

## **Petroleum Systems and Exploration Play Fairways in the Western Greece and Southern Crete Offshore**

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### **Abstract**

This exploration study realized as a support to the Offshore Greece Licensing Round held in 2015 on behalf of Petroleum Geo-Services was the basis for the delineation of the exploration blocks over the western Greece (Ionian Sea) to the south of Crete (Libyan Sea) offshore.

Based on the interpretation of a 12,500 km multi-client 2D "high frequency" seismic dataset acquired by Petroleum Geo-Services over an area of 225,000 km<sup>2</sup>, this study has enabled to evaluate the petroleum systems and identify exploration play fairways in the western Greece and southern Crete offshore.

Conducted over one of the last unexplored Mediterranean basins, this study encompasses: part of the Alpine thrust and fold belt represented by the Hellenides, the shallow water domain of the Apulian Platform and its southern extension within the Ionian Sea, the accretionary prism of Mediterranean Ridge associated to the subduction of the Africa Plate below the Hellenic Arc and remnants of Mesozoic basins with oceanic crust (Deep Ionian Basin, Herodotus Basin).

The main steps of this study were:

- A regional synthesis of the onshore and offshore Italian and Albanian, Adriatic and Western Greece hydrocarbons E&P results and previous offshore campaigns such as DSDP, ODP, and Escarmed.
- A structural interpretation of a complex tectonic setting involving subduction/collision and large scale wrench faulting.
- Existing wells being too sparse to constrain lateral depositional variation, seismic reflectors configuration was used to define relevant tectonostratigraphic units and the respective contribution of their lithological content to potential reservoir rocks, source rocks, and seals.
- Inventory of the play fairways and leads from the Permian till Pliocene associated to the evaluation of the petroleum systems has led to the evaluation of the potential hydrocarbon resources and exploration risks within the western Greece Ionian Sea and southern Crete Libyan offshore.

The new insights brought by that study are threefold: hydrocarbon resources evaluation within the unexplored deep Mediterranean offshore, better understanding of the evolution of the sedimentary system of a deep basin and its relation with long standing shallow water platform, and deepened knowledge about the Eastern Mediterranean Sea geodynamic.