

TRAINING TITLE

INTRODUCTION TO NAVIGATOR (RESERVOIR SIMULATION)

Training Duration

5 days

Training Venue and Dates

DE091	Introduction to Navigator (Reservoir Simulation)	5	03-07 Feb. 2025	\$5,500	Dubai, UAE
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In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees

- **\$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch**

Training Certificate

Define Management Consultants Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

It provides a recap of some of the basic concepts in Reservoir Engineering required to perform reservoir fluid flow calculations, and gives examples of the types of calculation that may be performed, and when these are required. The principles of how to define the material balance and flow calculations is established and how to solve the pressure equations. Practical issues around gridding, defining and controlling wells and upscaling are introduced.

TRAINING OBJECTIVES

By end of course participants will be able to understand

- be able to describe what is meant by a simulation model, saying what analytical models and numerical models are.
- be familiar with what specifically a reservoir simulation model is.
- be able to describe the simplifications and issues that arise in going from the description of a real reservoir to a reservoir simulation model.
- be able to describe why and in what circumstances simple or complex reservoir models are required to model reservoir processes.
- be able to list what input data is required and where this may be found.
- be able to describe several examples of typical outputs of reservoir simulations and say how these are of use in reservoir development.

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- know the meaning of all the highlighted terms - or terms referred to in the Glossary - in Chapter 1 e.g. history matching, black oil model, transmissibility, pseudo relative permeability etc.
- be able to describe and discuss the main changes in reservoir simulation over the last 40 years from the 60's to the present - and say why these have occurred.
- know in detail and be able to compare the differences between what reservoir simulations can do at the appraisal and in the mature stages of reservoir development.
- have an elementary knowledge of how uncertainty is handled in reservoir simulation.
- know all the types of reservoir simulation models and what type of problem or reservoir process each is used to model.
- know or be able to work out the equations for the mass of a phase or component in a grid block for a black oil or compositional model.

WHO SHOULD ATTEND?

- This course is designed to for Reservoir engineers, and any personnel involved integrated reservoir study, static or dynamic simulation.

TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

COURSE PROGRAM

Day 1

RESERVOIR SIMULATION MODEL SET-UP

Simulation Input

- **Identify what questions the simulation is expected to address.**

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- Identify what data is required as input to perform the desired calculations.
- Format data correctly, taking account of keyword syntax and required units.

Simulation Output

- Select required output of calculations.
- Quality check output data to check for errors in input.
- Identify purpose of each output file and use post-processors to analyse data.
- Identify impact of reservoir engineering principles in calculation performed.
- Identify numerical effects and impact of grid block size and orientation on results.
- Perform simple upscaling calculation to address numerical diffusion.

Day 2

Principles of Reservoir Simulation

- Reservoir engineering in Petrel
- Petrel user interface
- Rock Physics and Fluid models
- Simulation initialization
- Petrel Volume calculation

Day 3

Dynamic modelling

- History strategies
- Prediction strategies
- Well path design
- Completion design

Day 4

Analysis of Results

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- Summary results analysis
- 3D results analysis
- History matching workflow
- Modify a simulation model
- Aquifers
- Simulation case editor

Day 5

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History Matching and Prediction

- Quality control of coarsened grids
- Upscaling reservoir properties
- Simulation study challenge
- Quantify sensitivities to model uncertainty
- Optimize chosen concept

NOTE:

Pre-& Post Tests will be conducted.

Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.



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