P3.

CUADRILLA

Brabant Resources B.V.
Phileas Foggstraat 65 7825 AL Emmen Nederland
Tel: +31 (0) 591668155 Fax: +31 (0) 591668150

14 April 2011

De Minister van Economische Zaken, Landbouw en Innovatie
t.a.v.
Directeur Energiemarkt (ALP/562)
Bezuidenhoutseweg 30
2594 AV Den Haag

Excellentie,

Aanvraag opsporingsvergunning voor koolwaterstoffen

Onder verwijzing naar artikel 6 van de Mijnbouwwet dient Brabant Resources B.V. ("Brabant B.V.") hierbij een aanvraag in om een opsporingsvergunning voor koolwaterstoffen voor een gebied gelegen op Nederlands territoir (zuidelijk deel van de provincie Noord Brabant, in deze aanvraag genoemd Breda Maas) ter grootte van ongeveer 1806 km². De coördinaten en een kaart met een aanduiding van de ligging van dit gebied treft u aan in bijlage I bij deze brief.

De opsporingsvergunning wordt aangevraagd voor een periode van 4 jaar. De eerste 2 jaar zullen worden gebruikt voor het uitvoeren van geologische studies en het verkrijgen, voorzover noodzakelijk, van nieuwe seismiek. Na deze eerste 2 jaar zal Brabant B.V. hetzij afstand doen van de opsporingsvergunning hetzij het werkprogramma verder uitvoeren door het zetten van een boring in het 3e jaar van de vergunning. Afhankelijk van de resultaten van deze boring zal Brabant B.V. in het 4e jaar van de vergunning hetzij afstand doen van de opsporingsvergunning hetzij een aanvraag om een winningsvergunning indienen. Een volledige beschrijving van het werkprogramma en de geologische onderbouwing hiervan treft u aan in bijlage IV bij deze brief. Wij verzoeken u deze bijlage als bedrijfsvertrouwelijk te behandelen.

Brabant B.V. is de houder van de opsporingsvergunning voor koolwaterstoffen voor Noord-Brabant, een vergunningsgebied grenzend aan het gebied waarvoor onderhavige aanvraag is ingediend. De opsporingsvergunning voor Noord-Brabant is verleend bij uw beschikking van 13 oktober 2009, nummer ET/EM/9179798. In overeenstemming met het werkprogramma voor Noord-Brabant, heeft Brabant B.V. een boring gepland in de tweede helft van dit jaar. De aanvangsdatum van deze boring is afhankelijk van de uitspraak op de lopende beroepen tegen de bouwvergunning verleend door de gemeente Boxtel.

Technisch en financieel wordt Brabant B.V. ondersteund door haar moeder maatschappij Cuadrilla Resources Holdings Ltd ("Cuadrilla"). De betreffende garantstelling treft u aan onder bijlage II bij deze brief. Bijlage III bij deze brief bevat gegevens over de technische ervaring van Cuadrilla en geeft, met bijlage V, informatie over de wijze waarop Brabant B.V., gesteund door Cuadrilla, voornemens is het aangeboden werkprogramma uit te voeren. De financiële gegevens over Cuadrilla staan in bijlage II.

Deze aanvraag wordt ingediend in tweevoud en tevens digitaal. Een kaart van het aangevraagde gebied op schaal 1:50.000 hebben wij niet bijgevoegd. Desgewenst kunnen wij deze kaart alsnog laten maken.

Uiteraard zijn wij te allen tijde bereid bij u langs te komen om de aanvraag te bespreken of verdere informatie te verstrekken over Brabant B.V. en Cuadrilla.

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Vriendelijk verzoeken wij u deze aanvraag in welwillende overweging te nemen.

Hoogachtend

Dr Peter Turner
directeur Brabant Resources B.V.

Bijlagen:

Bijlage I:	coördinaten en aanduiding van het aangevraagde gebied
Bijlage II:	de gegevens behorende bij artikel 1.3.1, tweede lid, sub a, van de Mijnbouwregeling (inclusief KvK uittreksel Brabant Resources B.V., Garantstelling door Cuadrilla Resources Holdings Ltd en Letter of Support van Riverstone en AJ Lucas)
Bijlage III:	de gegevens behorende bij artikel 1.3.1, tweede lid, sub b, van de Mijnbouwregeling
Bijlage IV:	Werkprogramma en geologisch rapport ("Workprogramme and Geological Report")
Bijlage V:	Wijze van uitvoering van de mijnbouwactiviteiten ("Environmental Controls and Consumer Impact")

CUADRILLA

Brabant Resources B.V.
Phileas Foggstraat 65 7825 AL Emmen Nederland
Tel: +31 (0) 591668155 Fax: +31 (0) 591668150

14 April 2011

De Minister van Economische Zaken, Landbouw en Innovatie
T.a.v.
Directeur Energiemarkt (ALP/562)
Bezuidenhoutseweg 30
2594 AV Den Haag

Your Excellency,

Application Exploration Licence for Hydrocarbons

With reference to article 6 of the Mining Act Brabant Resources B.V. ("Brabant B.V.") hereby applies for an exploration licence for hydrocarbons for an area on the Dutch territory (southern part of the province of Noord-Brabant, area referred to as Breda Maas in this application) of about 1806 km². The coördinates and a map indicating the location of the area applied for is in attachment I of this letter.

The requested term of the exploration licence is 4 years. The first 2 years will be taken up by geological studies and, in as far as necessary, the acquisition of new seismic. At the end of these first 2 years Brabant B.V. shall either drop the exploration licence or carry out the remaining part of the workprogramme by drilling a well in year 3 of the licence. Depending on the results of this well in year 4 the licence will either be relinquished or an application for a production licence filed. A full description of the workprogramme and its geological foundation is in attachment IV of this letter. We ask you to treat this attachment IV as confidential.

Brabant B.V. is the holder of the exploration licence for hydrocarbons for Noord-Brabant, a licence area adjacent to the area currently applied for. The exploration licence for Noord-Brabant has been granted by ministerial decree dated 13 October 2009, number ET/EM/9179798. In accordance with the workprogramme for Noord-Brabant, Brabant B.V. plans to drill its first well in the Noord-Brabant licence in the second half of this year, spud day depending on the results of the appeals filed against the building permit granted by the council of Boxtel.

Technically and financially Brabant B.V. is fully supported by its ultimate parent company Cuadrilla Resources Holdings Ltd ("Cuadrilla"). A Parent Company Guarantee to this effect has been attached as part of attachment II to this letter. Attachment III contains data on the technical experience of Cuadrilla and, together with attachment V, information about the way in which Brabant B.V. , supported by Cuadrilla, intends to carry out the workprogramme offered. The financial data on Cuadrilla can be found in attachment II.

This application is being filed in twofold as well as digitally A 1:50.000 map of the area has not been added. If required we can have this map produced .

Naturally we should be pleased at any time to come to see you and discuss the application or give further information about Brabant B.V. and Cuadrilla

We kindly request you to consider this application

Kind regards,

Dr Peter Turner
director Brabant Resources B.V.

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LICENCE APPLICATION

BREDA MAAS

CUADRILLA

Attachments:

Att. I:	coördinates and indication of area applied for
Att II:	data required in article 1.3.1, second paragraph, sub a, of the Mining Regulation (including excerpt of Chamber of Commerce of Brabant Resources B.V., Parent Company Guarantee of Cuadrilla Resources Holdings Ltd and Letter of Support from premier investors of Cuadrilla Resources Holdings Ltd Riverstone and AJ Lucas)
Att III:	data required in article 1.3.1, second paragraph, sub b, of the Mining Regulation
Att IV:	Workprogramme and geological report ("Workprogramme and Geological Report")
Att V:	Way in which mining activities will be carried out ("Environmental Controls and Consumer Impact")

ATTACHMENT I: Cuadrilla Breda-Maas

Location of the Prospect Area

I.1 Introduction to the Prospect Area

This application is for an exploration license for hydrocarbons (Oil and Gas) in the Netherlands. The area of application covers an area of 1806 km^2 (446,420acres) according to the map shown in Figure 1. The coordinates of the vertices on this map are shown in Table 1. The area falls partly in the Provinces of Noord Brabant and Limburg. The area has provisionally been called Breda-Maas

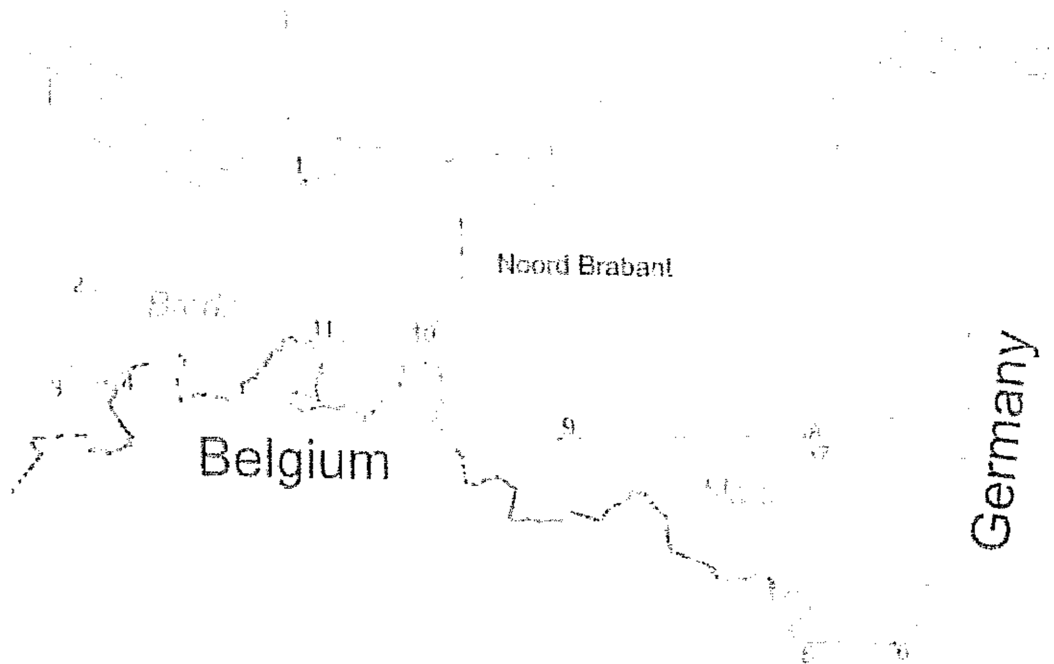

Figure 1. Location map showing the location of the Cuadrilla License Application Area.

Vertex	UTM x	UTM y	RD x	RD y
1	625311.575	5730614.584	115382.5006	414385.3746
2	593301.000	5713601.000	82825.97183	398424.9148
3	590154.000	5700361.000	79247.01841	385291.2903
4	595972.499	5700728.004	85075.97933	385468.1287
and then seamlessly along the Belgium border to				
5	698452 001	5664988.000	186348.3337	346409.2578
6	712172.037	5664959.528	200058.6437	345936.5124
7	700273.549	5692355.722	189056.8743	373700.4870
8	698834.768	5694911.006	187702.1299	376300.8820
9	662630.662	5693732.212	151480.5221	376300.9863
10	640805.729	5707693.445	130120.9428	390967.2514
11	626076.961	5707212.435	115382.4456	390967.2903

Area 1806 km2,
446,420acres

Table 1. Co-ordinates of the License Application area (UTM Zone 31, ED50) and RD.

1.2 Rationale Behind the Application

Cuadrilla has applied for this area specifically as a result of its activities on the Noord Brabant license. This license awarded in September 2009 contains unconventional targets in the Carboniferous, Triassic and Jurassic. Since the award of the license Cuadrilla has been interpreting well logs and seismic sections in the region. Also the TNO core facility in Utrecht has been visited and samples are being analysed for key shale gas and tight gas properties. During this work it has been clear that there are a number of Carboniferous prospects which straddle the southern boundary of the license area, particularly near Heeze and Vessem. Also our structural interpretations indicate that there is better opportunities of encountering Namurian shale gas plays (Geverik Shale equivalents) in this area. Geological and technical details are supplied in the relevant sections (Attachment IV) of this application.

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Breda Maas

ATTACHMENT II: Cuadrilla Breda Maas

Cuadrilla Corporate and Financial Information

Contents

Cuadrilla Resources Holdings Limited
Cuadrilla House
Stowe Court
Stowe Street
Lichfield
WS13 6AQ
United Kingdom

II.I Corporate Information

The applicant of the Breda Maas exploration licence is ***"Brabant Resources B.V."*** a company incorporated under Dutch law and based in the Netherlands, Brabant Resources B.V. is a wholly owned subsidiary of Cuadrilla Resources Ltd and ultimately owned by Cuadrilla Resources Holdings Ltd a company incorporated in the United Kingdom with its headquarters in Lichfield, England

The financial capacity and technical experience of Brabant Resources B.V. is supplied by Cuadrilla Resources Holdings Ltd and its subsidiaries. Any reference to Cuadrilla in this application should therefore be read as a reference to Cuadrilla Resources Holdings Ltd and its subsidiaries and should be considered to include the technical experience and financial capacity of Brabant Resources B.V. A Parent Company Guarantee for Brabant Resources B.V. to this effect has been provided by Cuadrilla Resources Holdings Ltd.

The main owners of Cuadrilla Resources Holdings Ltd are:

<u>Founders and Directors</u>

- shares
- shares
- shares
- shares
- shares

Percentage shares held by each of founders and directors: ± %

<u>**Premier Investors**</u>

- shares
- shares

Percentage shares held by each premier investor: ± %

None of the shareholders has any special control, other than by virtue of the number of shares held, in Cuadrilla Resources Holdings Ltd

<u>Notes about the Shareholders</u>

(1) Information about the <u>Founding Directors</u> can be found in Attachment III.

(2) is an energy and power-focused private equity firm founded in 2000. It has approximately $ under management across six investment funds, including the world's largest renewable energy fund. Riverstone conducts buyout and growth capital investments in the midstream, exploration & production, oilfield services, power and renewable sectors of the energy industry. With offices in New York, London and Houston, the firm has over 65 investments in North America, Latin America, Europe and Asia. For more information, visit www. The Carlyle Group is a global alternative asset manager with more than $ under management.

(3) is an Australian company based in Sydney. They are one of the largest and most innovative drilling and pipeline companies in that country. Since their initial listing on the Australian Stock Exchange in 1999, has grown from $ in annual revenue, to $ in 2009. In addition to their share ownership in Cuadrilla, they have taken a 25% working interest with us on several projects in the UK.

II.II Financial Capacity: Cuadrilla Resources Holdings Ltd. ("parent" company)

For the purpose of demonstrating our financial capacity to handle this work program, Cuadrilla Resources Holdings Ltd balance sheet, as at the 31 December 2010, is presented in table 1. In addition to the resources shown on its balance sheet, Cuadrilla also has access to significant additional funds from its premier investors for selected projects.

Table 1

"Cuadrilla Resources Holdings Balance Sheet"

ASSETS	Actual Dec 31, 2010
Non Current Assets	
Exploration and Evaluation Assets	40,545
Property, Plant and Equipment	10,500
Total Non Current Assets	**51,045**
Current Assets	
Inventories	340
Trade and other recievbles	2,760
Cash and cash equivalents	9,013
Total Current Assets	**12,113**
TOTAL ASSETS	**63,158**

LIABILITIES	
Current Liabilities	
Trade and other payables	
Non Current Liabilities	
Provisions	
TOTAL LIABILITIES	9,758
NET ASSETS	53,219
SHAREHOLDERS' EQUITY	
Share Capital	130,857
Other Reserves	(77,457)
TOTAL EQUITY	53,219

II.III Cost of Proposed Work Program (Breda Maas Prospect)

In Attachment IV we presented a 5 year work plan with a drill or drop option scheduled between Year 2 and Year 3. Table 2 shows a summary of costs associated with each work year.

Table 2

"Projected Costs for Cuadrilla Work Program"

	Work Plan	Manpower and Expenses	3rd Party Services	Estimated Total Cost
Year 1	Preliminary Tech. Study			
Year 2	Add. Data Acquisition (Drill or Drop Decision)			
Year 3	Drill Exploration Well (vertical well)			
Year 4	Drill Production Well (horizontal well)			
Year 5	Field Wide Development	To be determined	To be determined	To be determined

Notes on Costs in Table 2

(1) All costs shown are projected in Euros (€)

(2) "Manpower and Expenses" refers to in-house costs directly related to this particular project.

(3) "3rd Party Services" includes contractors, service companies, purchase of data, etc.

(4) The estimated cost of 3rd party Services in Year 2 is a provision for shooting additional seismic lines, but will only be done if we determine the available data is not sufficient by itself. All interpretation of that data will be done in-house by Cuadrilla

(5) The estimated cost of 3rd Party Services in Years 3 and 4 are lower than what may be typically expected because they reflect the use of Cuadrilla's in-house drilling/testing/fraccing services

II.IV Cuadrilla Capacity to Execute the Work Programme

II.IV.i Funding For Years 1 and 2

From Table 2 we can see that during the first 2 years of our work programme we may incur 3rd party services of up to € We project our monthly operating costs over the next 2 years to be in the range of $ to $ for wages, consulting fees, general overhead, and other work commitments. That will be an average of about $ per year.

If we assume the Dutch license in the Breda Maas Prospect is awarded to us in 2011, then we would anticipate concluding the exploration work in 2014

II.IV.ii Funding For Years 3 and 4

After the period in the first 2 years we will be at the point where we have to make the decision to either drill our well or relinquish the license. In Table 2 we have projected our exploration well to cost € This cost is less than one may typically expect for a land well, given all we plan to do, but it reflects the fact that we will be providing many of the specialized operations using our own well service equipment.

Cuadrilla's premier investors have provided a letter of support expressing their willingness to back Cuadrilla Resources Holdings Ltd's proposal, through its Dutch subsidiary company, Brabant Resources bv. This investment is attractive to both premier investors as it complements their existing investments portfolios, and draws on Cuadrilla's core capabilities and specialist equipment.

21 March 2011

The Office of the Ministry of Economic Affairs, Agriculture and Innovation
Bezuidenhoutseweg 30
2594 AV Den Haag
The Netherlands

Dear Minister

Cuadrilla Resources ("Cuadrilla") is pursuing the development of oil and gas resources in Roer Valley Graben, The Netherlands. As controlling shareholders of Cuadrilla, and an investment affiliate of together with and are interested in advancing discussions for Cuadrilla to become the chosen owner and developer of the Breda Maas License (the "License"). We understand that the decision to award the License will be made via an open process and are pleased to provide this letter regarding our efforts and to highlight our experience in the sector.

This letter is provided to assure you that both and fully support further discussions and negotiations regarding the License. Cuadrilla Resources is a dedicated European oil and gas exploration, development and production vehicle with a world class management team, owned oilfield service equipment, and inventory of shale gas development blocks across the United Kingdom and Continental Europe. In The Netherlands, Cuadrilla currently holds the Noord Brabant license bordering Breda Maas to the North and has also attained the Noordoostpolder license. The Investors have committed significant equity to Cuadrilla and are dedicated to supporting Cuadrilla in its expeditious development of these projects. Although no specific level of financial or other commitment can be made at this stage, Riverstone and Lucas are fully aware of and support Cuadrilla's interest in the Breda Maas License. Please find below a description of

, an energy and power-focused private equity firm founded in 2000, has approximately $ under management across six investment funds, including the world's largest renewable energy fund. and affiliates conduct buyout and growth capital investments in the midstream, exploration & production, oilfield services, power and renewable sectors of the energy industry. With offices in New York, London and Houston, the firm has committed over $ to 72 investments in North America, Latin America, Europe and Asia.

The Investors and their affiliates have made numerous investments that demonstrate their experience in the upstream sector. and affiliates are currently engaged in significant onshore oil and natural gas exploration, development and production activities across the United States and Canada. has seven investments focused specifically on shale gas and unconventional oil development in various target basins. These include Titan Operating and Vantage Energy focused on gas development in the Barnett Shale; Enduro Resource Partners operating in the Haynesville Shale; Eagle Energy focused on unconventional gas and oil in the Mississippi Lime, Hunton, and Woodford Shale; R/C Sugarkane focused on oil and liquids-rich gas development from the Eagleford Shale; and Liberty Resources and Shelter Bay Energy developing unconventional oil in the US and Canadian Bakken Shale. Through its investments, controls over 500 million barrels equivalent of proved oil and natural gas reserves across North America. Refer to Appendix A for an Overview of Selected Onshore Upstream Investments.

is a leading oilfield services and infrastructure firm with extensive expertise in shale gas development. Since its listing on the Sydney stock exchanges in 1999, has grown from $ million in annual revenue to $ in 2010. Over the last 10 years, has capitalised on its early leadership in horizontal direction drilling to grow rapidly as Australia's coal seam methane industry developed.

This letter shall not constitute a commitment of or any of their affiliates and shall not create an obligation of or any of their affiliates to provide capital or otherwise or be deemed to create any recourse hereunder against or any of their affiliates or any partner, officer, agent, employee or assignee of any of the foregoing, whether by the enforcement of any assessment or by any legal or equitable proceedings, or by virtue of any statute, regulation or other applicable law, it being expressly agreed and acknowledged that no personal or other liability whatsoever shall attach to, be imposed on, or otherwise be incurred by or any of their affiliates or any partner, officer, agent, employee or assignee of any of the foregoing, under this letter or any documents or instruments delivered in connection herewith. This document is being delivered by in its capacity as advisor to

Very truly yours

By:
Name:
Title: Partner

By:

Title: Chairman and CEO

Appendix A: Selected, Investments

investments focused on unconventional gas and oil exploration, development and production include:

Further details of active investments can be found on the
at: http://www.

PARENT COMPANY GUARANTEE

This Guarantee is given the 14 day of APRIL 2011 by Cuadrilla Resources Holdings Limited, a company incorporated under the laws of England and Wales (Company Number 07147040) and having its registered office at BBD House, Stowe Court, Stowe Street, Lichfield, Staffordshire WS13 6AQ, England (hereinafter the "Guarantor") to

1) The State of The Netherlands, represented by the Minister of Economic Affairs, Agriculture and Innovation charged with the execution of the Mijnbouwwet (hereinafter "MEZ")

And

2) The company designated to participate on behalf of the State of the Netherlands in the exploration and production of hydrocarbons Energie Beheer Nederland B.V., having its registered office in Utrecht, (hereinafter "EBN")

Whereas

A. Guarantor's wholly owned subsidiary Brabant Resources B.V., a company incorporated under the laws of the Netherlands (Chamber of Commerce number 24480611) and having its registered office at Hofplein 20, 3032 AC Rotterdam, the Netherlands (hereinafter "Brabant"), by letter dated 14 April 2011 applied for an exploration licence for hydrocarbons for an area in the south of the Netherlands referred to by applicant as Breda Maas ("hereafter "the Licence");
B. The capacity of Brabant to meet its commitments under the Licence should the Licence be granted to Brabant is dependent on the financial and technical support provided by Guarantor;
C. Should the Licence be granted to Brabant Guarantor therefore is willing to stand as financial guarantee for Brabant's obligations and liabilities as holder of the Licence which, for the avoidance of doubt, includes Brabant's obligations and liabilities under or arising from the Agreement of Cooperation relating to the Licence as referred to in article 87 of the Mining Act, to be agreed between Brabant and EBN (hereinafter: "AoC"):

1. The Guarantor hereby acknowledges that it is fully aware of the obligations of Brabant, more specifically its obligations towards MEZ and EBN under the applicable law and regulations, as a holder of the Licence and as a party to the AoC.

