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CUADRILLA Resources Ltd

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De Minister van Economische Zaken
[redacted]
Directeur Energiemarkt (ALP/562)
Bezuidenhoutseweg 30
2594 AV Den Haag

Betreft: aanvraag opsporingsvergunning voor koolwaterstoffen - Flevoland

Excellentie,

Onder verwijzing naar artikel 6 van de Mijnbouwwet dient Cuadrilla Resources Ltd ("Cuadrilla") hierbij een aanvraag in om een opsporingsvergunning voor koolwaterstoffen voor een gebied gelegen op Nederlands territoir (provincie Flevoland) ter grootte van ongeveer 852 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 5 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 Cuadrilla hetzij afstand doen van de opsporingsvergunning hetzij het werkprogramma verder uitvoeren door het zetten van een boring in jaar 3 van de vergunning. 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.

Cuadrilla is een nieuwe mijnbouwonderneming met beschikking over een uitgebreide technische ervaring op het gebied van de opsporing en winning van koolwaterstoffen. Bijlage III bevat gegevens over de technische ervaring van Cuadrilla en geeft, met bijlage V, informatie over de wijze waarop Cuadrilla, gevestigd in Londen, voornemens is het aangeboden werkprogramma uit te voeren. De financiële gegevens over Cuadrilla staan in bijlage II. Daarnaast heeft de [redacted] bij brief van 1 oktober 2008 zich garant gesteld voor de financiering van het werkprogramma van Cuadrilla. Wij verzoeken u deze brief als deel uitmakend van bijlage II van deze aanvraag te beschouwen.

Deze aanvraag wordt ingediend in viervoud en tevens digitaal. Een kaart van het aangevraagde gebied op schaal 1:50,000 hebben wij niet bijgevoegd. Deze kaart kunnen wij desgevraagd laten maken.

Uiteraard is Cuadrilla te allen tijde bereid bij u langs te komen om de aanvraag te bespreken of verdere informatie te verstrekken over Cuadrilla.

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

[redacted]

Hoogachtend

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<u>Bijlagen</u>:

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
Bijlage III:	de gegevens behorende bij artikel 1.3.1, tweede lid, sub b, van de Mijnbouwregeling
Bijlage IV:	Geologisch rapport en werkprogramma ("Geological Report and proposed Workprogramme")
Bijlage V:	Wijze van uitvoering van de mijnbouwactiviteiten ("Environmental Controls and Consumer Impact")

01 October, 2008

De Minister van Economische Zaken

Directeur Energiemarkt (ALP/562)
Bezuidenhoutseweg 30
2594 AV Den Haag
The Netherlands

Dear

RE: APPLICATION AREA OF NORTH FLEVOLAND

The purpose of this letter is to confirm that the ill provide all necessary support to Cuadrilla both in terms of finance and operations regarding the exploration and potential development of this area.

is listed on the Australian Stock Exchange capitalized at A$450 million and is active in the exploration and development of unconventional gas assets. Details about can be found on our web site at

Limited is both a shareholder in Cuadrilla and also a joint venture partner. We own some of Cuadrilla and we are also a joint venture partner with Cuadrilla in two unconventional gas plays in the UK recently licensed to our joint venture by the British Government. providing funding to Cuadrilla for these gas plays and will consequently increase its holdings in Cuadrilla.

mited is ready to provide the financial support to ensure that Cuadrilla is able to meet its financial obligations for the upcoming work programmes for North Flevoland as well.

If you have any questions, please feel free to send me an email to speak to me by telephone at direct) or mobile +

Sincerely,

Director

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ATTACHMENT I

Location of the Prospect Area

I.I Introduction to the Prospect Area: North Flevoland

This application is for an exploration valley for hydrocarbons (Oil and Gas) in the Netherlands. The area of application covers an area of 85,196.27 Ha (about 852 km²) according to the map shown in Figure 1, and the coordinates of the vertices on this map are shown in Table 1

Figure 1
"Landsat Image of the Netherlands Showing the Location of the North Flevoland License Application Area"

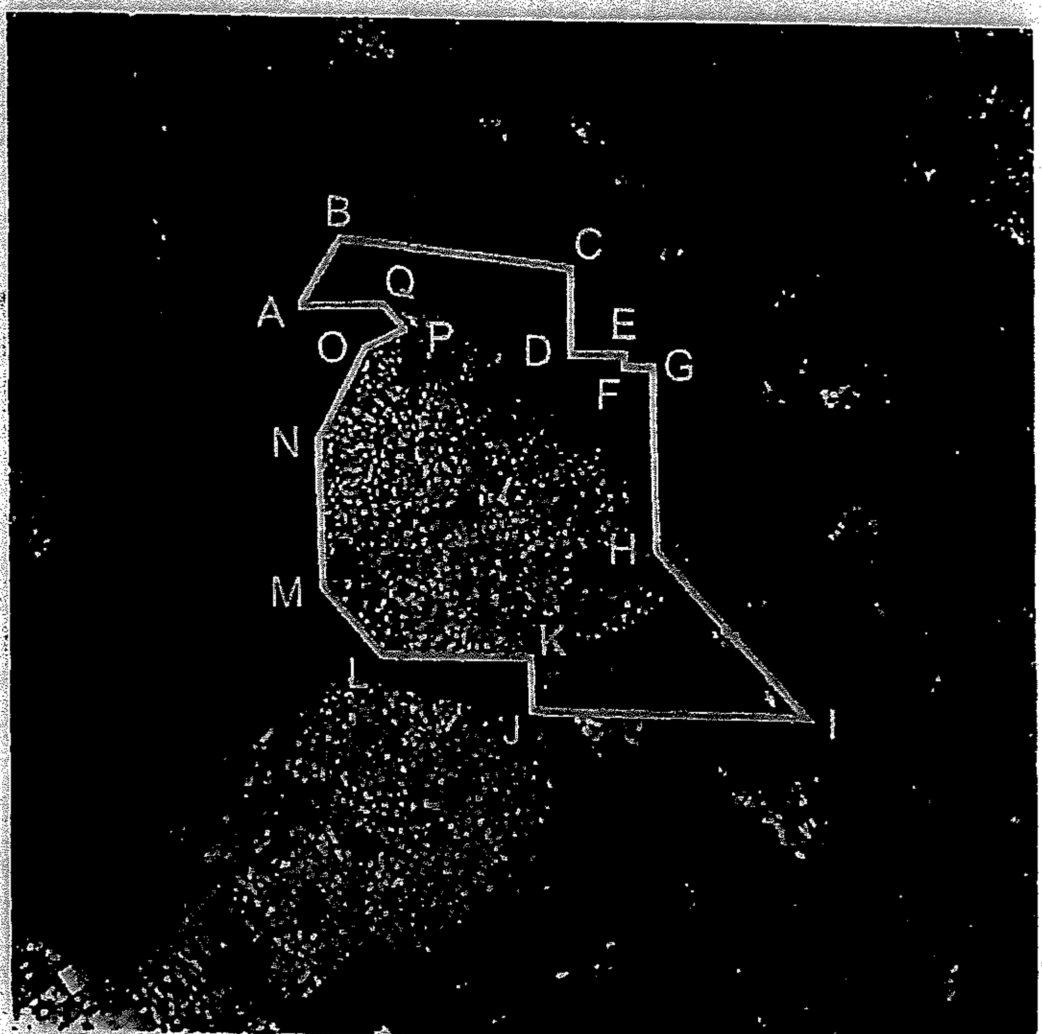

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Table 1
"Co-ordinate details of the vertices which define the Cuadrilla license application area"

Vertices	x lat	y long	UTM (31) x	UTM (31) y	RD x	RD y
A	52.852	5.601	675138	5859055	169309.88	540426.90
B	52.896	5.653	678457	5864088	172794.19	545346.59
C	52.872	5.920	676490	5863189	170798.47	544513.53
D	52.813	5.920	696744	5855604	190787.46	536260.17
E	52.811	5.978	700730	5855483	194766.67	536006.79
F	52.804	5.978	700761	5854787	194774.52	535310.25
G	52.803	6.011	702976	5854699	196985.03	535148.71
H	52.679	6.007	703276	5841009	196830.31	521458.60
I	52.558	6.172	715053	5828046	208168.79	508115.07
J	52.569	5.860	693849	5828315	186989.32	509085.95
K	52.607	5.858	693548	5832538	186828.38	513316.02
L	52.609	5.668	680677	5832294	173957.76	513498.49
M	52.660	5.601	675954	5837793	169419.85	519150.55
N	52.757	5.599	675425	5848580	169428.88	529948.59
O	52.830	5.676	680289	5856847	174384.42	538049.09
P	52.833	5.720	683215	5857287	177323.23	538391.61
Q	52.848	5.697	681611	5858909	175774.12	540065.90

The area outlined corresponds to an area of about 852 km^2 (210,524 acres) with a perimeter of 147,047 kms and in this application the area is referred to as the North Flevoland area.

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ATTACHMENT II

Cuadrilla Corporate and Financial Information

Contents Page

Cuadrilla Resources Ltd
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UK

II.I Corporate Information

"Cuadrilla Resources Ltd." a UK corporation with headquarters in Lichfield, England, is seeking a 5 year exploration license in the Netherlands. The license area is located in the southern part of the country in the Roer Valley. Throughout this application proposal we shall refer to this area as the ***"North Flevoland Prospect".*** Cuadrilla Resources Ltd. was incorporated on 14 January, 2008 as a wholly owned subsidiary of "Cuadrilla Resources Corp.", a Canadian corporation registered in Calgary, Alberta. The ownership of Cuadrilla Resources Corp. is as follows.

Founders and Directors (distributed over 5 persons)

Notes about the Shareholders

(1) Information about the 5 Founding Directors can be found in Attachment III.

(2) was founded in 1981 and is a 100% employee-owned investment dealer with more than 250 employees and Canadian offices in Vancouver, Calgary and Toronto. The firm is a member of the Toronto Stock Exchange, the TSX Venture Exchange, the Montreal Exchange, the Canadian Trading and Quotation System, the Canadian Investor Protection Fund, and the Investment Industry Regulatory Organization of Canada. In addition, , a wholly owned subsidiary is a broker-dealer registered to transact securities business in the United States and a member of the Financial Industry Regulatory Authority. Similarly, (UK) Limited is a wholly-owned subsidiary with offices in London, UK. Limited is a member of the London Stock Exchange and registered with the Financial Services Authority to service institutional customers in the UK.

(3) , has brought together 50 of their top individual investors to purchase shares in Cuadrilla Resources Corp. For over a quarter of a century, Casey Research has been providing independent research on investments offering above-average returns. Founded by Doug Casey, best-selling author and legendary investment maverick, Casey Research provides subscription-based research and actionable investment recommendations to independent-minded investors in the U.S., Canada and 138 other countries.

(4) 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 $ million in annual revenue to a forecast $ million in 2008. 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 Corp. ("parent" company)

For the purpose of demonstrating our financial capacity to handle this work program we will focus on the consolidated balance sheet for the parent company, which is inclusive of the balance sheet for Cuadrilla Resources Ltd. Table 1 is a current balance sheet for the parent company, and to be consistent with our published financial data, all numbers are expressed in Canadian dollars.

From the August 31 balance sheet it can be seen that we have a total asset value of approximately . This reflects the "seed capital" that was put into Cuadrilla for the purpose of funding our licensing efforts in Europe. Also shown in the table is what we feel to be a realistic projection of where we plan to be with our balance sheet by this time next year (June 2009). The projection is based on successful discussions with several private investment firms who have told us that if we have the licenses in place they will raise the additional capital that will be needed by us to fund any wells that we may drill, up to an amount of approximately The projected balance sheet also shows a "Capital Asset" value of This is for the Cuadrilla wellsite service equipment that was discussed previously in Attachment III. The projected 2009 "Cash" is estimated from raising $100 million, plus our current cash on hand, less our purchase of the wellsite service equipment, and less our projected operating costs for the next 12 months (estimated at

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Table 1

[redacted]

ASSETS	Actual Aug 31, 2008	Projected June 31, 2009
Current Assets		
Cash	3,017,452	73,200,000
Due [redacted]	600,638	
Due from [redacted]	16,051	
Due from [redacted]	20,996	
Prepaid Expenses and Deposits	14,292	20,000
GST and VAT Recoverable	3,410	10,000
<u>Total</u> Current Assets	**3,672,879**	73,405,000
Capital Assets	**34,060**	30,000,000
Non Current Assets (Incorporation Cost and other)	**4,607**	1000
TOTAL ASSETS	**$ 3,711,507**	**$103,406,000**
LIABILITIES		
Current Liabilities		
Accounts Payable	91,796	50,000
TOTAL LIABILITIES	91,796	50,000
SHAREHOLDERS' EQUITY		
Capital Stock	**4,443,288**	104,600,000
Retained Earnings	**(813,576)**	(1,219,000)
TOTAL EQUITY	3,619,712	103,381,000
TOTAL LIABILITIES and EQUITY	**$3,711,507**	**$103,406,000**

II.III Cost of Proposed Work Program (N. Flevoland 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	Cuadrilla Manpower and Expenses	3^{rd} 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. All seismic re-interpretation will be done by Cuadrilla.

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

(4) The estimated cost of 3^{rd} 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/fracing 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 expect to incur 3rd party services of up to . Additionally, we project our in-house operating costs directly related to this project to be) That will bring the total cost to (or approx.) over the first 2 years, which we can comfortably manage with our current cash balance.

II.IV.ii Funding For Years 3 and 4

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

If we opt to drill the exploration well we will acquire to fund the operations. As stated previously, the of Cuadrilla and additionally holds a working interest in our UK licenses. They have committed to fund the for the (Year 3) in the , and the horizontal production well in Year 4. A letter outlining this financial support is attached.

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ATTACHMENT III

Technical Capacity

Contents

Page

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III.I Cuadrilla: An Unconventional Oil and Gas Explorer

Cuadrilla is a newly formed explorer, focused on Basin Centered Gas (BCG), Tight Gas Sands (TGS), and Shale plays in key strategic basins. It has 100% onshore European focus with diversified proven concepts, targeted at a wide portfolio of large resource foundation prospects. Recently Cuadrilla has been awarded two exploration licenses in the UK (PEDL165and PEDL244). One of these is the first shale gas exploration license to be awarded in the UK. In addition Cuadrilla has also acquired working interests in the Lingfield and Cowden oil and gas discoveries in southern England and is currently planning well testing operations on two wells.

