UK Onshore Licence PEDL 125
Relinquishment Report
October 2014

Licence Details

Licence Number:	PEDL 125
Licence Round:	UK 11th Onshore Licensing Round
Effective Date:	1 July 2003
Licence Type:	Petroleum Exploration and Development Licence (Onshore)
Block Number:	UK National Grid Blocks SU41 (part), SU51 (part)
Operator:	Northern Petroleum (GB) Limited ("Northern") (50.0%)
Partners:	Magellan Petroleum (UK) Limited (40.0%) Egdon Resources U.K. Limited (10.0%)
Work Programme :	Acquire 100 km of 2D seismic data, Drill-or-Drop Commitment; Drill one well into Gt Ooolite before the end of the Initial Term

Licence Synopsis

PEDL 125 is located in the southwest part of the Weald Basin, onshore Southern England (Figure1), to the west of Horndean oil field and to the south of the Avington and Stockbridge oil fields. At the time of application an oil discovery Hedge End-1 had been recogised as a potential development requiring an appraisal well to fully evaluate the economic potential.

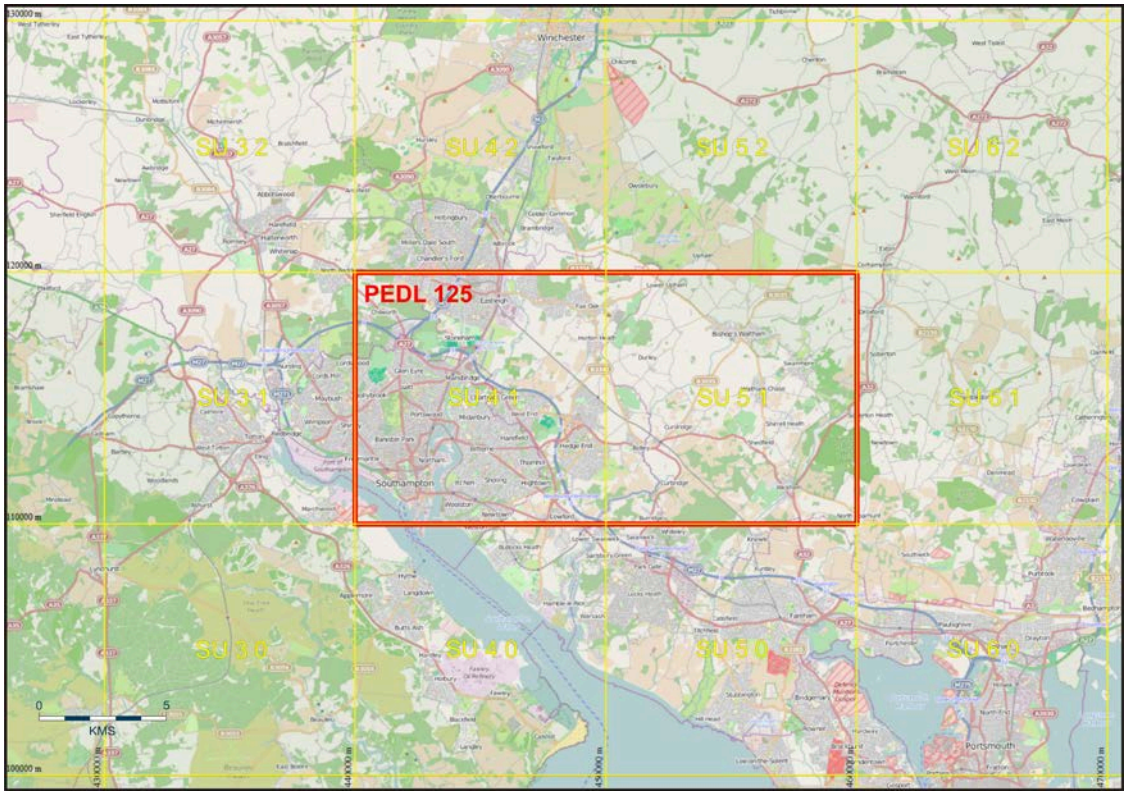

Figure 1: PEDL 125 Location Map

The location of an appraisal well was the major issue in an area that is a major conurbation with little agricultural land that would normally provide potential drilling sites. The owners of the land on which Hedge End-1 was drilled refused access. One possible site was subject to a planning application on local authority land. The application was submitted prior to signing a lease for the site, the terms of which had been agreed with the local authority. However local community opposition led to the local authority refusing to sign the lease and the planning application therefore had to be withdrawn.

