New Tenders: Prospectivity of Ionian, South and Southwestern Crete Offshore Blocks, Greece
Establishment of HHRM by Law 4001/2011:

• Introduced as
  “A competent independent authority, exercising exclusively the Hellenic Republic’s rights to hydrocarbon resources (i.e. managing upstream activities and licensing)”

• HHRM is a state company but not a NOC!
Hellenic Hydrocarbon Resources Management S.A.

- HHRM exercises the management of hydrocarbon rights on behalf of the state for the public benefit (prospecting, exploration and exploitation)

- HHRM, as lessor,
  - Enables E&P tender process
  - receives and evaluates bids
  - negotiates and
  - concludes Lease Agreements with third parties

- The agreements are signed between HHRM and the Contractor and are submitted to the Minister of Environment and Energy for final approval

- The right to hydrocarbon prospecting is granted by decision of HHRM
Main Objectives of HHRM

- Contribution to the economic growth and energy security and self sufficiency
- Development of the geological knowledge of the country
- Support and promotion of research for the O&G industry
- Creation of jobs in technically innovative fields
- Signing of agreements and finding ways to strengthen international relations and maximize social benefits
Fulfill the operational needs of HHRM

Shape new seismic data acquisition and reprocess the existing seismic data

Review the evaluation of the hydrocarbon potential of the country

New tenders preparation

Follow and manage the contractual obligations related to the existing concessions, including the Safety of the Offshore installations

Improve the terms of future tenders for the research, exploration and exploitation of hydrocarbons
HHRM has been transitionally appointed as the Competent Authority for Offshore Safety in Oil and Gas Operations in Greece since July 2016 (transposition of Directive 2013/30/EU)

The **responsibilities** of HHRM include:

- Assessing and accepting of Reports on Major Hazards
- Overseeing compliance by operators and owners of the Greek Offshore Safety Law, including inspections, investigation and enforcement actions
- Making annual plans and producing reports
- Proposing the issuing of safety regulations and regulatory acts
- Cooperating with other EU Competent Authorities
- Advising other authorities or bodies
Latest developments in the E&P sector of Greece

- Non Exclusive Seismic Acquisition Tender 2011-2012 awarded to PGS
- “Open Door” Tender Invitation: 2012
- Onshore Tender (according to Individual Express of Interest): 2014
- Offshore Licensing Round (western Ionian and south of Crete): 2015
- New Offshore Tenders: 2017
Mediterranean Sea - Greece
Tenders, Concessions & Awarded Blocks - Greece

AAPG/ICE, ExCeL London, Oct. 15-18, 2017

Hellenic Hydrocarbon Resources Management SA
www.greekhydrocarbons.gr
Current acreage

- Block 2
  - TOTAL-HELPE-EDISON

- Patraikos
  - HELPE-EDISON

- Katakolon
  - Energean Oil & Gas

- Block 10
  - HELPE

- Prinos
  - Energean Oil & Gas

- Ioannina
  - Repsol Energean Oil & Gas

- Arta-Preveza
  - HELPE

- Aitoloakarnania
  - Energean Oil & Gas

- NW Peloponnese
  - HELPE

- Sea of Thrace
  - HELPE-CALFRAC

Hellenic Hydrocarbon Resources Management SA
www.greekhydrocarbons.gr
Plan of new Offshore Seismic Data Acquisition
Geotectonic Overview of Greece: Focus in western & southern part
Geological environments with petroleum interest in western and southern Greece

- Carbonate platform and reefs
- Structurally complex area
- Thrusts
- Wedge & Messinian Evaporites
- Transpression / Transtension
### Western and South of Crete Blocks

<table>
<thead>
<tr>
<th>depth</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2500</td>
<td>5.5</td>
</tr>
<tr>
<td>2500-3000</td>
<td>12.6</td>
</tr>
<tr>
<td>3000-3500</td>
<td>35.7</td>
</tr>
<tr>
<td>3500-4000</td>
<td>37.8</td>
</tr>
<tr>
<td>4000-4500</td>
<td>8.1</td>
</tr>
<tr>
<td>&gt;4500</td>
<td>0.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>depth</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500-2000</td>
<td>3.6</td>
</tr>
<tr>
<td>2000-2500</td>
<td>10.2</td>
</tr>
<tr>
<td>2500-3000</td>
<td>51.7</td>
</tr>
<tr>
<td>3000-3500</td>
<td>19.2</td>
</tr>
<tr>
<td>3500-4000</td>
<td>12.1</td>
</tr>
<tr>
<td>4000-4500</td>
<td>3.2</td>
</tr>
</tbody>
</table>

AAPG/ICE, ExCeL London, Oct. 15-18, 2017

Hellenic Hydrocarbon Resources Management SA
www.greekhydrocarbons.gr
WD at main structure: 2,250 m
TWT of main structure: 3,0 sec, associated by deeper structure occurrence
Main structure width: 2.4 to 2.7 km, secondary at least double size
TWT Messinian Salt thickness: min. 100 msec (seal)
Cretaceous carbonates erosional surface in green
WD at structure: 430 m
TWT of structure: 950 msec
Structure width: ca. 7 km
Reefal carbonates “atoll type”, sealed by onlapping lagoonal seds.
and Messinian Evaporites
South of Crete, new plays – 2017

WD at main structure: 3,500 m
TWT of main structure: 5.2 sec
Structure width: ca. 7 km
Occurrence of shallower structures
Reefal carbonates, sealed by onlapping fan seds. and Messinian Evaporites
Ionian Block