2. The Guarantor hereby irrevocably and unconditionally declares itself to be jointly and severally liable for the performance and payment of any and all of the obligations of Brabant under or arising from the Licence, the AoC and the applicable law and regulations. In the event that Brabant fails in any respect or to any degree to meet any or all of its obligations under or arising from the Licence, the AoC and the applicable law and regulations, Guarantor shall immediately upon first demand in writing by MEZ or EBN perform its obligations or pay in full the sum which shall be demanded by MEZ or EBN, as the case may be, with respect to Brabant's unfulfilled obligations.

3. The Guarantor shall not be discharged or released from its obligations under this Guarantee by the occurrence of any one or more of the following:
   a. Any alteration of the relationship between the Guarantor and Brabant;
   b. Any amendment of the Licence and/or the Parties thereto;
   c. Any allowance of time, or other concession MEZ may have granted Brabant, any refusal or neglect of MEZ to perform or enforce any rights, remedies or securities against Brabant; nor any other compromise or settlement of any dispute between Brabant and MEZ;
   d. The liquidation, bankruptcy, dissolution, or any change in name, composition or constitution of Brabant and or the Guarantor;
   e. Any other act or omission which but for this provision might exonerate or discharge Guarantor.

4. Guarantor shall perform its obligations and make any payment due hereunder without the right to set-off or counterclaim and without any legal formality being necessary, and waives all privileges or rights which it may have as a Guarantor, including any right to require MEZ or EBN, as the case may be, to first exhaust all remedies against Brabant.

5. Guarantor may not assign or otherwise transfer this Guarantee and or any of its rights and obligations hereunder without the prior written consent of MEZ and EBN. This Guarantee and the undertakings herein shall be binding upon Guarantor's permitted successors and assignees and shall extend to and inure to the benefit of MEZ and EBN.

6. This Guarantee shall enter into force on the date that the Licence is granted to Brabant and shall remain in force until Brabant
   a. is no longer a holder of the Licence; and
   b. fulfilled all its obligations (including but not limited to its current and future abandonment obligations) under the Licence, the AoC and the applicable law and regulations.

7. MEZ's and EBN's rights under this Guarantee are in addition to those provided by law.

8. This Guarantee shall be governed by and construed in accordance with the laws of the Netherlands.

9. Any dispute under this Guarantee shall be decided exclusively by the competent court in the Hague as court of first instance.

In witness whereof this Guarantee has been duly executed in fourfold by the authorised representative of the Guarantor on the day and year first above written.

____

Name : ________________

Title : Director
For and on behalf of Cuadrilla Resources Holding Limited

Dossiernummer: 24480611 Blad 00001

Uittreksel uit het handelsregister van de Kamers van Koophandel
Deze inschrijving valt onder het beheer van de Kamer van Koophandel voor Rotterdam

Rechtspersoon:

Rechtsvorm	:Besloten vennootschap
Naam	:Brabant Resources B.V.
Statutaire zetel	:Rotterdam
Eerste inschrijving in het handelsregister	:28-12-2009
Akte van oprichting	:17-12-2009
Maatschappelijk kapitaal	:EUR 90.000,00
Geplaatst kapitaal	:EUR 18.000,00
Gestort kapitaal	:EUR 18.000,00

Onderneming:

Handelsna(a)m(en)	:Brabant Resources B.V.
Adres	:Hofplein 20, 3032AC Rotterdam
Telefoonnummer(s)	:44(0)1543266444
Faxnummer	:44(0)1543266440
E-mailadres	:deborah.burton@quadrillaresources.com
Datum vestiging	:17-12-2009
Bedrijfsomschrijving	:Het verwerven en verkopen van koolwaterstoffen.
Werkzame personen	:0

Enig aandeelhouder:

Naam	:Cuadrilla Resources Limited
Adres	:[illegible] House [illegible] Court, [illegible] St., WS13[illegible] Lichfield, Verenigd Koninkrijk
Ingeschreven in	:Companies Registration Office te Cardiff, Verenigd Koninkrijk onder nummer [illegible]
Enig aandeelhouder sedert	:17-12-2009

Bestuurder(s):

Naam	:Turner, Peter
Geboortedatum en -plaats	:[illegible]-1945, Blackburn, Verenigd Koninkrijk
Infunctietreding	:17-12-2009
Titel	:Directeur
Bevoegdheid	:Alleen/zelfstandig bevoegd

Naam	:Miller, Mark Andrew

15-04-2011 Blad 00002 volgt.

Dossiernummer: 24480611 Blad 00002

Geboortedatum en -plaats	:[illegible]-1954, Pennsylvania, Ver. Staten van Amerika
Infunctietreding	:17-12-2009
Titel	:Directeur
Bevoegdheid	:Alleen/zelfstandig bevoegd

Naam	:Carlton, Dennis Ray
Geboortedatum en -plaats	:1[illegible]-1950, Kansas, Ver. Staten van Amerika
Infunctietreding	:17-12-2009
Titel	:Directeur

CUADRILLA

Breda Maas

ATTACHMENT III: Cuadrilla Breda Maas

Technical Capacity

Contents

Page

Cuadrilla Resources Ltd
Cuadrilla House
Stowe Court
Stowe Street
Lichfield WS13 6AQ
UK

III.I Cuadrilla: An Unconventional Oil and Gas Explorer

Cuadrilla Resources Ltd was incorporated in 2008 and its subsidiary company Brabant Resources ,,B.V.in 2010. The company is focused on the exploration for unconventional gas resources in mainland Europe in key strategic basins. It has 100% onshore European focus targeted at natural gas resource prospects. Cuadrilla was awarded two exploration licenses in the UK (PEDL165 and PEDL244) and holds the Noord Brabant and Noordoostpolder licenses in the Netherlands. Cuadrilla has recently drilled the first shale gas exploration well in the UK. In addition Cuadrilla has interests in Poland, The Czech Republic and Hungary. In December 2010 Cuadrilla complete the UK's first shale gas well at Preese Hall-1 in Lancashire to a total depth of 2,773m The work programme executed for Preese Hall-1 is exactly that which is planned for the Namurian shale gas wells in the Netherlands (see Figure 1).

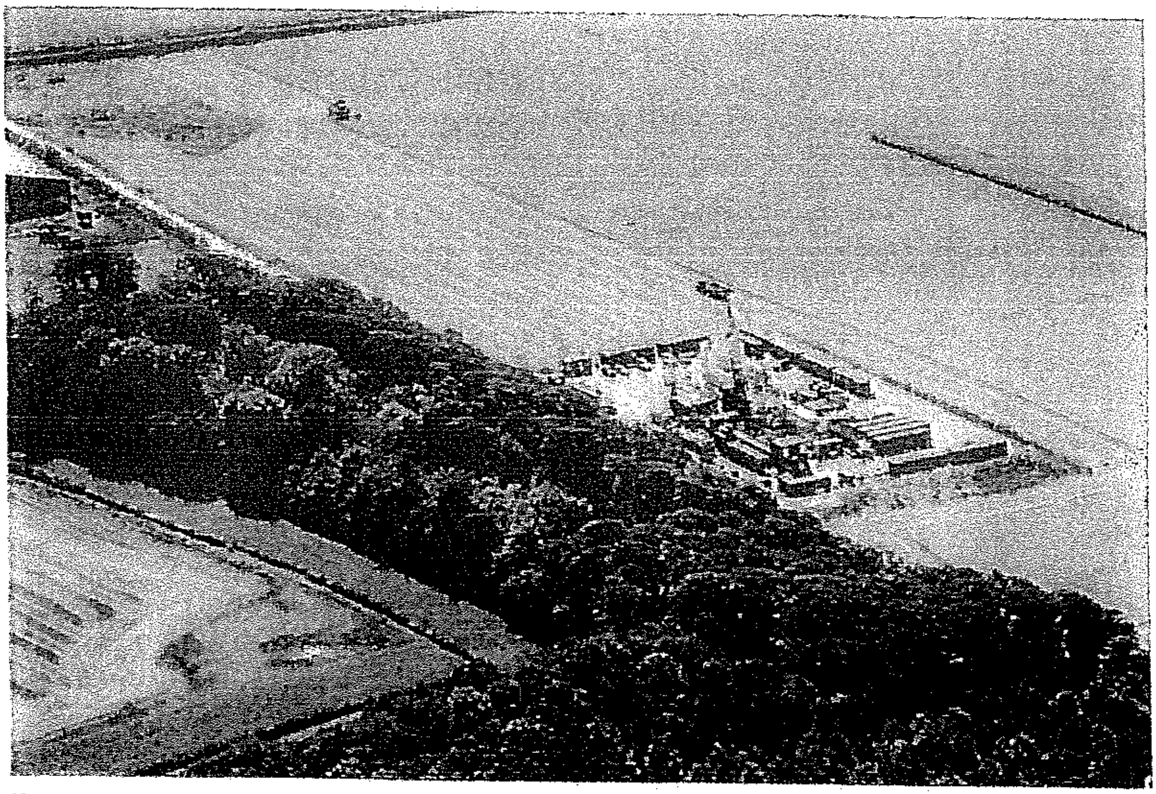

Figure 1 The Cuadrilla drilling rig 'Hutton' at Preese Hall in Lancashire (summer 2010)

A key feature of Cuadrilla is that it has its own drilling and well completions equipment which was specifically designed for European operations. This equipment, currently operating in the UK Cuadrilla has an exceptional execution team in place, forming one of industry's strongest new groups with complimentary expertise in structural geology, sedimentology, reservoir modeling for unconventional petroleum systems, and drilling/completions/production engineering; all the critical ingredients for unconventional resource play exploration.

The following paragraphs discuss how each of the 5 founding directors will use their particular areas of expertise to contribute to the work programme for our Breda Maas prospect.

Dennis Carlton, was the key players in building in the USA. That company, focused on the Raton Basin of Colorado, was built from a fledgling company to a major operator, employing over 500 people and producing > 220 mmscfd from > 1700 wells. The company was acquired in 2004 by for US $2.1billion. Under the leadership if Chris and Dennis, drilled over > 30 wells onshore UK, and Ireland under conditions very similar to those likely to be encountered in the Netherlands. They also built and operated their own drill rigs, coiled tubing units and stimulation equipment which, all of which was fully compliant with EU regulations and CE marked. We intend to duplicate the well services model and bring the same level of technical and operational experience to Holland in order to evaluate potential unconventional reservoirs.

Marc Bustin is President of CBM Solutions, a company owned by one of Canada's largest well service companies, and has extensive experience of drilling land based wells in Canada. Marc will direct our efforts with the specialized geochemical analysis of cores and drill cuttings (as discussed in our work programme). His work will be used to generate rock properties which is a critical part of any unconventional resource project.

Peter Turner has worked on numerous unconventional resource projects in Europe, North America and Asia. As our VP of Exploration, he is responsible for assembling and managing Cuadrilla's geological team and supervising the exploration that will locate prospect areas for unconventional resources around Europe. His team will also, select the best locations for drill sites when we are ready to drill our first wells.

Mark Miller lived and worked in Holland in the 80's and 90's (Miller with , which later became ' ', and both are very familiar with the work and environmental regulations there. Chris has been directly involved in the design, execution and evaluation of hydraulic fracturing treatments on more than a thousand wells worldwide, many of which were conducted in Europe, and in particular, the Netherlands. And Mark has been directly involved in the design, field operations and interpretation of unconventional well testing and reservoir modeling projects in Europe, North America and Australia.

The Cuadrilla team has been formed specifically to evaluate the shale gas and tight gas plays in Europe, and developing an unconventional play in the Netherlands is a key element in Cuadrilla's forward strategy. An addendum with the resume's of the management team is attached in this section.

III.II Our Commitment to Safety and Environmental Protection

In order to successfully execute our work program, we have the right team in place, bringing a variety of unconventional resource expertise to Cuadrilla in the areas of exploration, drilling, completions, reservoir evaluations and production Our team is fully committed to doing the job in a highly professional manner, so that we achieve a high level of success, while at the same time, operate in full compliance with all Dutch regulations and standard industry recommended procedures. Enviornmental issues. It is our intent to complete this work programme free of accidents and incidents that could result in personal injuries, environmental damage, or loss of equipment and assets. Moreover, we plan to conduct all of our field operations in a very community friendly manner, with no adverse environmental impacts

III.III Cuadrilla Plan for Managing the Work Programme

If Cuadrilla is awarded the license for the Breda Maas Prospect we will conduct our research and evaluation work from our UK Technical Centre (Lichfield, England) under the direction of Dr. Peter Turner. He will manage a geological team that will focus primarily on conducting the work as laid out in Year 1 and Year 2 of our proposed work programme. The product of their work will be to generate data that will enable us to decide if we want to drill our exploration well, and if so, where it should it be located

If we decide to proceed with the exploration well in Year 3, and any other wells thereafter, they will be under the control of our operations base in the Netherlands. We will staff it with an Operations Manager and a small office staff The primary focus of the Operations Manager and his staff will be to ensure that we are conducting all of our field operations in accordance to our proposed work programme, and in full compliance with all Dutch regulations This group will also be responsible for preparing the annual reports that are required by the Dutch authorities as part of the licensing conditions

III.IV Cuadrilla Well Services Group (CWS)

III.IV.i Introduction to the In-house Well Services Concept

Cuadrilla is vertically integrated in order to control all aspects of its drilling and development programme. To this end, it has designed and overseen the manufacture and commissioning of a purpose built DrillMec HH220 top drive rig and state of the art cementing, fracture stimulation and completion equipment. Our equipment base also includes our own work-over rig. All components of this equipment are designed for European specifications (noise, roads, etc.) and certified to all European standards.

The primary objective of Cuadrilla's equipment subsidiaries is to underpin the group's vertical integration strategy within the context of a stretched supply chain for European unconventional resources.

Deployment of the equipment will be led by Cuadrilla's executives (and Mark Miller in particular), but staffing, operations and maintenance will be provided by a very experienced third party partner,

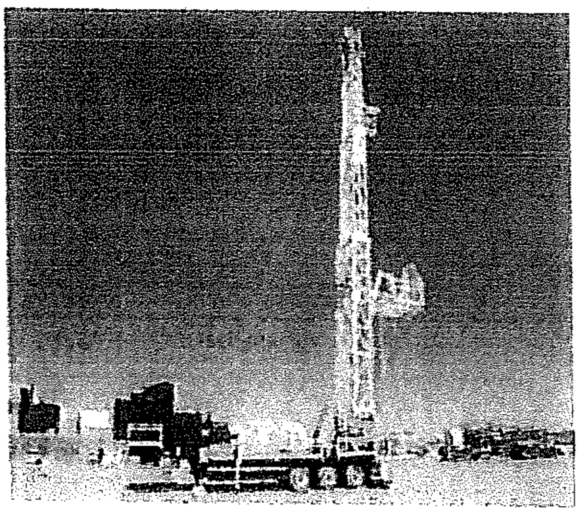

Fig. 2 Cuadrilla's work over rig

Agreement for the provision of consultancy, management, support and operational services for drilling and support services. The services provided by [redacted] or CRL form an overall program for the purpose of executing drilling (CuaDrillCo) and workover services [redacted] in the UK and EU. The services include such activities as equipment design, planning, organization, procurement, project management, HSE documentation and management, operation and supervision of the drilling and service units.

III.IV.ii Benefits of an In-house Well Services Group

Cuadrilla has invested $40.000,000 for the equipment that will be assigned to this group. While this is a large sum of money to be spent, we are convinced that this will add significant value to Cuadrilla and enhance our overall success as we go forward in the future with our exploration and development plans in Europe. We have listed below the top 4 reasons as to why we plan to deploy our own well services group.

(1) Availability – Presently Europe does not have a land based oil/gas services infrastructure like what is available in North America. For example, we are aware that there are pressure pumping services available through service companies in Germany and Holland, but none are capable of providing enough pump rate capacity to meet the needs for unconventional reservoirs. That means we would have to supplement the pumping equipment with skid mounted offshore units which makes scheduling very difficult, causing delays and down time. The same will be the case when trying to schedule a land based drill rig (capable of drilling extended lateral holes), wellbore cementing, or when trying to locate the specialized well testing services needed for evaluating the unconventional reservoirs. With our own fleet of drilling, pressure pumping and well testing equipment, and a technically competent field staff to operate it, we can complete our wellsite activities on time and on budget.

(2) Cost Savings -

III.IV.iii Cuadrilla's Drilling Services

They are among the largest and most innovative [illegible] drilling and pipeline companies in Australia and they are recognized as the leading specialists in the use of cutting edge horizontal drilling technologies for the development of unconventional gas resources. They own and operate a fleet of rigs ready and capable of drilling the deep penetrating lateral holes that will be needed in our Breda Maas prospect. Any rig that they may supply to us for the Breda Maas prospect will be in full compliance with all Dutch regulations and will meet or exceed all of the recommended industry standards.

III.IV.iv Cuadrilla's Pressure Pumping Services

Cuadrilla has a fleet of pressure pumping equipment that gives us the capability of conducting well cementing and hydraulic fracturing operations. each have a significant experience level with pressure pumping equipment, job design, and hands-on field operations of cement jobs and frac treatments.

Our facilities include one cement crew and one frac crew. For the cement crew we will build a re-circulating cement mixer and bulk storage units for the field. We will buy our cement locally in Europe and we will acquire a small cement testing lab for the purpose of bulk cement quality control testing and cement slurry design (additive requirements, thickening time, setting time, compressive strength).

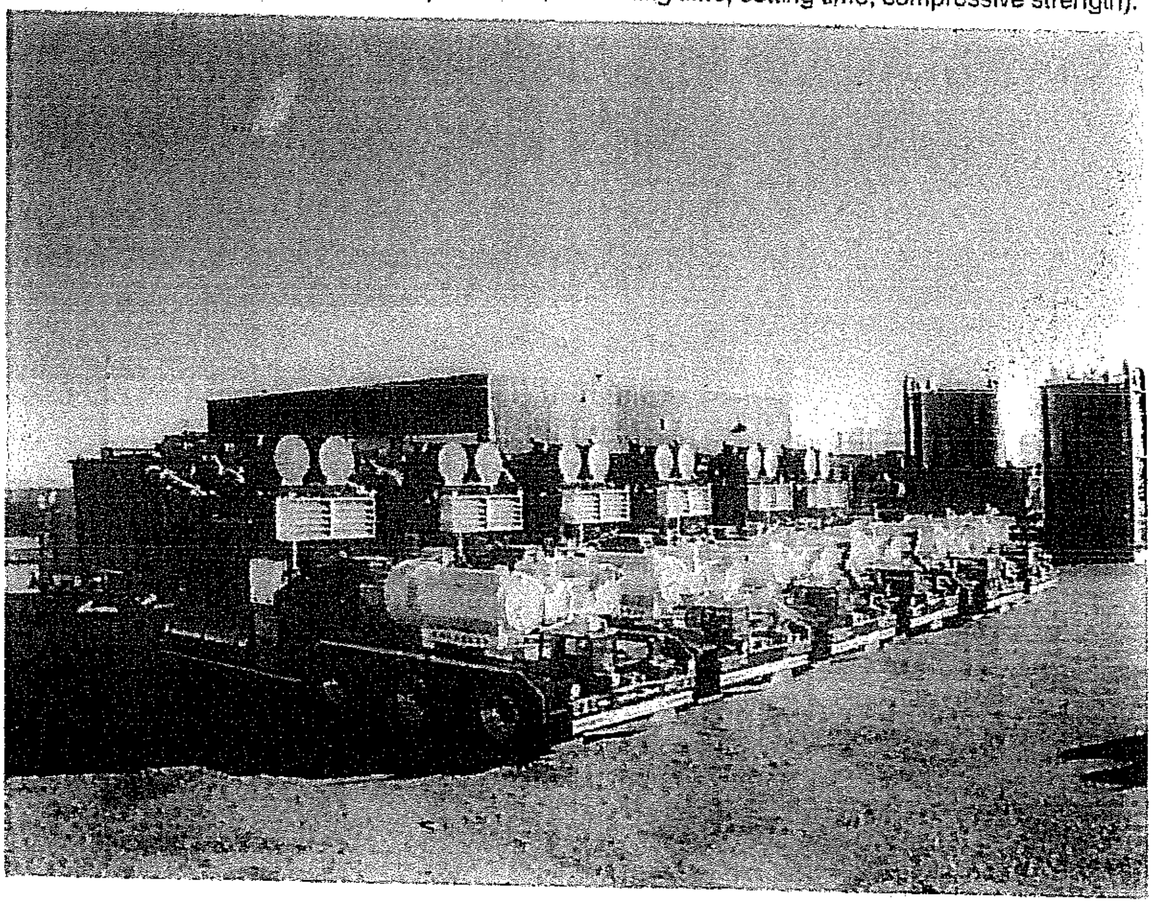

Figure 3 Cuadrilla frac pumper suite

For our frac crew we plan to build a fleet of high pressure pumping equipment that will include 6 x 2500 hhp quintiplex pump units (i.e. 15,0000 hhp total), which will give us the capability of pumping at rates in excess of 120 barrels/min at pressures of up to 5000 psi. Additionally we will build a high rate blender unit for mixing water, proppant (sand) and frac chemicals and delivering the frac slurry to the inlet of the high pressure pumps at up to 120 bpm (approx. 5000 gals/min). We will also build field sand handling equipment, a frac monitoring van, and all necessary support equipment needed to conduct our own frac treatments in a safe and professional manner

All equipment will be built in Canada and will be designed to European standards for safety, noise levels, etc. Blending, pumping equipment will be mounted on trailers for easy mobilization from one wellsite to the next. We have budgeted $. for the pressure pumping equipment and we expect to have it delivered to us by late 2009.

