Characterization of Jordan’s In-situ Oil Shale Resource

Jordan Oil Shale Company (JOSCO)
18 Oct 2011

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**Reserves:** Our use of the term “reserves” in this presentation means SEC proved oil and gas reserves for all 2009 and 2010 data, and includes both SEC proved oil and gas reserves and SEC proven mining reserves for 2008 data.

**Resources:** Our use of the term “resources” in this presentation includes quantities of oil and gas not yet classified as SEC proved oil and gas reserves or SEC proven mining reserves. Resources are consistent with the Society of Petroleum Engineers 2P and 2C definitions.

**Organic:** Our use of the term Organic includes SEC proved oil and gas reserves and SEC proven mining reserves (for 2008) excluding changes resulting from acquisitions, divestments and year-on-year pricing impact.

To facilitate a better understanding of underlying business performance, the financial results are also presented on an estimated current cost of supplies (CCS) basis as applied for the Oil Products and Chemicals segment earnings. Earnings on an estimated current cost of supplies basis provides useful information concerning the effect of changes in the cost of supplies on Royal Dutch Shell’s results of operations and is a measure to manage the performance of the Oil Products and Chemicals segments but is not a measure of financial performance under IFRS.

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JOSCo is a wholly owned subsidiary of Royal Dutch Shell plc

- Active in more than 90 countries
- Approx. 100,000 full-time employees worldwide
- Over 40,000 Fuel service stations
- Provide transport fuel to some 10 million customers a day

Royal Dutch Shell plc is listed on the stock exchanges of Amsterdam, London and New York

Source: 2010 Annual Report and Form 20-F

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Oil Shale and Extra-Heavy Oil-Bitumen Potential

Source: modified from Oil Shales of the World: Their Origin, Occurrence, and Exploitation by Paul L. Russell and UNITAR Heavy Oil & Oil Sands database

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In situ Conversion vs Surface Retorting

Diagram courtesy of Jordan Cement
Jordan – 22,270 km² Concession Area
¼ of Jordan

Map of the Middle East showing Jordan with a highlighted concession area.
Path to Commerciality
Risk reduction during next two decades

**Identify**
- Is Jordan of interest and can we secure acreage?

**Regional resource evaluation:**
- Data integration:
  - Oil Shale wells
  - Petroleum wells
  - Water wells
  - Oil Shale Richness

**Negotiate Concession Agreement:**
- Investment Climate
- Commercial Terms
- OSCA Ratified

**Explore**
- **Assess Phase**
  - Does the play exist/work?
  - Explore for sweet spots:
    - 9 months Venture Set Up
    - Assess Richness, Thickness and Overburden
    - Regional G&G Evaluation

**Appraise**
- Is the materiality and productivity present?
- Address key risks & questions:
  - Define sweet spots - infill drilling

**Pilot**
- Can we produce commercially?
- ICP commerciality
- Successful pilot

**Design**
- How is the development defined?
- Commercial Project Defined

**FID**
- Final Investment Decision

Timeline:
- Identify: 3 yrs
- Explore: 2 - 3 yrs
- Appraise: 4 - 10 yrs
- Pilot: 3 - 7 yrs

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Exploration Area: Country-Wide 3D Oil Shale Model

- 2172 water wells
- 284 oil shale exploration wells
- 87 petroleum wells
- Cross sections (seismic & surface geology)
- Shell 1990’s oil shale drill-core exploration
- Surface geology
- Regional structural model
- Hi-Res DEM
JOSCO has Grown
177 Staff – over 90% Jordanian
Established Drilling Operations

Rig move by convoy

Drilling in CW Block
Wireline Operations Established
Rock/Geochemistry Lab capabilities

- Whole Core scan: Density, P-wave, NGR
- Sample preparation
- Core slabbing
- XRF, Photo & UV imaging
- Elemental analysis (TC, TS, TOC)
- Geochemical analysis (RockEval)
- Fisher Assay
Amman Petroleum Systems Master Class
Jordan Oil Shale Ph.D. student research projects

Academic partnership and supervision

4 PhD Students Selected

MasterClass: 32 Students were accepted out of 135 applicants
Results