<table>
<thead>
<tr>
<th>depth</th>
<th>percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;500</td>
<td>11.5</td>
</tr>
<tr>
<td>500-1000</td>
<td>12.4</td>
</tr>
<tr>
<td>1000-1500</td>
<td>43.8</td>
</tr>
<tr>
<td>1500-2000</td>
<td>19.3</td>
</tr>
<tr>
<td>2000-2500</td>
<td>10.1</td>
</tr>
<tr>
<td>&gt;2500</td>
<td>2.9</td>
</tr>
</tbody>
</table>
1. Shallow water carbonate build-ups
2. Nummulitic limestone carbonate debris flows
3. Microbreccious limestone and calcareous gravity-mass deposits (calciturbidites derived from the platform)
4. Karstified L. Jurassic-Mid Miocene platform deposits

Subordinate reservoirs:
5. Shallow water karstified rudist limestone and collapsed breccias
6. Redeposited turbiditic sandstones and conglomerates (derived from the eastern slope of Pre-Apulian basin).
Potentially sealed by muddy-cherty deep-sea sediments of Pre-Apulian
The organic matter is Type I and Type II

TOC ranges up to 6% for the Jurassic and up to 10% for the Cretaceous deposits. The Miocene-Oligocene clastic deposits exhibit good TOC values.

The carbonate potential reservoirs could be charged from hydrocarbon source rocks developed in
- Jurassic-Cretaceous Posidonia and Vigla shales
- late Triassic Foustapidima dolomites

Clastic reservoirs charged from the lower parts of Miocene-Oligocene Flysch deposits.
WD at structure: 1,600 m
TWT of structure top: 2,9 sec
Structure width: ca. 2,5 km
Isolated carbonate build up sealed by Neogene pelagic seds. and Evaporites
TWT of Messinian Evaporites av. thickness: 160 msec
Extension of previous isolated carbonate build up sealed by Neogene pelagic seds. and Evaporites, to the south (next seismic line record), securing the continuity and the large size of the structure.
WD at structure: 1,590 m
TWT of structure top: 2,9 sec
Isolated carbonate build up sealed by Neogene pelagic seds. and Evaporites
Max width: 9 km, 3 km each rim
Various channels to be observed
### Geophysical coverage of the three blocks (New Tenders 2017)

#### IONIAN Block
- **Block area:** 6,671.13 sq. km
- **MC lines:** 1,298.24 km (*by PGS 2012-2013*)
- **Legacy lines:** Conditioned: 269.94 km
- **Legacy lines:** Reprocessed: 1,818.88 km
- **Seismic lines Sum:** 3,387.06 km

#### Offshore Crete (two Blocks on offer)
- **Blocks (2) area:** 39,926.77 sq. km
- **MC lines:** 2,274.61 km
- **Legacy lines:** Reprocessed: 63,02 km
- **Seismic lines Sum:** 2,327.63 km

---

AAPG/ICE, ExCel London, Oct. 15-18, 2017

Hellenic Hydrocarbon Resources Management SA
www.greekhydrocarbons.gr
Tenders Time Schedule

• Submission of offers to HHRM begins with the publication of the Call for Tenders Notice in the Official Journal of the European Union (EU). Ministerial Decision is already published (Aug. 11, 2017)

• Data Room review (Athens) opens the day of the Notice publication (Data Room Fee: €1,000). PGS data rooms also available in London, Oslo, Kuala Lumpur and Houston.

• Application deadline: 90 days after the Notice publication in the Official Journal of the EU

• Offers evaluation: 60 days after application deadline

• Lease Agreement execution: 3 months after the offers evaluation completion

• Court of Audit approval and Parliament ratification secure the procedure for the contractual E&P period (8+25 yrs)
Bid requirements

• Application Fee: €5,000

• Minimum data purchase: 3,000 km of PGS data, including all PGS data within the block applied for

• Consortium (or J/Vs) data purchase discounts apply

• Interpretation Report of Beicip: €50,000

• HHRM’s Interpretation Report focused on the tendered blocks: €25,000

• Bid Guarantee: €100,000

• Financial and Technical Capability Documentation

Purchase of reprocessed legacy seismic and wells datasets is not obligatory
Biddable Items

- Minimum Exploration Work Programme
- Minimum Financial Commitment
- Royalty (-ies)
- Signature and Production bonuses
- Acreage (Surface) Fees
- Capital Depreciation
- Relinquishment
- Training and Facilities Support
Evaluation Criteria

Technical Capacity (40%)

• Technical and operational experience and geological understanding
• Work programme quality: proposed budget
• HSE qualifications

Financial Capability (60%)

• (Royalties, Bonuses, Acreage Fees, Relinquishment, Depreciation, Training)

Type of Agreement: Lease Agreement
Summarizing

• HHRM acting as a state regulator is responsible for all documentation relating to the tenders (applications, bid evaluations, negotiations) and eventual Lease Agreement management

• Petroleum Geology:
  • The three tendered blocks present good oil/gas potential with a number of structures/leads present in both carbonate and clastic plays
  • Water depth at structures top is within industry norms
  • Huge blocks are offered for exploration (2 x 20,000 sq. km, 1 x 6,700 sq. km)

• Fiscal regime is very attractive with 25% tax (stabilization clause applied)

• Greece, as a European Union Member, provides stability, security and transparency during all phases of tendering and beyond

• Under the offshore tender processes, PGS will provide seismic and well data
Join us on the next adventure – New Offshore Tenders under publication

Visit HHRM at
Booth Nr. 535

Presentation tomorrow:
Capital Suite 17, 16:50

Thank you for your attention