III.IV. v Cuadrilla's Well Testing Services

Well testing is a specialized science that enables us to investigate deep into a reservoir to determine average reservoir properties such as permeability, average. reservoir pressure, and presence of (and distance to) reservoir heterogeneities such as natural fractures, faults, other boundaries (pinch outs, water contacts, etc). Well testing also enables us to determine the effective frac length, or identify and quantify near wellbore skin damage, if it is present. The data acquired in a well test is used in a variety of ways including:

- generating reservoir descriptions
- design and evaluation of fracture treatments
- estimating reserves
- forecasting future well performance (production rates and pressures)
- identifying the nature of production problems
- optimization of well spacing

We have budgeted $ for the purchase of well test equipment. The list of equipment includes bottomhole pressure gauges, memory production logging tool, well test separator and line heater, choke manifold, high pressure flow lines, flare system and a surface data acquisition system.

Addendum : Cuadrilla Management Team

Peter Turner (BSc PhD DSc FGS) **VP Exploration**

Peter Turner was until recently Reader in Sedimentology and Head of the Petroleum Geology Research Group at the University of Birmingham. Most of his career has been spent teaching and researching at UK Universities. He has published widely in sedimentology, diagenesis and palaeomagnetism and is the author/editor of over 150 publications including a number of textbooks. The early part of his career was spent in the School of Physics at Newcastle University where he helped pioneer the use of magnetostratigraphy in sedimentary basins and its application in the hydrocarbon industry. During the last twenty years he has acted a s a consultant in the petroleum industry and worked especially on clastic reservoirs of the Rotliegend of the southern North Sea, the Permo-Trias of the East Irish Sea Basin and in North Africa including Libya and Algeria and the Middle East. He has published a number of papers on Rotliegend and Triassic of the North Sea and recently on deep tight gas reservoirs in the Sultanate of Oman. He is a past winner of the Wollaston Fund of the Geological Society of London and member of the AAPG research committee

Mark Miller - (BSc - Geophysics) **CEO and Director**

In 1976 he graduated from Penn State University with a BSc in Geophysics, and later acquired 15 post graduate credits from Penn State in Petroleum & Natural Gas Engineering (reservoir engineering and well test analysis). After graduation he joined Dowell Schlumberger ("DS") where he worked for 9 years and gained international experience in design, execution, and evaluation of hydraulic fracturing treatments, and wellbore cementing operations. During his time at DS he held a variety of key management engineering and field operations positions (land and offshore) in eastern US, Saudi Arabia and Netherlands.

In 1985 Mr. Miller was a co-founder of Eastern Reservoir Services ("ERS"), where he served as President for 18 years. During his time at ERS he acquired significant experience in well test design and interpretation, reservoir modelling and stimulation design projects in North America, Europe, Asia, and Australia. His primary areas of expertise are unconventional reservoirs (shale, CBM) and gas storage operations. He has served in numerous R&D projects sponsored by the US Dept. of Energy and the Gas Research Institute, and in 1995 he was named Principal Investigator on the GRI project called "R&D Wells for Technology Transfer".

In 2003 ERS was sold to Universal Well Services, at which time Mr. Miller became the Manager of Reservoir Technologies, and his primary duties were to head up the well test analysis and reservoir modelling group. In 2006 he was promoted to Manager of Technicial Services where his duties were focused on managing the engineering staffs from the both the pumping services and the wireline and testing services. He continued to serve in that assignment until joining Cuadrilla Resources in January 2008.

C. T. Cornelius (B.Sc. PhD) **eTechnical Consultant**

Chris Cornelius is one of industry's leading completion technologists, specializing in the development of large unconventional petroleum systems. Starting his career as District Engineer for Nowsco Well Service (UK) Ltd with responsibility for all UK onshore well service operations, including cementing, CT, and fracturing for numerous UK operators, he subsequently became Engineering Manager for NOWSCO Well Services (USA) Inc in Houston; managing major projects as diverse as massive hydraulic fracturing of tite gas sands in East Texas to Coil Tubing Drilling in the Deep Water GOM. Following the acquisition of NOWSCO by BJ Services, he joined Evergreen Resources Corp as Technical Director, forming part of the company's key management team that would ultimately develop over 1.6 TCF of proven CBM reserves in the Raton Basin, Southern Colorado. Additional project under supervision included the drilling and completions of over 15 CBM/CMM wells onshore UK and shale gas wells in Northern Ireland/Ireland during 2001-2002. Following the acquisition of Evergreen Resources in 2004, he has been involved in founding several new start-up companies, including Cuadrilla Resources, working on unconventional gas projects in China, Indonesia, Australia, Canada, Europe and the US. A recent SPE technical workshop Chairman, he received a BSc from Manchester University and PhD from Birmingham University, both in Geology.

R. Marc Bustin (Ph.D., P. Geol., FRSC) **Technical Consultant**
Marc Bustin is Professor of petroleum and coal geology in the Department of Earth and Ocean Sciences at the University of British Columbia and president of RMB Earth Science Consultants and former principal of CBM Solutions Ltd., the largest unconventional gas service company in Canada and world wide experience. He has broad experience in the realm of unconventional gas exploration and exploitation both in research and in his consultancy practice. His professional experience includes employment by Mobil Oil Canada, Gulf Canada Resources prior to joining the University of British Columbia and subsequently with Elf-Aquitaine (France), CSIRO (France) and CNRS (Australia). Dr. Bustin has consulted in the area of fossil fuel resource evaluation and functioned as director and technical advisor for a variety of small through large petroleum companies in Europe, Africa, North America and Asia. Dr. Bustin has published over 170 scientific articles on fossil fuels.

Dr. Bustin received his PhD in geology in 1980 from the University of British Columbia and is a registered Professional Geoscientist in the province of British Columbia. He is or has been an associate editor of the Canadian Society of Petroleum Geology Bulletin, Sedimentary Geology, International Journal of Coal Geology and the Canadian Journal of Earth Sciences. He is member of the ICCP, AAPG, TSOP and GSA. Bustin is a past recipient of the A. L. Leverson memorial award from the AAPG and received the Thiesson Medal from the International Committee for Coal Petrography in 2002 for his contributions to coal sciences/organic petrology and the Sproule Award in 2003 for contributions to the study of unconventional gas resources. Bustin is an elected Fellow of the Royal Society of Canada.

Dennis R Carlton **Technical and Financial Director**

Mr. Carlton recently retired from Pioneer Natural Resources, Inc. (Pioneer) where he held the position of Vice President Exploration -- Western Division, Denver, Colorado. Mr. Carlton was responsible for Pioneer's Rocky Mountain unconventional resource exploration projects and business development activities. In September 2004 Pioneer acquired Evergreen Resources, Inc. (Evergreen), at which time Mr. Carlton was Executive Vice President – Exploration, Chief Operating Officer and a Director, and President of Evergreen Operating Corp. where he was responsible for all domestic and international exploration and production activities. Mr. Carlton was a founder of Evergreen in 1981 growing the company from a $6.25 million initial NASDQ underwriting to a $2.1 billion New York Stock Exchange company at the time of the Pioneer acquisition. Prior to joining Evergreen Mr. Carlton held geological positions with Hamon Oil Company and Mobil Oil Corporation. He received a Bachelor of Science degree in Geology and a Masters of Science degree in Geology from Wichita State University. Mr. Carlton was awarded the Rocky Mountain Association of Geologists, 2000 Outstanding Explorer for his Coalbed Methane exploration and development efforts in the Raton Basin of southern Colorado. The award is given to individuals who are responsible for significant mineral or energy discoveries. He serves on the Boards of Cuadrilla Resources Corp (Chairman), BPI Energy, Inc. and Argos Resources, Ltd. and is an American Association of Petroleum Geologists Certified Petroleum Geologist. Mr. Carlton's conventional oil and gas and unconventional resource exploration and production experience (Coalbed Methane, Tight Gas Sands and Shale Gas) includes US Rocky Mountain Basins, the Canadian Western Sedimentary Basin, United Kingdom, Alaska, Chile and the Falkland Islands.

During the period 1994 to 2001 as Vice President of Exploration for Evergreen Resources UK, Ltd, Mr. Carlton was responsible for all geological, engineering and technical aspects of drilling, completion and production testing 14 Coalbed Methane wells in several UK onshore basins. In addition, as part of the application and licensing process Mr. Carlton conducted several Coalbed Methane Workshops for the technical staff (UK gov't) of the 'DTI"
(now called "BERR").

CUADRILLA

Breda Maas

ATTACHMENT IV: Cuadrilla Breda-Maas

Geological Report and Proposed Work Programme

Contents

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IV.1 Introduction: Why Unconventional Plays?

Unconventional hydrocarbon resources include a wide variety occurrences which are generally characterized by their high GIP (Gas-in Place) but relatively low concentration. They are likely to be extremely important as part of the mix in the future energy supply of the Netherlands (Muntendam-Bos. A.G., 2009). Frequently unconventional hydrocarbons remain trapped in the place that they were generated. By contrast conventional reservoirs are those in which hydrocarbons have undergone secondary migration into discrete reservoirs of limited areal extent. A requirement of unconventional resources is that the shale must have been or is currently within the oil/gas window.

The difference between conventional and unconventional resources is shown in Figure1.

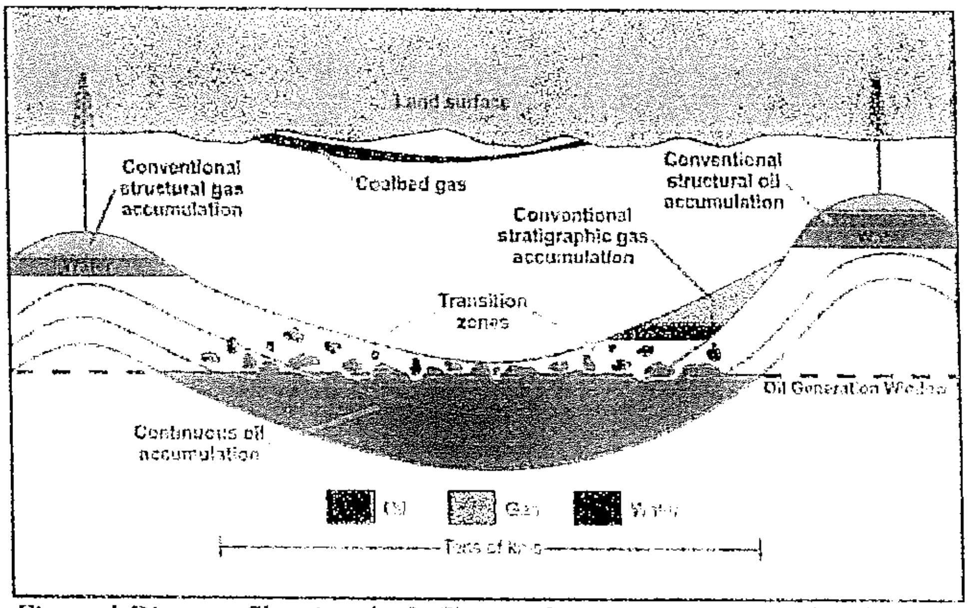

Figure 1 Diagram Showing the Difference Between Conventional and Unconventional Resources

Cuadrilla's plan is to bring unconventional oil and gas exploration to the Netherlands since we have recognized exploration opportunities in tight gas sands, basin centered gas and shale gas Resource plays of this type (see Figure 2) are at early stage of development i the Netherlands but Cuadrilla's was awarded the Noord Brabant license in 2009 and more recently TNO has produced a comprehensive report of unconventional resources in the country (Muntemdan-Bos and other authors 2009).

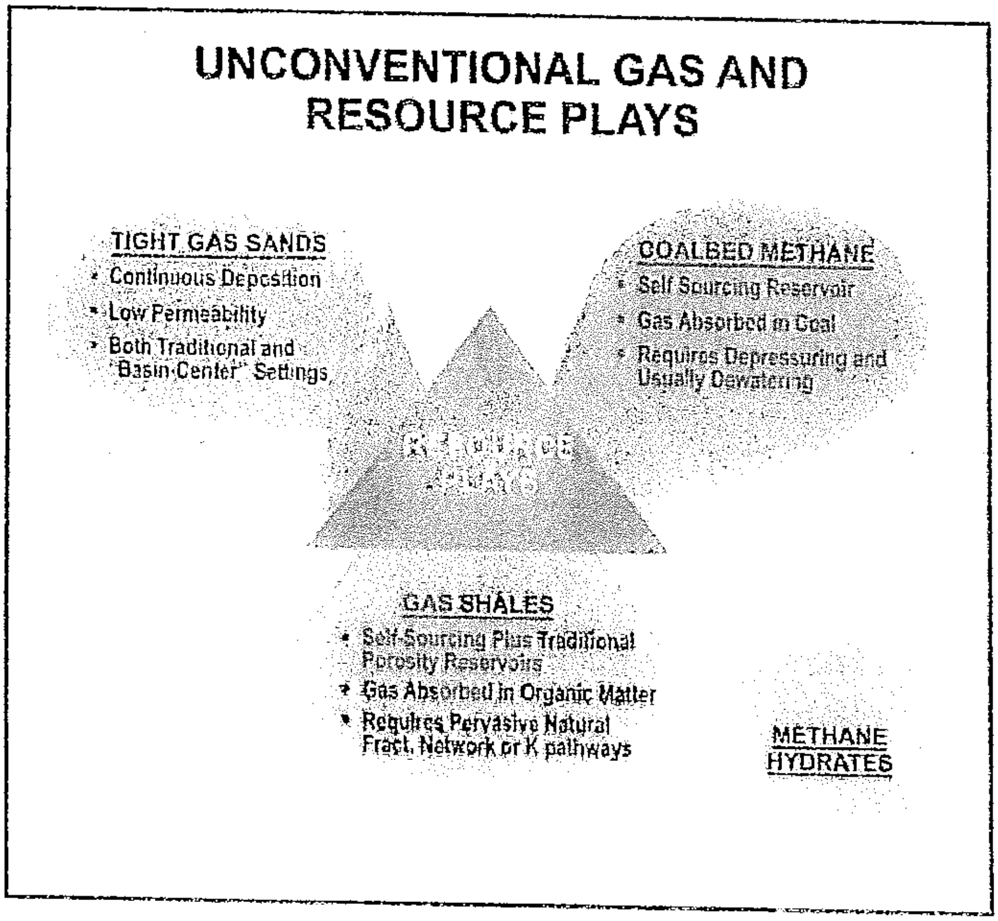

Figure 2. Unconventional Gas and Resource Plays.

The fact that unconventional plays are higher volume and more dilute means that a different approach is required for their development. In the US high precision, horizontal drilling and hydraulic fracturing has meant that these resources can be unlocked and high technology at cost effective prices is the key to success (see Figure 3).

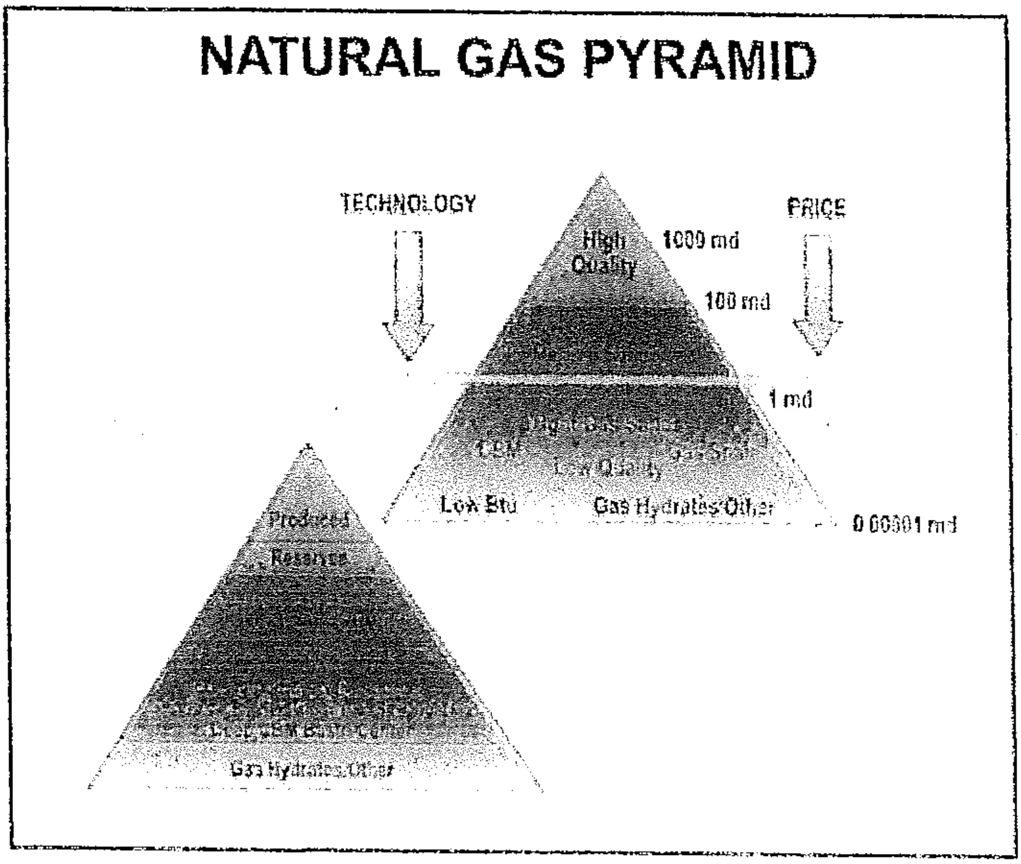

Figure 3. The Natural Gas Pyramid.

In the Breda Maas area our principal interests lie in the exploration of shale gas in the Carboniferous of the southern RoerValley Graben and Campine Basin and tight gas/basin centred gas in the Triassic of the southern Roer Valley Graben (Figure 4).

IV.I.i Shale Gas Plays

In recent years, shale plays have become a major focus for Independent producers in North America. Some of the larger plays include the Barnett Shale, Marcellus Shale, Fayetteville, Eagel Ford and Hatnesville Shale. These shales currently provide the most rapidly developing energy source in North America. The Barnett Shale in the Fort Worth basin has an estimated recoverable gas resource of over 20 tcf. Gas is generated by bacterial decomposition of organic matter (OM) to dry gas, primary thermogenic decomposition of OM and secondary thermogenic cracking of oil to gas. The shales may be the reservoir or it may be in interbedded sandstones or limestones as in thhe Eagle Ford. Such systems are often described as **continuous** reservoirs since the conventional source, reservoir and seal are all connected. An important consequence of this is that exploration of these systems precludes the need to find subsurface structural traps and areas, formerly thought to be non-productive can be brought into play. Key features for the production of gas are generation-induced microfractures in the shales and tectonically induced fracture systems during later events. Key factors in the success of shale gas plays are: TOC>1-2%, maturity values of Ro>1 and the presence of natural fracture systems or other permeable horizons.

For decades, Producers have considered these shales only as source rocks, and not of any real value as a reservoir. Over the years, tens of thousands of wells have been drilled through these shales, with little or no effort to produce gas from them. During the 1980s's and 1990's the US Dept. of Energy and the Gas Research Institute (GRI) have both funded millions of dollars of research to find ways to produce gas at commercial rates from these shales, but little success was reached. One GRI study concluded that due to the very low microdarcy permeability found in most shales, a particle of natural gas in a typical shale reservoir will only travel between 5 to 10 ft. in a 50 year period. Yet today, development of shale reservoirs is one of the fastest growing focuses in the North American natural gas industry. Why? Part of the reason for this increased development is tied to natural gas prices, which are on average 3 to 4 times higher than they were in the past. And this makes the development of any unconventional reservoir financially more attractive. But there's more.

Over the past 5 to 7 years, there have been some major technological breakthroughs in the way the industry stimulates shale reservoirs and these have given Producers the ability to produce from shales at commercial rates. The single biggest breakthrough resulted in abandonment of the idea that you need long, deep penetrating and highly conductive natural fractures to successfully stimulate a shale reservoir. For years Producers used high viscosity cross-linked frac fluids, with a high sand concentration (8 to 10 pounds per gallon), in an effort to push fracture wings a 1000 ft. to 1500 ft. or more into the reservoir. But in recent years, it has been determined that it is not the depth of the frac penetration that matters, but rather the "stimulated rock volume", or SRV. And the highest SRV's come from fracture "fairways" that are rectangular in shape, full of interconnected fractures, both natural fractures and those induced during the hydraulic fracture treatment. The rectangular dimensions of typical frac fairways are often several hundreds of feet in width, and 500 to 1000 ft in length. And to get that fracture pattern during a stimulation treatment. Producers now pump millions of gallons of thin, low viscosity water based fluids, with low sand concentrations (i.e. 1 to 2 pounds per gallon). Micro-seismic technologies have been developed and refined to determine the dimensions and azimuth of the fairways. Horizontal drilling technologies, with newly developed zone isolation techniques have been deployed to substantially increase the SRV. And new and more cost effective geochemical analysis techniques have been developed to help Producers choose the very best zones to be stimulated, within the massively thick shale formations.

In the UK cuadrilla has had success drilling the Namurian Bowland Shale formation and is developing the strategies need for thick shale developments. It has become clear to us the the Namurian of the netherlands is broadly analogous to the UK situation and hence our interest on the Western and Eastern Campine basins (Figure 4).

IV.I.ii Oil Shale Plays

Cuadrilla is planning to investigate the potential for unconventional "continuous-type" oil and gas resources within the Jurassic organic-rich shales of the Roer Valley Graben (see figure 4 below) in its Noord Brabant license. The key features of unconventional oil shale resources are:

1. the presence of organic-rich shales
2. maturity within the oil window
3. an overlying seal of immature shales or other lithologies
4. a middle zone of sandstone or naturally fractured limestone which acts as a more permeable layer

By contrast conventional reservoirs are those in which hydrocarbons have undergone secondary migration into discrete reservoirs of limited areal extent. A requirement of unconventional resources is that the shale must have been or is currently within the oil/gas window. In order to test this play Cuadrilla is currently planning a deep well at Boxtel in the central part of the Roer Valley Graben.