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 Flevoland.

and , were the key players in building . 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 Under the leadership of 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.

is President of , 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) work will be used to generate rock properties which is a critical part of any unconventional resource project.

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

[redacted] each lived and worked in Holland in the 80's and 90's ([redacted] with [redacted] and [redacted] with [redacted] which later became [redacted]), and both are very familiar with the work and environmental regulations there. [redacted] 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. An [redacted] has been directly involved in the design, field operations and interpretation of unconventional well testing and reservoir modelling 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 "Doing the Job Right"

As you read through this proposal you will find that we have a great plan in place for finding and developing unconventional oil and natural gas resources in the Netherlands. And 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. 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 Flevoland Prospect we will conduct our research and evaluation work from our UK Technical Centre (Lichfield, England) under the direction of [redacted] 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 should it be located.

If we decide to proceed with the exploration well in Year 3, and any other wells thereafter, we will set up an 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:

During the drilling operations we would have an experienced Drilling Engineer on-site at all times, which will require 2 persons working in rotation. We expect that at least one of these persons would be provided by Cuadrilla and the other may possibly be supplied by the AJ Lucas Group. Additional technical support will be available to our Netherlands operation from our UK Technical Centre.

III.IV Cuadrilla Well Services Group

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

A key part of our long term strategy in Cuadrilla is to assemble a first class well services group to handle a significant amount of our well site work. This in-house group will provide services in 3 principal areas, drilling, well testing and pressure pumping services (well cementing & hydraulic fracturing). We chose those 3 services because they are areas in which we have a substantial amount of experience in job design, field operations and data interpretation. In this regard we do not intend to engage in providing services like open hole logging or perforating, as we do not have a sufficient level of in-house experience to operate those types of operations.

To lead our well services group we have chosen to be our "Manager of Well Services". has 22 years of experience in pressure pumping services, and his first 17 years were spent working in a variety of management and technical roles in two major service companies, and He then spent 5 years setting up and running the well services group at is currently involved in the preparation for setting up the Cuadrilla well services group.

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

We are in the process of investing for the equipment that will be assigned to this group. While this is a we are convinced that this will add to Cuadrilla and as we go forward in the with and development plans We have listed below the as to why we plan to deploy our own well services group.

(1) – Presently Europe does not have a infrastructure like what is available For example, we are aware that there are through but are capable of to meet the needs for That means we would have to supplement the with

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which makes scheduling very difficult, causing delays and down time. The same will be the case when trying to schedule a (capable of drilling extended lateral holes), wellbore cementing, or when trying to locate the the With our own and well , and a competent to it, we can complete our activities.

(2) - We have made a very detailed and thorough business plan for the well services group, and from that we are convinced that <u>we can</u> <u>by about 40%</u> if we can use our own That reflects depreciation on our investment, maintenance and and of of , etc. To operate and we have set up and arrangement with we will have an and talented available to us on an , as needed, during and operations.

The will be realized by us in ways. First there will be a that is directly tied to our on 3rd party services to fit us into their (as discussed above in point 1). The to be realized from this is a hard number to quantify, but it is real and we will lower our if we

And second, we will because we will our own etc, and wont have to the party service contractors. Additionally, while we will be incurring for maintenance and for our of we will still come out way ahead of the very party Moreover, we wont subject ourselves to the that they if operations are

(3) - With our group we will be in a to use our and our in the area of , to to joint ventures around Europe. We have by a company in to look at for a We expect that these of will become way our is in place.

(4) Finally, one very up our is that we to from our as a of the of and that we will get from our and have all had first hand and services group while they at They huge difference in

the attitude of [redacted] people vs. [redacted] of 3rd party contractors, with respect to safety, quality control and overall professionalism. And this elevated attitude level led to noticeable benefits in production over time. One of the [redacted] highly successful is [redacted] management opted to [redacted] to all of [redacted]. And once the [redacted] felt a [redacted] of [redacted] in [redacted] they had a [redacted] and [redacted], as they knew that their [redacted] work could [redacted] their [redacted] net worth, through [redacted] to [redacted] the [redacted] of [redacted]. We plan to use the experience of [redacted] to ensure that we get the same [redacted] in [redacted] and [redacted] from [redacted] well services group.

III.IV.iii Cuadrilla's Drilling Services

While all of the Cuadrilla management team have a significant amount of time spent around drilling operations during their careers, we will be relying on the expertise on our partner shareholder, the [redacted], to set the direction for us with respect to our in-house drilling operations. The [redacted] is an Australian company based in Sydney. They are both a shareholder of Cuadrilla Resources Inc (see attachment II) and partner with Cuadrilla Resources Ltd. in several of our operations in the UK.

They are among the largest and most innovative onshore 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 Roer Valley prospect. Any rig that they may supply to us for the Roer Valley 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

We plan to build a fleet of pressure pumping equipment that will give us the capability of conducting well cementing and hydraulic fracturing operations. [redacted] and [redacted] each have a significant experience level with pressure pumping equipment, job design, and hands-on field operations of cement jobs and frac treatments.

It is our intent to put together 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).

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, av. reservoir pressure, and presence of (and distance to) reservoir heterogeneities such as natural fractures, faults, other boundaries (pinchouts, 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.

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Addendum : Cuadrilla Management Team

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

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 welltest 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 Technical 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) **President and Technical Director**

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 tight 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 and Financial Director**

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").

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ATTACHMENT IV

Geological Report and Proposed Work Programme

Contents Page

IV.I Introduction:

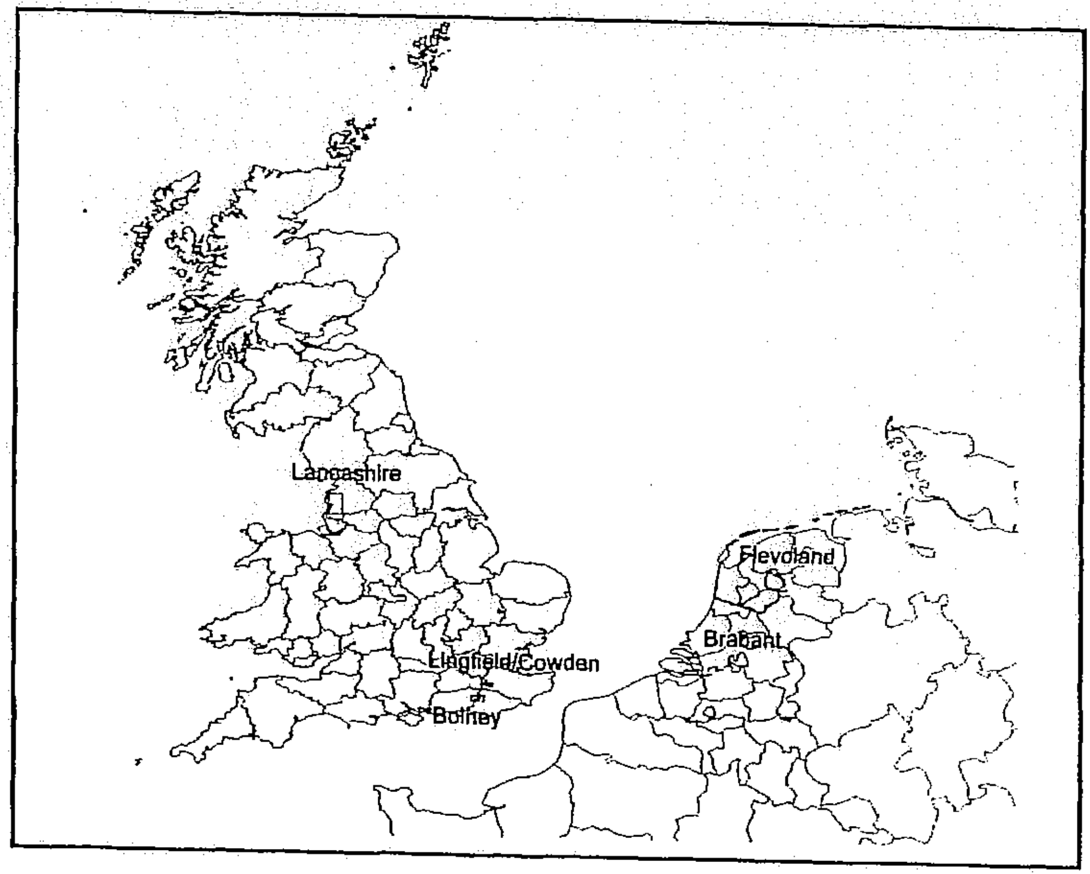
This is the second application made to the Ministry of Economic Affairs (MEA) by Cuadrilla Resources Ltd. This application is focussed on the Friesland platform area with the specific aim of investigating the unconventional petroleum potential of the central Netherlands Namurian Basin. This area bears close comparison with one of Cuadrilla's UK license areas in the Namurian Bowland basin of NW England (Fig. 1) and the specific target is shale gas and tight gas. In addition we wish to evaluate secondary objectives in the Westphalian coal bearing strata and potential gas bearing reservoirs in fractured Zechstein carbonate rocks. Of further interest is the possible presence of carbonate reefs in the Lower Carboniferous similar to those in the UK and which are such prolific oil reservoirs in the Caspian Sea area.

Results of modelling of the Lower Namurian petroleum system indicate that gas formed by secondary cracking of the oils can have mixed with the Westphalian coal-derived gas. Such a mixing is inferred from geochemical analyses. The existence of a Lower Namurian hydrocarbon system in the West Netherlands Basin implies that hydrocarbons are possibly trapped in the Westphalian and Namurian successions. These potential traps in the basin have not yet been explored (van Balen et al. 2000a,b)

A deep Dinantian carbonate play has recently come into focus in the Netherlands and poses some real opportunities and challenges to the explorationist. A yet undiscovered petroleum system may be present in Dinantian carbonates. However, lack of well control and the significant depth involved has caused pre-Silesian formations to be under-explored. It is suggested that thick Dinantian platform carbonates may be present at the northern fringe of the London-Brabant Massif (van Hulten and Poty, 2008)

Cuadrilla has therefore planned a work programme which is primarily intended to focus on the Namurian shale gas potential of the Namurian Basin of the Friesland Platform. As a secondary objective our team also plan to investigate the possible occurrence of carbonate build ups at the base Namurian stratigraphic level although the deep HP/HT well drilled by Total (LTG-01) is not yet released.

Figure 1
"Cuadrilla license holdings and applications as of October 6th 2008"



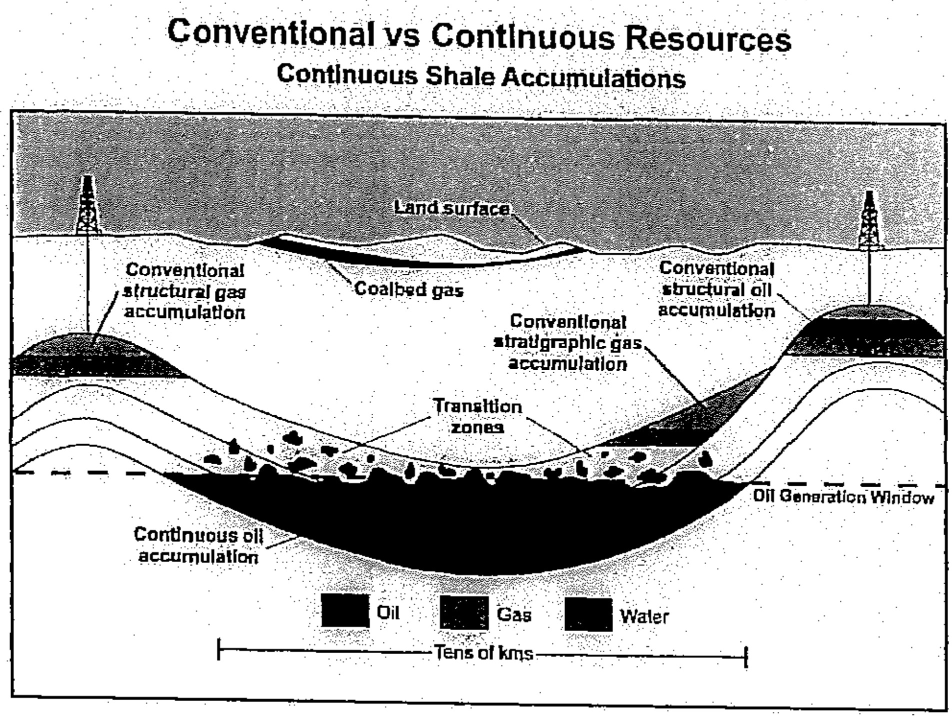
IV.I.i Shale Gas Plays

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, the Marcellus Shale, the Fayetteville Shale and more. 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. Such systems are often described as **continuous** reservoirs since the conventional source, reservoir and seal are all connected (Figure 2). 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.

Figure 2
"Diagram Showing the Difference Between Conventional and Unconventional Resources"



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).

IV.II Database and Methods

The Cuadrilla license application is shown in Figure 3. The area comprises approximately 211,000 acres of northern Flevoland. 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: http://www.nlog.nl/

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 3.

