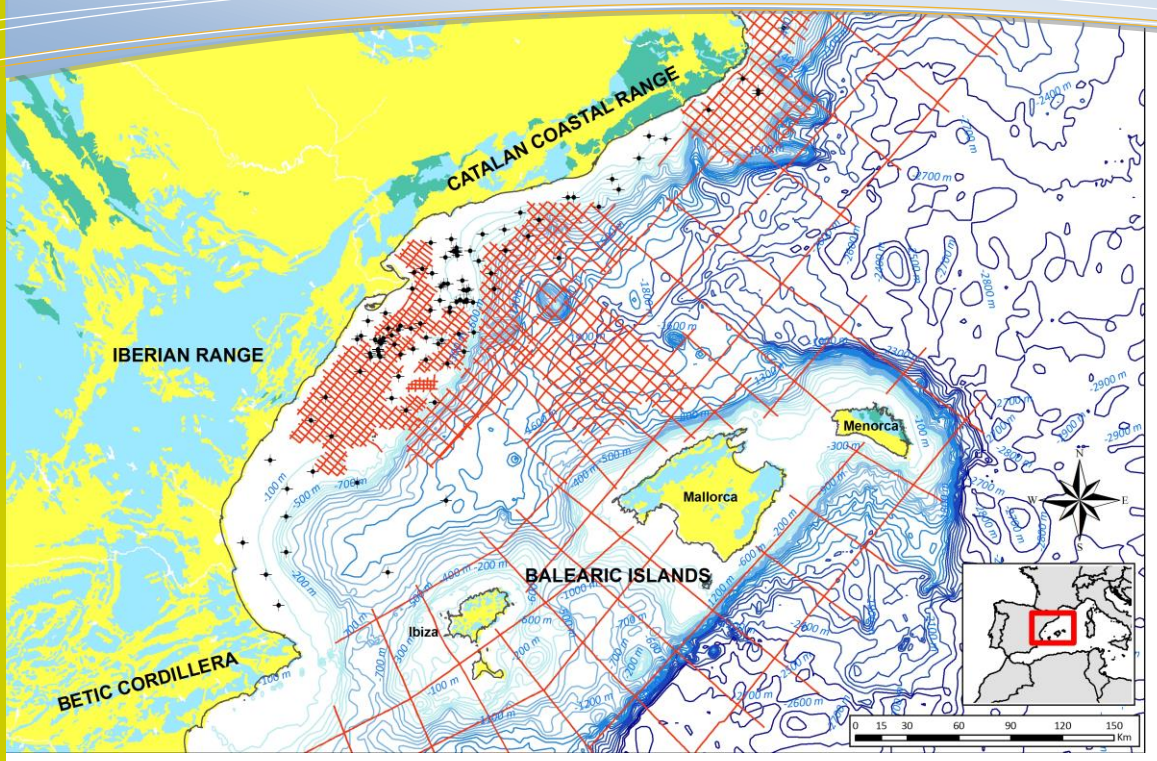
VALENCIA TROUGH PETROLEUM PROSPECTIVITY



The Western part of the Mediterranean Region is one of the less explored areas for hydrocarbons of the entire Tethys region. The Valencia Trough, offshore Spain, is located between the Catalan coast and the Balearic Islands and it represents one of the most attractive basins for HC exploration using new concepts and technologies.

Exploration in the Gulf of Valencia started in 1968, with the third well drilled making already the first commercial discovery. By 1976, with just 22 exploratory wells drilled, most of the hydrocarbons fields known today had been found (Amposta, Dorada, Montanazo and Tarraco oil fields). Since 1994, 3D seismic started to be used as an exploration tool and, consequently an higher rate of success has been achieved and new accumulations discovered, which, in spite of their small sizes (3 to 10 million barrels of oil), have been immediately developed.

After many years of exploration and more than 200 wells drilled, information has been published about the geology and geodynamic evolution of the basin (Roca, 1994), as well as on the petroleum systems of the existing fields (e.g. Seemann et al., 1990). However, considering the complex characteristics of the reservoirs, where several processes interact, the complete understanding of the distribution of petrophysical properties and the main pathways for fluid circulations have to be fully achieved. Moreover, the complete characterisation of the Mesozoic source rocks can offer further exploration targets in un-explored parts of the basin.

This study represents a full review of the geology and exploration potentials of the Valencia Trough. The analysis was performed integrating the interpretation of more than 13500 km of seismic lines (supplied in digital format by Schlumberger Multiclient), the results of the main wells drilled in the area, the review of detailed studies on outcrop and in the basin, the development of 1D basin models for some key wells and an exhaustive and critical evaluation of the stratigraphic and tectonic frameworks.

The main conclusions of the study focus on the description of four play types identified in the basin:

The Casablanca and Amposta play is characterised by the presence of the Mas D'Ascla Fm. (U. Jurassic) and Alcanar Fm. (L. Miocene) source rocks and by Cretaceous and Jurassic karsified limestone and dolostone reservoir. This play has been proved in the shelf margin and it has been assumed to be present in the central sector of the basin.

The Castellon play is characterised by the presence of the Alcanar Fm. (L. Miocene) source rocks and by Upper Miocene sands of the Castellon Group as a reservoir. The play has been detected mainly along the shelf margin and in a small sector in the south western part of the basin.

The source rock of the Ebro play is defined by the clays of the Ebro Group (Pliocene-Pleistocene), whereas the reservoir is characterised by the Ebro sands (Pliocene-Pleistocene). The play is well distributed along the shelf margin and it has been recognised in a small sector in the south western part of the basin.

The Rosas play is characterised by a source rock formed by Paleogene marine facies and a reservoir that could be represented either by Cretaceous to Permo-Triassic carbonates and dolostone or Paleogene formations (?). This play is limited to the north eastern part of the Valencia basin.

Play distributions, paleogeographic maps, basin locations and further features are included into an ArcGIS project supplied as enclosure to this report.

The study has been conducted by GEPlan Consulting s.r.l. based in Ferrara, Italy, who is acknowledged as one of the foremost experts in Petroleum Exploration in the Mediterranean area. The company operates several permits on behalf of clients in both onshore and offshore Italy, has also prepared speculative and proprietary reports on the Bradano Basins, Adriatic Basin, Sicily and Malta Channels basin, Southern Apennines Thrust Belt and is currently preparing other regional reports in the Mediterranean area.

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PETROLEUM PROSPECTIVITY

REPORT CONTENTS

Enclosures:

- **GIS project;**
- **Enclosure 1: Stratigraphy**
- **Enclosure 2: Cross sections**
- **Enclosure 3: Dataset and Geological Overview**
- **Enclosure 4: Play distribution and characteristics**

*** seismic data provided by Schlumberger** Schlumberger

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