

Play-Based Exploration

Consultant / Trainer

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The **Petrogenium** (in collaboration with EPTS) **Play-Based Exploration** will equip participants with a structured understanding of Play-based Exploration (PBE) as a systematic method for identifying and evaluating hydrocarbon opportunities. It will guide them through the entire PBE framework—Basin to Play to Prospect—emphasizing how to build a solid technical foundation from basin analysis, classify and assess plays, and mature leads into drillable prospects..



Participants

This **Petrogenium**. course is designed for all geoscientists working in exploration: from technical assistant to exploration manager. Also portfolio analysts will find this a very instructive course.



Learning Objectives

The course is full with exercises and opportunities for discussion, and will feel like a hands-on workshop. At the end of the course the participants will have a good understanding of the added value of the PBE approach, and should be able to apply this in their day-to-day work.

In addition to the day-long exercise of Day 2, there are many smaller exercises that should lead to a better understanding of the main messages and learnings. Several real examples will be presented of where the PBE approach has resulted in a better understanding and in insights that would otherwise probably not be gained.

DAY 1

General introductions

- 1. Introduction to PBE:** In this module the main concepts and terms are introduced, and the main steps of the PBE approach are explained. Later in the course all will be dealt with in more detail. The intention is to give the course participants an early idea of what will be covered, to make sure that the logic of the approach is appreciated. Concepts that will be introduced (and that will be dealt with later in more detail):
 - What is a play map (geology)
 - What are CRS and CCRS maps (relative risk)
 - Field-size distributions and lead count maps
 - Play POS and Prospect POS
 - Yet-to-find
 - Prospect ranking (within plays)
- 2. Play Mapping:** What is a play, and how are plays defined; stratigraphically and aurally. The elements that should be displayed on a Play map. The module ends with an exercise where groups of participants are asked to draw the essential elements of a play of their choice on a provided A0 template. This is followed by presentations and discussions of the produced illustrations and a discussion of the value of Play maps.
- 3. The PBE Pyramid:** Explanation of the importance of understanding the basin type and basin evolution is a basis for sound prospect/opportunity assessments. The value of the "Play concept" is illustrated with an exercise. Other exercises include the construction of a chrono-stratigraphic chart and recognizing basin cycles from a cross-section of basin. Examples will be presented to demonstrate the added value of the PBE approach: 1) Norwegian Atlantic margin with an unexpected source for reservoir sands, 2) Santos Basin of Brazil with a pre-salt (syn-rift) play based on an African analogue, and 3) the importance of knowing the basement composition for realistic heat flow understanding, illustrated with examples from Nigeria and the Saudi plate.

Programme

DAY 2

Recap Day 1

1. **Building a Play Map:** An exercise in groups of 4-5 staff, based on the Southern North Sea.

Pre-reading material for this exercise will be provided. The actual exercise is preceded by an introductory presentation on the regional geology, petroleum system and main plays of the area.

Each group will be supplied with the following maps at A1-scale: Base map; Structural elements map; Depth map to top reservoir; Thickness and reservoir facies maps; Thickness and presence of seal; Extent and maturities of source rocks; discovered fields (as per 1970); Regional cross-section(s).

As a first step, the groups must make summary maps for Structure, Reservoir, Seal and Charge, which are presented and discussed.

Secondly, each group makes a play map by indicating the essential information that influence prospectivity for all 4 play elements. The resulting map must make clear why the play works where it does, potential extensions of the play, and areas of increased risk. Each group is to present results in 10 minutes. This is finalised by a general discussion on learnings.

2. **CRS Mapping:** Preceded by an explanation of what a Common Risk Segment (CRS) Map is, the groups are charged with making CRS maps for Structure, Reservoir, Seal and Charge, and to combine these in a Combined CRS (CCRS) Map.

Based on these exercises participants will know how to go about making Play and CRS Maps, and they will understand the difference between the two.

The day ends with a presentation of what 45 years of exploration and production in the Southern North Sea (since 1970) has resulted in

Programme

DAY 3

Recap Day 2

- 1. Play POS and Prospect-specific POS:** It will be explained what Play POS is, and why and how it can be used. Guidelines are given for a consistent use of Play POS in unproven play segments, avoiding "double-dipping". An exercise on estimating Play and Prospect-specific POS will enhance understanding.
- 2. Play Statistics: This module deals with:**
 - Field-size distribution plots; what they are and how they are made. It will also be demonstrated with a simple exercise how they change with ongoing exploration activities. Pitfall are discussed.
 - Creaming Curves; how creaming curves can tell us something about the maturity of a play. Many examples of real HC basins are given, and their shapes are explained in context of the play complexity and exploration activity levels.
 - "Yet-to-find" volume; statistical methods that are being used to establish the volume of yet to be discovered hydrocarbons within a play or basin are explained. An exercise is designed to apply some of the methods and at the same time the exercise provides a basis for discussing pitfalls and shortcomings of a purely statistical method.
- 3. Course summary:** A brief summary of the main learnings of the course and a last opportunity to discuss any issues

Why select Petrogenium.?

The above support will be provided by principal consultants with 30+ years world-class experience in the technology and hands-on know-how from operation of refinery units.

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