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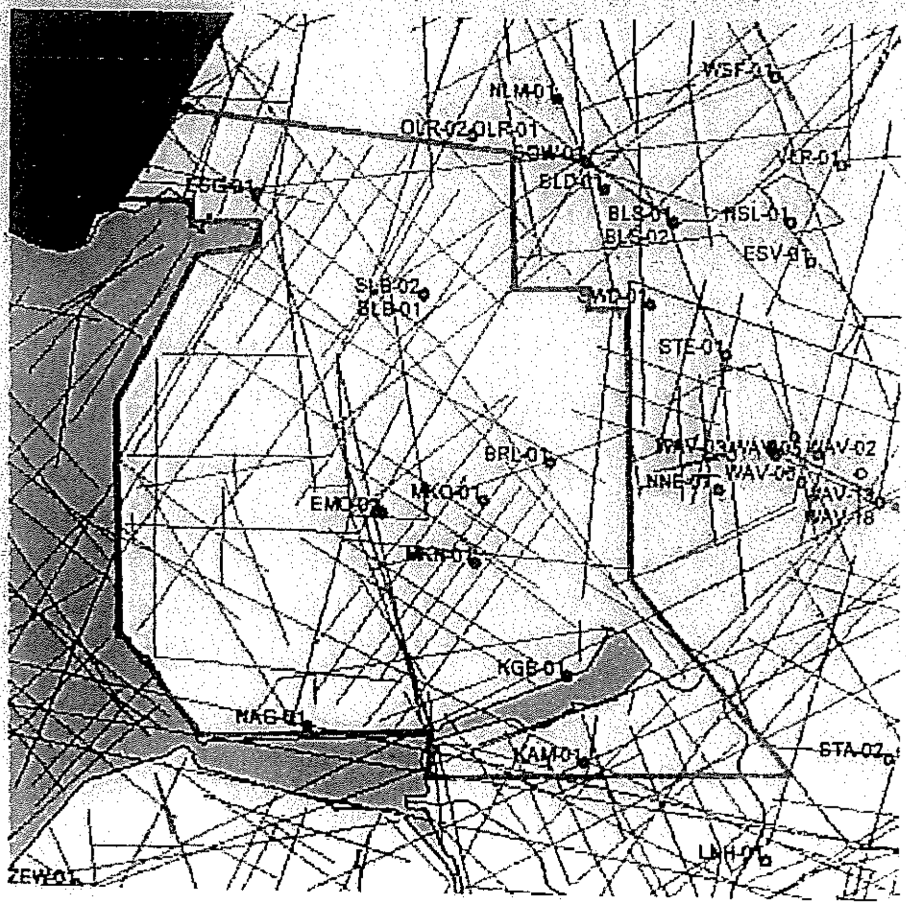
Figure 3
"Database Map Showing Well and 2D Seismic Line Locations Available on the TNO Website" (NOTE: the outline of the Cuadrilla permit application area is shown in red)



Seismic data were purchased from TNO in the form of digital seg-y files and also raster images. 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.

IV.III Previous Drilling Activity and Results

The area lies to the west of major hydrocarbon accumulations in the Schoonebeek and south of the Tietjerksteradeel and Akkrum Fields. The Schoonebeek oilfield (onshore NE Netherlands) was abandoned in 1996 after having produced about 250mm bbls of the 1 billion bbls in place Due to advances in heavy oil recovery technologies and the changed economic climate, Schoonebeek is now scheduled for re-development in the near future.

The reservoir here is the Bentheim Fm. (Lower Cretaceous) which consists of a 30m thick multi-Darcy shallow marine sandstone. The structure is a heavily faulted, E-W trending, anticline with a crestal collapse graben.

Within the permit area there has been only minor drilling activity in this area with some 14 wells drilled over a 48 year period. NAM drilled a number of wells from 1953-1967 which were focused on possible oil accumulations in the Cretaceous sandstones More recently the main target has been gas accumulations in the Rotliegend or Zechstein carbonates .and the results of some of these wells are described below. The well database which has been used in preparation work for this application is shown in Table 1.

Figure 4
"Location of the Cuadrilla Application in relation to oil and gas fields in the Netherlands"

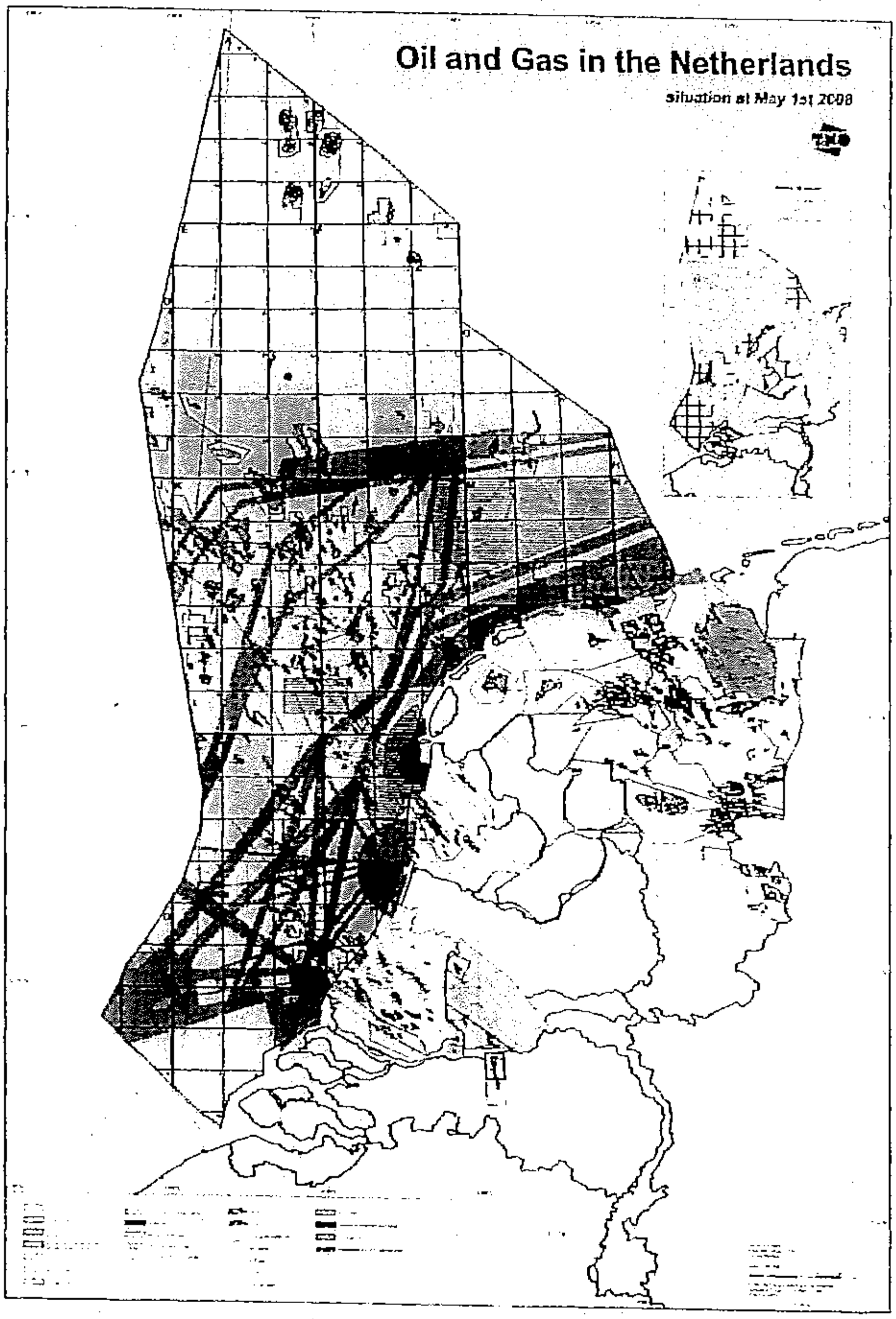


Table 1

"Wells used by Cuadrilla in the Evaluation of the Flevoland Drilling Permit"

Well	Top ROSL	ROSL Thick	x	y	TD	Top West	Top Nam	TD	Year	Operator
ESG-1	2027	189.5	682749	5860008	2210	2216.5		West A	1990	NAM
MKN-1	1686.7	62.8	694678	5841805	2000	1749.5		DC	1983	NAM
SLB-1	1815.4	74.6	691870	5855142	2280	1890		Limburg	1983	NAM
SLB-2	2114	86	691889	5855164	2402	2200		Limburg	1986	NAM
BRL-1	1760.5	12	698745	5846871	1970	1772.5		West A	1981	NAM
KGB-1	1973	106	699687	5836253	2340	2079		West B	1987	NAM
MKO-1	1755	102	695132	5844921	2006	1857		DC	1986	NAM
NAG-1	0	0	685471	5833586	4298	1614	2962	Namurian	1970	NAM
KAM-1	1795	122.5	700629	5831988	2154.5	1917.5		West A	1969	NAM
EMO-1	1679.5	45	689585	5844222	2547.7	1724.5	2335	Namurian	1969	Elf P
STN-1	2001.5	96	678978	5864216	2193.5	2097.5		West A/B	1969	Elf P
SWD-1	1899.5	15.5	704251	5854840	3646	1915	3320	Namurian	1966	NAM
STN-2	1962.8	106.9	676204	5862538	2179.5	2069.7		West A	1982	Amoco

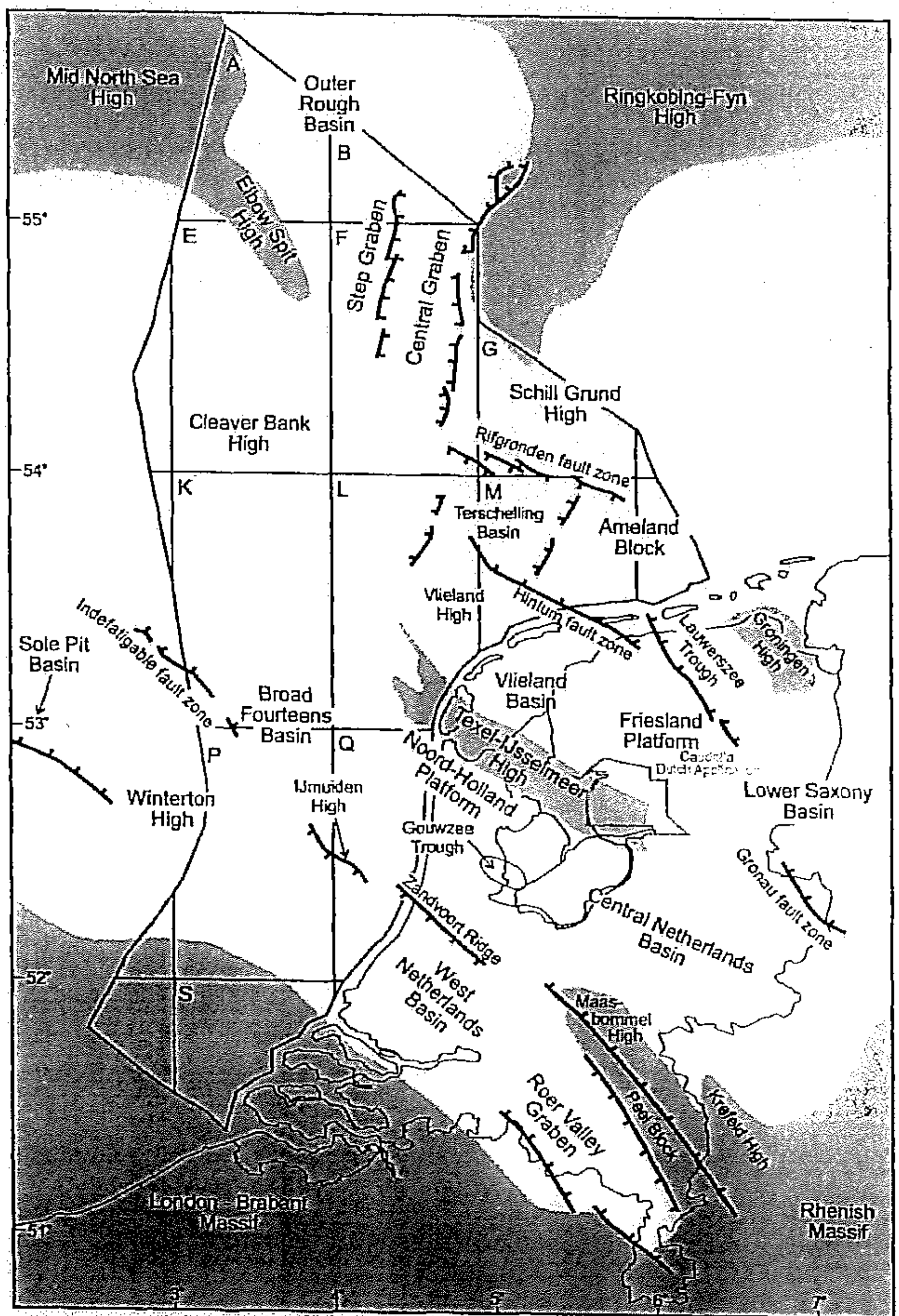
IV.IV Geological Setting of the North Flevoland

IV.IV.i Structural Framework

In this section we are following the definitions of Duin et al.2006 in order to outline the structural context of the Flevoland Prospect. Geologically the area lies on the Friesland Platform of the Netherlands High (NH). The main structural types are ***basin***, ***high***, ***platform*** and ***fault (-zone)***. The boundaries of structural elements, including basins, are delineated by subcrops, (major), faults or salt structures. In this study a ***high*** is defined as an area with significant erosion down into Carboniferous or Permian strata (Rotliegend and/or Zechstein). A ***platform*** is characterized by Late Jurassic erosion into the Triassic and the absence of Lower and Upper Jurassic strata. The term ***graben*** is used for subsided structural elements that are clearly delineated by major linear faulting.

