Offshore Ultra-Deep Exploration in Greece – Challenges and the Next Steps of HHRM
Deep Water Drilling Areas in the East Mediterranean

- Cyprus (1700m)
- Egypt (1450m)
- Israel (1600m)
- Black Sea (2200m)

Greece?
To be determined
Water depths up to
- 4000m
Deep Water Targets in Greece

• Block #1 (200-1000m)
• Block #2 (900-2000m)
• Ionian (1400-2000m)
• Gulf of Patraikos (450m)
• Katakolon Field (750-1500m)
• Block #10 (1500-2800m)
• West Crete (3000-4000m)
• Southwest Crete (2800-4000m)
• Source rock are the **Mesozoic** Pantokrator and Vigla **carbonate** formations and **Oligocene-Miocene flysch**
• Reservoir type varies from **reef** build-ups to **gravity mass** deposits and carbonates
• Seal is expected to comprise of **Plio-Pleistocene** sediments, muddy and cherty deep sea sediments and evaporites
• Water depths range from **1400 to 2100 m**
• Structure depths range from **1700 to 4000 m**
W-SW Crete Plays

• Ultra deep water high-potential, high-risk plays
• Source rock system is expected to be Triassic and Jurassic carbonates. The source system has been proven only in basinal areas around platform
• Reservoir types could be Mesozoic platform carbonates with potential build-ups and/or pre-Messinian clastics (alluvial fans and tubridites).
• Seal would be the Messinian salts or, towards the NW of the area, Tertiary clastic flysch
• H₂S presence is a concern
• Water depth expected in the region of 3000 to 4000 m
Challenges for Deep Water Exploration

• Operational (riser equipment, drilling rigs, decommissioning etc)
• Technical. (seismic data, fluids, cement types, casing designs, small fracture gradients, logging equipment design etc)
• Financial (high investment costs)
• Organizational
• Contract/procurement (long lead times for spares and installation resources)
• Introduction of new technology elements or usage of known technology in new conditions.
• High consequences of operational failure.
Challenges for Deep Water Exploration

• New challenges imply previously unmet risks
• These require more detailed and more in-depth risk assessment
• Identification and implementation of performance standards for additional Safety and Environment Critical Elements specific to ultra-deep water exploration is an almost certain requirement
• Only operators with significant experience in this field of exploration are expected to be able to cope with the demands and undertake such projects in Greece
• Well notifications will have to include complex designs and verification schemes
Actions for HHRM

The documents that HHRM published may have to be updated to include ultra-deep water references and guidance.

Increased technical expertise will be needed for installation inspections etc.

HHRM is already in the process of growing its Offshore Safety pool of expertise.
HHRM has initiated a collaboration with relevant Greek authorities in order to prepare an External Emergency Response Plan covering all offshore oil and gas installations within its jurisdiction.

- Ultra-deep water exploration activities will be considered and form part of this planning.

- In order to successfully carry out this important task, it has secured the assistance of the Joint Research Center (JRC) of the European Commission.

- HHRM is in close collaboration with other European countries who share expertise in their field of deep water exploration.