

# **Say'un Masalah Basin Onshore Yemen**

**Block 74**



**August 2009**

## Opportunity to acquire a small participating interest in the highly prospective Block 74, & underexplored extension of prolific oil producing Masila Basin & 30km from major fields

### Adelphi Energy Ltd.

**Introduction:** Adelphi Energy Limited, the Perth based ASX (Australian Stock Exchange) listed company holds an 8.5% working interest in Block 74 in the Say'un Masilah Basin onshore Yemen. The Block was awarded in June 2005 and the PSA was signed in March 2008. The operator, KEC (Kuwait Energy Company ~ a company with a significant presence in the Yemen and the Middle East), and other partners including KUFPEC, Australian Worldwide Exploration Limited (AWE) and Yemen General Corporation for Oil & Gas are preparing to acquire a 3D seismic survey in late 2009 ahead of drilling in 2010 and 2011.

Oil was first discovered in the Lower Cretaceous Qishn formation in the Masilah Basin in 1990 in Block 14 (Ref: Attached Montage), 30km to the north of Block 74. Since then it has produced more than 650 Million bbls from some 40 fields, which have combined recoverable reserves estimated to be well over 1 Billion bbls. In recent years the fractured basement play has also been spectacularly successful, with discoveries at several fields, and estimated mean reserves in excess of 400 Million bbls.

Adelphi Energy now wishes to divest itself of its 8.5% interest in Block 74 (10% Paying Interest as the investors carry a 15% interest by the state Yemen Company) for strategic reasons and budget management to enable them to refocus on other key areas of their portfolio.

**Exploration History:** Oil was first found in Yemen in 1984 in the Shabwa Basin to the west of Masilah. AGIP first conducted geological field work in the Masilah Basin, including the Block 74 area, in the early 80's after which CanOxy acquired 1,282 km 2D seismic between 1988 and 1994 and then drilled the Quzah-1 well in 1993, which encountered good oil and gas shows in Qishn clastics. MOL acquired a further 500km of 2D seismic between 1994 and 2004 and drilled Quzah North-1 in 2002. This well also encountered oil and gas shows, although neither were discoveries due to the lack of structural closure. The available seismic data is now being reprocessed using the most up to date and modern techniques, which is

expected to yield much more structural detail and assist in designing the planned 3D survey.

**Play Overview:** There are two proven plays in the Masilah Basin. The main **reservoir** is the Lower Cretaceous Upper Qishn marine sandstone, which is thought to hold more than 1.1 Billion bbls recoverable reserves in this basin alone and from which some 190,000 bopd, is currently being produced, mainly from fields within 50 km of Block 74. Minor secondary reservoirs include the Lower Cretaceous Sa'ar clastics, Nayfa marine argillaceous carbonates and mid-Jurassic Kuhlan sandstones.

The other proven play in Block 74 is Basement, as found in several major discoveries, including the >200 Million bbl Kharir field, less than 60km north of the Group's Block.

The most successful **trap** styles defined to date in the Masilah Basin comprise i). sediments draped over basement horsts, ii). mild compressional fold anticlines; and iii). extensional rotated fault blocks. The location of Block 74 near the south-west basin margin ensures that adequate fault-bound traps can be expected, and large Jurassic structural features have already been defined on the existing seismic data.

The primary **source rocks** for the hydrocarbons discovered in the basin so far are the organic-rich shales of the Mabdi Formation which typically exhibit 2-13% TOC. Peak generation is thought to have occurred in the Middle Cretaceous at depths >3,500 metres. The presence of mature Mabdi source rock is interpreted over much of the western and central part of Block 74 with up to 900 metres of Mabdi reported in wells to the south of the block. Oil shows in Quzah-1 have also been identified as being sourced from the Mabdi formation and described as "an early mature, good to very good source". This is a key factor in the prospectivity of the Block

The Quzah High, a long-standing Mesozoic-aged Basement high, runs north south through the centre of the block and acts as a focus for hydrocarbon migration.

Upper Qishn marine carbonates form a regional **seal**, with the Jurassic Mabdi shales able to seal the lower targets.

