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**Project P199**

# **Onshore UK**

## **EXL 141-2 Licence**

**(including the Newton Oil Field)**

**East Midlands**

**AltaQuest**

**September 2011**



**Opportunity for corporate acquisition with the Newton oil field onshore UK in the East Midlands, requiring crestal development of up to 2.1 MMbbls (est. 'most likely' 700 Mbbls) recoverable reserves & upside exploration of the sole assets. Additional benefit from valuable unclaimed corporate tax losses associated with the transaction.**

## AltaQuest Energy Corp (UK) Ltd

### EXECUTIVE SUMMARY:

**Introduction:** Envoi has been commissioned to assist the current owners of AltaQuest Energy Corp (UK) Limited ('AltaQuest') find a buyer for their private UK company whose sole asset is now the 100% interest and operatorship of Licence EXL 141-2 in the Gainsborough Trough, situated in the East Midlands Basin, onshore UK (England). The acreage includes the currently shut-in Newton oilfield, which has an estimated (P2) 'most likely' 0.7 MMbor remaining reserve and a (P3) of some 2.1 MMbor. The acreage contains four undrilled exploration 'analogue' prospects also mapped within the Licence which have a combined additional reserve potential of 2.5 MMbor as defined on a relatively modern 3D survey acquired over a large part of EXL141-2 in 1998. EXL 141-2 was converted in March 2003 into a 20-year 'Production Licence' with the appraisal and further development of the remaining Newton field reserves in mind.

In order to focus available resources on other activities, the owners of AltaQuest are now seeking cash buyers for the entire private share capital of AltaQuest Energy Corp (UK) Limited and its sole interest in EXL 141-2, including the Newton oil field and undrilled exploration prospects. The company also comes with valuable tax losses and unclaimed exploration expenditure capable of being used to offset future profits from any production from the Newton field. Such tax losses are also transferable and could be used by a successful buyer to offset other UK production, if appropriate, although future taxable revenues from the re-development of the Newton field by drilling an additional well, as proposed, would equally benefit from the tax loss to offset future revenues.

**Brief History:** The owners acquired their interest in the original EXL 141 Licence through the acquisition of Courage Energy (U.K.) Ltd from Samson in the mid-2000s. This old EXL 141 Licence area, which was made up of two part blocks, was split in 2010 by official application through DECC and is now two separate independent Licences that have been renumbered EXL 141-1 and EXL 141-2. The latter has since been transferred into AltaQuest with a view to its sale. The new independent EXL141-2 Block, is a 16 km<sup>2</sup> area

and incorporates the currently suspended Newton oilfield plus four other undrilled exploration prospects. The Newton-1 discovery well has produced a total of some 27,648 bbls on its own at up to 80 bopd from the 8.3 metre net Carboniferous reservoir sands over a two year period after its discovery in 1998. The well was shut in in 2000 after increasing water cut and low commodity prices at the time. The well was re-opened in 2007 and flowed at between 10-15 bopd for several months before the trucking costs to dispose of the high water cut at the nearby Whisby field became uneconomic. The field has been shut in since then.

**Regional Setting & Geology Overview:** The UK has had an extremely varied and complex stratigraphic and tectonic evolution and, although it is a relatively small area, the resulting geology contains significant mineral resources. These include not only the major oil and gas deposits offshore in the North Sea, discovered in the early to mid-1970s, but also a number of productive onshore oil and gas basins.

The East Midlands contains the oldest and largest number of onshore fields in the UK with the first (Kelham Hills) discovered as far back as the 1920s. In 1939 discovery of the 5 MMbbl Eakring field by BP (then known as D'arcy Exploration) and demand for oil during World War II led to many more fields being found. A later exploration phase in the 1980s led to the discovery of more fields including the 20 MMbbl Welton field which is situated to the east of EXL 141-2. The Newton field shares a common oil kitchen with several established producing oil fields in the region including the large Egmonton field to the south, Farley's Wood and Bothamsall to the south west and Whisby field to the south east (Ref: Montage).