The Licence was extended by two years by DECC in order that further efforts could be made to locate a drilling site. However no other suitable sites could be identified from which an appraisal well could be drilled.

Exploration Activities

The Group has not undertaken any new seismic acquisition on Licence PEDL 125 nor drilled any wells. The Group has acquired all of the existing 2D seismic line data over the Licence as part of an extensive regional database that it has built up (Figure 2). Data has also been acquired for all of the wells in and around the Licence that have been publicly released (primary interest being Hedge End-1).

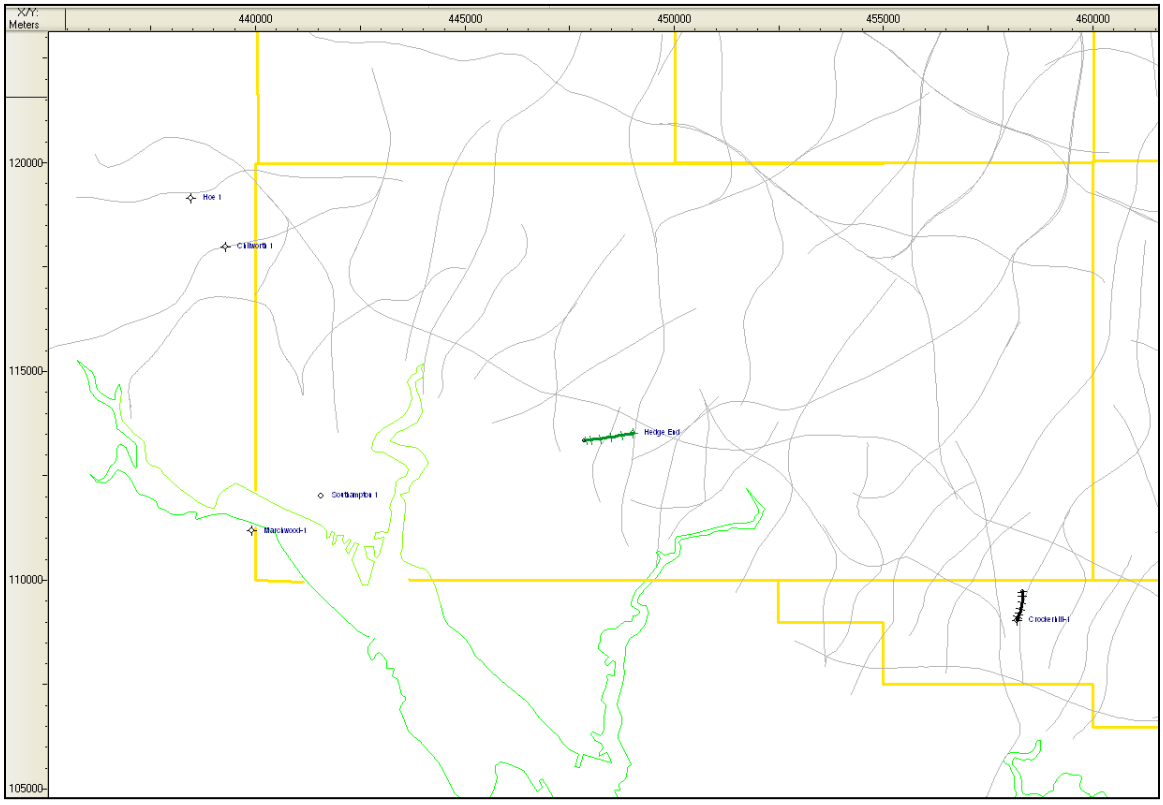

Figure 2: PEDL 125 Seismic and Well Database

The PEDL 125 Group reprocessed 185km of existing 2D seismic data in order to generate a consistent dataset over the Licence, specifically to address the Hedge End

oil discovery structure (Figure 3). Copies of the final reprocessed lines have been supplied to the UK Onshore Geophysical Library (UKOGL).