**Prospectivity:** The Quzah wells have proved that Block 74 has access to an active petroleum system and that both the Qishn and basement plays are present. The two wells recorded good shows in the Qishn formation, but both appear to have been drilled off structure. Quzah-1 was drilled on the downthrown side of a major fault, while Quzah North-1, targeting an updip location to Quzah-1, was drilled on a high

identified from 2D seismic, but subsequent analysis has thrown doubt on the evidence of structural closure.

In neither of these wells was Basement shown to contain open fractures. Elsewhere in the Basin, deviated wells are required to encounter the fractures and seriously test the play in Block 74.

Several leads have been identified in both plays within the Block based on current interpretations and include several large Jurassic-aged structures overlain by Qishn formation with evidence of structural closure. The mapped leads are all centred on Jurassic depocentres, with combined mean reserves potential currently estimated to be in excess of 330 Million bbls. They are also situations where multiple target prospects could potentially be tested by a single well.

The leads identified to date can be summarised:

| Lead         | Structure  | Est. Mean Reserves (MMbo) |             |                |
|--------------|--|---------------------------|-------------|----------------|
|              |  | Qishn                     | Mabdi       | Sa'ar & B/ment |
| A            | Carbonate build-up on the footwall of tilted fault block |                           | 20.4        |                |
| B            | Rotated fault block                                      | 8                         |             | 96             |
| C            | Basement high/fault trap                                 | 19                        |             | 16             |
| D            | Basement high/fault trap                                 | 10                        |             | 8              |
| E            | Rotated fault block                                      | 6                         |             | 96             |
| Quzar West   | Qishn: tilted fault block. Basement: horst               | 10                        |             |                |
| Quzar        | Basement: horst  |                           |             | 50             |
| <b>Total</b> |  | <b>53</b>                 | <b>20.4</b> | <b>266</b>     |

The main risk at present lies in the existing seismic quality, hence the Group's plans to acquire a new 3D seismic together with the modern reprocessing of selected parts of the existing 2D data.

**Work Programme & Obligations:** The PSA comprises two exploration periods involving an initial 3 year period (2008 – 2011) requiring the reprocessing of existing data, the acquisition of an additional 250km of seismic and the drilling of 3 wells, with a minimum expenditure of US\$11.2 million. The second phase (2011 – 2013), carries an obligation to acquire both new 2D and 3D seismic surveys, the drilling of at least 1 additional well and a minimum expenditure of US\$ 4.2 million. The operator, KEC, is however, planning to acquire a 300 km<sup>2</sup> 3D seismic survey in 2009, and is currently in negotiation with the Yemen Government to reduce the permit obligation by 1 well and 250 km of 2D seismic.

At the end of the first exploration period and fulfilment of both phases of the work obligations, the Group has the option to either exit the Block or relinquish 25% of the original license area and apply for either extensions to the first term or to commit to an extended 2nd Exploration Period with new obligations.

**Infrastructure and Markets:** Petroleum is essential to the Yemen economy and constitutes 75% of government revenue and 90% of exports. It is currently exported via 3 oil pipelines and 1 LNG gas pipeline.

Block 74 lies 50 km from the main producing oilfields and contains one of the three main oil export pipelines (Ref: Montage) which has spare capacity. The terrain is topographically rugged, but all the leads identified to date lie in the more accessible western half of the Block.

**Terms:** Adelphi wish to find a company willing to acquire its entire 8.5% working interest in Block 74 for cash where any offers in excess of US\$ 1 million would secure an immediate deal. Adelphi's decision to divest is part a strategic move to refocus its limited available resources closer to home.

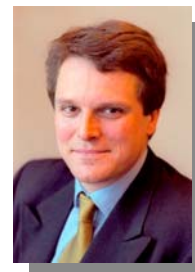
**Additional Information:** Access to the project data on the Block is available after execution of a Confidentiality Agreement. Seriously interested parties will be invited to access Adelphi's online data room and (if necessary) to visit Adelphi's offices in Perth for a more detailed presentation and related discussions if appropriate.