The region's productive plays consist mostly of Upper Carboniferous reservoirs, Namurian and Westphalian, sourced by underlying Namurian shales and older Lower Carboniferous marine strata.

**Stratigraphic & Structural Evolution:** The Caledonian Orogeny of the Early Palaeozoic imprinted a SW-NE fault pattern on British topography. Elements of this are still remnant in the East Midlands. However, a more significant imprint was created by plate movement in late Devonian-early Carboniferous times.

Northward compression caused a Variscan front to form across southern England. To the north of this E-W belt, extensional movements on pre-existing and new fault lines resulted in the formation of tilted blocks or half-grabens across what is now central and northern England. In the East Midlands, three interconnected basin areas were created. EXL 141-2 lies in the most northerly of these, the Gainsborough Trough, which contains many extensional traps.



Formation of these grabens coincided with a rise in sea level in the early Carboniferous (Dinantian) times and marine sedimentation, including widespread limestone deposition, was followed by thick marine shales in the early Namurian. Subsequent and progressive regression initially produced the coarse grits and sandstones (Millstone Grit stratigraphy).

These were then overlain with large scale deltas providing the widespread coal and sandstone deposition of the Westphalian Coal Measures which are present in AltaQuest's EXL 141-2 licence area. These deposits, consisting mainly of interbedded coals, channel sandstones and siltstones today cover an area of approximately 11,000 km<sup>2</sup> of the UK's surface, with a further 28,000 km<sup>2</sup> of sub-surface deposits onshore.

Late Carboniferous Variscan-related inversion with increasing plate pressure from the south (in late Westphalian / Stephanian times) uplifted the Pennine hills which now separate the East and West lowlands of England. This Variscan-related inversion is seen as the main trap-forming event in the East Midlands, as it caused several grabens and half grabens to invert. The resulting anticlines have provided most of the oil and gas discoveries in the East Midlands to date.

At the onset of the Permian an arid desert environment prevailed and caused mild peneplanation of the Upper Carboniferous. Subsequent Mesozoic strata were deposited relatively conformably in the East Midlands region.

East of the Pennine Hills, towards the North Sea, a relatively conformable stratigraphy exists in the NW-SE trending Carboniferous subsurface that underlies EXL141-2. These strata dip regionally towards the east, due to the uplift of the British Isles during progressive widening of the North Atlantic during Cretaceous and Tertiary times. This has produced little structural deformation other than the rejuvenation of some of the major faults.

**Petroleum Geology Overview:** The primary **source rocks** in the Gainsborough Trough are oil-prone Namurian marine shales, found beneath the Millstone Grit deposited within the deeper sub basins of the East Midlands Basin. These are complemented by both older marine shales, found interbedded with Dinantian shelf carbonates, and younger Westphalian shales from the Lower Coal Measures, which make source contributions at a lesser scale.

The main **reservoirs** in the Gainsborough Trough area are formed by the thicker Namurian Sandstones and the multiple channel sands of the Westphalian. These range in the Newton field from 1.5 metres to 17 metres in thickness. Multiple channel sands were

more thickly developed in the hanging walls of extensional faults. When inverted by Variscan compression, these thicker reservoirs then lie on the crestal areas of the anticlinal rollovers. Newton is no exception and may explain the crestal increase in amplitude seen on the 3D over the undrilled part of the field's closure, updip of the Newton-1 discovery well, where the Crawshaw reservoir may improve and thicken, with positive implications to the potential updip reserves in the field.

Thick **seal** is provided by intra-Carboniferous siltstones and mudstones.

**Prospectivity & Reserves Potential:** The Newton-1 discovery well, drilled to a depth of 1,404 metres, encountered oil in an 8.3 metre net reservoir interval consisting of four reservoir horizons in the Carboniferous, including the Namurian-age Kinderscout and Chatsworth formations and the Westphalian-age Crawshaw sandstones and Longshaw formation. Primary oil production of up to 80 bopd was from the Longshaw Sand. The three other sandstones also had oil shows but were not successfully put on production.