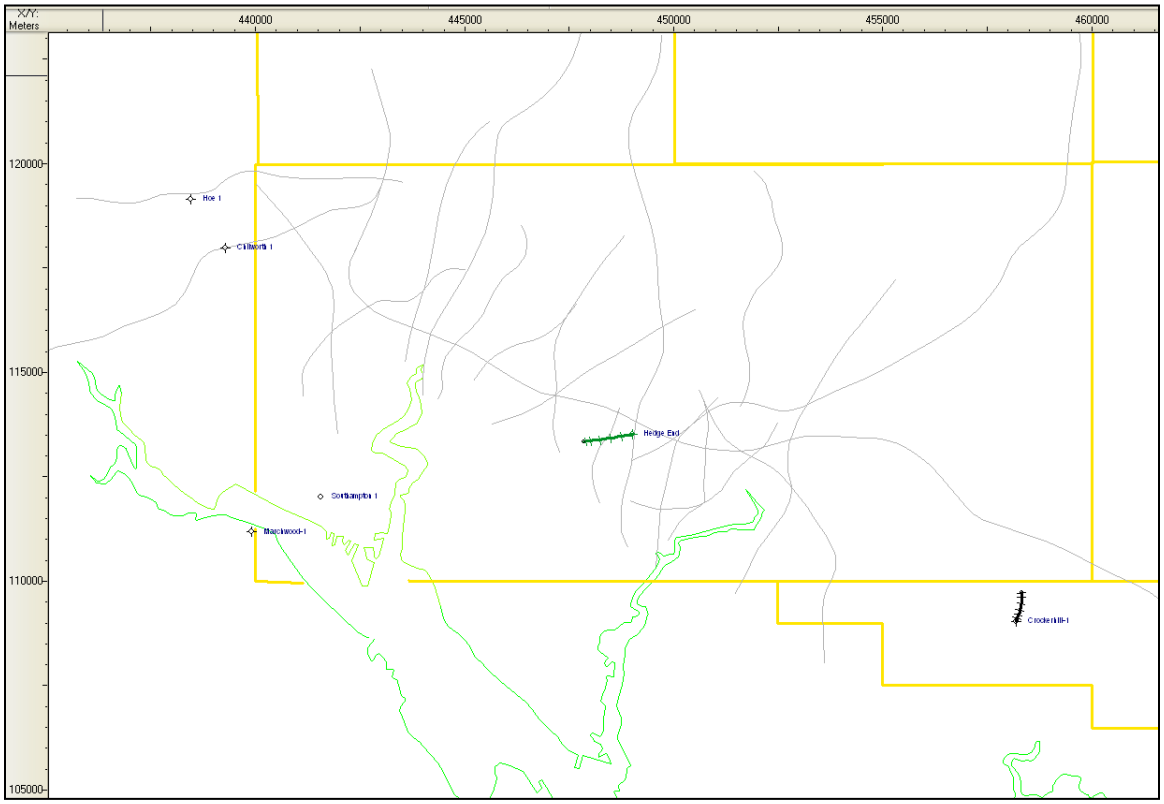

Figure 3: PEDL 125 2007 Seismic Reprocessing Project

The reprocessed data show a marked improvement over the original versions of the seismic lines having benefited particularly from a consistent approach to calculating static corrections. Subsequent interpretation and mapping over and around Licence PEDL 125 using the reprocessed data has allowed the Group to generate structure maps in which a greater degree of confidence can be placed than previously.