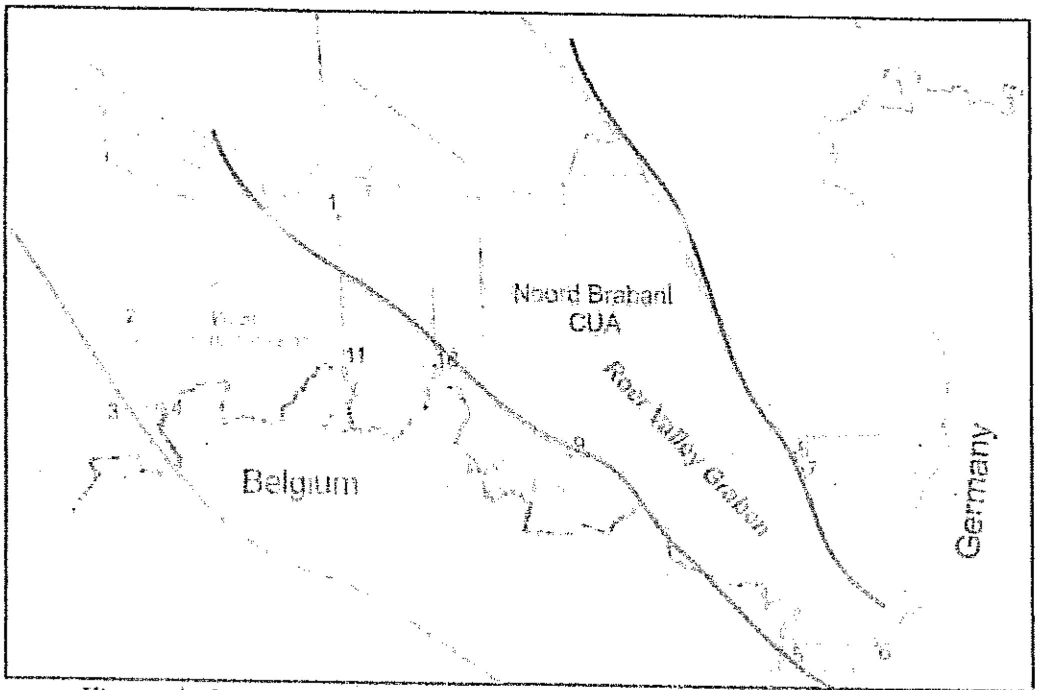

Figure 4. License Application Area and Associated Sedimentary basins.

Globally at the present time one of the most actively explored unconventional resources is the Late Palaeozoic Bakken Formation of the Williston basin in North America. The USGS estimates that this resource may contain as much as 3.65 billion barrels of oil, 1.85 trillion cubic feet of gas and 148 million barrels of natural gas liquids as yet undiscovered (Pollastro et al 2008).

The key to unlocking the resource potential of oil shale plays like the Bakken has been the development of modern technology especially horizontal wells and hydraulic fracturing (Pitman et al 2001)

IV.I.iii Tight Gas Sandstones and Basin Centred Gas

Tight gas sandstones and basin centered gas are potential resources in the Carboniferous but particularly in the Triassic of the application area. Tight gas sandstones have low permeabilities that can be unlocked by hydraulic fracturing. Basin centred gas (Law 2002) is an unconventional play type which is under-explored in Europe. In these systems the reservoir rocks lie immediately above the source rocks. The deeper parts of the basin are characterized by decreasing porosity and permeability but are gas bearing and anomalously pressured. The shallower parts of the basin have better porosity and permeability but are water bearing and overly a transition zone of gas and water bearing rocks (Figure 5)

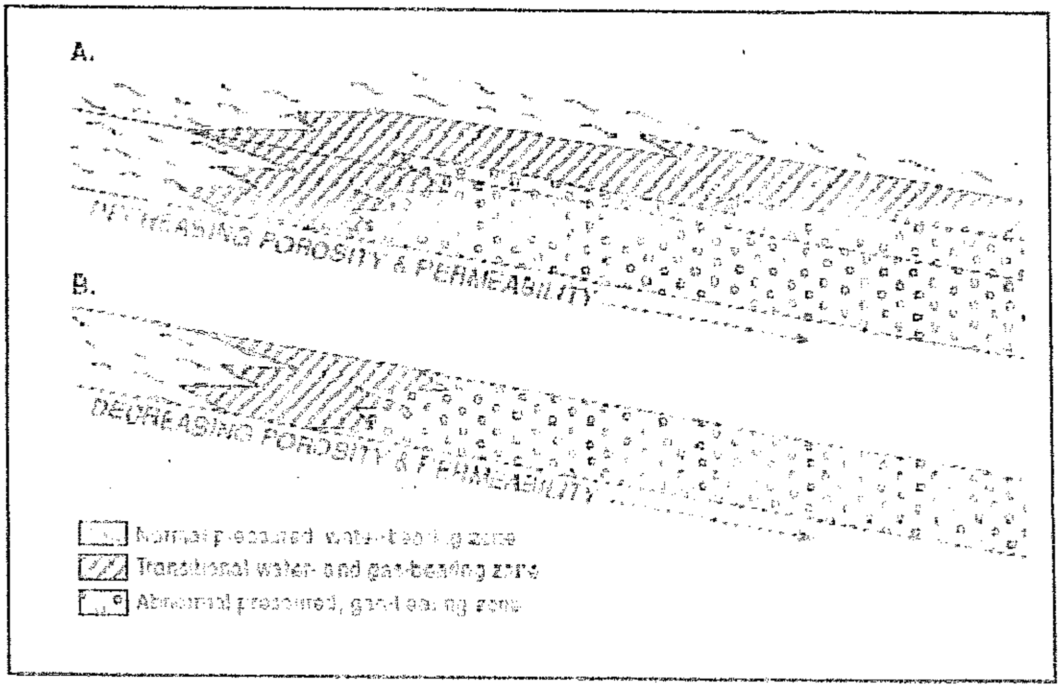

Figure 5. Diagram showing the basic set-up in a basin centered gas system (after Law 2002).

Characteristic features of Basin Centered Gas systems (Law 2002) include:

1. A normally pressured, water-bearing zone
2. A transitional water and gas-bearing zone
3. An abnormally pressured (high or low) gas-bearing zone

Our preliminary investigations in the Noord Brabant suggest that some wells drilled at structurally high levels may lie in the transitional zone of a basin centered gas system. An example of this is the SPC-01 well and the focus of our future exploratiuon is the centre of the Roer Valley Graben which is partly the reason for this application

IV.II Database and Methods

As part of the application process Cuadrilla has assembled and appraised a large amount of data from the onshore Netherlands. Most of these data are available on the NL Oil and gas portal website. [illegible]

This site was produced at the request of the Dutch Ministry of Economic Affairs and is managed by TNO Geological Survey of the Netherlands. It includes a comprehensive collection of well and seismic data along with completion reports, maps and a variety of geological reports. The well and seismic database along with the boundaries of the Cuadrilla license application are shown in Figure 6.

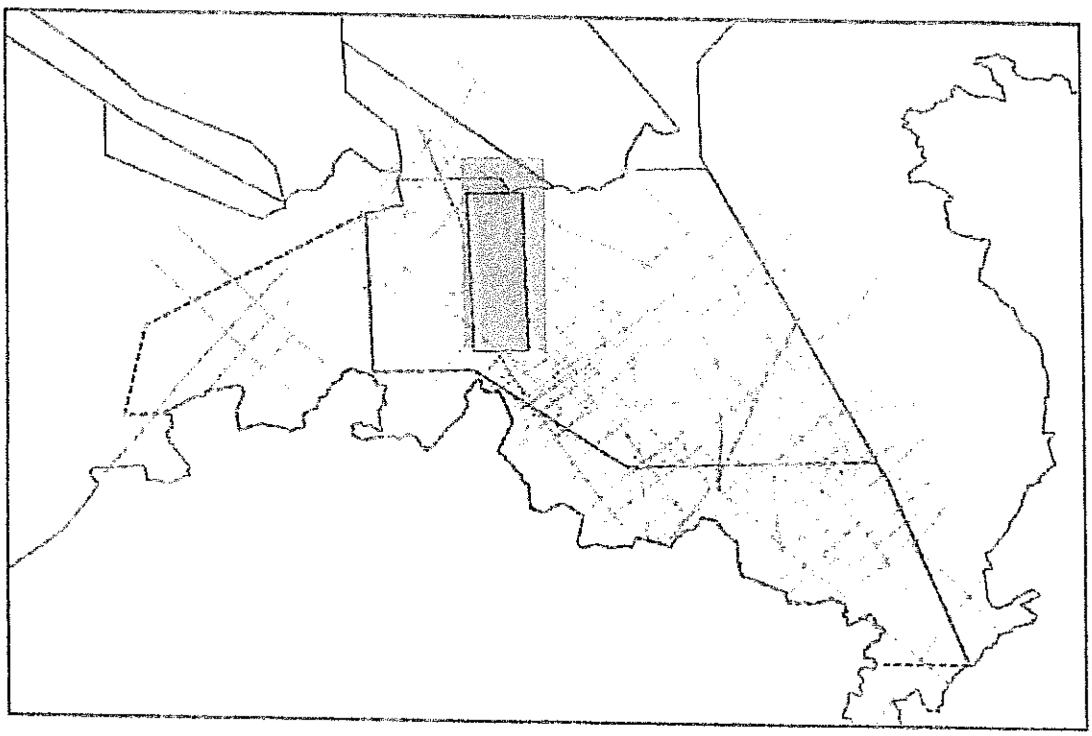

Figure 6. Database Map Showing Wells and interpreted 2D 3D Seismic Data currently in the Cuadrilla Kingdom Project.

Breda Maas

Seismic data were purchased from TNO in the form of digital seg-y files and also raster images which were purchased from TNO. The raster images which are of different seismic vintages were scanned to achieve optimum reconstruction by resizing the images and removing blemishes and other markings. Each scanned image was then vectorized to produce a standard IBM32 floating point seg-y format for each seismic section. The post stack data were then tested and processed using FX random noise filter, TVF, amplitude balance and migration. The data were then loaded into SMT Kingdom suite prior to interpretation. Seismic interpretation was facilitated by the use of VSP reports and other geophysical studies available from the TNO website. Cuadrilla is returning the digitized seg-y files to TNO so that they can be posted on the NL web site.

IV.III Previous Drilling Activity and Results

Previous drilling on the Eindhoven and North Brabant permits has taken place over a long period. NAM drilled a number of wells from 1953-1967 which were focused on possible oil accumulations in the limestones of the Jurassic Brabant Formation. More recently wells have been drilled by BP and Clyde Petroleum. The main target in these exploration programmes were gas accumulations in the Rot and Bunter Sandstones of the Triassic. Only a few wells have targeted the Carboniferous succession and there has been no specific unconventional exploration in the Campine Basin or Roer Valley graben other than that initiated by Cuadrilla. The well database which has been used in preparation work for this application is shown in Table 1.

Company	Well	Year	TVDBRT (m)	Formation	Status
Clyde	HVB 01	1993	2620.5	Volpriehausen	suspended
BP	BKZ-01	1989	2700.0	Rogenstein	P&A Oil shows
Clyde	KDK-1	1992	2330.6	Rogenstein	P &A oil shows
Petrofina	SMG 1	1985	3337.5	Buntsandstein	P &A
Clyde	HSW-1	1992	2847.[illegible]	Rogenstein	P&A
NAM	AST-1	1953	2664.[illegible]	Buntsandstein	P&A
NAM	VEH 1	1967	2072.[illegible]	Lias	P&A
NAM	OIW 1	1959	2406.5	Lower Dogger Shale Jurassic	P&A
BP	SPC 1	1987	2858.[illegible]	Limburg Carboniferous	P &A gas shows
NAM	WAP 1	1959	[illegible]	Carboniferous?	P&A
BP	RSK 1	1987	[illegible]	Delfland Jurassic	P&A
Petroland	STH-1	1976	[illegible]	Westphalian C	P&A gas shows
NAM	DON 1	1957	[illegible]	Lias Jurassic	P&A
NAM	RSB-1	1970	[illegible]	Namurian Shale Lower Carboniferous	P&A
Fina	NDW 01	1985	[illegible]	Carboniferous	P&A
NAM	STB-1			Carboniferous	P&A

Table 1 Wells used by Cuadrilla in the Evaluation of Noord Brabant and Breda Maas

Results have significant gas shows in many of the wells particularly in the Jurassic shales of the Aalborg Formation and the Triassic sandstones. The area has one producing gas field at Waalwijk, now operated by Northern Petroleum and with proven and probable reserves of 200BCF gas and 10.75 mmbbls of liquids. The reservoir lies in the Röt and Bunter sandstones

Production on Waalwijk was 56.4 million in 2007 and in the first 5 months of 2008 a total of 1.7 million m^3. Some wells surrounding this area, especially SPC-1, HVB-1 and KDK-1 report oil and gas shows. Since these wells were drilled without fracture stimulation Cuadrilla plans to reappraise the relevant acreage to assess the applicability of new completion techniques.

IV.IV Geological Setting of the Proposed License Area

IV.IV.i Structural Framework

This NW branch of the Rhine Graben (Fig. 7) can be divided into a number of structural blocks which suffered variable degrees of subsidence (Figure 8):

- Krefeld Block
- Venlo, Peel and Koln Blocks
- The Roer Valley Graben (RVG)
- Eastern and western Campine Blocks
- The Brabant Massif

The Roer Valley Graben has had a complex geological history. It comprises a thick Cenozoic (Miocene-Recent) basin sitting unconformably on older rift and pre-rift sediments of Carboniferous to Cretaceous age. The area of application lies at the southern end of the Roer Valley Graben. This is a Cenozoic basin which forms the north western branch of the Rhine Graben. It is bounded to the south by the Brabant Massif and to the east by the Rhenish Massif (Figure 7). The Cenozoic sequence which comprises 2000m of mainly Upper Oligocene to Quaternary sediments overlies older rift related deposits of Triassic to Jurassic age and pre-rift Carboniferous and Permian deposits.

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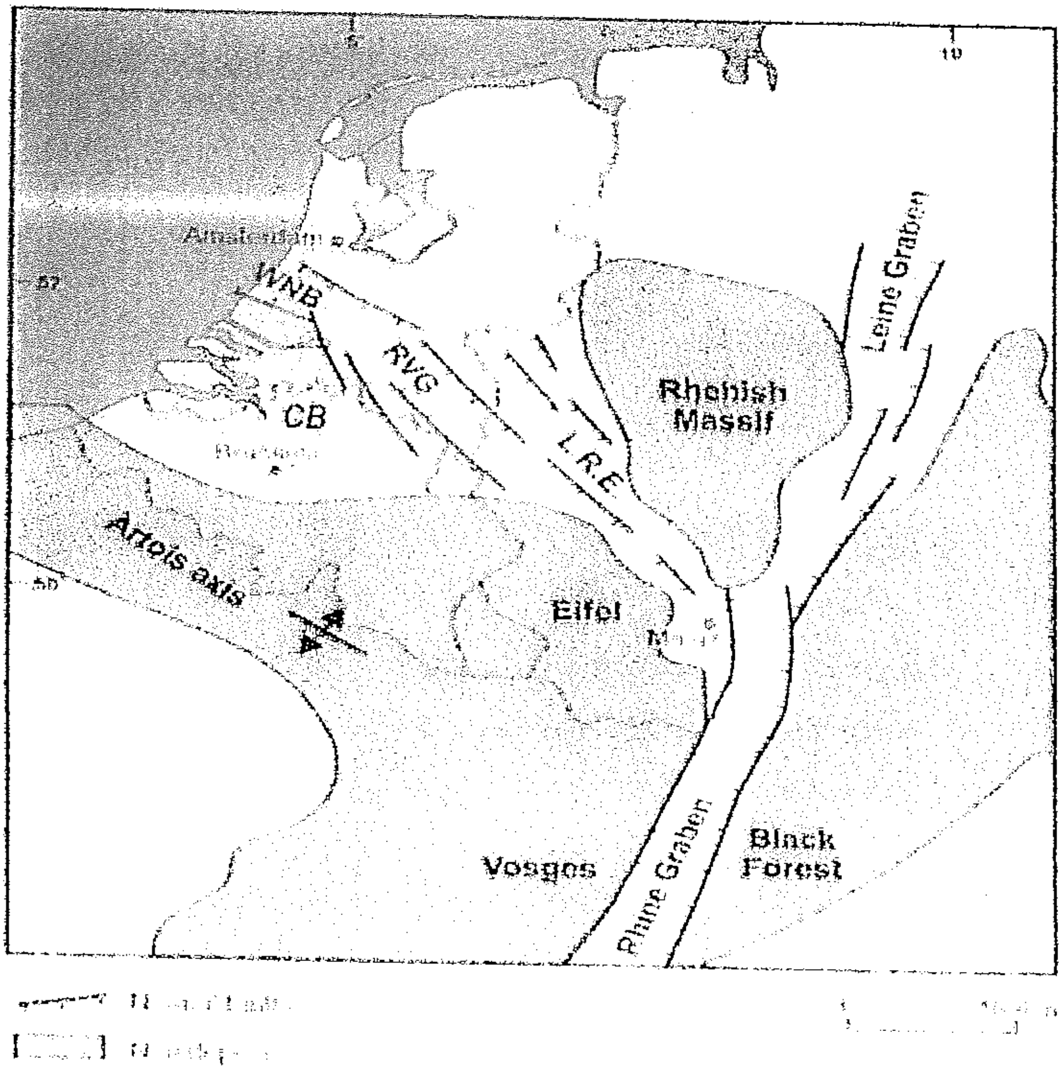

Figure 7 Cenozoic graben in North Western Europe. WNB: west Netherlands Basin, RVG: Roer Valley Graben, LRE: Lower Rhine Embayment, CB: Campine Basin" (modified after Geluk et al. 1994)

The RVG is NW-SE trending and is bounded to the east by the Peel Boundary Fault which has throws of up to 1000m. The SW basin margin is formed by a series of antithetic faults including the Feldbiss, Neeroeteren and Heerlerheide Faults which have throws of 100-400m. The RVG can conveniently be divided into two parts:

1. a north-western part with intense wrench faulting and complex late Cretaceous inversion tectonics. This area suffered strong subsidence during Middle Jurassic-early Cretaceous times
2. South-eastern part which was influenced by the uplift of the Brabant and Rhenish Massifs and suffered mild tectonic deformation during the Kimmerian

The boundary between these two units is close to the E-W Veldhoven Fault. Elements of all these structures are seen in the Cuadrilla license application area (Figure 4) which spans the area of the north-western and south-eastern RVG.

RVG Structure

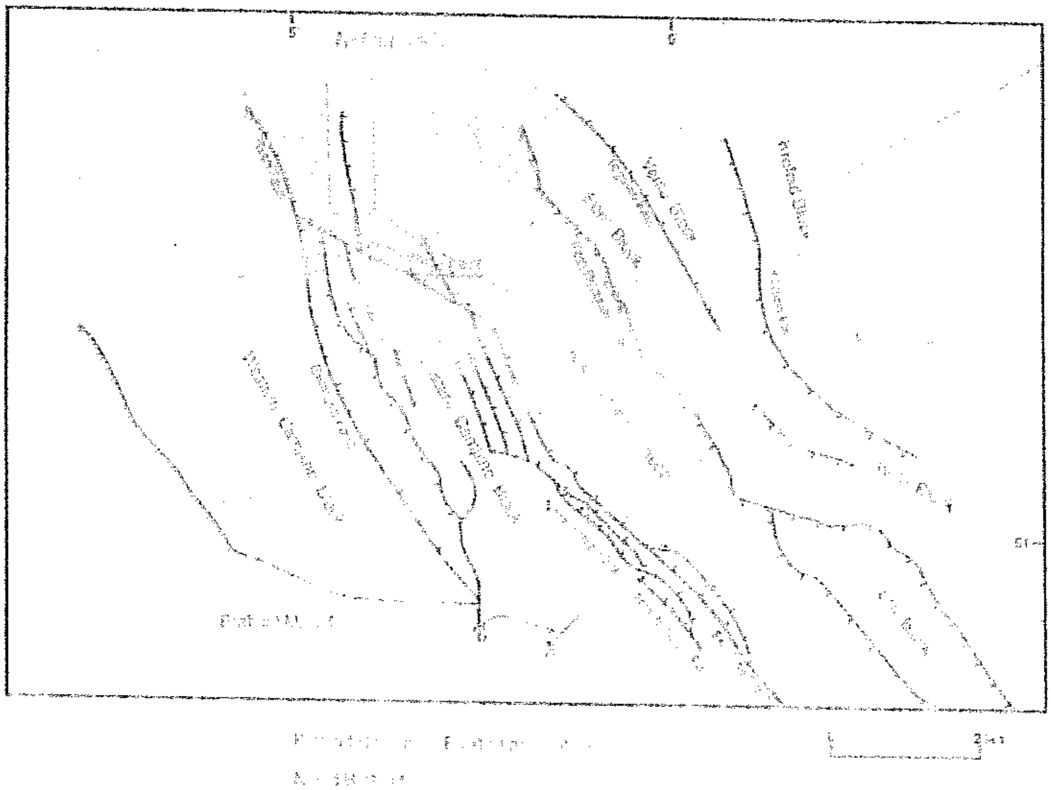

Figure 8. Structural elements. The application area is indicated in yellow. The main exploration target is the Westphalian and Namurian of the Eastern and Western Campine basin. Additional tight gas RCG is the main target in the southern Roer Valley Graben.

IV.IV.ii Stratigraphy and Geological History

The regional stratigraphic outline is shown in Figure 9.

RVG Tectonic Events

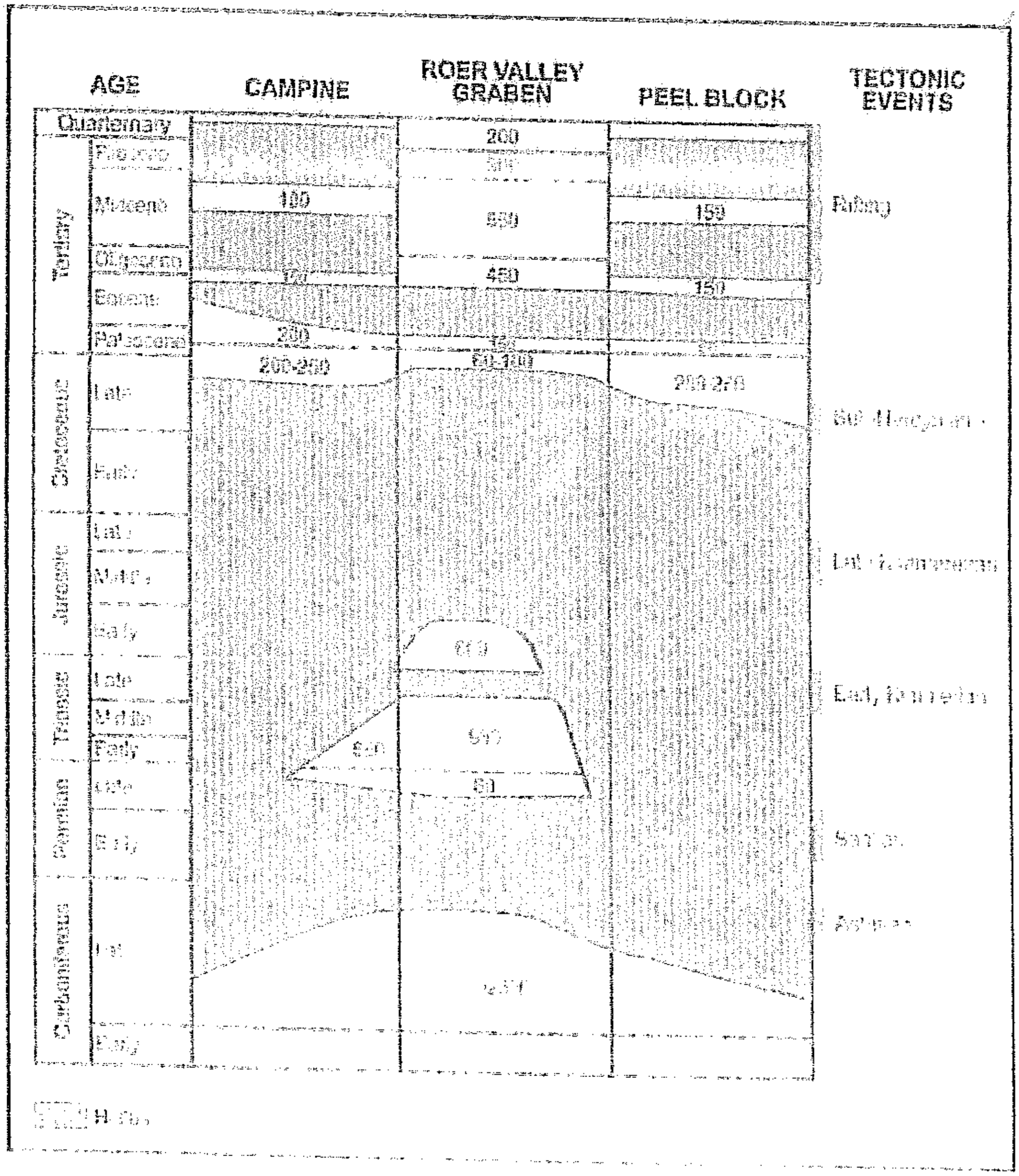

Figure 9. Stratigraphic diagram showing the differences between the Campine, RVG and Peel Blocks (after Geluk et al 1994).