All expressions of interest and requests for more information, including a copy of the CA for execution prior to access to the online data room, should be made through Envoi:

**Envoi Limited**  
11 Cowper Road  
London, W7 1EL  
United Kingdom

Tel : +44 (0)20 8566 1310  
Fax : +44 (0)20 8566 1312  
E : [mail@envoi.co.uk](mailto:mail@envoi.co.uk)

Contact: Mike Lakin



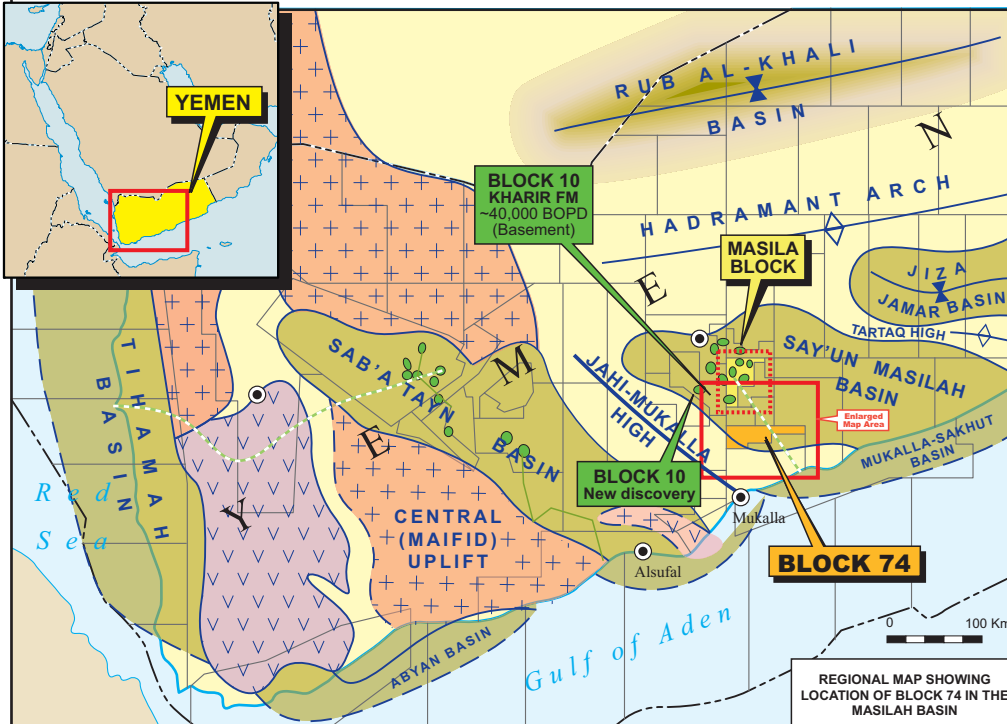
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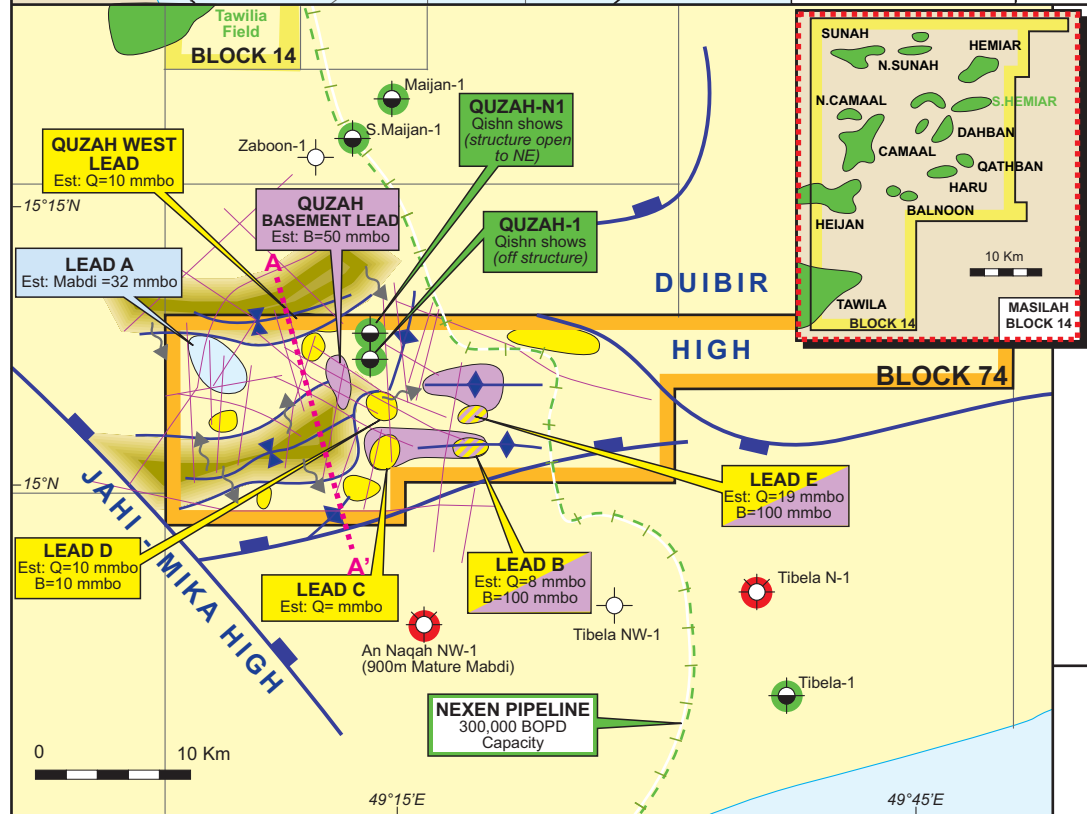
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# MONTAGE SUMMARISING THE HYDROCARBON PROSPECTIVITY OF BLOCK 74 IN THE SOUTHERN SAY'UN MASILA BASIN ONSHORE CENTRAL YEMEN