AltaQuest acquired 21 km new 2D seismic lines on the original EXL 141 in 1997-8 which added to the older pre-existing BP seismic data. A 30 km<sup>2</sup> area of 3D data was acquired in the Licence centred around the successful Newton-1 discovery well, but after it was drilled in March-April 1998.

This 3D data is regarded as fair to good quality and shows that the Newton-1 well penetrated the southern flank of a large roll over closure, down dip from the crest. Undeveloped potential is, therefore, predicted in the undrilled crest of the closure, where the seismic also shows increased amplitude that might signify better reservoir (as summarised in the previous section) and result in a larger-than-estimated reserve based purely on the reservoir seen in Newton-1.

Based on the most recent 3D interpretation it is estimated that the remaining reserve potential in the Newton field ranges between a P1 of around 97,000 bbls recoverable to a P3 of around 2.1 MMbbls recoverable with a 'most likely' P2 reserve potential estimate of around 700,000 bbls recoverable.

It has been proposed that drilling a new crestal well would test the updip potential of the 3D structural interpretation and Newton-1 well could then be used to re-inject any existing or future water production, to maintain reservoir pressure in a new crestal well.

**Exploration Upside:** Interpretation of the 3D seismic data over the remaining area of the EXL 141-2 Block area has also defined an inventory of some 4 additional low risk undrilled Carboniferous prospects which include the California, Thorney, Dunholm and



NE Newton prospects. These could add some 2.5 MMBbls recoverable if all were found to be hydrocarbon filled.

**Fiscal Terms & Economics:** Further production from EXL141-2 would be under standard onshore UK production Licence terms which remain some of the best in the world and even more so being politically stable and with well-developed markets and infrastructure. The fiscal terms are based currently on local business rates, Corporation Tax at 30% with Supplementary Corporation Tax at 20% with no royalties, bonuses or state participation, and no performance bond required.

The favourable fiscal terms for onshore UK gas production mean that the economics of UK onshore oil and gas production are very robust. The currently high global price of oil, and particularly the higher Brent Crude price, makes UK onshore oil production very profitable.

Site supervision costs are very economical and oil treatment (dehydration) carried out on site allows rapid and inexpensive trucking to the refineries some 40 miles distant. Water disposal will be by injection into Newton-1 once a second producing well on the crest of the structure has been successfully drilled.

**Infrastructure:** The Total and ConocoPhillips refineries at Immingham deal with all of the East Midlands oil as well as North Sea production. Rail links are no longer used and contractual trucking is the norm.

Gas production, either clean or separated from oil is locally used to supply hospitals (e.g. Gainsborough) or generate electricity (up to 10 MW) that can be tied into the national grid.

There are major road and rail connections to the East Midlands and international airports less than 1.5 hours distant. The local Humberside airport has connections to national and overseas facilities.

**Work Programme & Obligations:** AltaQuest had fulfilled all of the EXL 141-2 work obligations prior to its conversion to a 'Production Licence' which is now held for 20 year extension under new PEDL Licence terms from March 2003. The current Licence will expire in 2023 but can be extended for a further 10 years if any field within its boundaries is still producing in 2022.

**Terms:** The owners of AltaQuest would now like to find a company willing to acquire its entire 100% private equity holding in AltaQuest Energy Corporation (UK) Limited including its sole 100% WI in the EXL 141-2 licence, the Newton field and the undrilled exploration prospects. The owner's preference is for a straight acquisition for cash, but would consider some combination of cash with overrides or royalties, or a deal involving some cash and tradable quoted shares depending on their value potential.

**Additional Information:** A presentation and key data review, most likely in London, will be possible after execution of the Confidentiality Agreement.