Carboniferous

The oldest known deposits are of Carboniferous age and are known from boreholes in the Eastern Campine Block. The estimated regional thickness is up to 2500m and they comprise coal-bearing strata of mainly Westphalian A, B and C age. The Netherlands has a thick succession of Westphalian strata, locally up to 5500m, but in general potential reservoirs are relatively deep. The section in Figure 10 (from van Buggenum and den Hartog 2007) shows the regional context. In the centre of the RVG the Westphalian is deep but rapidly shallows towards the Midi overthrust. Regional correlations show that the Westphalian is underlain at depth by Namurian clastics and Dinantian carbonates and evaporites (Figure 10).

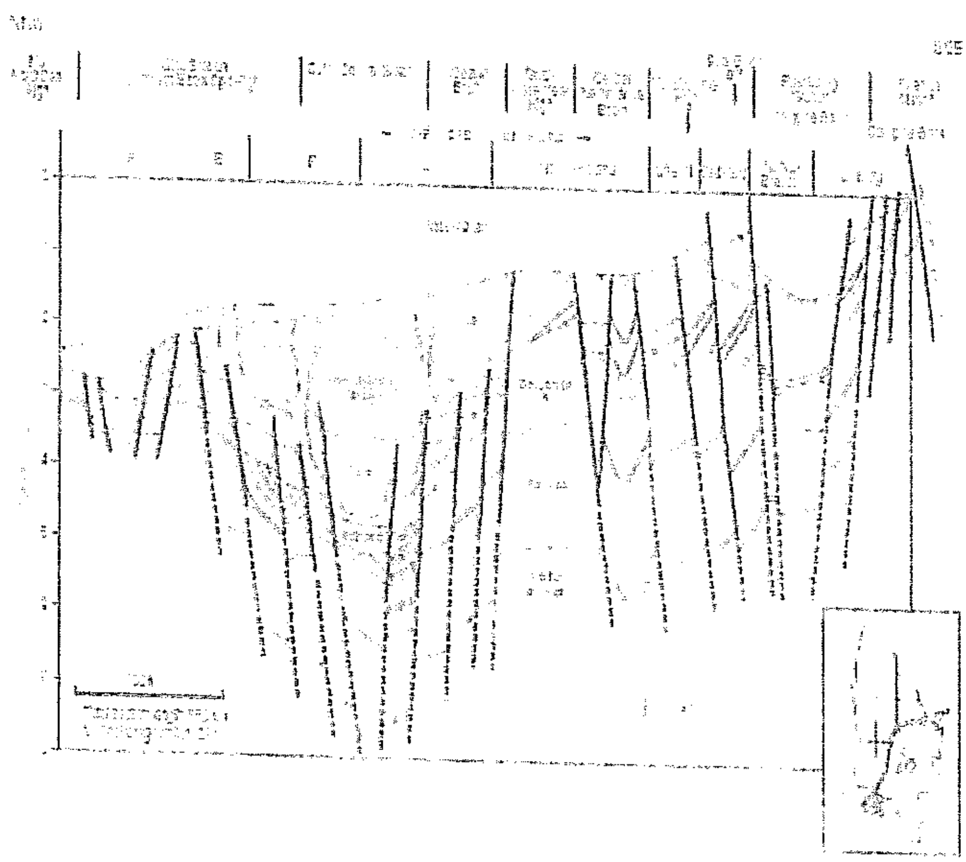

Figure 10. Regional cross-section of the Carboniferous offshore-onshore Netherlands (from van Buggenum and den Hartog Jager 2007)
NOTE: The Cuadrilla license application is focussed on the the Campine Block.

Namurian

There are well penetrations of Namurian strata within the study area (RSB-01) and these rocks are known to be present at depth in the subsurface in the area of the application. Namurian deposition began with a major marine transgression and high TOC black shales and associated turbidites were deposited in a deep basin across NW Europe (Figure 11)

NAMURIAN BASINS

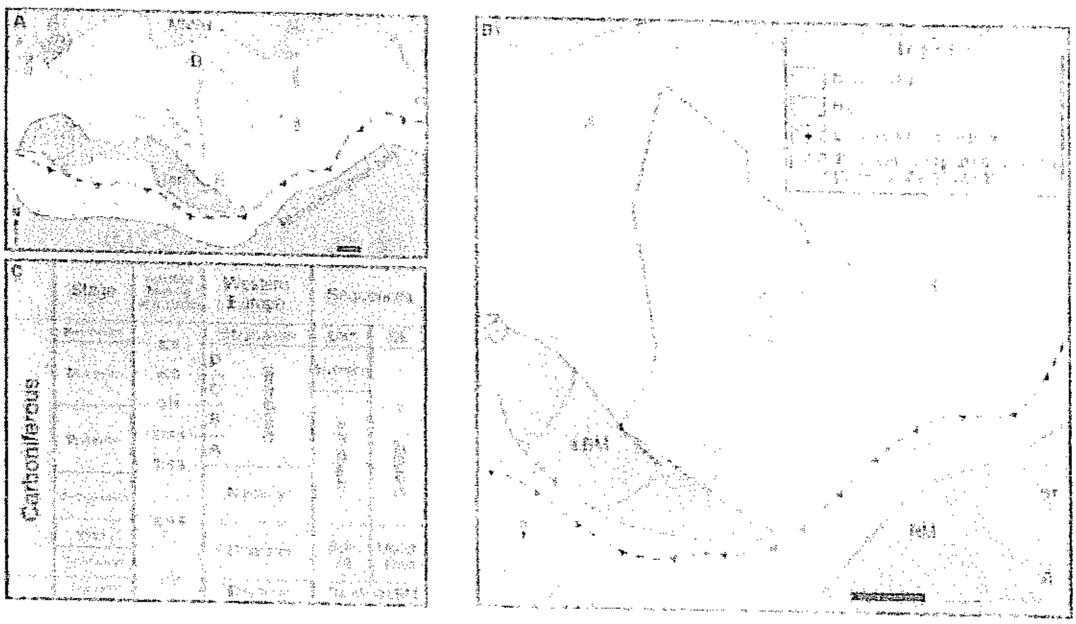

Figure 11. Map showing the distribution of the Namurian foreland basin north of the London Brabant Massif (LBM).

This lowermost Namurian section is well represented in the Geverik-1 well in southern Limburg. Here the shale is about 25m thick and has TOC of around 8% (Van Balen et al. 2000). Published VR data indicate Ro values of 1-2.0 indicating that the section has reached the gas window. Isopach maps (Figure 12) show that thickness of the Namurian is likely to be 1000-1500m thick *(van Buggenum & D.G den Hartog Jager 2007)*and may reach 1700m (van Bergen et al 2010)

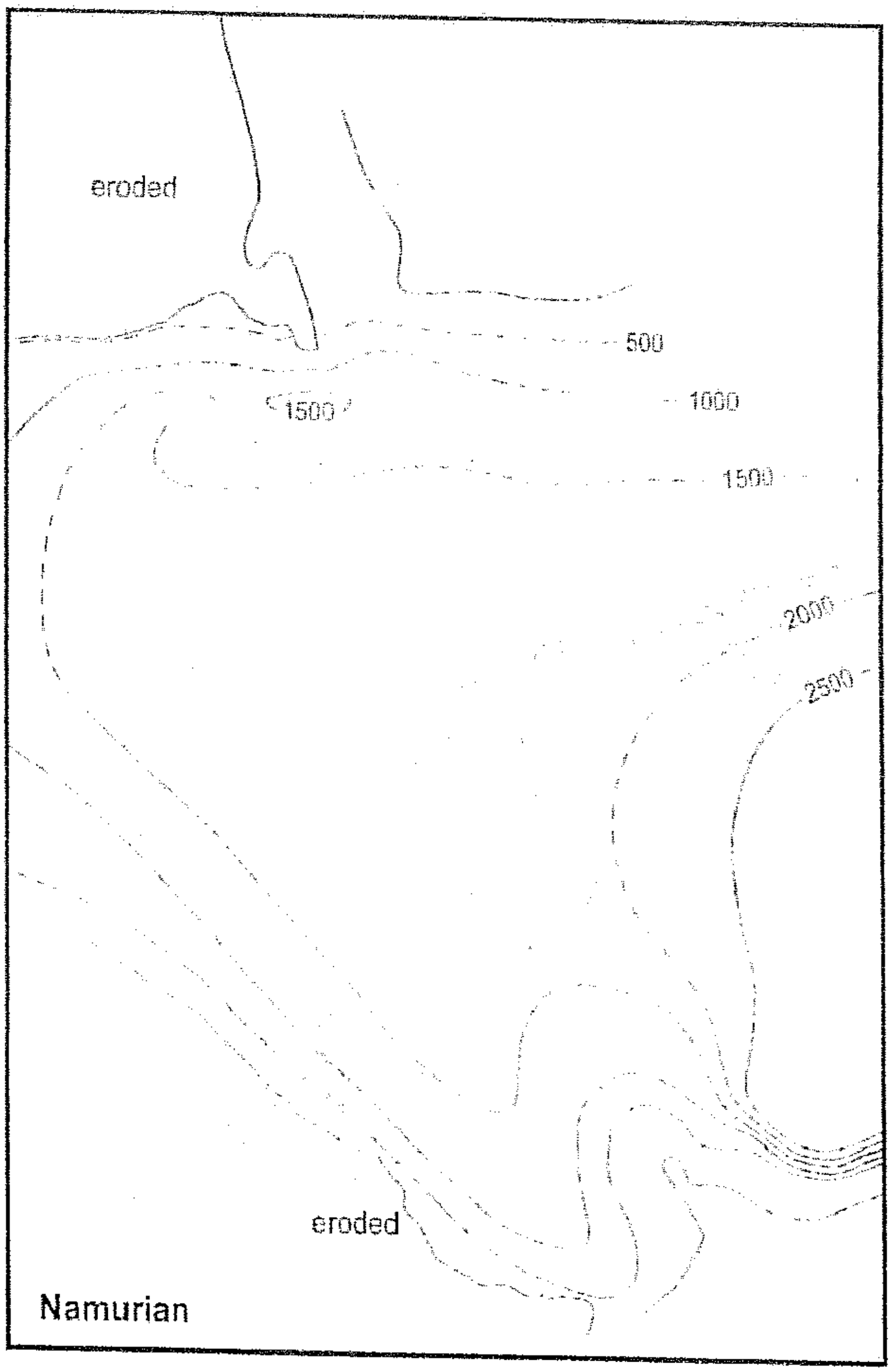

Figure 12 Isopach map showing the inferred thickness distribution of the Namurian in the Netherlands (van Buggenum & D.G. den Hartog Jager 2007).

The palaeogeography of the Westphalian is shown in Figure 13. This shows a sand fairway flowing north-westwards along the axis of the Roer Valley Graben in Westphalian B times. However, our evaluation of the available wells shows that in the Namurian and early Westphalian in the Campine Basin area is dominated by shale deposition. In the western

Campine basin, in particular, the Westphalian and Namurian sections are dominated by thick black shale deposits as exemplifield by RSB-01.

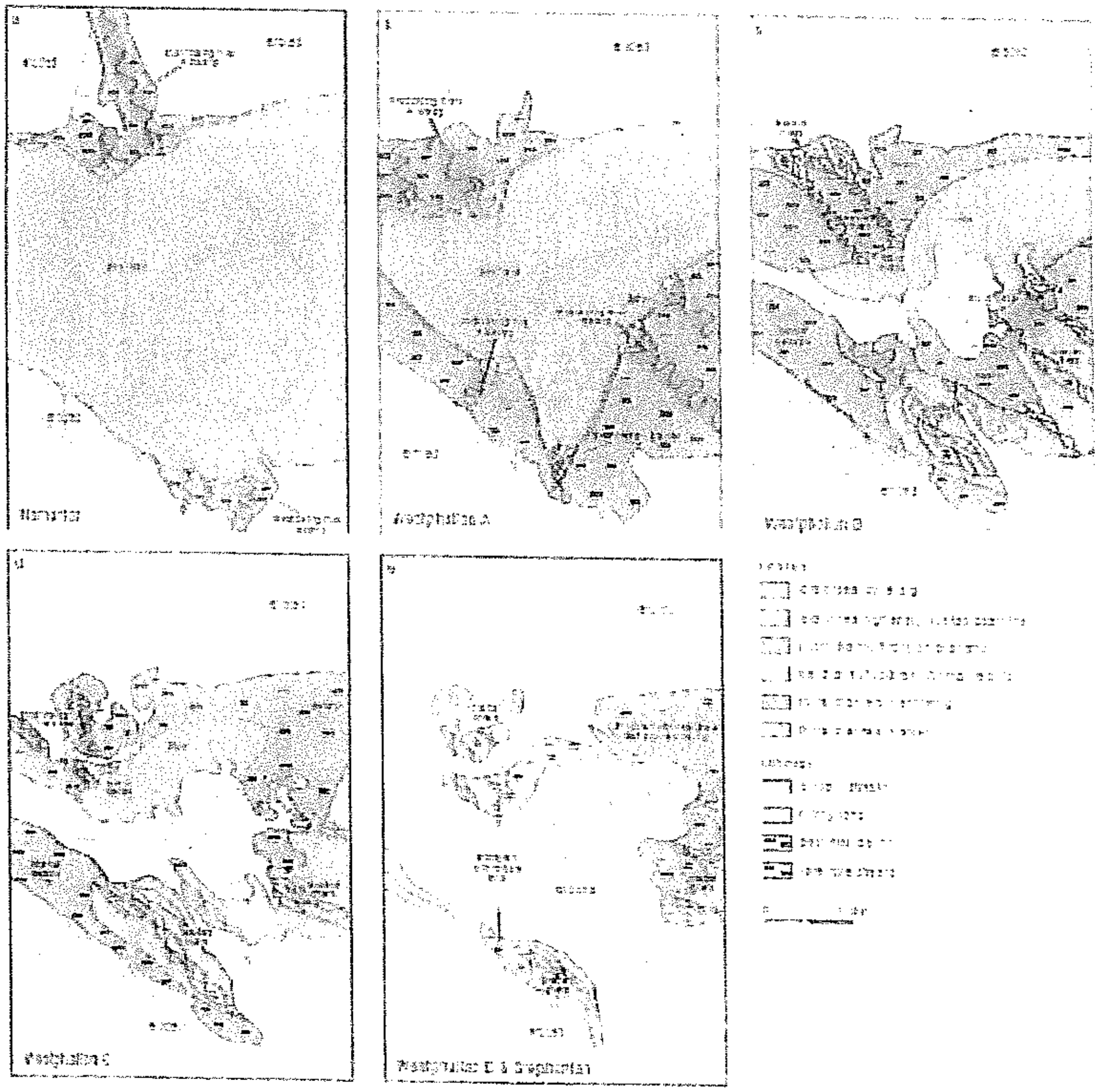

Figure 13. Palaeogeogeography of the Westphalian. Note that the major fluvial systems flow NW along the axis of the Roer Valley Graben (from van Buggenum and den HartogJager 2007).

The Carboniferous is overlain unconformably by a sequence of Permian and Triassic clastics and minor carbonates. The Permian is very thin and comprises an Upper Rotliegend cover of coarse clastics (0-10m) which drape the Carboniferous unconformity surface and Zechstein carbonates (10-60m).

Triassic

The Triassic conformably overlies the Zechstein sequence but is much thicker and coincides with a period of rapid extension and subsidence which corresponds to the break-up of Pangea. Figure 14 shows the regional thickness distribution of the Triassic based on TWT.

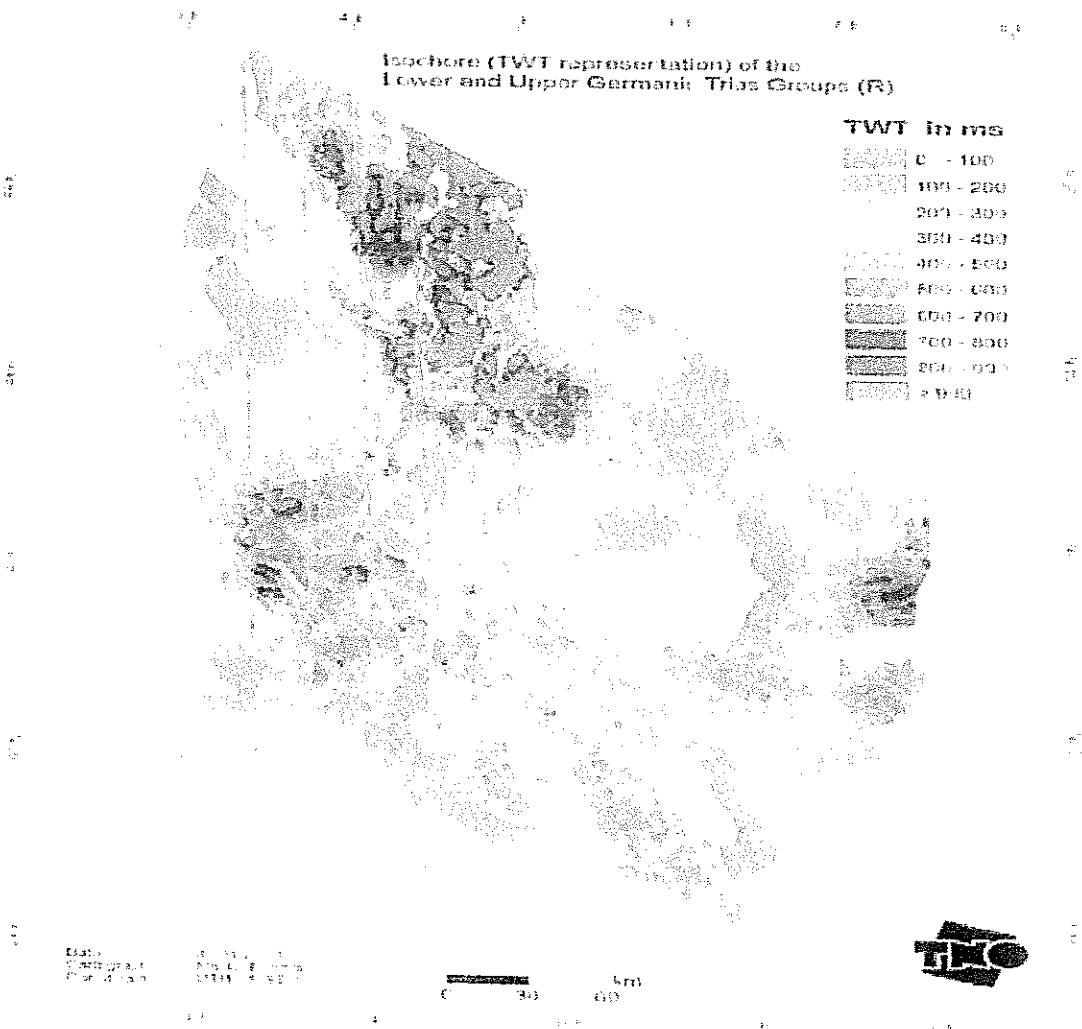

Figure 14 Regional thickness distribution of the Triassic based on TWT. The outline of the Roer Valley Graben (RVG) is clearly visible

The Triassic has a complex stratigraphic succession with a number of internal unconformities and lateral facies variations which resulted from contemporaneous extensional tectonics. The stratigraphic subdivision of the Triassic is shown in Figure 14. The thickest section of the Triassic is confined to the Roer Valley Graben and is very thin or absent in the Western Campine basin. However, in the southern part of the application area there is considerable tight gas exploration potential.

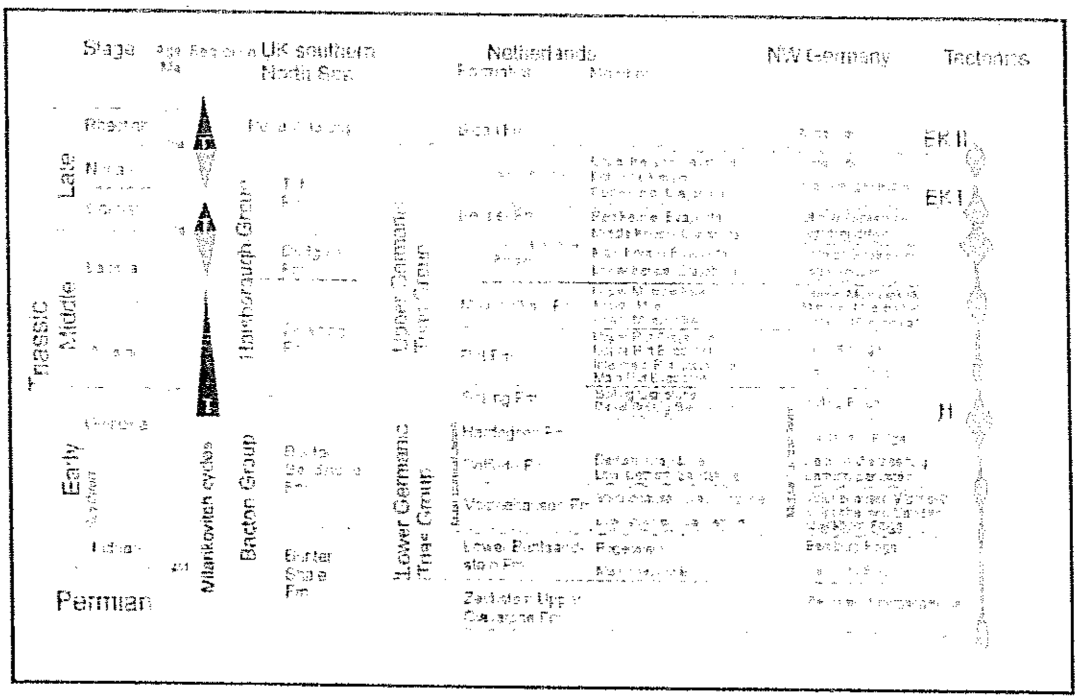

Figure 15. Stratigraphic subdivision of the Triassic in the Netherlands and adjacent countries (from Geluk 2005).