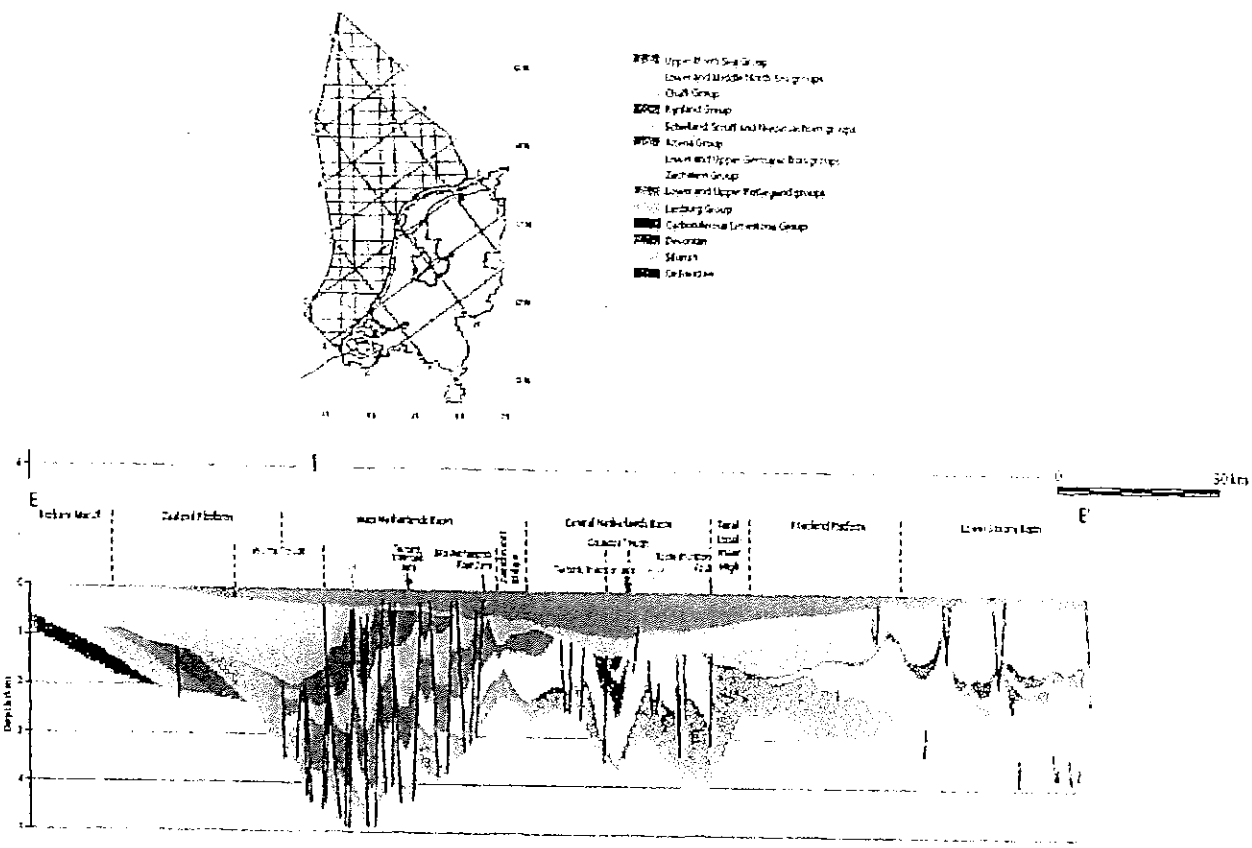
The main elements are shown in Figure 5. It can be seen that many of these onshore structural elements are contigous with the offshore southern North Sea. The Cuadrilla license application is for an area which lies on the southern part of the Texel-IJesselmeer High and the south-western part of the Friesland platform. The area is bounded to the north by the Vlieland basin and to the south by the central Netherlands basin.

Figure 5
"Regional structure of the Netherlands showing the location of the proposed license area"



The cross section in Figure 6 shows the key elements of the Friesland Platform and the Cuadrilla permit application. The structural basement is formed by the Carboniferous Limburg group and Namurian. The Carboniferous is overlain unconformably by the Rotliegend Slochteren Sandstone or younger rocks. The Rotliegend actually thins out south westwards onto the Texel IJesselmeer High. North westwards the section thickens and a more complete Mesozoic section comprising Triassic, Jurassic and Cretaceous rocks in the Lower Saxony Basin.

Figure 6
"Regional cross-section of the Netherlands showing the main basins and highs"



IV.IV.ii Stratigraphy and Geological History

The regional stratigraphic outline for the Netherlands is shown in Figure 7. With respect to the Friesland platform the regional geology is relatively undeformed with a basement of Palaeozoic (Carboniferous) rocks overlain unconformably overlain by a cover of Mesozoic and Cenozoic rocks.

Figure 7
"Stratigraphic outline for the Netherlands"

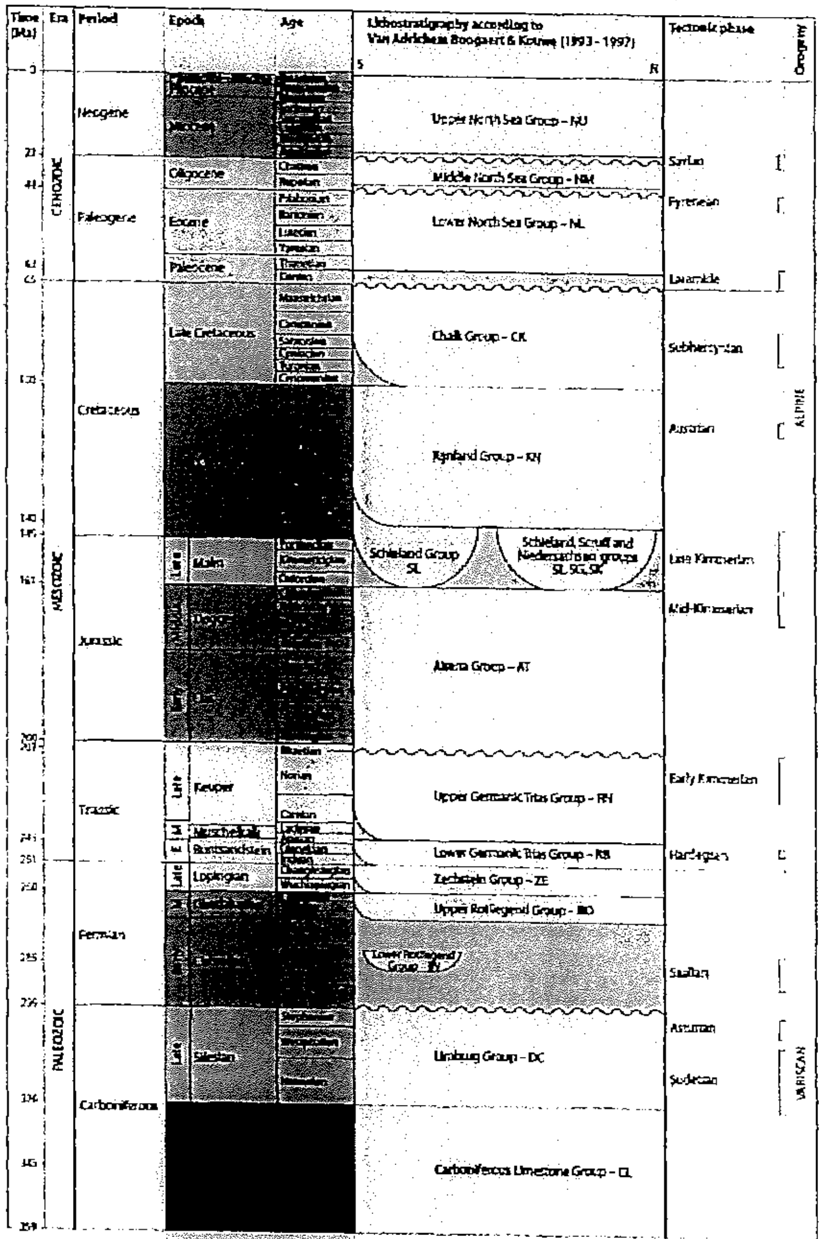
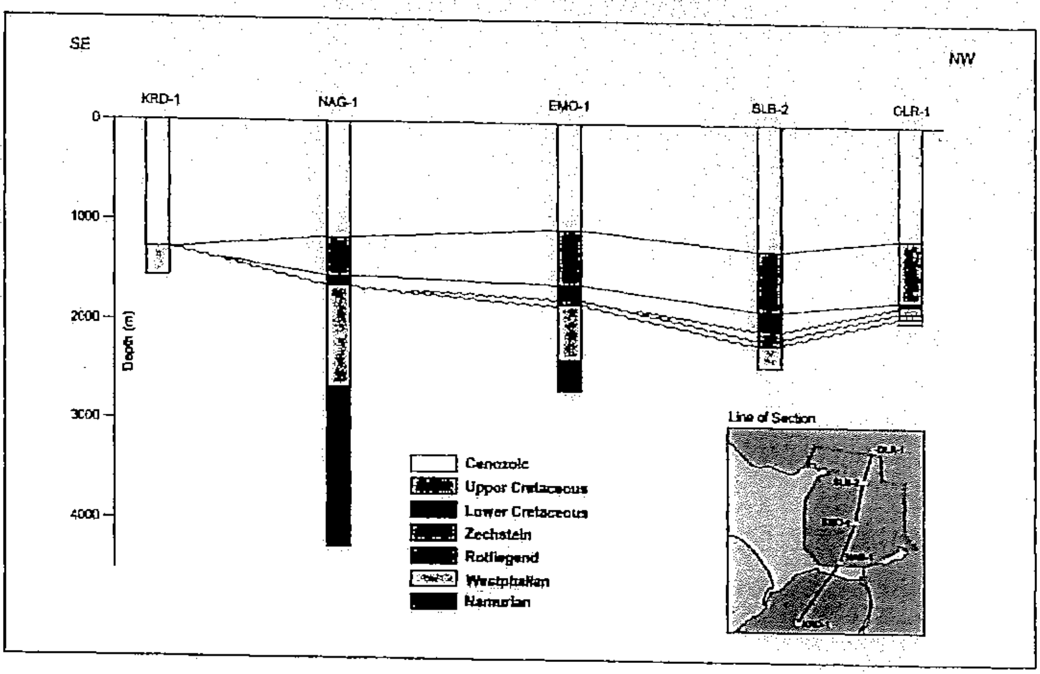


Figure 8 shows the basic stratigraphical pattern typical of the Friesland High. The Namurian forms the geological basement of the area. Also these rocks are the oldest in which potential hydrocarbon occurrences can be expected . The Carboniferous has an unconformable cover of late Palaeozoic and Mesozoic strata which progressively onlap the Friesland Platform - Texel-IJesselmeer high from NE to SW. NE of EMO-1 the carboniferous is overlain by a Rotliegend section of up to about 120m thick. Further NE there is a thin Zechstein section but this is absent in EMO-1. The Triassic and Jurassic are completely missing in this area and the Palaeozoic is overlain by the Cretaceous which progressively onlaps and overlaps the older deposits. (Figure 8)

Figure 8
"Stratigraphic correlation diagram of wells across the Friesland High. The results show the progressive onlap of the Cretaceous section towards the SE"

FRIESLAND STRATIGRAPHIC RELATIONSHIPS



Mesozoic and Younger Cover

Typically the Mesozoic and younger cover comprises a section of Cretaceous rocks which unconformably overlie late Palaeozouc Rotliegend and Zechstein sequences. In the application area the Triassic and Jurassic are completely absent due to Kimmerian erosion. The Cretaceous contains a lower section of Aptian-Albian claystones and marls overlain by a thicker section of Upper Cretaceous Chalk.

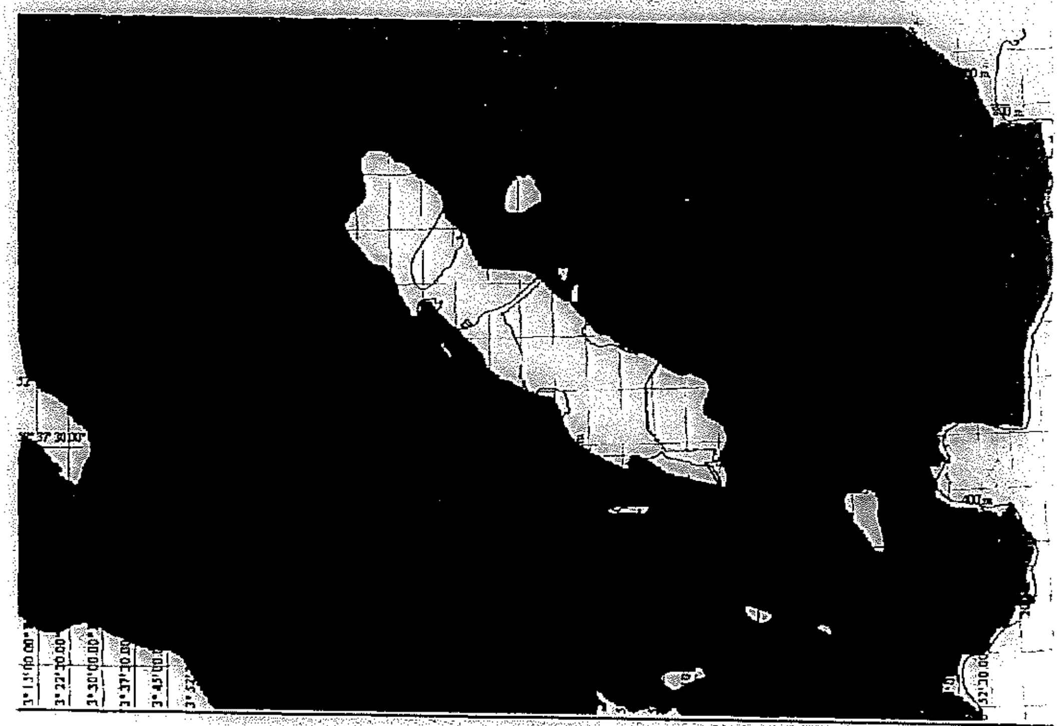
Rotliegend and Zechstein

The Rotliegend in the license area ranges from 0 (NAG-1) to over 180m thick (ESG-1). In some sections there is a basal conglomeratic unit (e.g. Well) but in others the sequence generally comprises clean sandstones of probable aeolian origin. The thickness distribution was calculated by computing depth thickness contour maps from the TWT maps downloaded from the TNO website. The Rotliegend is shown in Figure 9. This shows the thinning of the Rotliegend onto the Texel IJsselmeer High.

Figure 9
"Thickness distribution of the Rotliegend-onshore Netherlands"

The Zechstein section is generally less than 200m thick in the region but thickens rapidly to the south and west. The section includes carbonates and evaporites and thin claystones. The cyclic nature of the deposits means that individual cycles can be correlated over large distances from the UK, across the southern North Sea to onshore Netherlands. The cycles present in the Flevoland area correspond to the Zechstein 1-3 cycles.