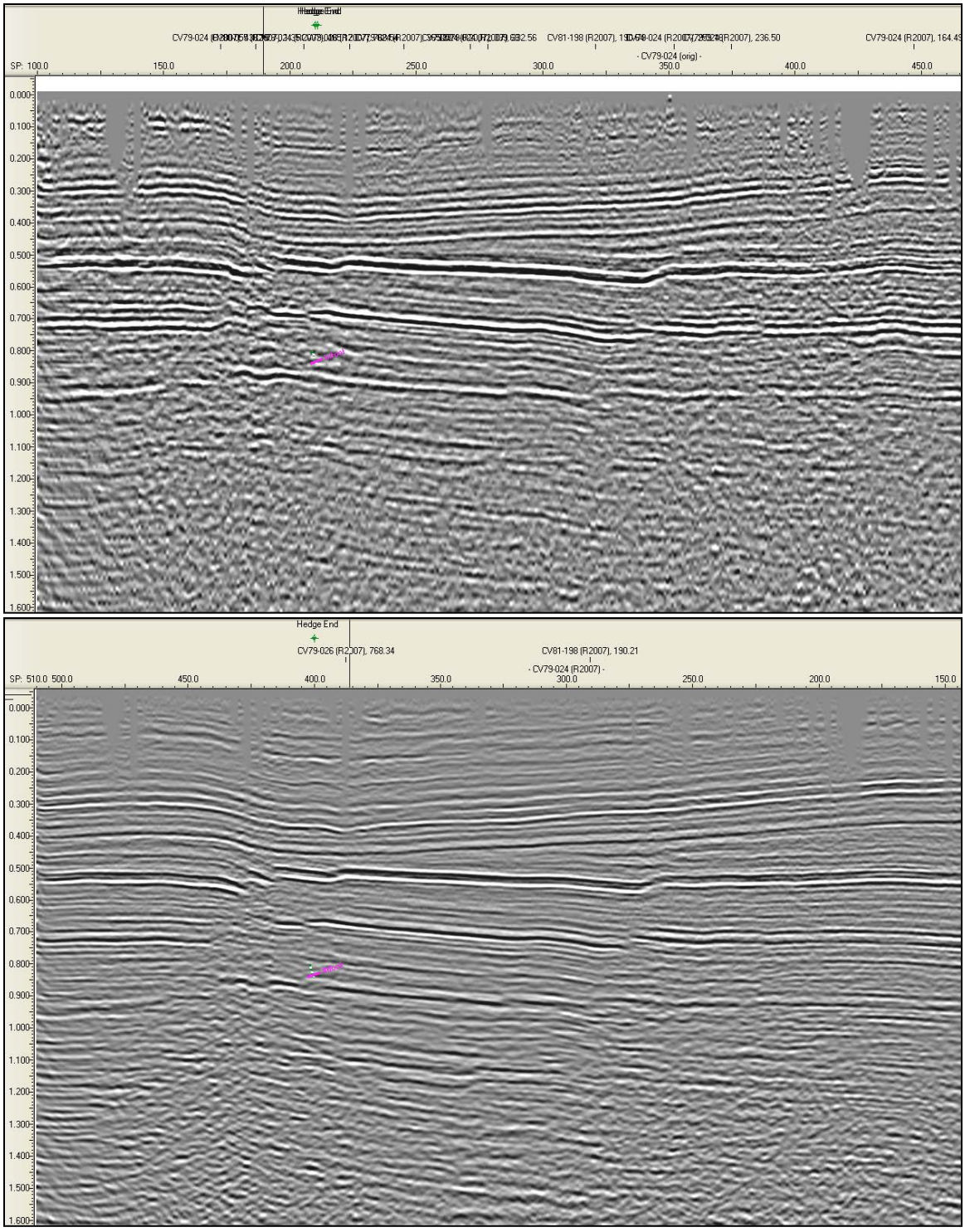

Figure 4: PEDL 125, Seismic Line C87-1004 Comparison

Prospectivity Analysis

The primary reservoir target at the time of the Licence's award was identified as being the Bathonian Great Oolite limestone series, the main productive reservoir in

the southern and western parts of the Weald Basin (Storrington, Singleton, Lidsey, Horndean, Avington, Stockbridge, Goodworth, Humbly Grove/Herriard) and interpreted as oil bearing in the Hedge End-1 well. The upper zone of the Great Oolite interval in the Hedge End-1 well exhibits good reservoir properties on logs.

The principal source rocks in the Weald Basin are the Lower Jurassic Lias marine shales. Potential for oil generation also exists in Middle Jurassic Oxford Clay and the Upper Jurassic Kimmeridge Clay, the primary source of oil in the North Sea. The Lias shales are interpreted to have been buried sufficiently deeply to generate oil in the Weald Basin and migration is believed to have commenced during Lower Cretaceous times and to have continued until the area underwent significant inversion in response to Alpine tectonism during Miocene time when the source rocks were lifted out of the maturity window and oil/gas generation ceased. It is not clear whether the Oxford Clay has ever been buried deeply enough to become mature for hydrocarbon generation, although it is interpreted that the Kimmeridge Clay definitely has not. It is understood that all the oils produced in the Weald Basin have been geochemically typed to the Lias source rocks. Oil has migrated towards the southern edge of the Weald Basin from a mature generating kitchen in the centre of the Basin to the north, as evidenced by the accumulations at Singleton, Horndean, Hedge End, Avington and Stockbridge.

