recovery
- Onshore vs. offshore production operations
- Summary of desired Learning Outcomes for the production of hydrocarbons section

### 7. Transportation of Oil and Natural Gas

- Movement of oil and natural gas from producing field to refineries and processing plants
- Movement of products to consumers

### 8. Disposition and Abandonment

- Lease terms
- Economic factors

### 9. Refining Oil and Natural Gas

- Why refine?
- Characteristics of crude oil
  - Basic chemistry of petroleum
  - Downstream jargon

### 10. Marketing of Processed Hydrocarbons

### 11. E&P Industry Economics and the Future Demand for Oil and Natural Gas

### 12. Social responsibility

- Stakeholders
- Community development
- Environmental stewardship
- Governmental regulations
- Hydraulic fracturing
- Summary and desired Learning Outcomes of the E&P Business Orientation