Figure 10
"Thickness distribution of the Zechstein -onshore Netherlands"



Carboniferous

Structural Constraints

The Carboniferous in the Netherlands forms part of the very large North West European Carboniferous basin (NWECB) (Kombrink et al. 2008) which stretches from Ireland in the west to Poland in the east. It is one of the most significant gas kitchens in the world being the source rock for a large number of reservoirs including the Rotliegend and the Bunter sandstone. An outline of the main structural elements is shown in Figure 11. Key features are the Netherland High (NH), the Raalte Boundary Fault (RBF) and the Hantum Fault Zone (HFZ)

Figure 11
"Variscan Structural Elements (from Duin et al. 2006)"

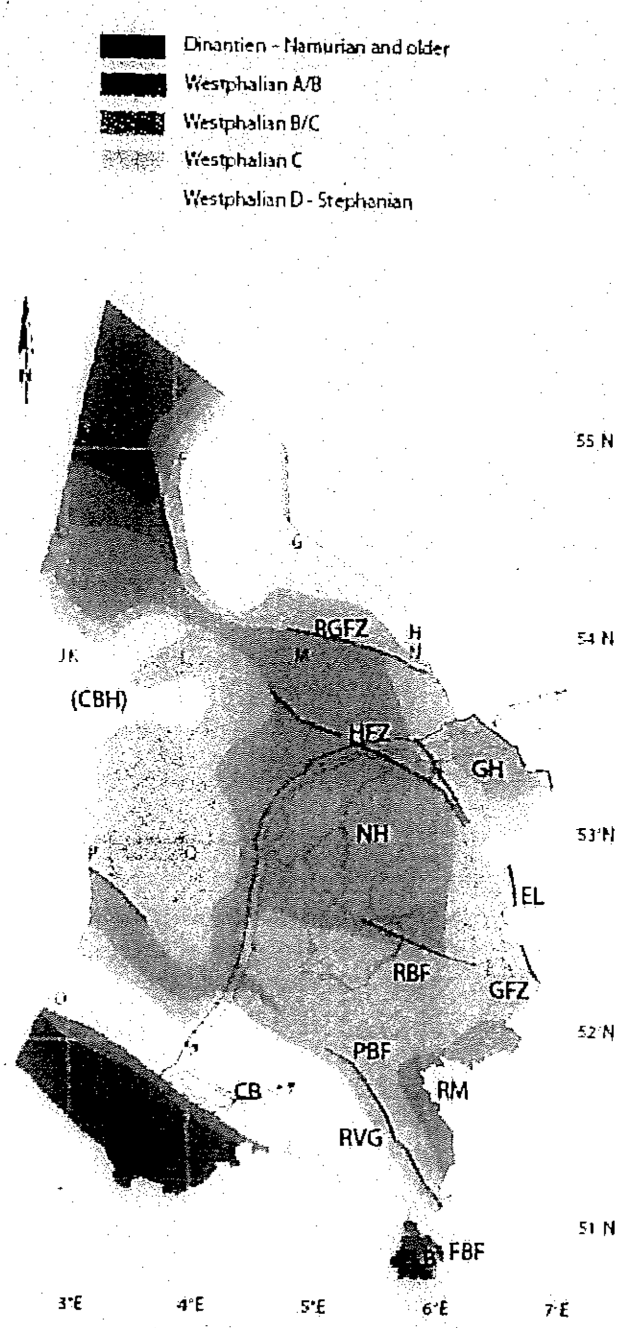
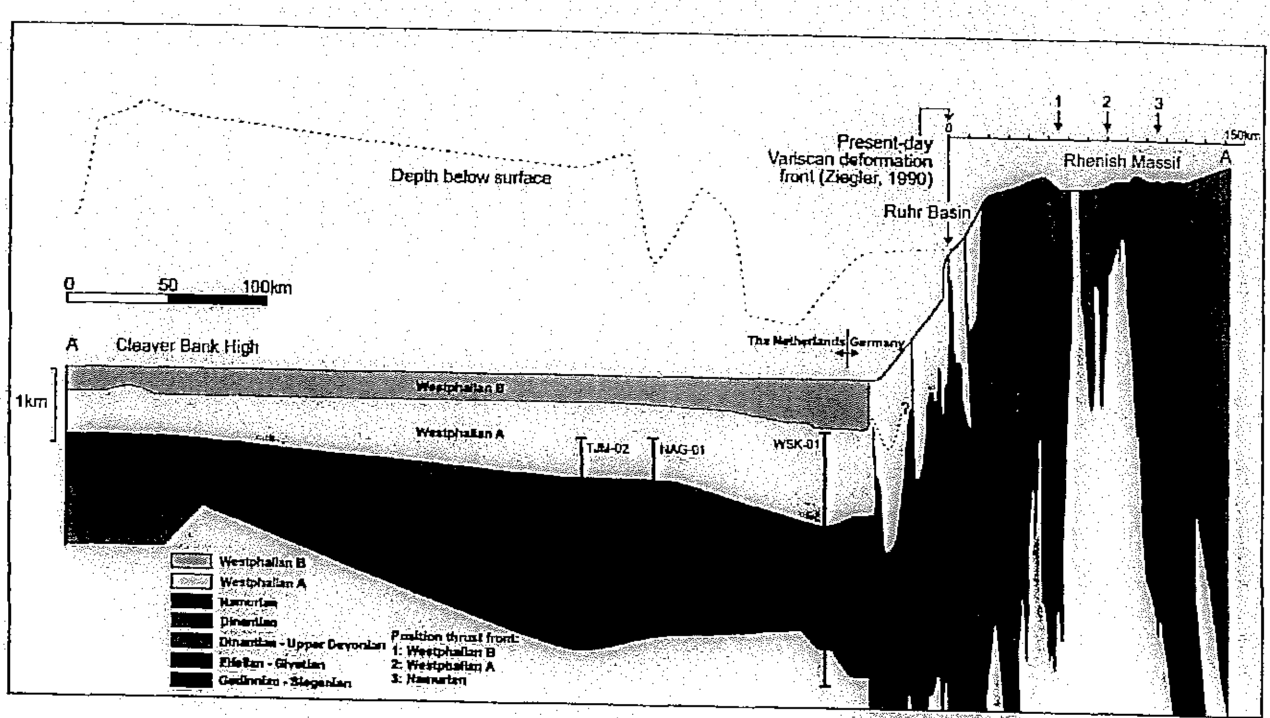
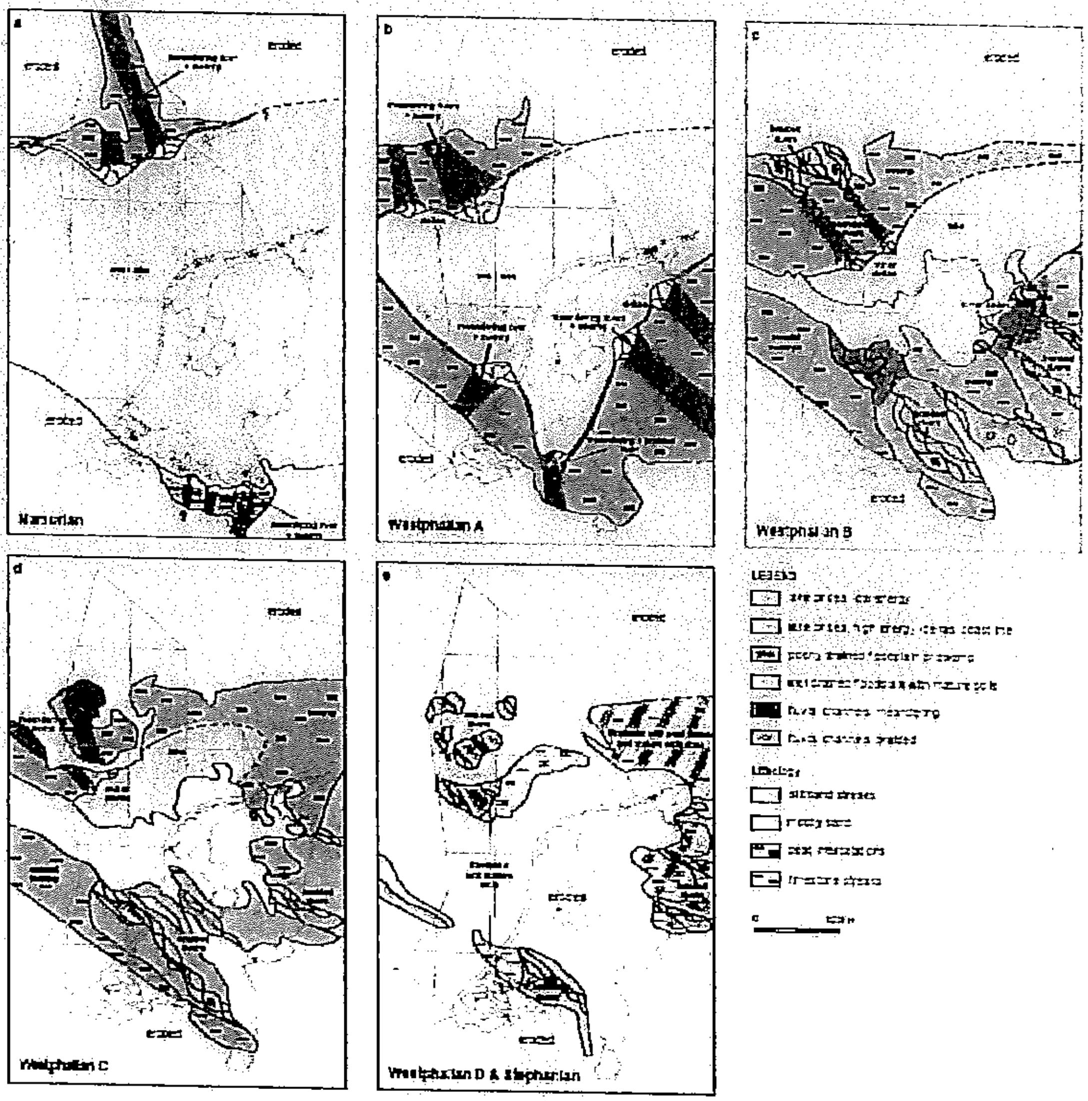


Figure 14
"Cross section from the Cleaver bank High to the Rhenish massif showing the structural configuration of the application area (around NAG-01)"



The palaeogeography of the Westphalian is shown in Figure 15.

Figure 15
"Palaeogeogeography of the Westphalian (from van Buggenum and den Hartog (2007)"



This shows a series of sand fairways which drain from SE to NW in the main Carboniferous foreland basin during Westphalian A and B times. The later Westphalian is missing due to erosion or non-deposition. Fluvial style changes in response to the evolving Variscan highlands with meandering rivers and associated coal-bearing swamps dominant in the earlier Westphalian and braided rivers later. In the area of the Cuadrilla application the later westphlain c/d is largely missing due to subsequent erosion. The Westphalian A/B comprises thick shale sequences with thin interbedded coals and sandstones. Clearly the diagrams of van Buggenum et al need slight modification since they show the Cuadrilla area as an area of non deposition in Westphalian A/B time.

Namurian

We have little information on the Namurian palaeogeography because of the poor well control. In the UK oil and gas prone organic–rich shales of Serpukhovian (early Namurian) age are present in a number of basins, especially the Bowland and Pennine basins. these shales which typically contain 2-8% TOC and up to 15% accumulated in extensional rift basins with restricted marine circulation (Fraser and Gawthorpe 1990) These are the known source rocks for a large number of oil and gas accumulations in the country and compare closely with significant unconventional reservoirs like the Barnett Shale in the USA

In Holland similar shales were encountered in the Geverik-1 well in the Limburg area. The organic-rich shales in this well have a thickness of 15-25m thick and a TOC of about 8% (Van Adrichem, Boogaert and Kouwe 1997). The overlying Namurian section is poorly known in detail but comprises a siliciclastic sequence of shales and thin bedded sands initially of deep water, turbidite origin and shallowing upwards towards the Westphalian.

IV.V Play Concepts and Proposed Technical Work

IV.V.i Introduction

We identify three potential play types in the area:

1. Conventional Rotliegend/Zechstein gas
2. Westphalian tight gas sands and unconventional shale gas
3. Namurian unconventional shale gas

Of these Cuadrilla sees the two Carboniferous as being of much the greatest significance. We have seen evidence of gas in fractured carbonates of the Zechstein and since these would have to be drilled through to attain Carboniferous targets we see them as a potential secondary play.

Table 2 Flevoland Play Summary

Unit	Type	Top Depth (m)	Gross thickness	net thickness	Cuadrilla rank
Zechstein	fractured carbonates	1700-1900	0-200	100	3
Rotliegend	aeolian sandstones	1750-2000	0-180	50	4
Westphalian	floodplain shales and TGS	1600-2200	1200	600	2
Namurian	unconventional marine shales	2300-3600	2400	1200	1
Dinantian	carbonate reef	5000m+	?	?	5
TOTAL AREA	211,000 acres				

IV.V.ii Rotliegend and Zechstein Gas,

In principal this should be a good potential play in the Freisland Platform since the basic ingredients of ***Source*** (Westphalian coal bearing strata) ***Reservoir*** (Schlochteren Sandstone or fractured Zechstein carbonates) and ***Seal*** (Zechstein evaporates) are all present. The reservoir characteristics are generally excellent with good porosities and permeabilities. However most of the drilled sections show that the Rotliegend is water wet and there is little prospect of commercial gas accumulations. There are small gas occurrence is in EMO-1, KAM-1, STN-1 and STN-2. A typical well section which illustrates the water saturated Rotliegend is shown in MKN-1 (Figure 17).