The extensional movements resulted in a number of pronounced and more subtle unconformities in the Triassic (see Fig. 15):

1. the Hardegsen unconformity at the base of the Solling Formation

2. the early Kimmerian I and II unconformities at the base of the Red Keuper claystone and the base of the Rhaetic Sleen formation

Although there is little direct evidence for syn-depositional faulting during the Triassic the regional distribution of thickness variations shows that thickest developments are largely confined to the RVG and differential activity on the boundary faults was instrumental in controlling thickness and facies distributions. The Triassic sediments comprise stacked upwards-fining sequences of fluvial sandstones and lacustrine siltstones and claystones. In keeping with other authors in NW Europe Geluk (2005) has shown how Milankovitch cyclicity can be applied to the sequence development of these strata. The stratigraphy of the Triassic section in this area as outlined by BP (Emery 1987) is shown in Figure 16.

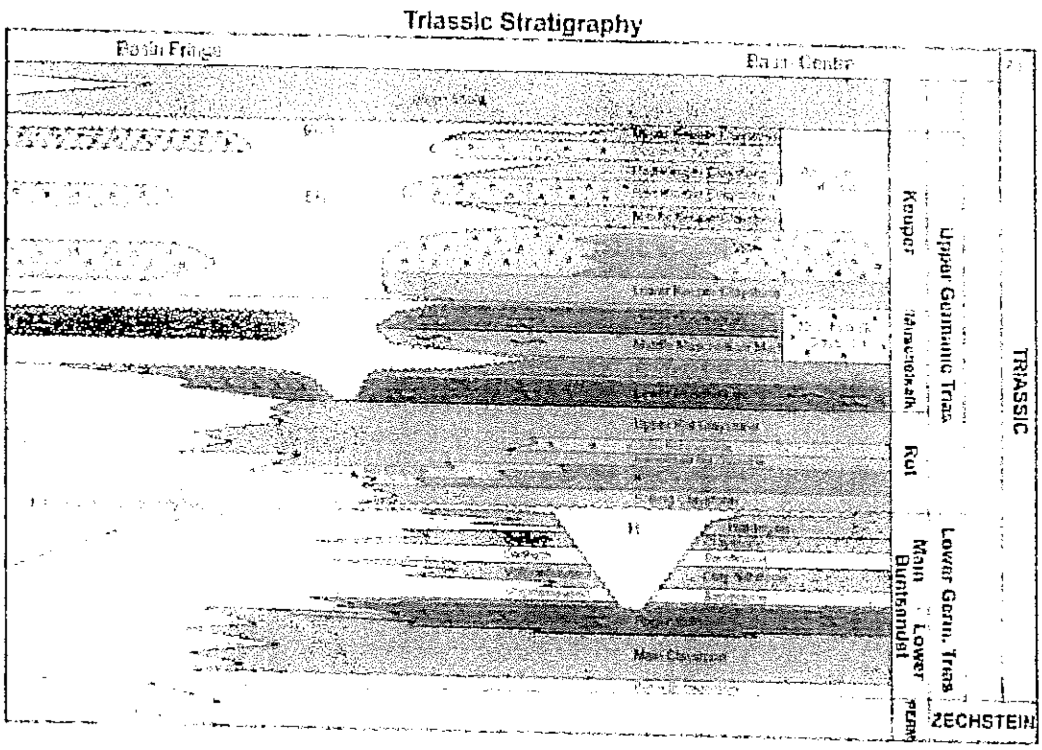

Figure 16. Triassic stratigraphy in the Roer Valley Graben showing the distribution of major sand bodies (yellow). Based on BP internal report (Emery, 1987).

The lower Triassic is up to 700m thick in the Graben but thins eastwards towards the Campine Block and westwards towards the Peel Block. Although this might be in part to late Kimmerian erosion, well records show significant intra-Triassic thickness and facies variations. In the Eindhoven permit area the Lower Triassic is thinner and sandier near the basin margin and becomes thicker with a higher proportion of claystone with the graben area.

The palaeogeography and depositional setting in the license area based on previous work by BP is shown in Figure 17 (Emery 1987). They argued that the Triassic was derived from the fault bounded Brabant Massif and formed a series of alluvial fans which drained towards the NE into an evaporative lacustrine area in the centre of the graben.

Schematic Palaeogeography During Upper Sand Deposition

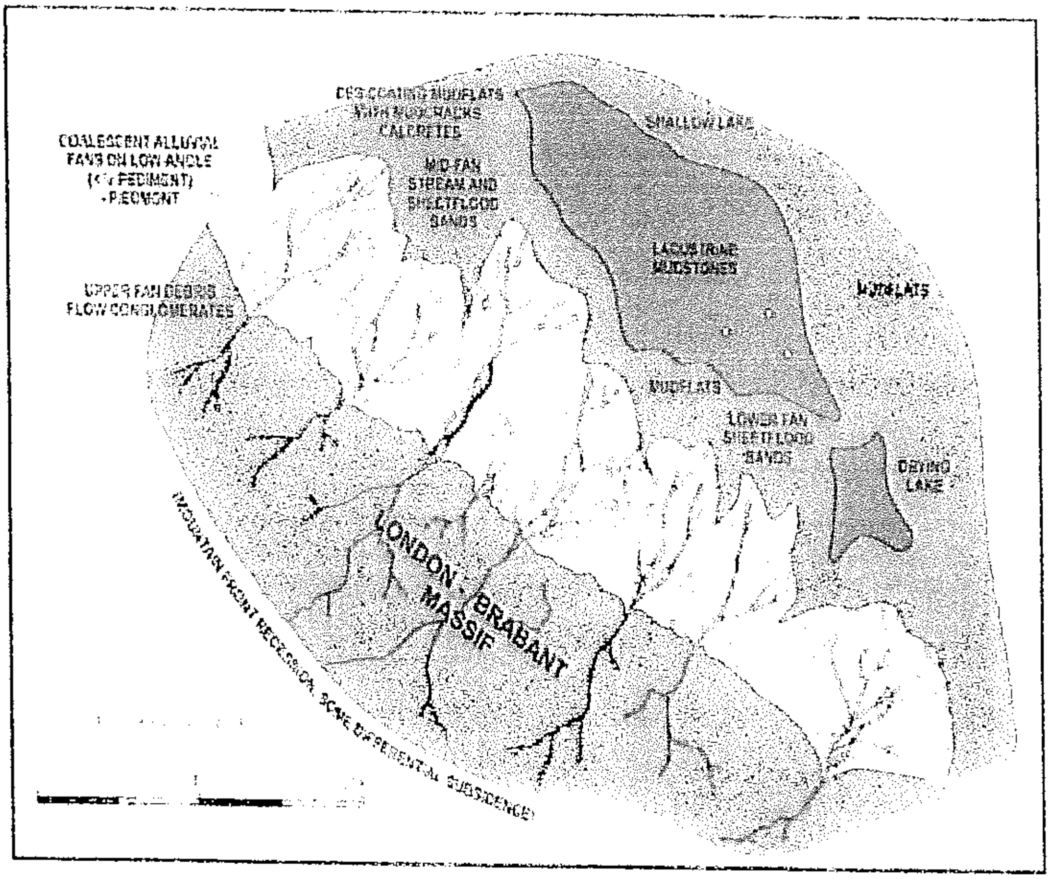

Figure 17. Triassic palaeogeogeography during Upper Buntsandstein deposition of the Cuadrilla license application area (based on BP report on the Waalwijk area (Emery 1987).

However, more recent work (summarized in Geluk (2005)) shows that the Triassic is more likely part of a fluvial system derived from the south and flowing along the axis of the Roer Valley Graben. Maps showing the changing palaeogeography during Triassic times are shown in (Figure 18). These studies indicate the importance of careful appraisal of facies variations and distributions in the Triassic as a means of exploring for tight gas sands

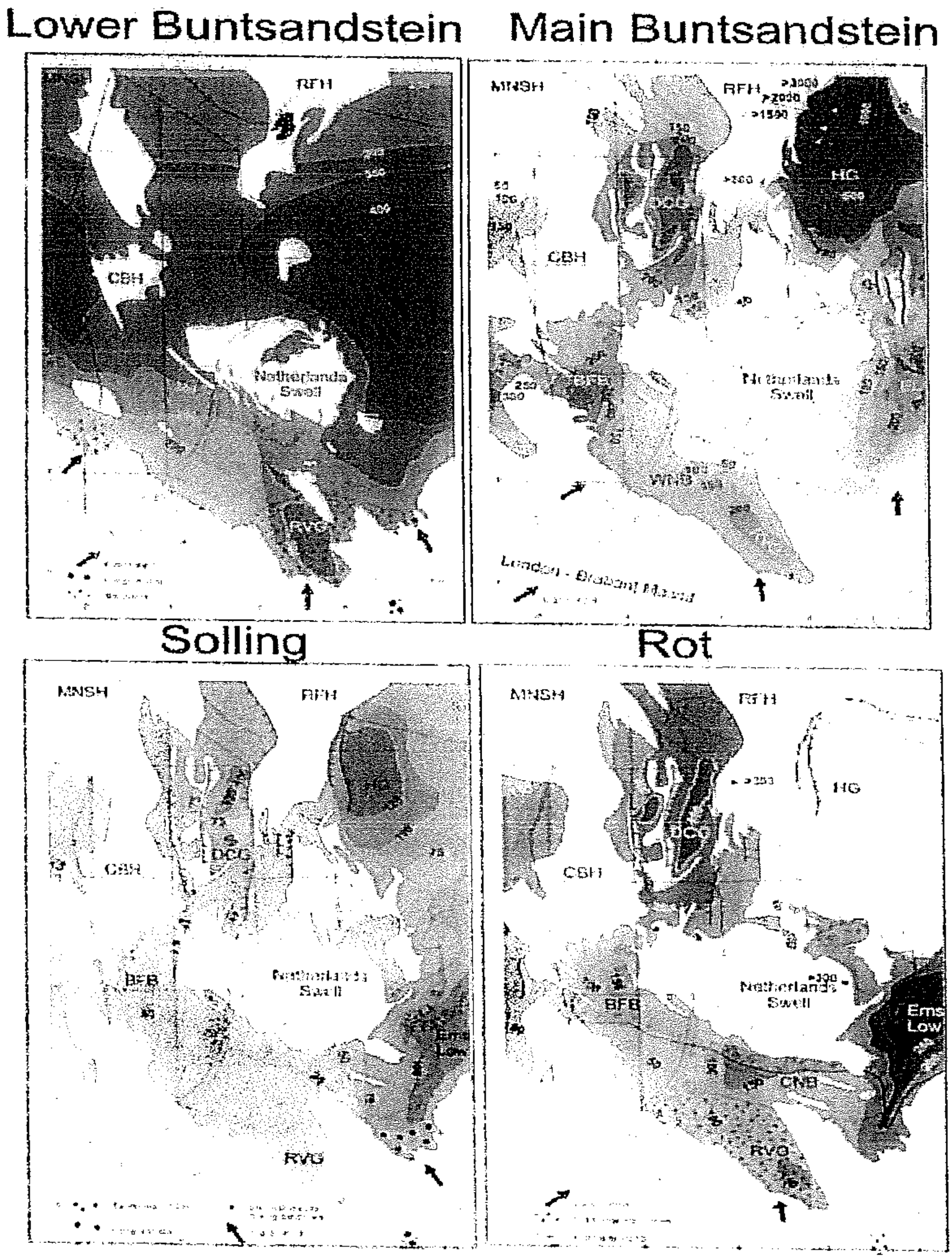

Figure 18. Triassic isopachyte maps showing regional thickness variations and sediment sources for the Netherlands and adjacent areas" (based on Geluk 2005).

The Upper Triassic includes the Muschelkalk and Keuper, a series of claystones, carbonates and evaporites. These are important in forming seals to Triassic sandstone reservoirs in the region. These marine sediments mark the start of Mesozoic sea level rises and on the eastern margin of the basin the Keuper rests on older sections of the Muschelkalk. In the basin centre sedimentation was continuous

The main marine transgression is marked by the Rhaetic Sleen Formation. The base of the Sleen is coincident with the EKII (Early Kimmerian) unconformity (see Figure 15). This organic-rich black shale marks the onset of marine conditions which persist throughout much of the Jurassic

Jurassic

As with the Carboniferous and the Triassic the thickness distribution of the Jurassic closely mirrors the Roer Valley Graben (Figure 19). The stratigraphy of the Jurassic and regional comparison with surrounding areas is shown in Figure 20. During the Rhaetian-Bajocian interval the area was subject to relatively uniform subsidence and a sheet of fine grained marine sediments were deposited over a large area. Herngreen et al (2003) recognize three depositional megasequences

- Rhaetian–Aalenian (Megasequence I)
- Aalenian – Middle Callovian (Megasequence II)
- Middle Callovian – Ryazanian (Megasequence III)

These correspond to the periods between the early and mid-Cimmerian tectonic phases (megasequence I), the period during the mid-Cimmerian phase (megasequence II) and the period between the mid and late Cimmerian phases.

Rhaetian–Aalenian (Megasequence I)

This was a period during which a uniform blanket of marine shales were deposited over a large part of NW Europe. These sediments are referred to as the Altena group in the Netherlands. They comprise dark grey and black silty claystones with abundant pyritized fossils. Those of Hettangian-Pliensbachian age correspond to the Aalburg Formation. Towards the southern basin margin there are an increasing number of thin limestone bands.

During the Toarcian, in common with other parts of NW Europe oceanic circulation became more restricted and black, bituminous shales (Posidonia Formation) were deposited under anoxic conditions. This is the most prominent petroleum source rock in the Netherlands and is considered a potential unconventional resource by Cuadrilla.

Breda Maas

During the late Toarcian to Bajocian basin circulation returned to normal and a series of marine silty mudstones and glauconitic sandstones (Werkendam Formation) were deposited. This formation is integral to Cuadrilla's strategy in that the Werkendam is a potential reservoir or production pathway from oils generated in the Posidonia formation.

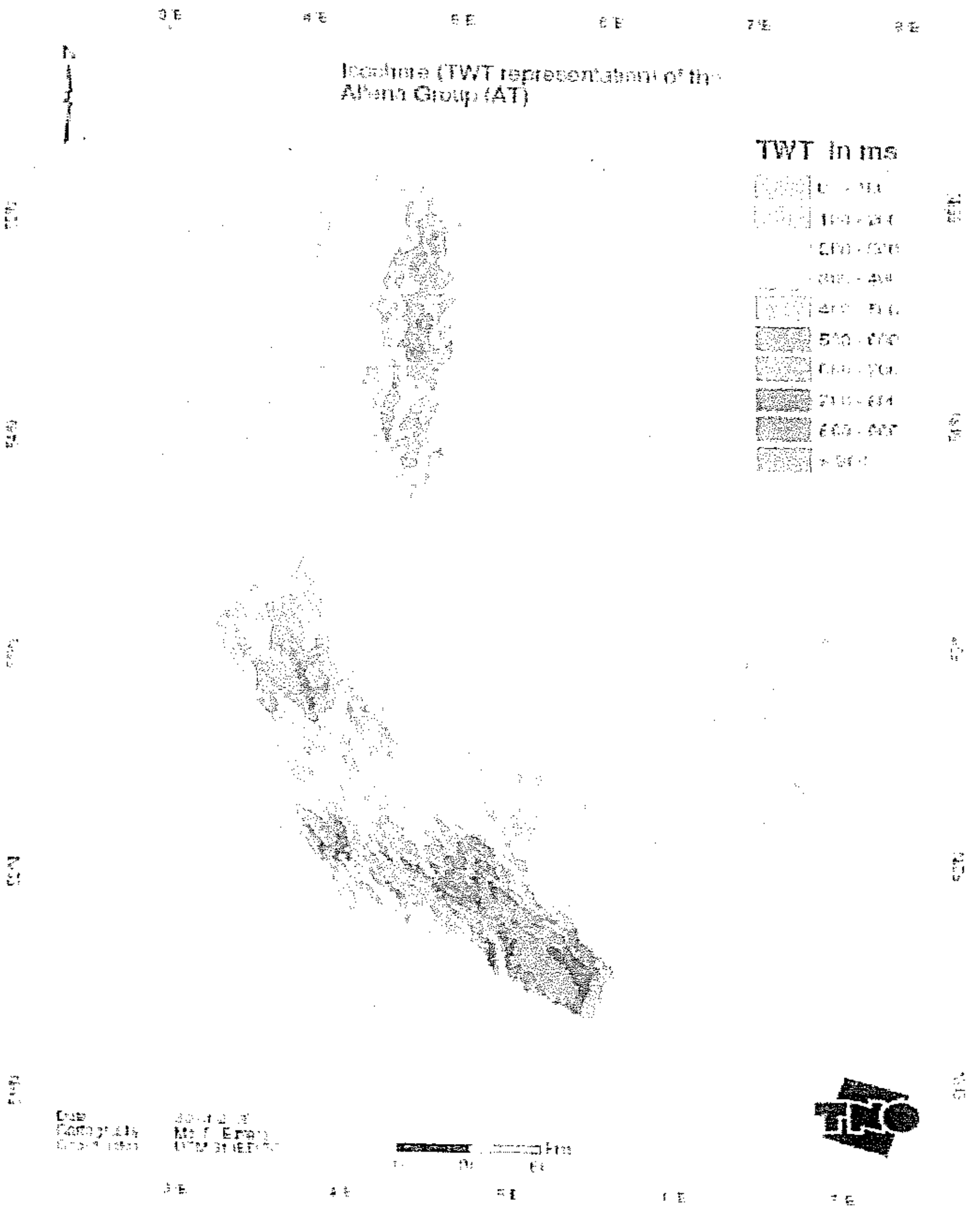

Figure 19. Thickness distribution of the Altena Group (Lower Jurassic) of the Netherlands. Note how the succession is largely confined to the Roer Valley Graben

Jurassic Stratigraphy

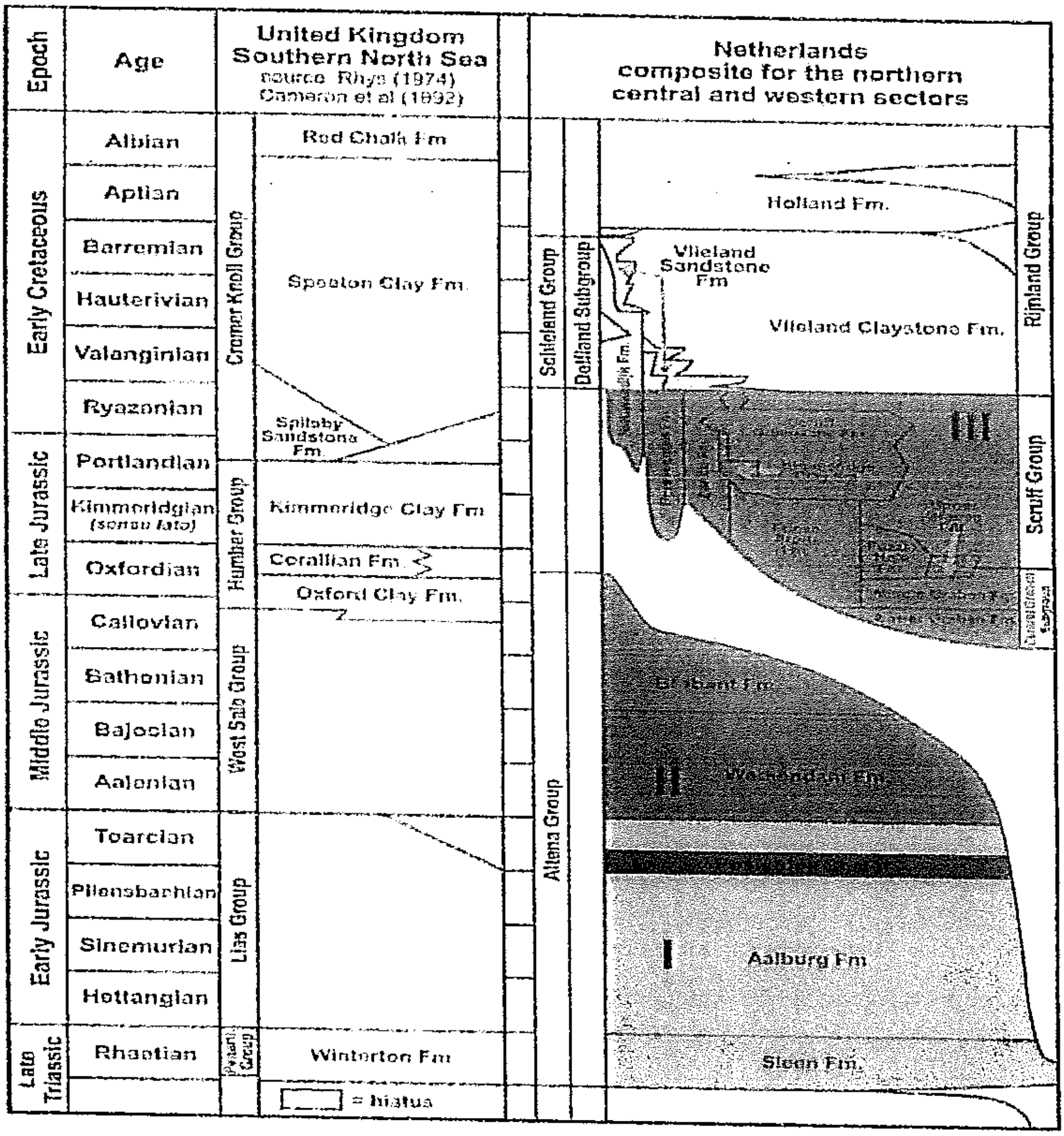

Figure 20. Jurassic stratigraphy of the Netherlands and adjacent areas. I, II and III refer to the megasequences described in the text.