PREPARED BY



| SUMMARY OF RELEVANT YEMEN BASIN PETROLEUM GEOLOGY |                 |                     |             |                        |  |
|---|-----------------|---------------------|-------------|------------------------|--|
| AGE/ERA   | FORMATION       | SCHEMATIC LITHOLOGY | PET GEOLOGY | HYDROCARBON OCCURRENCE |  |
| CENOZOIC  | TERTIARY        | ABSENT              |             |                        |  |
|   | PALEOGENE (DUG) | JEZA UMMER BAD HUM  |             |                        |  |
| MESOZOIC  | LATE MAURA GP   | SHARNAYN            |             |                        |  |
|   |                 | MUKALLA FM          |             |                        |  |
|   | EARLY MAURA GP  | FARTAQ FM           |             |                        |  |
|   |                 | HAR SHIYA           |             |                        |  |
|   | CRETACEOUS      | QISHN FM            |             | (R)                    | ● BLOCK 14 FIELDS<br>● NABRAJA<br>● QUZAH-1<br>● QUZAH-N1<br>● LEADS (A, C, D, E & Q West) |
|   |                 | ABSENT              |             |                        |  |
|   | JURASSIC        | LATE AMFAAN GP      | SAAR        | (R)                    | ● NABRAJAH FIELDS  |
|   |                 |                     | NAYFA       | (R)                    | ● LEADS  |
|   |                 | MIDDLE              | MADBI       | (R)                    | ● LEADS (Quzah, B & E)   |
|   |                 |                     | SHUQRA      | (R)                    | ● SUNAH  |
| BASEMENT  | KULAN SS        | (R)                 | ● KHARIR    |                        |  |
|   | ++ + +          | (R)                 |             |                        |  |



### KEY:

- Block 75
- Prospects & Leads
- Q=Qishn  
● B=Basement  
● Mabdi
- Fields
- Wells
- Existing seismic
- Existing pipeline
- R Primary Reservoir
- Seal
- S Source rock

**MAP SHOWING LOCATION & PROSPECTIVITY OF BLOCK 74 INCLUDING EXISTING WELLS, PROSPECTS, SEISMIC & INFRASTRUCTURE**