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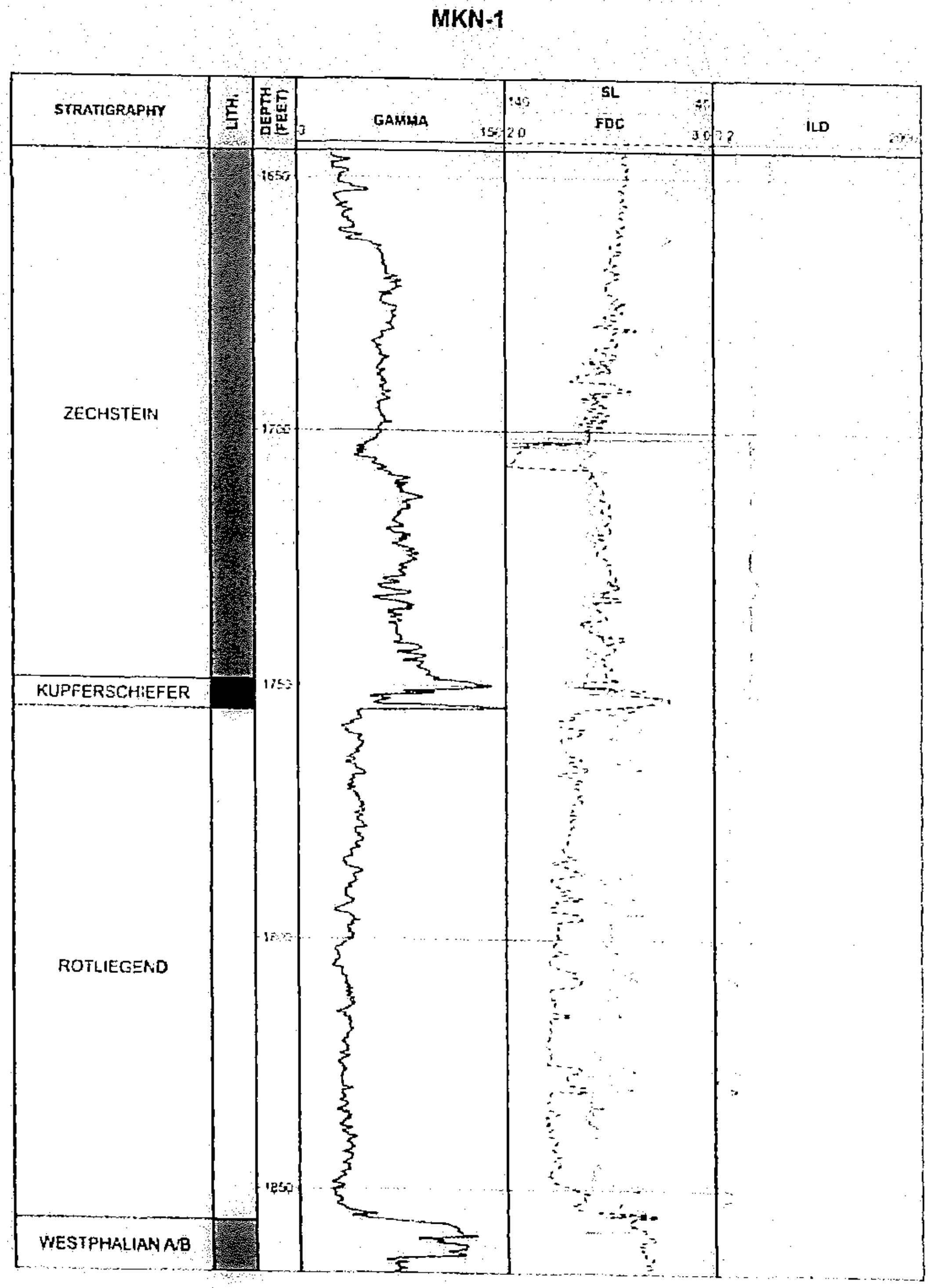
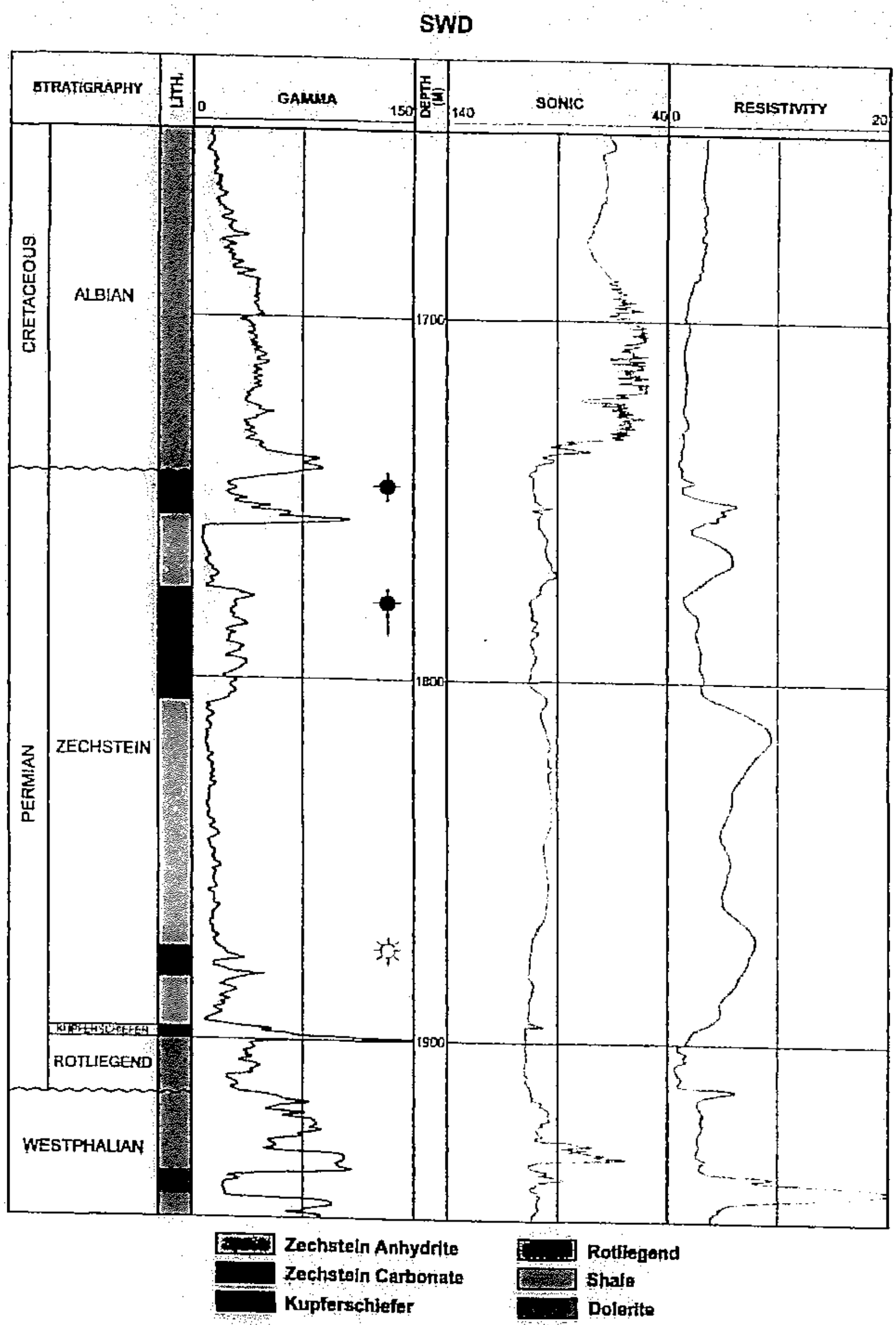
Figure 17
"Rotliegend well section from well MKN-1"



The Zechstein section typically comprises interbedded dolomites and anhydrites. In SWD-1 (which lies just outside the license area) Zechstein carbonates show bot oil and gas shows. The Zechstein section is 153m thick and comprises three cycles of mudstone-dolomite-anhydrite. The three carbonate horizons are approximately 10m, 32m and 13m thick from bottom to top. The lower carbonate has gas shows and the upper two both show oil stains. Cuadrilla considers that carbonate horizons of this type are good candidates for fracture stimulation. We also anticipate the prospect of higher formation pressures in the carbonate reservoirs since they are individually sealed by anhydrite layers.

Figure 18
Well section from SWD-1 showing oil stained Zechstein carbonates



identification of commercial gas accumulations will depend on careful seismic mapping and fracture stimulation of dolomitic carbonates. The Zechstein pinches out stratigraphically to the west and this may provide a suitable trapping mechanism for oil and gas.

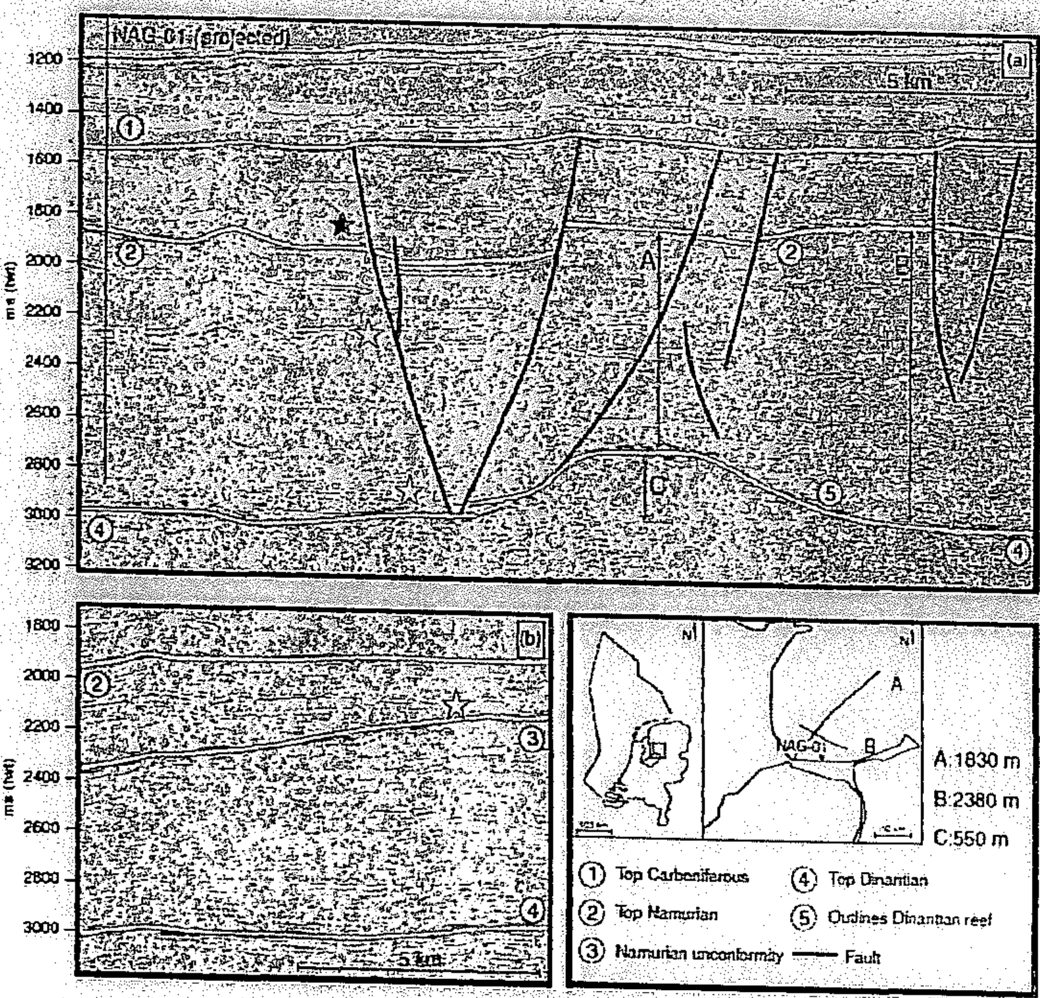
IV.V.iii Westphalian unconventional plays

Potential Carboniferous plays can be illustrated by reference to the seismic section in Figure 16 (from Kombrink et al 2008). The Westphalian play is shown with a green symbol and the Namurian plays with yellow symbols. Current seismic investigations indicate that the structure of the Friesland Plateau is relatively simple and the absence of major structural features makes it ideal for unconventional resource evaluation. The total thickness of the Westphalian is over 1000m and the Namurian 2400m (Figure 16). We consider that significant proportions of these intervals might be suitable for resource evaluation. Key ingredients in an unconventional resource evaluation are.

1.
2.
3.
4.
5.
6.

As part of our initial investigation our aim will be to collect as much information as possible from the cored intervals. In particular we have indentified cores from a number of previously drilled wells which have been prioritized for investigation.

Figure 16
"Seismic section (Kombrink et al 2008) illustrating play types in the Friesland area"

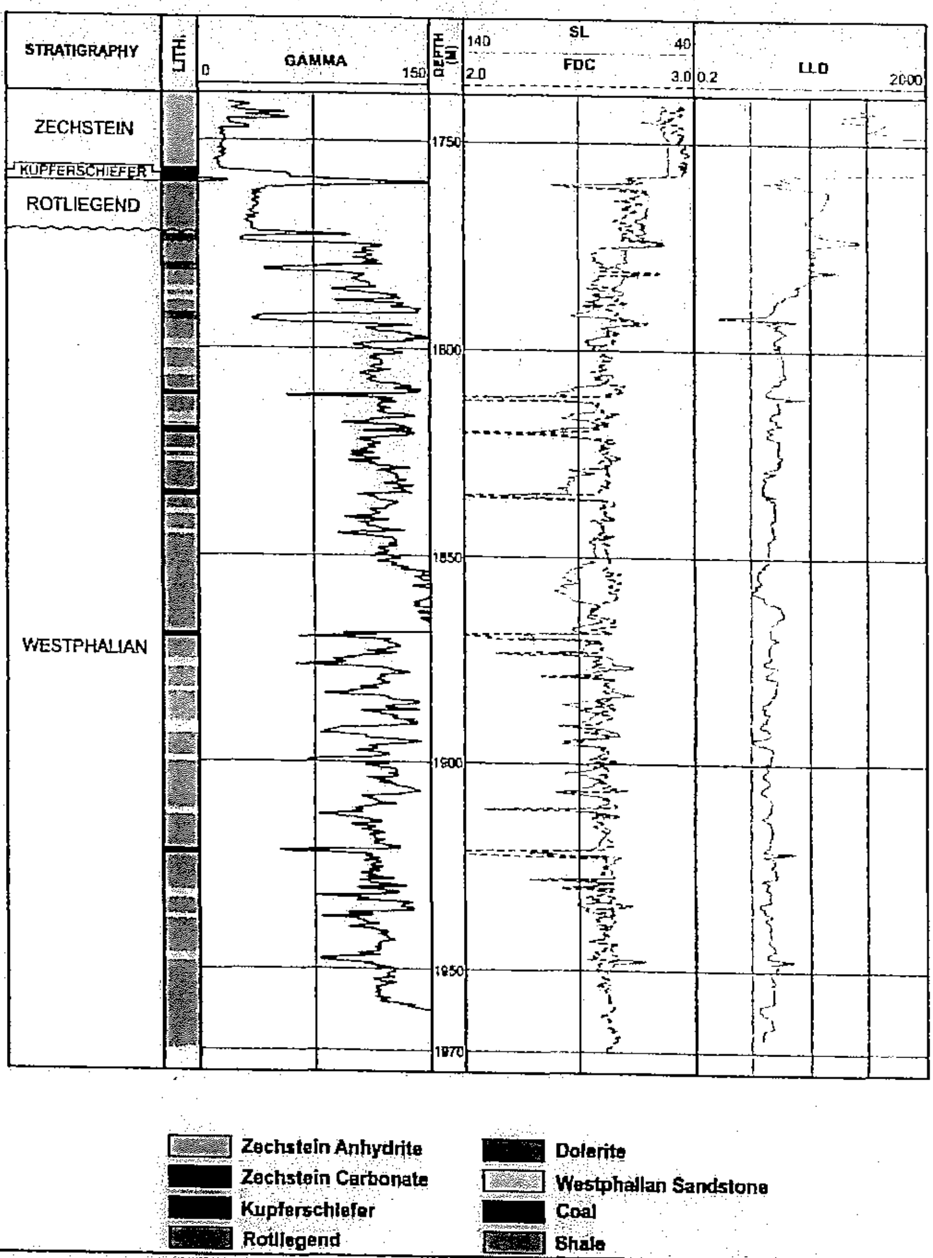


Most of the previous wells have encountered Westphalian A/B interval which is largely dominated by thick shale sequences with thin sandstones and coals. A representative section is shown for the Baarlo-1 well.