Aalenian – Middle Callovian (Megasequence II)

The sediments in this megasequence were deposited in response to tectonic activity associated with the uplift of the central North Sea Dome. The tectonic event is the 'mid-Cimmerian' unconformity (see Underhill and Partington 1993) for a general description of the significance of this event. The effect of the North sea Dome was uplift in the central North Sea such that the amount of truncation decreases southwards away from the dome. Thus in the Roer Valley Graben the effect of this event is negligible and the unconformity between Megasequences I and II is a conformable correlative horizon. Deposition of the Werkendam Formation continued during this period and depositional facies changed to shallow marine sandy carbonates and marls in the Bathonian. This is the Brabant Formation and in the Cuadrilla license application area this unit has some reservoir potential.

Middle Callovian - Ryazanian (Megasequence III)

Periods of marine transgression oscillated with pulses of tectonically driven continental clastics to produce a complex sequence of interbedded marine and continental clastics. The Scruff Group (Upper Jurassic-Ryazanian) and Rijnland groups are largely marine and interfinger with the mainly continental Schieland Group.

<u>Late Cretaceous and Cenozoic</u>

The Roer Valley Graben is essentially a Cenozoic feature in which subsidence was controlled by earlier formed features. In the Cuadrilla application area the late Cretaceous and Chalk is generally thin and the previous search for Chalk reservoirs met with little success. The Cenozoic is important for burial and maturity levels in the Mesozoic section. Figure 21 shows the thickness of the Miocene which attains values over 1400m in the centre of the graben.

Miocene Isopach Map

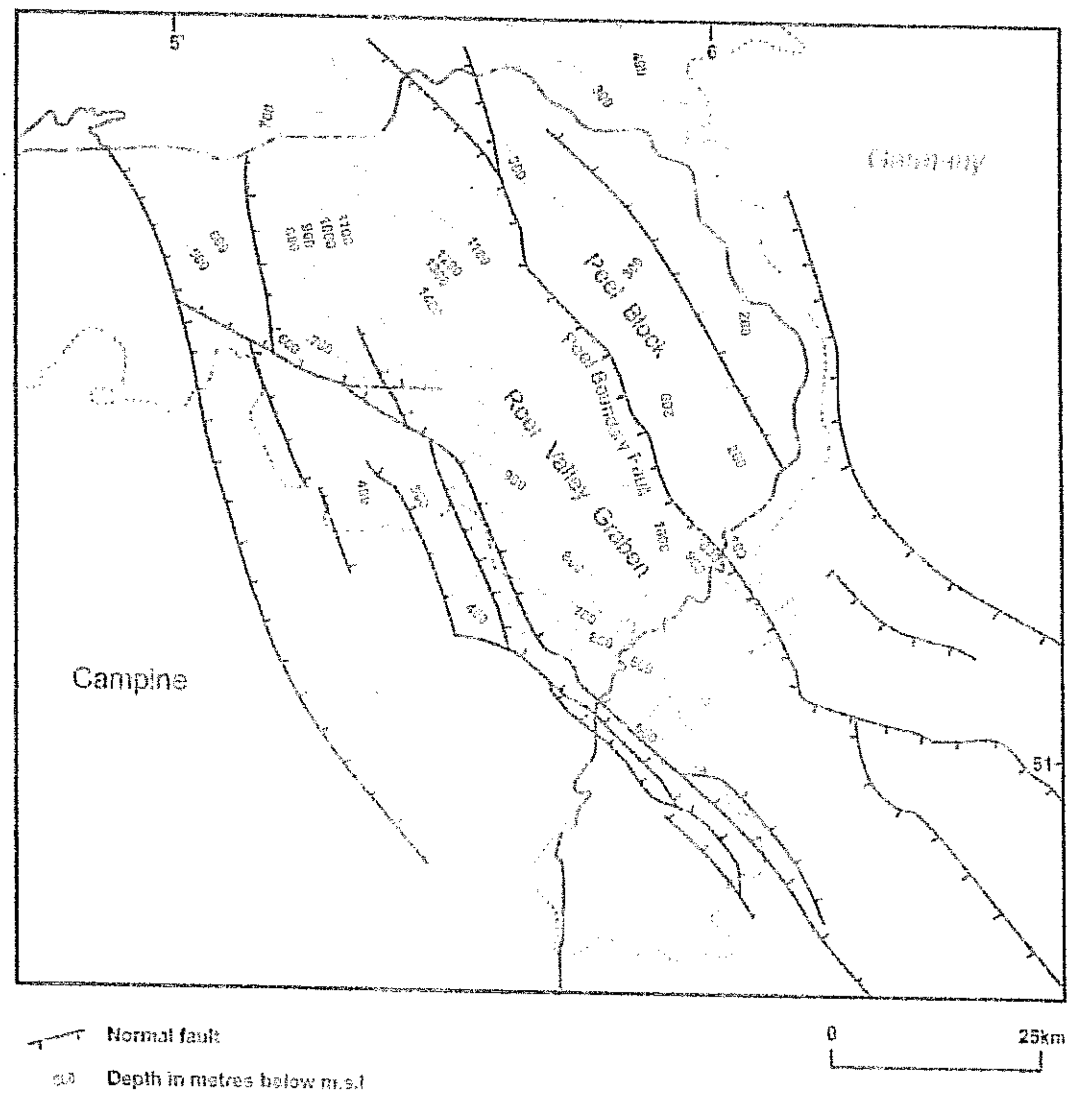

Figure 21. Thickness of the Miocene in the RVG. Thicker in area of potential oil shale maturity partly coincides with the thicker Miocene sections

IV.V Play Concepts and Proposed Technical Work

Cuadrilla has identified

The plays are

IV.V.i Namurian and Westphalian

Figure 22. *showing potential exploration play*

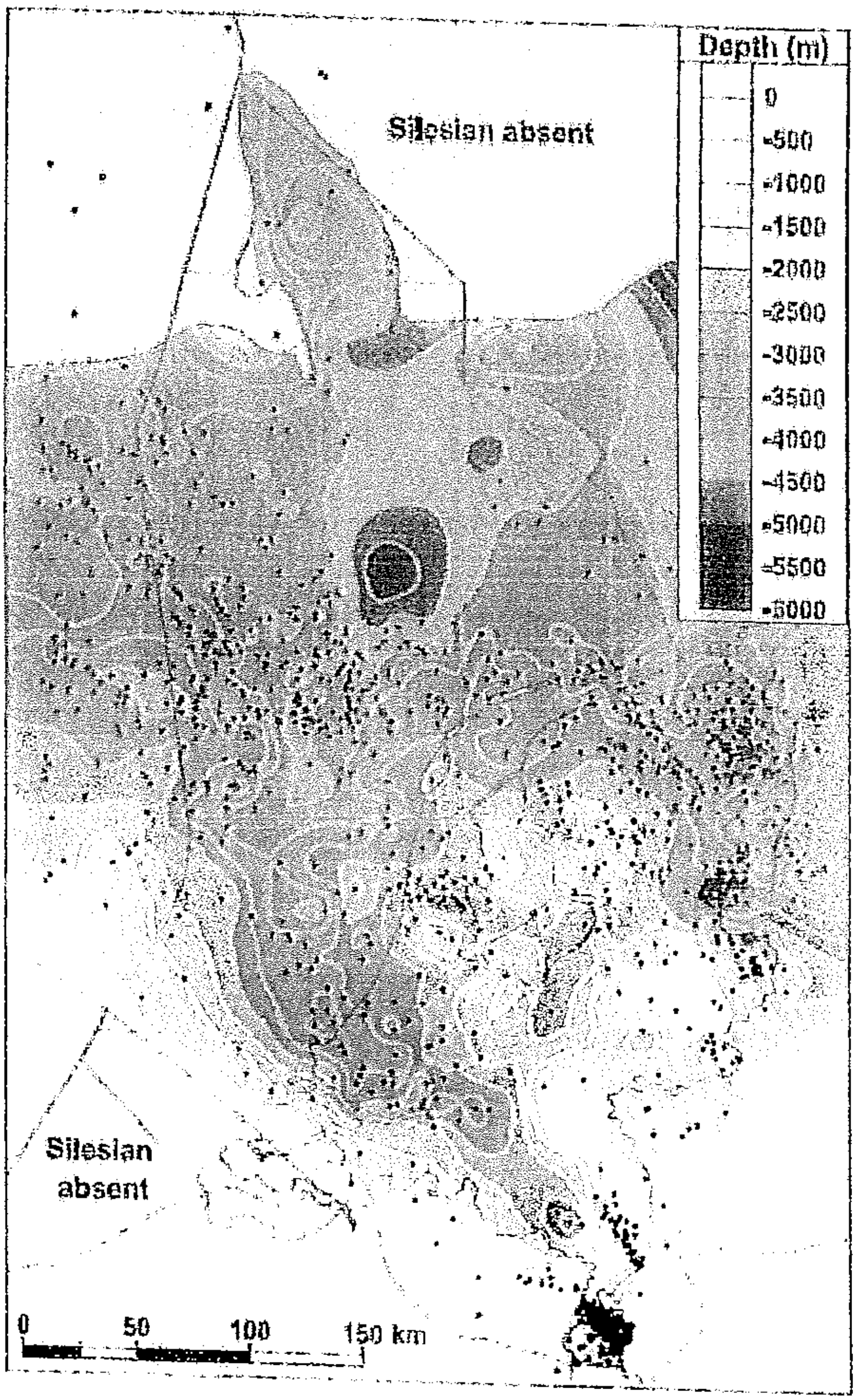

Figure 23. Depth to top Carboniferous in the Netherlands and the distribution of boreholes.

The structural attitude of the Carboniferous has been investigated by preliminary analysis of 2D seismic lines. Figure 24 shows the location of three seismic lines which indicate the important unconventional Carboniferous resource potential in the Breda-Mas Application area.

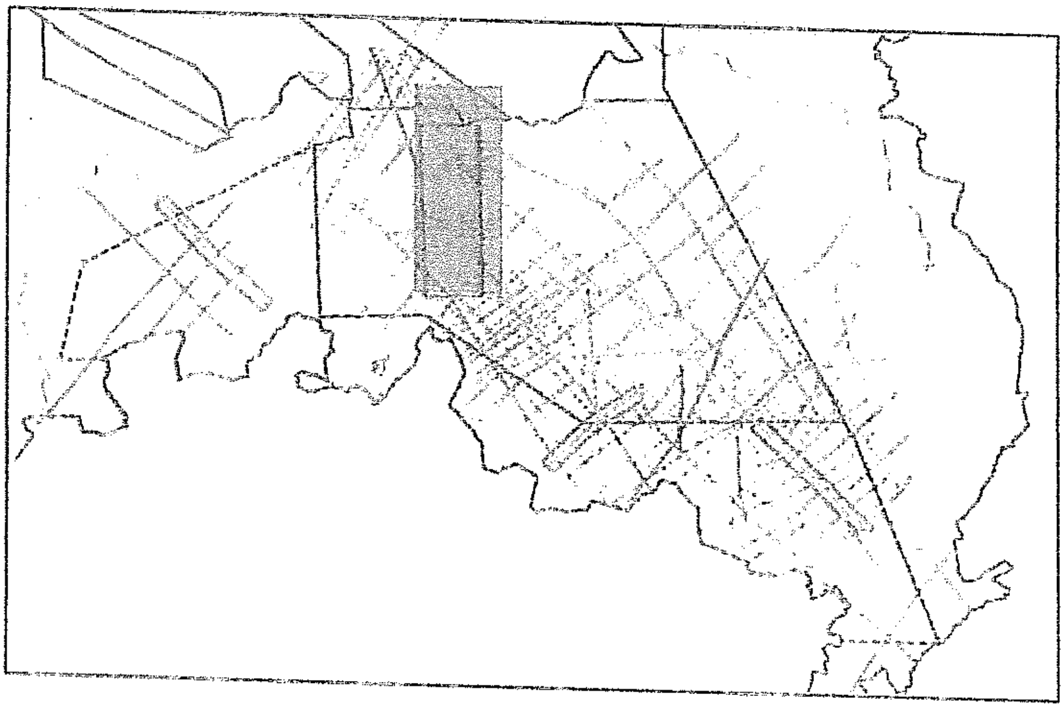

Figure 24. Location map of the Breda-Maas application area showing the location of three seismic lines (highlighted in red) which are used to illustrate the unconventional research potential of the area.

Figure 25. Seismic

Figure 26. Seismic

Figure 27. Seismic

Figure 28.

Breda Maas

Evaluation of TNO data (Figure 29) and our own evaluation of available geochemical data indicates that these sections are mostly within the gas window. (Fig. 30)

Figure 29. Maturity at the top

Fig. 30 Maturity data

Technical Work Summary - Westphalian/Namurian

We plan to undertake some basic exploration work on the Breda Maas data base including:

1. Interpretation of relevant seismic lines in order to identify conventional structures
2. collation of relevant wireline logs
3. log interpretation – calculate water/gas saturations in tight gas
4. modelling of GIP
5. selection of potential well locations
6. Geochemical analysis especially of

IV.V.ii . Triassic

The stratigraphy and thickness distribution of the Triassic in the area under application is described in Section IV.IV.ii. It comprises the Lower and Upper Germanic Trias which are separated by the Hardegsen Unconformity although there is little direct evidence for the presence of the unconformity in the area under consideration. Potential reservoirs are present in the Lower Triassic which comprises a variable sequence of fluvial and lacustrine sediments.

Part of the problem with flowing wells of this type concerns the low permeabilities and layered nature of the sandstone sequence. Cuadrilla believes that improvement in well performance could be achieved by fracture stimulation. These issues were recognized by BP.

The key issues surrounding Triassic sandstone reservoirs have been discussed in detail by Emery (1987). These are:

- Bed thickness and lateral continuity
- Vertical permeability baffles introduced by lamination and mica flakes
- Cementation and diagenesis

(Figure 30

Figure 31. Petrophysical analysis

Technical Work Summary

1. regional seismic mapping to identify potential conventional structures
2. interpret wireline and other logs to map sandbody distribution, bed thickness and net:gross
3. describe available cores sedimentologically to build a sedimentological model for the
4. undertake petrophysical analysis of wells to accurately determination water/gas saturation
5. petrographic/diagenetic study to determine cement distribution and types and their influence on reservoir properties
6. Regional evaluation of the petroleum system to test the hypothesis This will include drilling a well down dip of known wells with both gas and water bearing reservoirs

IV.VI Work Program

IV.VI.i Overview of Cuadrilla Work Program

Year 1 -

Year 2 - if needed) - may include additional seismic data acquisition and interpretation. Make the decision to "Drill or Drop" (assuming we drill, precede to Years 3 and 4)

Year 3 - (vertical well)

Year 4 - (horizontal well)

Year 5 - ; the production performance from the horizontal well (and possibly the exploration well) to enable us to decide to either move forward with a formal development and production program, or to relinquish the license.

Cost estimates for each year of the work program can be found in Section 7. If the entire work program is executed we expect the cost (up through Year 4) to be approximately

IV.VI.ii Year 1 - Preliminary Technical Study (available data)

The primary focus of the Preliminary Technical Study will be to look at all currently First we will use the data to evaluate the potential of the Breda Maas Prospect as a future, commercial, unconventional shale gas playand use this study to help us determine the location of our first well. The work to be completed in our Preliminary Technical Study is included in the following list:

- Obtain approximately 400kms of 2D line seismic from NLOG. Depending on the availability of field tapes we would plan to reprocess much of this data. Our reprocessing scheme includes removal of refraction statics and pre stack time migration (PSTM). The PSTM sections have proved very useful in the UK in refining the Palaeozoic structure.

- Obtain all available well . Although these logs are relatively old useful information can be obtained. From these determine thickness, lateral extent, and potential shale gas reservoir targets. Key logs include gamma, sonic and neutron density. Key well log overlays, e.g Passey plots will be used to identify potential target zones with characteristic high TOC and sonic slowness. We will also review existing mudlogs in order to map the distribution of gas shows in the wells and calibrate the logs for TOC analysis.

- This will involve sampling relevant cores (RSB-01 and NDW-01) at TNO and collating Rock Eval and XRD mineralogy Study available well cuttings and core samples for gas in shale, geochemistry, maturation, vitrinite reflectance, Tmax, TOC, and kerogen type. Our principal tool here will be rock eval. We will also use XRD to determine shale mineralogy in order to evaluate the silica and carbonate contents of the samples. This provides important input into rock physics properties. In addition we will collect core samples for rock mechanical tests including the Young's modulus and Poisson's Ratio.

IV.VI.iii Year 2 – Additional Data Acquisition (new data)

We currently have made preliminary interpretations of the prospect area. However, there are some in the available data, which we may have to fill in to be able to make a realistic interpretation across our prospect area. After re-interpreting the existing data in Year 1 we will decide how much additional data we may need to properly describe the of the . We will then arrange to shoot the new seismic during Year 2, if we determine it is critical to our Drill or Drop decision making process.

We are aware that there have been some drilled through the Carboniferous and Triassic sections. And as such, we expect that there will be a reasonably good availability of open hole log data and maybe some core data for our work in Year 1. We are optimistic that there will be a sufficient level of data such that we can make a realistic drill/drop decision for these two zones.
After we have completed all of our from Years 1 and 2, we should be in a good position to make a realistic evaluation of the oil and gas potential in the Breda Maas Prospect. From that evaluation we will make our If we have seen sufficient evidence to suggest that we think that we can ultimately produce oil/gas at commercial rates, then we will proceed with our exploration well in Year 3.

IV.VI.iv Year 3 – Exploration Well

Drilling Operation

Analysis of Core and Cutting Samples

Rock Mechanics

Mineralogy and Geochemical Analysis -

Gas Content and Isotherm Data -

Permeability and Porosity -

Well Logging

Formation Microscanner (CMI) -

Crossed Dipole Sonic Log (CXD -

Spectral Gamma Log

Pre-Frac Well Testing

Hydraulic Fracturing Program

Post Frac Evaluation

IV.VII Year 4 – Production Well (optional)

At this point the work on our exploration well will be concluded. And from the entire data analysis conducted during Years 1, 2 and 3, we can make a logical decision regarding the drilling of a production well with respect to location and target zone(s)

IV.VIII Year 5 and Beyond – Field Wide Development (optional)

After completion of the production well, we plan to put the well into production for a year or more to determine if we want to proceed with additional development in the area.

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CUADRILLA

Breda Maas

ATTACHMENT V

Environmental Controls and Community Impact

Contents

V.I Cuadrilla Environmental Focus

In all our operations we make an extra effort to conduct all of our activities in a manner that will minimize the socio-environmental "footprint" during and after our field work. The following sections give an overview as to how we conduct our work to minimize the social and environmental impact. On a practical basis we plan, if a production license is awarded, to engage Oranjewoud, a group of experienced environmental scientists for the preparation of a environmental impact report (MER) or strategic environmental assessment (SMB) as required. Oranjewoud's MER. consultants can indicate when an MER. or SMB may be necessary or desirable and they possess all the required expertise to perform either of the two.

V.II Years 1 & 2 - Research Activities

V.III Years 3 & 4 - Drilling Activities

V.IV Operational Activities

Before we would conduct any work on the seismic or drilling phase, we would first complete a comprehensive study. This would be submitted to the national, provincial and local authorities in accordance with all laws and regulations for approval prior to conducting any operations. In addition we would hold community meetings to make the local residents aware of what we intend to do, how long it will take, and what impact it will have (if any) on their day to day routines at home and at work. We would take their good suggestions and recommendations into account and adjust our work program to reflect those ideas that will minimize any temporary disruptions or inconveniences to the local residents. Cuadrilla has gained important experience in planning the Boxtel well in the adjacent Noord Brababant license.

As we mentioned previously, it is our intent to complete this work programme free of accidents and incidents that could result in personal injuries, environmental damage, or loss of equipment or assets. Natural gas seismic/drilling/completion operations rely heavily on work input from numerous third party contractors, and as such, selecting the right contractors is an integral part of implementing a safe and professional work operation. We will pre-screen all potential service contractors and only use those who have a demonstrated track record of conducting their own operations in a safe, professional manner. We will require that they provide us only with well-trained and highly experienced personnel.

Before we initiate any field operations we will hold a pre-drill contractors meeting to discuss details of our work programme, and to identify potential safety and environmental issues that may be encountered during the programme During this meeting we will give each contractor representative a block of time to present an overview of their own safety programmes, and make recommendations to our work plan. After we commence field operations we will closely monitor all of our contractors, as well as our own employees, to ensure that all operations are being conducted in a manner consistent with industry recommended procedures, and in full compliance with all Dutch regulations for land based drilling operations.

At this point in time we are limited as to how much detail we can present regarding our environmental programs that will be embedded into our drilling program, as we won't have a precise location for our first drill site until we complete our first phase of research and seismic work during Year-1.

V.V Recognition of the Environment in Which We Plan to Work

V.V.i The Geographic Situation

The area is a combination of urban and rural landscape. Like much of the Netherlands, Breda Maas is mostly flat. While most of the population lives in urban areas, much of the province is less inhabited and much of the land is cultivated. Like many naturally raised areas, forests, heathlands and dune areas can be found. The largest cities include Breda and Weert.

V.V.ii The Economy

Employment is found in the agricultural, industrial and sectors. The main agricultural products include wheat, sugar beet and livestock. The chief industries are automobile production, electronics (both mainly in Eindhoven), textiles and shoes.

This combination of geography and the importance of the economy shows the focus that we must take when we undertake work in the area. Proper communication, consideration of the populace, and the need to respect the environment at all times will drive a concentrated effort to perform our activities with great care and diligence.

V.VI Evaluation of Different Sources of Potential Impact

V.VI.i Geological Studies

These studies may focus on the geology of the area requested considering its potential oil and gas and interpretation of data collected either by the seismic method or by drilling. The work is performed in laboratories or offices; consequently, this work does not affect the environment.

V.VI.II Seismic Work

This Work consists of using a long-tested technique known as seismic reflection. This technique has been employed in many applications for years. The method is to create sound waves which are reflected on the various geological strata and the data is accumulated for further study and analysis. This vibro-seismic method will be used for carrying out campaign(s). It is characterized by the production of acoustic waves which are generated by mechanical means. The method transmits the waves into the ground, using electro-hydraulic vibrators mounted on vehicles. The signal is low and generally necessary to accommodate the vibrations of several elementary vibrators operating in synchronization.