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

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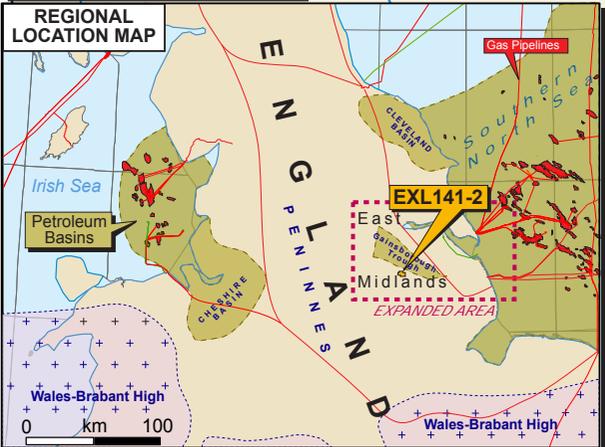


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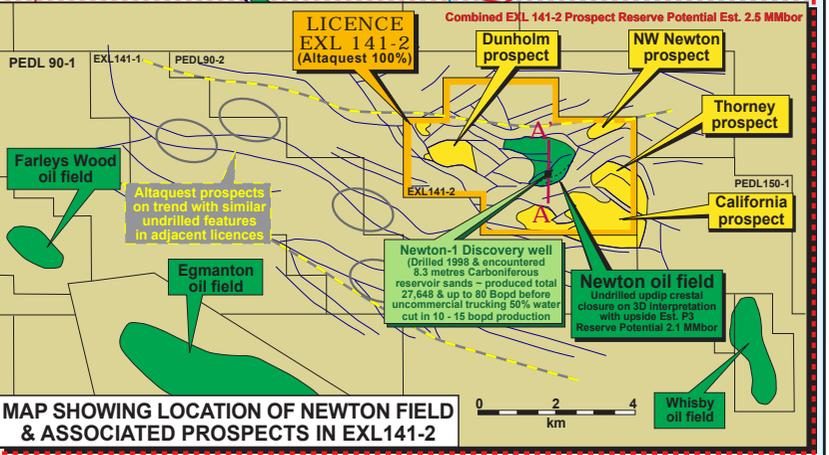
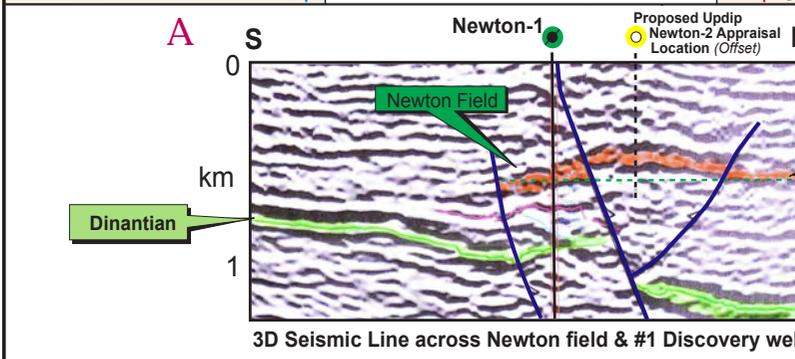
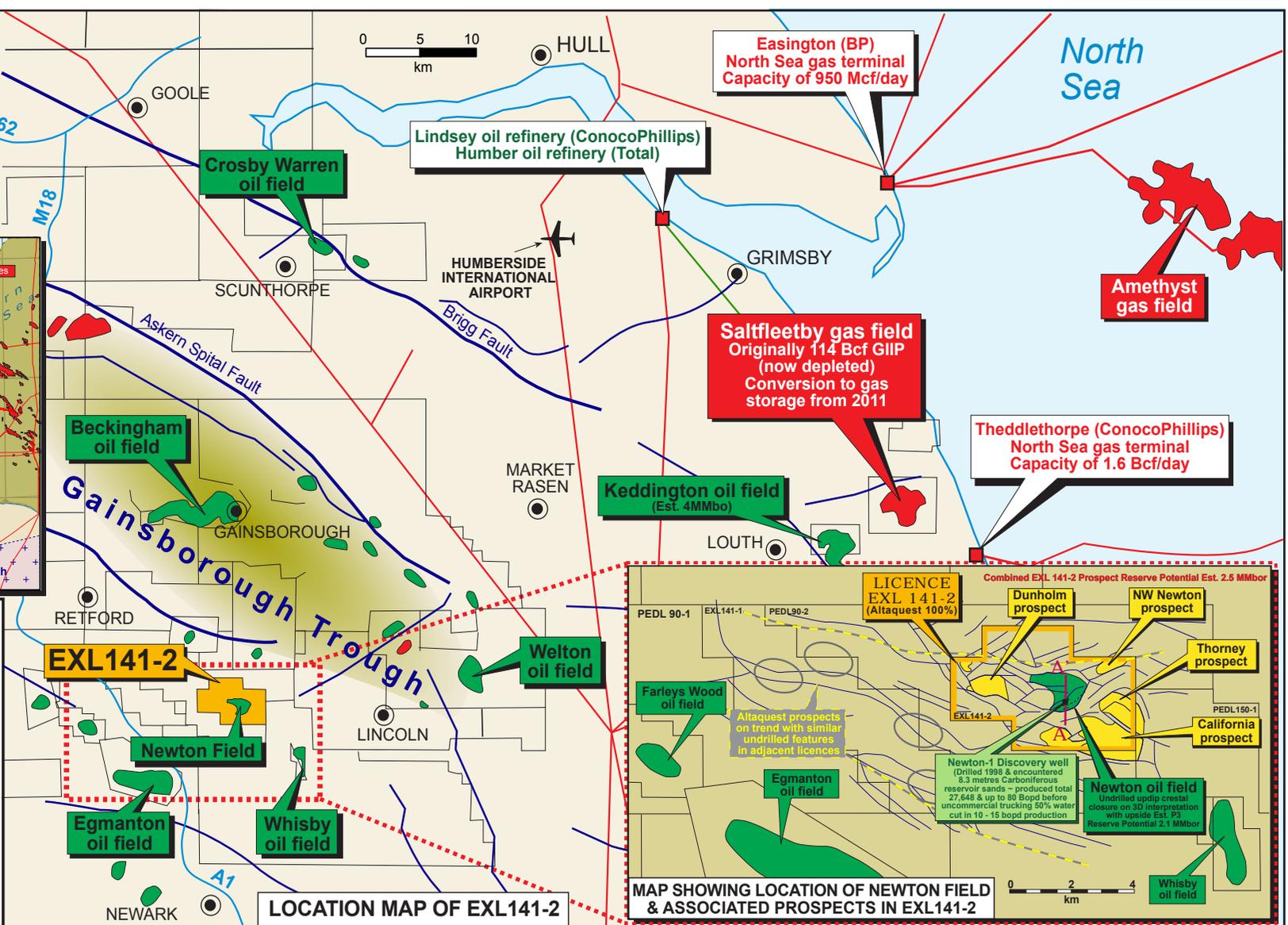
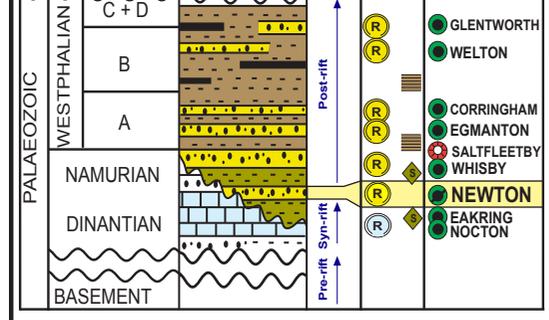
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**SUMMARY OF EAST MIDLANDS PETROLEUM GEOLOGY**

AGE	FORMATION	LITHOLOGY	TECT. EVOL.	PET. GEOL.	HYDROCARBON OCCURRENCE
CRETACEOUS			Inversion		
JURASSIC			Post-rift		
TRIASSIC (Sherwood Sst)					
PERMIAN					
MESOZOIC					
PALAEOZOIC	C+D		Post-rift		
	B				
	A				
NAMURIAN			Pre-rift Syn-rift		
DINANTIAN					
BASEMENT					



**KEY:**

- Licence
- Gas Field
- Oil Field
- Wells
- Prospect
- Source
- Reservoir
- Seal

Prepared by

**Hydrocarbon Prospectivity of the EXL141-2 Licence, East Midlands, Onshore UK**

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