This well is located in the central part of the Cuadrilla license application area and shows the characteristic features of the Westphalian in this area. The fact that the sections are shale dominated with thin coals makes this an ideal candidate for unconventional resource evaluation. The wireline logs indicate multiple gas shows both in the thin coals and associated thinly bedded sandstone–shale sequences.

Figure 17
"Unconventional Westphalian Play BRL-1"

BAARLO



IV.V.iv Namurian Unconvential Play

The high TOC organic-rich source rocks typical of the early Namurian (Serpukhovian) have Not been penetrated in the area and are expected to be present at depths of >4km. Organic rich shales also occur higher in the Namurian section as indicated in well EMO-1. The character of the sequence above the Intra-Namurian unconformity is dominated by interbedded thin sandstones and shales. Some thicker shale sections e.g. 2370-2400m display higher gamma and resistivity signatures. This interval also shows hydrocarbon shows (C_1 and C_2) indicating that it is a good candidate for unconventional resource evaluation. Core samples are available for EMO-1 and NAG-1 and we plan to investigate resource parameters including VR, TOC pyrolysis and mineralogy as part of our initial investigation. Burial history modelling of this area (Kombrink et al. 2008) indicates that the Carboniferous sections can be expected to be in the gas window.

Figure 18
"Namurian unconventional play EMO-1. Hydrocarbon shows are indicated in shale dominated sequences. Noe that the methane indications coincide with consistently higher GR and resistivity readings "

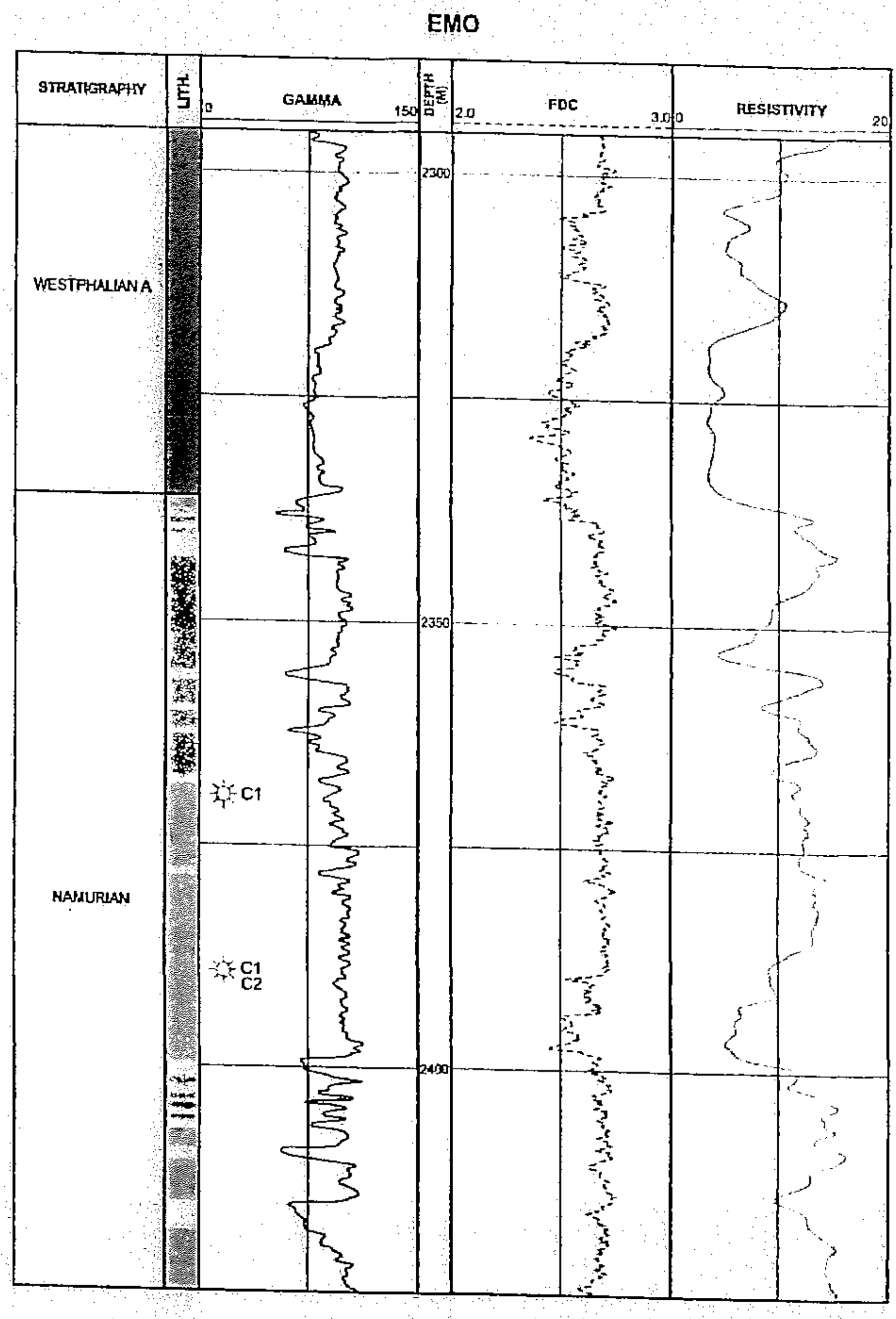
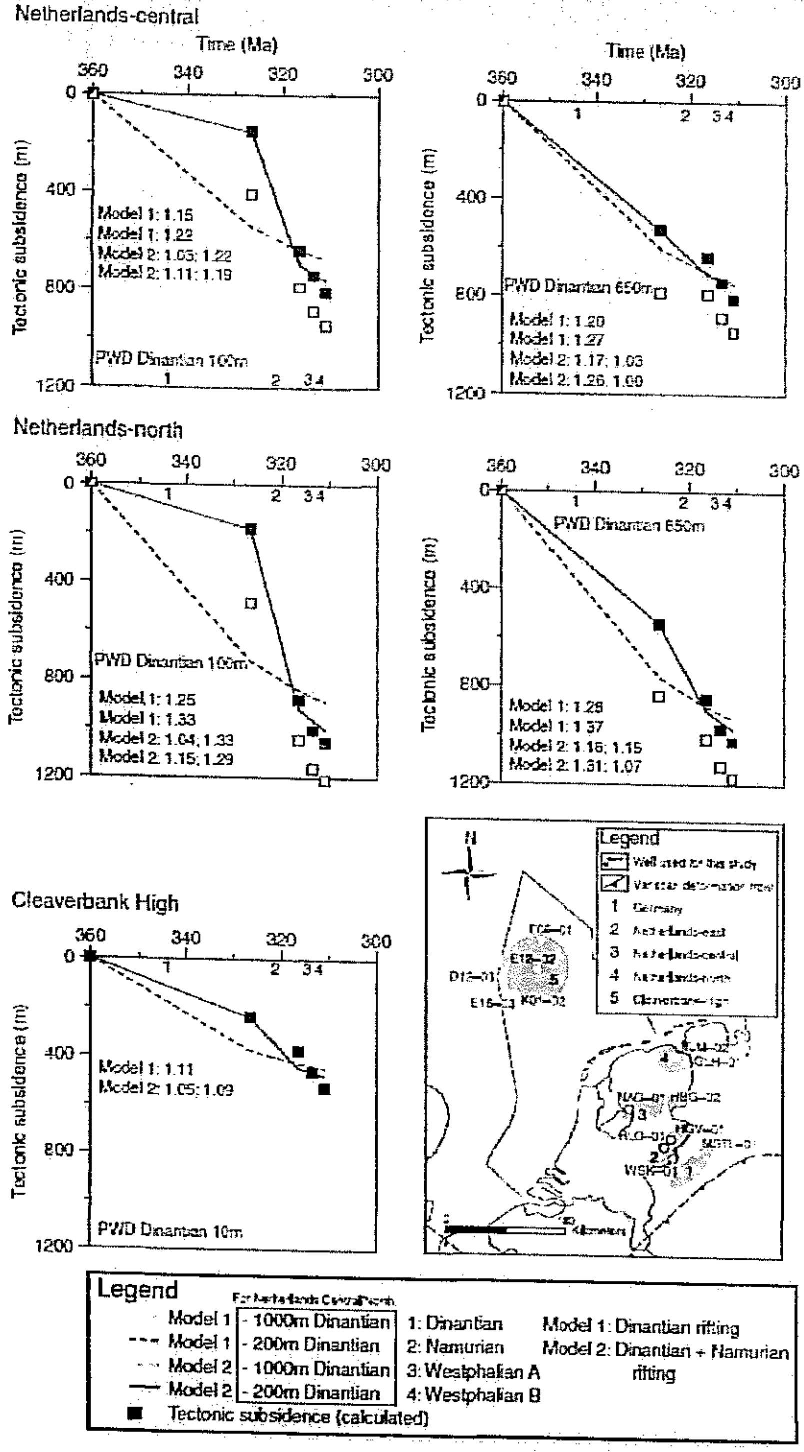


Figure 19
"Burial history modelling of the late Carboniferous (from Kombrink et al 2008)"



IV.VI Work Program

IV.VI.i Overview of Cuadrilla Work Program

We have identified of interest to us in this Flevoland Prospect which are in the Namurian, Westphalian and Zechstein intervals. We are asking for a to study and possibly begin development in this area. Because of the range of depths between these 3 sections, we will have to conduct our studies (including drilled wells) in more than one location. In this regard we expect that our work programme will follow the general time table as shown below, starting from the date of license award.

Year 1 -

Year 2 – (if needed) - may include additional (a and Make the decision to or (assuming we proceed to Years and

Year 3 – (vertical

Year 4 - (horizontal

Year 5 – the production performance from the (and possibly the to enable us to decide to either move forward with a formal development and production program, or to relinquish the license.

for each year of the work program can be found in Section VII. 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 available geologic, geophysical and geochemical data for two purposes. First we will use the data to evaluate the potential of the Flevoland Prospect as a future, commercial, unconventional oil play and second, we will use this study to help us determine the areas where we may need additional data, and ultimately, where we may drill our first well. The work to be completed in our Preliminary Technical Study is included in the following list.

Seismic Review - Obtain and reprocess existing 2D seismic (approximately 500kms line) and interpret the regional distribution of the 3 target zones. Determine from this if additional seismic data is needed.

Well Log Review - Obtain all available well logs. From these determine thickness, lateral extent, possible permeable pathways, and rock mechanics from dipole sonic. Existing FMI logs will be reviewed for fracture analyses, *in situ* stress analyses (break outs, fracs). Calibration of logs for TOC analysis

Core/Cuttings Review - Study available well cuttings and core samples for gas in shale, geochemistry, maturation, vitrinite reflectance, Tmax kerogen type, rock eval, TOC, gas in place, porosity, adsorption capacity. Also look at shale mineralogy and matrix permeability.

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

After re-interpreting the existing data in Year 1 we will decide how much additional data we may need to properly describe the distribution of the 3 target zones. 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 test wells previously drilled through the Carboniferous and Zechstein sections. 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 data interpretations 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 Flevoland Prospect. From that evaluation we will make our "Drill or Drop" decision. 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 R&D well in Year 3. If we do not we will relinquish the license.

IV.VI.iv Year 3 – Exploration Well

For the purpose of this application, we define the term "exploration well", to mean a vertical wellbore which we will initially use to obtain a large amount of technical data, above and beyond what we would normally get from a basic production well. If we find oil or gas in what we believe to be commercial quantities, we can at a later date convert the exploration well to a standard production well.

The primary focus of the exploration well is to collect data and acquire reservoir knowledge that will be needed to go forward into the full field development phase. Some of the technologies to be deployed are very expensive, and some cases there may be some redundancy with respect to collecting various items of reservoir data. Our approach to this project is to use some of the more expensive data acquisition techniques on this first well to verify and in some cases calibrate, the less expensive techniques, that will be used on future development wells. We plan to achieve 3 things with this part of the program.

(1) Identify the target zones within the Flevoland Prospect that have the highest potential for delivering commercial gas production rates. We will be focused particularly on shale zones in the Westphalian and Namurian for this phase of the project

(2) Generate a detailed reservoir description for each of the target zones. The reservoir description will include average reservoir pressure, permeability, primary and secondary porosity, identification of reservoir heterogeneities (presence and orientation of natural fractures, faults, layering), gas content, and a desorption isotherm for the Namurian and Westphalian Shale sections.

(3) Determine the hydraulic fracture azimuth, and the general profile of the hydraulic fracture fairways (to be used for optimization of future frac treatment design, direction of lateral holes, well spacing, and general layout of the field development).

Drilling Operation

The location of the exploration well will be heavily influenced by the work done in the Pre-Drill Study. The well will be drilled as a vertical well and will be drilled on fluid. This will give us the best access to looking at the entire intervals for our initial reservoir evaluation, and identification of our target zones. During the drilling operation we will be collecting a whole core at selected intervals, collecting cuttings and recording all gas shows. Following the open hole logging operation, 5-1/2 inch casing will be run into the well and cemented in place.

Analysis of Core and Cutting Samples

Collecting and analysing cores is a very expensive means to obtain certain types of reservoir information. But as we mentioned previously, core data is highly accurate and can be used to verify and calibrate some of the less expensive alternate techniques used to obtain this same information. Here are some examples of how we plan to use the data from cores and cuttings.