Structures which have been demonstrated to be effective hydrocarbon traps in the southern and western part of the Weald Basin were predominantly present as trapping mechanisms at the time of hydrocarbon generation and migration (Lower Cretaceous – Miocene). They generally take the form of tilted fault blocks bounded by a normal fault to the south or southwest with sufficient southward down-throw to have caused juxtaposition across the fault of reservoir rocks against an effective seal. Some structures with a younger element related to the Alpine inversion, which is interpreted to post-date the primary generation and migration of hydrocarbons, have also been proven to trap oil (e.g. Avington).

Prospectivity Review

The PEDL 125 Group initially interpreted all of the existing 2D seismic data over and around the Licence and generated time and depth structure maps for the Top Cornbrash which gives a relatively consistent and continuous reflection across the area and is taken to define structure at Top Great Oolite level. The Base Gault reflection was also mapped, which is the deepest reflection that postdates (or equates) to the main Albo-Aptian Unconformity, which marks the end of Jurassic to Cretaceous tectonism in the Basin. Thus, by generating isochrons/isopachs between the Base Gault and deeper levels, the effects of Alpine inversion and uplift can be “stripped off” and a view taken as to the palaeo-structure at identified leads during the period of hydrocarbon generation and migration during the Mid-to-Upper Cretaceous and Early Tertiary.

The primary interest was in defining the Hedge End-1 discovery structure and this had been done prior to the application. On review a relatively high degree of uncertainty were attached to the structural closure as a result of the inconsistencies noted between seismic lines of various vintages with various sometimes significant (e.g. 50ms) static shifts not being uncommon. This lead to the Group’s decision to reprocess most of the data over the Licence during 2007.

Following the completion of the reprocessing project, the Group interpreted and mapped the now consistent and statically tied dataset and generated new structure maps, most notably at Top Cornbrash level where the fault pattern was interpreted to be somewhat different than previously mapped.

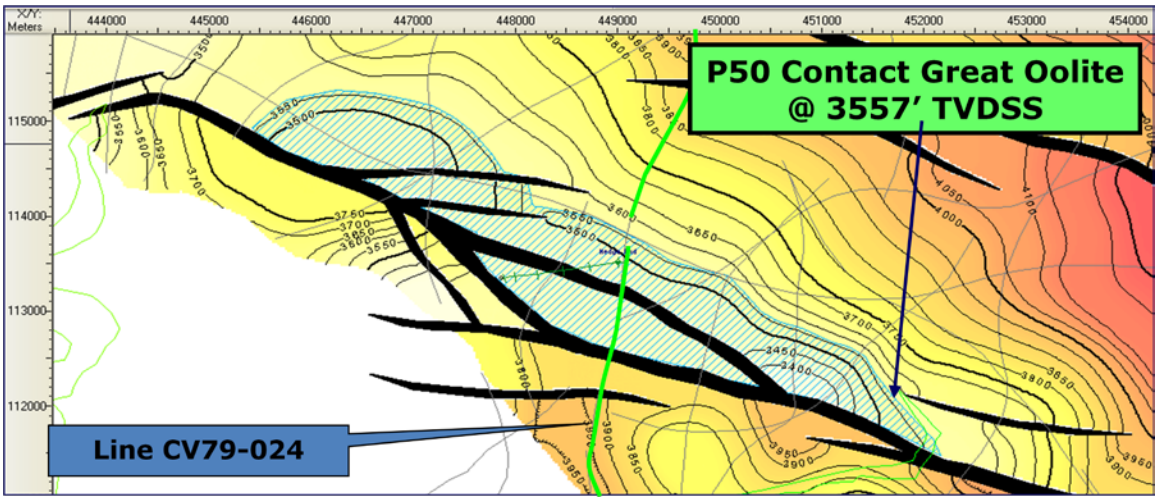

Figure 5: PEDL 125 Top Cornbrash Depth Structure Map (2009), C.I. 50'

The Group has assessed the oil in place volumes and potentially recoverable reserves for the Hedge End structure with the following results.

STOOIP (MMstb)	P90	P50	P10
RPS 02/10 CPR	13	19	26.6

Undeveloped Reserves (MMstb)	1P	2P	3P
RPS 02/10 CPR	0	2.58	6.66

The Group made concerted efforts to locate a potential drilling site without success and following the licence extension was still unable to make any progress. The licence therefore expired without an appraisal well being drilled of the Hedge End-1 discovery.

Clearance

As operator for Licence PEDL 125, Northern confirms that DECC may publish this Relinquishment report, and all 3rd party ownership rights have been considered and appropriately cleared for publication purposes.