The measuring device used to record vibrations reflected by the layers of subsoil includes seismographic stations aligned with a "profile", spaced from one another by a distance that can vary 10 to 100 metres, spanning a length of a few kilometres and width of a few tens of meters. The simultaneous recording signal detected by these stations is monitored by the recording truck upon execution of a vibration. These recordings, after treatment in a computer centre, provide information on the geometry of layers of subsoil located in the vertical profile and determine the exact thickness and the seismic velocity of the surface layer(s).

a) Impact on Environment

Primary concerns of seismic reflection arise by the passage of vehicles of various levels on land (wood, crops, roads, etc. ...) with the damage usually caused by the passage of trucks:

-- The light vehicles do virtually no damage to roads. Access to the surface parcels being crossed is carefully mapped to assure that the minimum disruption is created to get the best results.

-- The larger vehicles are heavier and can do damage passing through the surface parcels if the ground is wet. For this reason, the lead contractor will seek to conduct work when properties are driest to assure minimum disruption.

b) Measures Envisaged to Reduce or to Eliminate any Impact on the Environment

-- The preparation work is composed of lightest vehicles possible considering their duties.

-- The larger vehicles are cognizant of requirements to move off-road only when necessary.

-- The gear needed for the emission of acoustic waves is less and less damaging as a result of use more and more specialized vehicles. These vehicles are equipped with wide tires enabling them to move easily in any field. In addition wherever possible, vehicles passing in subsequent operations use the same access points.

-- Measures common to all aspects of work:

- In terms of protecting flora and fauna, the appropriate authorities, will be contacted beforehand to seek the maximum advice and to assure the most current issues are recognized.
- After the passage of the team, locations are rehabilitated.
- The disturbance from operations for the farmers is reduced to a bare minimum; all operations above occupy the areas concerned only for a few days.
- The representatives of our Company, responsible for relations with government and owners of the land, make on-site visits before work begins. They make contact with the owners or users to inform them of the work and determine the passages which, while taking into account technical requirements, can make the best ingress planning.
- Finally, operators are well informed of the systemic financial damage compensation levels and land owners are quickly compensated for damages incurred.

c) Regulatory Provisions

Prior to execution of any campaign of geophysics to be carried out within the perimeter, all appropriate regulatory authorities would be contacted to acquire necessary permits and requirements and would then respect all judgments about the planned work, the operational execution and closure of the work.

V.VI.iii Drilling The Well

The proposed works have environmental effects which are by their nature temporary and that may be separated into two phases:

a) Civil Engineering Works

The civil engineering works, with an expected duration of approximately one month before the drilling itself, includes the following:

- Construction of a suitable site, designed to accommodate the rig, the personnel accommodations and a parking terminal ;
- Construction of several basins to receive the necessary drilling fluids (water and sludge) and their treatment;
- Storage of arable land for its future use.

This work involves only civil engineering gear of a conventional type and does not change the terrain in a meaningful way. Rehabilitation is always the primary consideration in designing the work sites.

b) The Drilling Operations

-- Drilling operations are of limited duration (3 to 5 weeks depending on the depth and / or deviation). It is necessary to analyse the environmental impact of this work in several aspects.

- Physical impact on the site

  The leveling and civil engineering work contained in the preceding paragraph is employed to minimize the effects on the landscape and the erection of a drilling rig.
- Odours and airborne concerns

  The drilling do not emit any odor other than the exhausts of diesel engines used.
- Sounds

  The sounds of diesel engines of the probe and pumps, the noise related issues of the drill pipe and other metal parts, the noise from vehicles used for delivery.

  These sounds are not negligible and measurements made during drilling on various types of equipment are regularly and continuously monitored to conform to Dutch requirements. The drilling operations are carried out 24 hours on 24 for a period of approximately 45 days, it can be a significant concern, given the proximity of potential rural habitats. However, equipment currently in use is equipped with devices that allow soundproofing and significantly reduce the noise levels experienced by the surroundings.
- A plan for all transport will be prepared to minimize its impact

- Treatment and discharge of drilling wastes
  This activity will be operated by a company specialized in the business and by carriers qualified to evacuate waste to the licensed sites. This company(s) will be selected from among local businesses best suited for such treatment and transport.

c) Precautions Taken to Reduce or Removal of Nuisances Linked to Drilling

-- Access to the location of the drilling is fully contained and access is off-limits to the public.

-- The drilling site is underlain by an asphalt layer and surrounded by a network designed to collect runoff. The network is equipped with fluid traps that are the subject of regular inspection. The basins to receive drilling fluids will be made watertight. In the case of any unexpected runoff, they are channelled to the retention network.

-- Noise is addressed by employing equipment equipped with soundproofing and a noise level lower than those set by the legislation in force

d) Arrangements for the End of Drilling Operations

Given what has been said earlier, the site is at the end of the operations is addressed the following manner:

-- If the well(s) proves useful to exploitation, they are made safe, so that their presence runs no risk to the environment. In particular, the location of the wellhead is closed and those of the basins are treated and rehabilitated. The surfaces unnecessary for the future operation are rehabilitated

-- If a well is dry or not deemed critical to future operation the borehole is blocked by several cement plugs, in accordance with the state of the art of the oil industry. Basins are treated and the site is handed over to state so as to allow reintegration into the natural environment.

e) Regulatory Provisions

Prior to execution of any campaign of drilling to be carried out within the perimeter, all appropriate regulatory authorities would be contacted to acquire necessary permits and requirements and would then respect all judgments about the planned work, the operational execution and closure of the work

Van:

Verzonden: maandag 18 april 2011 14:45

Aan: SodM algemeen;

Onderwerp: adviesaanvraag ov koolwaterstoffen Breda-Maas

Beste adviseur,

Op donderdag 14-4-2011 is bij EL&I de aanvraag opsporingsvergunning koolwaterstoffen Breda-Maas ontvangen. Deze aanvraag concurreert (deels) met de aanvraag De Kempen (voorheen Zuid Noord-Brabant). Graag ontvang ik daarover uw advies uiterlijk 1 week na het verstrijken van de publicatietermijn van de uitnodiging voor het indienen van concurrerende aanvragen.
Ik heb de aanvraag geplaatst op de Y-schijf.

Met vriendelijke groet,

Ministerie van Economische Zaken, Landbouw en Innovatie
DGETM / Directie Energiemarkt
Bezuidenhoutseweg 30
Postbus 20101
2500 EC Den Haag
telefoon:
fax:
e-mail:

85

Ministerie van Economische Zaken,
Landbouw en Innovatie

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t.a.v.
Postbus 80015
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Directoraat-generaal voor Energie, Telecom en Markten
Directie Energiemarkt

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Overheidsidentificatienr
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www.rijksoverheid.nl/eleni

Behandeld door

Ons kenmerk
ETM/EM / 11058529

Bijlage(n)
3 x CD

Datum 19 APR 2011

Betreft adviesaanvragen over aanvraag opsporingsvergunning koolwaterstoffen gebied Breda-Maas en

Geachte ,

Brabant Resources B.V. heeft, per schrijven van 14 april 2011, ontvangen op gelijke datum, een aanvraag ingediend voor een opsporingsvergunning voor koolwaterstoffen in een gebied dat is aangeduid als Breda-Maas.

De CD's behorende bij bovengenoemde aanvragen heb ik bijgesloten.

Graag ontvang ik van deze 3 aanvragen zo spoedig mogelijk van u, maar uiterlijk 1 week na dagtekening van deze brief, een gebiedsbeschrijving en uitsluitsel over de naamgeving van de gebieden, zodat ik de publicatie van de uitnodiging voor het indienen van concurrerende aanvragen in het Publicatieblad van de EU dan wel de Staatscourant kan verzorgen.

Indien u van mening bent dat de aanvragen onvoldoende informatie bevatten om de Minister van Economische Zaken, Landbouw en Innovatie te kunnen adviseren ontvang ik graag zo spoedig mogelijk, maar uiterlijk 4 weken na dagtekening van deze brief uw reactie.

Indien de aanvragen voldoende informatie bevatten vraag ik u mij binnen 1 week na afloop van de publicatietermijn voor het indienen van concurrerende aanvragen advies uit te brengen over de geologische onderbouwing en het werkprogramma van deze vergunningaanvragen.

Met vriendelijke groet,

directie Energiemarkt

3AN01/000090104

Van:
Verzonden: woensdag 27 april 2011 11:55
Aan:
CC:
Onderwerp: gebiedsbeschrijving ova Breda-Maas (Brabant Resources)
Bijlagen: pre-advies_Breda-Maas.doc; ATT00001.txt

Brabant Resources heeft een opsporingsgebied voor koolwaterstoffen "Breda-Maas" aangevraagd op 14 april, voor een gebied dat gedeeltelijk overlapt met de eerdere aanvraag (31 maart) van Basgas, door ons "De Kempen" genoemd.
Laatstgenoemde aanvraag is tot op heden nog niet gepubliceerd.

Ervan uitgaande dat "De Kempen" met voorrang op "Breda-Maas" gepubliceerd zal worden, resteren van "Breda-Maas" nog 3 te publiceren deelgebieden.
Bijgaand hierbij de gebiedsbeschrijving ervan.

groeten,

===========

[redacted] TNO innovation for life [redacted]

Advisory Group for Economic Affairs (AGE)

Apeldoorn

Utrecht

Tel
Mail:

Aanvraag opsporingsvergunning Breda-Maas (koolwaterstoffen)

Het gebied ligt in de provincies Noord-Brabant en Limburg en bestaat uit drie deelgebieden:

Deelgebied 1:
a. De rechte lijn tussen punt 1 en het snijpunt van de x = 115.338,00 lijn met de lijn die het midden vormt van de Amer, nabij het punt 2;
b. Vervolgens vanaf het onder a genoemde snijpunt de rechte lijn tot het punt 3;
c. Vervolgens de rechte lijn tussen de punten 1 en 3.

Deelgebied 2:
a. De rechte lijnen tussen de puntenparen 4-5, 5-6 en 6-7;
b. Vervolgens de rechte lijn van het punt 7 over het punt 8 tot het punt waar deze lijn de rijksgrens snijdt;
c. Vervolgens vanaf het onder b genoemde snijpunt de rijksgrens tot het snijpunt met de rechte lijn van het punt 10 over het punt 9;
d. Vervolgens vanaf het onder c genoemde snijpunt de rechte lijn over het punt 9 tot het punt 10;
e. Vervolgens de rechte lijn tussen de punten 4 en 10.

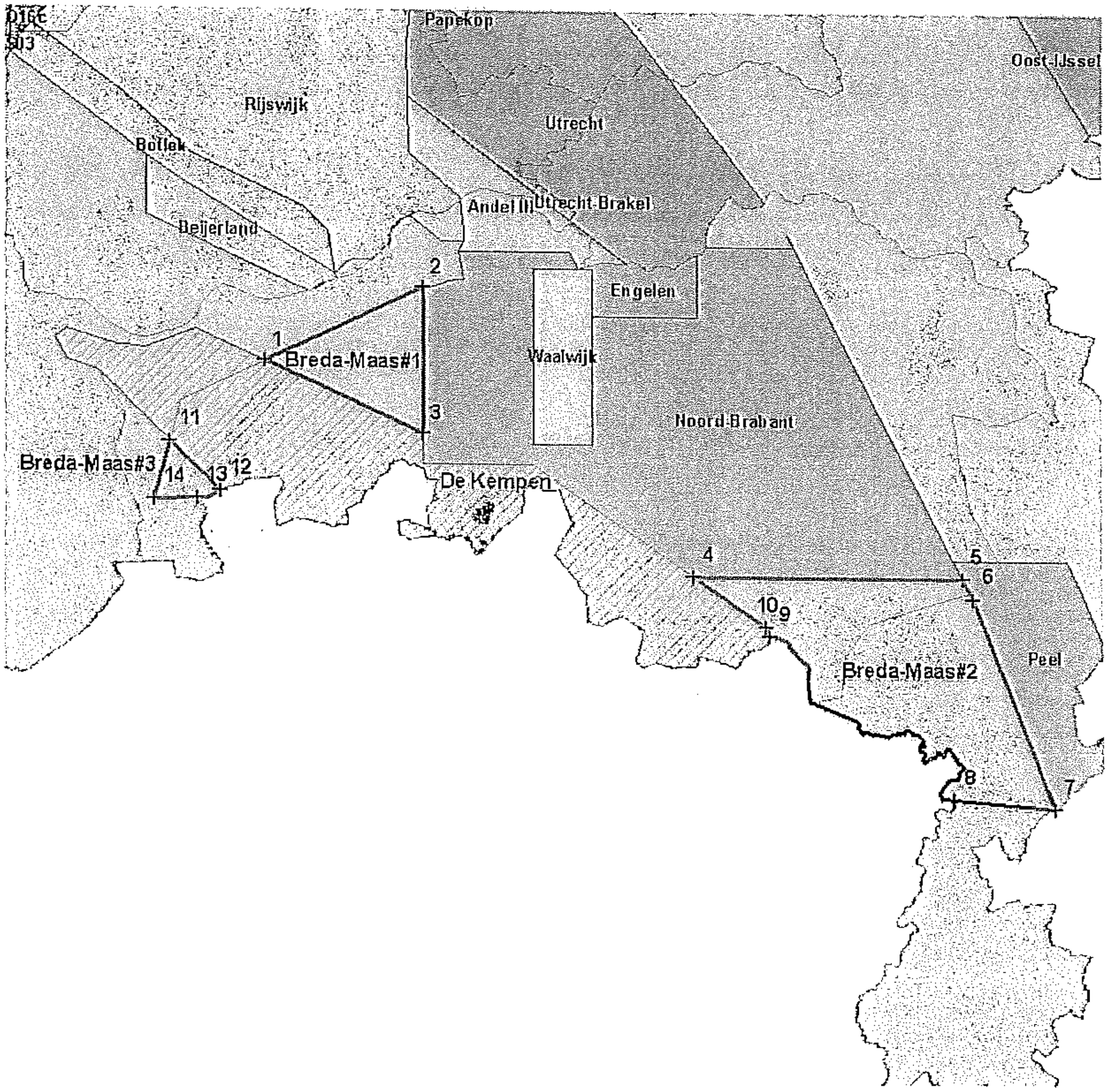
Deelgebied 3:
a. De rechte lijn van het punt 11 over het punt 12 tot het punt waar deze lijn de rijksgrens snijdt;
b. Vervolgens vanaf het onder a genoemde snijpunt de rijksgrens tot het snijpunt met de rechte lijn van het punt 14 over het punt 13;
c. Vervolgens vanaf het onder b genoemde snijpunt de rechte lijn over het punt 13 tot het punt 14;
d. Vervolgens de rechte lijn tussen de punten 11 en 14.

De coördinaten van de vermelde punten zijn:

Punt	X	Y
1	94259,16	403789,01
2	115338,00	413678,55
3	115338,00	394385,00
4	151430,00	375600,00
5	187645,93	375600,00
6	189000,00	373000,00
7	200000,00	345240,00
8	186348,33	346409,26
9	161687,62	367888,20
10	161200,00	368960,00
11	81356,61	393032,82
12	88243,54	386478,77
13	85075,98	385468,13
14	79247,02	385291,29

De coördinaten zijn vermeld volgens het stelsel van de Rijksdriehoeksmeting (RD).

Op basis van deze grensbeschrijving is de oppervlakte 941 km^2.



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Utrecht
Botlek
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Andel III
Utrecht-Brakel
Engelen
Waalwijk
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Noord-Brabant
Breda-Maas#3
De Kempen
Breda-Maas#2
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Van:
Verzonden: woensdag 11 mei 2011 15:25
Aan:
CC:
Onderwerp: uitnodiging voor het indienen van concurrerende aanvragen voor een opsporingsvergunning voor koolwaterstoffen in het gebied Breda-Maas
Urgentie: Hoog
Bijlagen: ATLAS-#11067761-v1-uitnodiging_voor_het_indienen_van_concurrerende_aanvragen_voor_een_opsporingsvergunning_voor_koolwaterstoffen_in_het_gebied_Breda-Maas.DOC

Dag

Graag bijgevoegde uitnodiging laten publiceren in het EU-Publicatieblad. Het is in dezen wel zaak dat het publicatieverzoek inz. uitnodiging voor de opsporingsvergunning koolwaterstoffen De Kempen, die ik jullie op 8 april 2011 heb toegezonden, eerder wordt gepubliceerd dan onderhavig publicatieverzoek.

Met vriendelijke groet,

Mededeling van de minister van Economische Zaken, Landbouw en Innovatie van het Koninkrijk der Nederlanden op grond van artikel 3, lid 2, van Richtlijn 94/22/EG van het Europees Parlement en de Raad betreffende de voorwaarden voor het verlenen en het gebruik maken van vergunningen voor de prospectie, de exploratie en de productie van koolwaterstoffen

(2011/C 178/11)

De minister van Economische Zaken, Landbouw en Innovatie deelt mee dat een aanvraag voor een opsporingsvergunning voor koolwaterstoffen is ontvangen voor een gebied, genaamd Breda-Maas.

Het gebied ligt in de provincies Noord-Brabant en Limburg en bestaat uit drie deelgebieden:

Deelgebied 1:

a) De rechte lijn tussen punt 1 en het snijpunt van de x = 115338,00 lijn met de lijn die het midden vormt van de Amer, nabij het punt 2;

b) Vervolgens vanaf het onder a genoemde snijpunt de rechte lijn tot het punt 3;

c) Vervolgens de rechte lijn tussen de punten 1 en 3.

Deelgebied 2:

a) De rechte lijnen tussen de puntenparen 4-5, 5-6 en 6-7;

b) Vervolgens de rechte lijn van het punt 7 over het punt 8 tot het punt waar deze lijn de rijksgrens snijdt;

c) Vervolgens vanaf het onder b genoemde snijpunt de rijksgrens tot het snijpunt met de rechte lijn van het punt 10 over het punt 9;

d) Vervolgens vanaf het onder c genoemde snijpunt de rechte lijn over het punt 9 tot het punt 10;

e) Vervolgens de rechte lijn tussen de punten 4 en 10.

Deelgebied 3:

a) De rechte lijn van het punt 11 over het punt 12 tot het punt waar deze lijn de rijksgrens snijdt;

b) Vervolgens vanaf het onder a genoemde snijpunt de rijksgrens tot het snijpunt met de rechte lijn van het punt 14 over het punt 13;

c) Vervolgens vanaf het onder b genoemde snijpunt de rechte lijn over het punt 13 tot het punt 14;

d) Vervolgens de rechte lijn tussen de punten 11 en 14.

De coördinaten van de vermelde punten zijn:

Punt	X	Y
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Punt	X	Y
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9	161687,62	367888,20
10	161200,00	368960,00
11	81356,61	393032,82
12	88243,54	386478,77
13	85075,98	385468,13
14	79247,02	385291,29

De ligging van bovengenoemde punten is uitgedrukt in geografische coördinaten berekend volgens het stelsel van de Rijks Driehoeksmeting (RD).

Op basis van deze gebiedsbeschrijving is de oppervlakte 941 km^2.

De minister van Economische Zaken, Landbouw en Innovatie nodigt hierbij eenieder uit tot het indienen van een concurrerende aanvraag voor een opsporingsvergunning voor koolwaterstoffen voor het gebied dat wordt begrensd door voornoemde punten en coördinaten, onder verwijzing naar de in de aanhef genoemde richtlijn en artikel 15 van de *Mijnbouwwet* (*Staatsblad* 2002, nr. 542).

De minister van Economische Zaken, Landbouw en Innovatie is voor de verlening van de vergunning bevoegd gezag. De criteria, voorwaarden en eisen, genoemd in de artikelen 5.1, 5.2 en 6.2 van de hierboven genoemde richtlijn, zijn uitgewerkt in de *Mijnbouwwet* (*Staatsblad* 2002, nr. 542).

Aanvragen kunnen worden ingediend gedurende 13 weken na de publicatie van deze uitnodiging in het *Publicatieblad van de Europese Unie* en dienen gericht te zijn aan:

De minister van Economische Zaken, Landbouw en Innovatie
ter attentie van de heer P. Jongerius, directie Energiemarkt
ALP A/562
Bezuidenhoutseweg 30
Postbus 20101
2500 EC Den Haag
NEDERLAND

Aanvragen die na afloop van deze termijn zijn ontvangen, zullen niet in behandeling worden genomen.

De beslissing op de aanvragen wordt uiterlijk twaalf maanden na afloop van deze termijn genomen.

Nadere informatie is verkrijgbaar bij de heer E. J. Hoppel, onder telefoonnummer: +31 703797762.

STAATSCOURANT Nr. 11810
5 juli 2011
Officiële uitgave van het Koninkrijk der Nederlanden sinds 1814.

Uitnodiging tot het indienen van concurrerende aanvragen voor een opsporingsvergunning voor koolwaterstoffen voor het gebied Breda-Maas nr. ETM/EM / 11100694

De Minister van Economische Zaken, Landbouw en Innovatie deelt mee dat een aanvraag voor een opsporingsvergunning voor koolwaterstoffen is ontvangen voor een gebied, genaamd Breda-Maas. De Minister van Economische Zaken, Landbouw en Innovatie nodigt eenieder, onder verwijzing naar artikel 15 van de Mijnbouwwet (Stb. 2002, nr. 542), uit tot het indienen van een aanvraag voor een opsporingsvergunning voor koolwaterstoffen voor het gebied Breda-Maas.

Het gebied ligt in de provincies Noord-Brabant en Limburg en bestaat uit drie deelgebieden:

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d. Vervolgens vanaf het onder c genoemde snijpunt de rechte lijn over het punt 9 tot het punt 10;
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14	79247,02	385291,29

De ligging van bovengenoemde punten is uitgedrukt in geografische coördinaten berekend volgens het stelsel van de Rijks Driehoeksmeting (RD).

Op basis van deze gebiedsbeschrijving is de oppervlakte 941 km^2.

Aanvragen kunnen worden ingediend gedurende 13 weken na de publicatie van deze uitnodiging in het 'Publicatieblad van de Europese Unie' en dienen gericht te zijn aan de Minister van Economische Zaken, Landbouw en Innovatie, ter attentie van de heer P. Jongerius, directie Energiemarkt, ALP/562, Postbus 20101, 2500 EC Den Haag.
Deze aanvraag is gepubliceerd in het 'Publicatieblad van de Europese Unie' (2011/C 178/11) op 18 juni 2011. Aanvragen die na afloop van deze termijn (19 september 2011) zijn ontvangen, zullen niet in behandeling worden genomen.

Nadere informatie is verkrijgbaar bij de heer E.J. Hoppel, bereikbaar op telefoonnummer: (+31) 70 379 77 62.

De Minister van Economische Zaken, Landbouw en Innovatie,
namens deze:
J.C. de Groot,
directeur Energiemarkt.