Rock Mechanics - The core data will be used to give us mechanical properties of the reservoir rock, (Young's Modulus and Poisson Ratio). This data is necessary to the hydraulic fracture design process in that it helps us to determine the overall "fracibility" of the rock, and is needed in 3D frac models to predict the fracture growth and geometry. A less expensive technique for estimating this same data is through the use of the long space sonic logs. However, mechanical properties derived from sonic logs typically require some level of regional calibration, which can only come from a reliable data source, such as core data or an in-situ stress test. Once that calibration is made however, these properties can be obtained with confidence in future development wells using sonic logs, at a fraction of the core cost.

Mineralogy and Geochemical Analysis - Core data will be used to acquire two important geochemical parameters, particularly in the Aalburg Shale. Total organic carbon (% TOC) will be collected to enable us to select the very best intervals to be completed. Vitrinite reflectance will be measured to give us a handle on the thermal maturity throughout the interval (i.e. used to determine if we are in the "gas window"). The mineralogy will also be determined from the core samples (type and percentage of quartz, clays, carbonates, iron etc.). This information will be used to help indicate the rock quality. And it will also be used in the frac design process to check for frac fluid compatibility. Drill cuttings will be used to gather this same geochemical and mineralogical data, from any interesting areas in the well bore that were not cored.

Gas Content and Isotherm Data - Core samples will be used to determine gas content and to generate a desorption isotherm for the zone(s) of interest. This information will be used in shale reservoir simulator to predict future well performance, which in turn will influence a lot of future decisions regarding type of hole (vertical vs. horizontal), well spacing, frac treatment design, production techniques, and investments in production equipment and pipeline systems. Again, cuttings can be used to generate this data for any part of the un-cored hole.

Permeability and Porosity - Knowledge of both of these properties is critical to the entire reservoir evaluation process, and the core sample can used to obtain values for these. The permeability and porosity from core samples will be compared with those values extracted from open hole logs and pre-frac well tests, both of which will be the primary source of this data on future development wells.

Well Logging

We will use a basic suite of tools for the open hole logging operations which will include gamma, borehole caliper, neutron density and resistivity logs. In addition we will use the following specialized logs.

Formation Microscanner - This will be used to identify and quantify the presence of natural fractures in the near well bore region. This information will be incorporated into our reservoir model, and it is critical information to have available when selecting the zone(s) to frac.

Long Space Dipole Sonic Log - This will be used to generate values for Young's Modulus and Poisson ratio. Mechanical properties derived from sonic logs are not as reliable as those taken from core analysis, but if they are regionally calibrated to good data, these sonic log derived values can be used with confidence on future wells in the same general area.

Using the key taken from the cores, cuttings and shows during select the best . Each of the target zones will a test. The objective of the will be to establish a and production for each of the While the duration of on each of the will vary depending on the of (i.e. the the perm. the the), the program will the same for . The will following activities.

- Perforate only the first (i.e. deepest) of the target zones to be tested, using 4 shots per foot over a short interval (max 4 ft) in the centre of the target zone. Run in the well with 2-3/8 tubing and a straddle packer with the packer elements spaced about 12 ft. apart. Straddle the perforations and set the packer. Swab all fluid from the hole before testing.

- Mobilize and rig-up well test equipment, including a well test separator (with gas measurement, back pressure regulator, adjustable choke), a flare stack, a slick line truck, two downhole pressure gauges (electronic memory type), a downhole gauge hanger, and a digital surface pressure gauge. Program downhole gauges to sample at 30 second intervals then run them in the tubing on wireline and softset the gauges at the perforated joint between the packer elements.

- Mobilize a , With the downhole
, start a low rate until a
is observed. After small
then allow to falloff and this may
maybe up a). Use this data to
. This value will be used later in the after months of
to estimate the using . Do not start
the test until this has

After the has stabilized, begin
a rate. Set the back on the
and continue Then lower the to
and an Then lower the to
and the until the For the purpose
will be as the where the against a
and the rate is of the in a 1 hour
period (NOTE: This may At this point the for
of before Also, before terminating the , look at
the data to ensure has pseudo
and a of of to (more is better)

- At this point, to conduct a for a
that is the . At the end of the
the download the and the

- Using well with type and
capabilities, perform a of the pressure
buildup data to estimate
and of etc.). Using the derived from the
generate then the
the pressures and and
the properties until the a good match with all
of the The model should now be ready for and
well

- and tubing from the the
before for the Perforate the
next zone up the using these same basic procedures.

The primary objective of this is to that will treatment design on Information to be gathered includes frac and , as well as and In this regard we will not attempt to necessarily run a large and expensive treatment, but rather we will spend a significant amount of our budget on specialized data acquisition and diagnostics. The tentative frac program will include the following activities.

- Using all the available data from and , we will select the and to be For this we will most limit the interval to between to Any from previous that fall within the interval will be included in the . Additional holes will be throughout the interval as needed. Any hat outside of our interval will be isolated before the treatment by cement into them.

simulator (FracPro, M-Frac or equivalent) will be used to the for the will come from and . Final design will be based on the from the but for now we can estimate that we will likely with a friction reducer. The total to be will probably be to per of Maximum will be to per and the rate will be in the range of /min to /min per foot of pay.

- The best for determining these would be if we can locate to an well, if any are present in our . We would then run in the well with and conduct a survey during the . If it is not possible to use the , the same information can be obtained using a but our is to use the . While this is very the of this data is that we will be able to estimate the and of the which will be key for our

- Prior to the we will a to the of a memory gauges should be in the and they should be on (note: this sample rate will give us up to 8 days of time to complete the . Run in the hole with the and set the just below the [redacted] at the bottom of the [redacted] This will enable us to [redacted] bottomhole [redacted] injection [redacted] during the treatment, as well as [redacted] and flowback [redacted]. The data will be used for [redacted] matching to help determine the [redacted]. While this is not as [redacted] a [redacted] for [redacted] as is the [redacted], it can be used at an a[redacted] for [redacted] field development. And the [redacted] data collected for [redacted] well will be used to [redacted] obtained from [redacted] matching.

[redacted] Prior to pumping the [redacted] a small step rate [redacted] be [redacted], followed by a [redacted]. The data from this will be enable us to [redacted] pore [redacted] and [redacted] for the [redacted]. And this information will be used to calibrate the [redacted] model that will be used on-site during the job to conduct [redacted]

[redacted] in the tanks (or pits) will be tested for [redacted] and [redacted] before [redacted] will be made if necessary. All blending and [redacted] will be pressure tested to avoid unplanned and [redacted] during the job due [redacted] During the entire treatment, a real time [redacted] The [redacted] of this [redacted] that it will enable us to [redacted] understanding of the [redacted] and [redacted] and consequently make changes to the [redacted]. An [redacted] person will be [redacted] during the job, particularly with respect to [redacted] that the correct concentration of [redacted] is maintained throughout the job. Unstable concentrations of [redacted] can make a real time [redacted] nearly impossible to conduct with any [redacted]

After completing the [redacted] we will used the following procedures to [redacted] and [redacted]

[redacted] - Prior to pumping the [redacted], the [redacted] and [redacted] and [redacted] be [redacted] and [redacted] should be rigged up, ready to [redacted] immediately in the [redacted] The [redacted] equipment will include [redacted] flowlines (with line restraints), [redacted]; high [redacted] ([redacted] phase, with back pressure regulator and [redacted] measurement), [redacted] BTU in-line gas heater, a flare stack ([redacted] high with auto-igniter and pilot), and a [redacted] acquisition unit.

As soon after the [redacted] is safe to do so, the well should be opened up to start the [redacted] operation. The starting [redacted] setting will be based on [redacted] well head shut-in [redacted] and a choke size should be selected so as to maintain a [redacted] rate of [redacted] per hour, for as long as the well can deliver that rate. As the the choke sizes should be to maintain the rate. During this time any gas produced back in the wellstream will be then and produced during the flowback will be measured and stored in Flow back operations will be for hrs/day, and may continue for several the maximum . Every during these operations the flowback crew will (water, condensate, gas), temperature, and water properties (pH, density, salinity). and samples will be collected periodically and sent to a lab for analysis.

At some convenient point in the (earlier is better) we will run in the and After that operations will at the .

- At the end of the operations, when a flow is mobilize and equipment to conduct a production logging survey over the . Tool string can be or , and of the following sensors:

The survey should include ft/min, ft/min, ft/min) and passes up, at the same line speeds. Data from this survey will be used to determine the from the various and may help us to determine if the of from a single , or if multiple systems were created during the treatment. This may also indicate at various locations across the perforated interval.

- After the , and with the still producing at the same rate, run in the well with recorders). above the bridge plug at the bottom of the (using a casing collar hanger). The should be programmed to sample and store then minute (note: this sample rate should give us 3 to 4 months of time to conduct our buildup test). When the are in is out of the hole shut-in the well to start the post-frac buildup test. As soon as the well is shut-in , rig down and the equipment and personnel.

Since the well will not yet be up to a the shut-in time will not In this regard, the well should as long as needed to allow the pressure to buildup and . This could require several or longer. To guide our decisions on when we should he we will the When the surface , we will retrieve the , from the download , and perform a During this time the nust remain If our indicates that is needed we will and land them at the , and continue

The from this will primarily be used to he success of the by giving us a The data and the matching data will give us about the and achieved during the which is critical data for . But the length from the buildup test is equally critical data because it tells us how well we really the For example, we may determine from the that we fraced rock to a distance of from the but our welltest may indicate that we only have an of That is telling us that regardless of how far we broke the well is only producing as if we had put a clean, highly This will help us to make

IV.VI.v Year 4 – Production Well (optional)

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

Our production well will be drilled and may possibly have several we identify multiple in the well. We expect the length of the lateral holes to be in the range Moreover, we will attempt to orient the lateral so that they are This has been proven to be an effective technique for taking advantage of permeability in the reservoir, and it enables us to obtain hat are approximately at right angles to our lateral hole. When done successfully, can account for up to compared to orienting the laterals in different directions.

Many of the technologies we used on our exploration well will also be deployed on the . With that being said however, from the work will have completed in our we expect to be able to use some of the more (in-lieu of coring or micro-seismic surveys) to obtain , stress ; etc.

IV.VI.vi Year 5 and Beyond - Field Wide Development (optional)

After completion of the production well, we plan to put the well into or with additional . During this time we intend to perform both production history matching and material balance studies to generate realistic gas/oil-in-place and recoverability forecasts. If and when we determine that the has sufficient reserves to justify additional we will begin making

There is no way at this point that we could give for our plans. However, we can give a as to the that we may on a well by well basis, should we decide to

We fully expect that once we go into the , all future wells will be , with the length of the lateral holes to be about , in a direction perpendicular to the plan of weakest stress. We may opt to drill horizontal wells in groups of 2, with lateral holes that are parallel and spaced about apart. We would then conduct on them, to achieve the greatest stimulated rock volume (SRV). This technique has been used with great success in the many of the unconventional plays in North America.

We expect to put up to stages into each well. Zone isolation for each stage will likely be achieved through the use of the " system (or equivalent) which was developed primarily for use in multi-stage shale wells in operations will be probably be substantially well. For the entire each well we may use gallons of fluid with pounds of proppant mesh and mesh sand). To use our water in the most efficient manner, <u>we plan to</u> <u>and</u> <u>of the</u> <u>as possible</u>.

To reduce the size of the environmental left from our drilling operations we will build multi-well , and we may be able to put on each pad. When we are ready to produce gas we may decide to set up on-site to sell electricity to the local This decision will be influenced by our proximity the pipeline pressures, the quality of our and the cost required to process our gas to the point where it can enter the pipeline

Finally, we do not expect that a single exploration well can provide representative reservoir data for our <u>entire</u> proposed acreage block. In that regard, as we step out to new areas of our acreage we will have to or all of the used in our initial well. As a guideline, we expect that data from an exploration well can be used with confidence on Beyond that we will have to spend

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ATTACHMENT V

Environmental Controls and Community Impact

Contents Page

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V.I Cuadrilla Environmental Focus

Over the recent years we have travelled on numerous occasions to The Netherlands and we continue to be impressed by both the beauty of the landscape and the friendly and accommodating nature of the people throughout the country. With our sincere appreciation for this area, we will 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 to engage Oranjewoud a group of experienced environmental scientists for the preparation of environmental impact report (m.e.r.) or strategic environmental assessment (SMB) as required. Oranjewoud's m.e.r. consultants can indicate when an m.e.r. or SMB may be necessary or desirable and they possess all the required expertise to perform an m.e.r. or SMB

V.II Years 1 & 2 - Research Activities

During the first year our work will mainly focus on research and evaluation. Some of our studies will be done at rock outcrops but none will involve any type of excavation or disruption of any surface features. Our outcrop studies may involve taking several small rock samples, less than the size of a football, so that we can analyse the rock properties in a laboratory. The rest of our work will be conducted in an office setting, and therefore will not cause any disruptions to the local environment.

We expect that additional seismic activity may be required for us to complete our analysis. Our expectation is that we will perform seismic activities over lines of approximately 100 kilometres to compliment the previous work to which we have access. The cost of this is estimated at approximately € 500,000. That would require a significant amount of planning, for the technical and operational details, as well as the safety and environmental details.

V.III Years 3 & 4 - Drilling Activities

If our research during the first year convinces us that the area is suitable to install a well to produce oil or natural gas, then we will make plans to drill our exploration well at some point during the third year of our program. We estimate that the cost to drill the exploration well at the depths we would need in the area would cost us € 1,500,000 or more. Moreover, the cost to drill a horizontal production well would be about € 3,650,000. These costly operations would obviously require a significant amount of planning, for the technical and operational details, as well as the safety and environmental details.

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V.IV Operational Activities

Before we would conduct any work on the seismic or drilling phase, we would first complete a comprehensive environmental impact study to ensure that we would know how our work efforts for drilling and laying a pipeline would affect the local streams, air quality, farm land, and underground water sources. This would be submitted to the provincial 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.

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 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.

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

V.V.i The Geographic Situation

The province of Flevoland was established in 1986 and as such is the youngest province in the Netherlands. It at the location of the former Zuiderzee. The main part of the area lies in Noordoostpolder and includes the former islands of Urk and Schokland. The city of Emmeloord lies in the centre of the polder and is the local government and services centre.

V.V.ii The Economy

Flevoland has experienced rapid economic growth over the past few years and is focused on

- Innovation & technology
- Internationalisation
- Job market and starters
- Agriculture and agribusiness
- Tourism and recreation

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 laboratory 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 platform designed to accommodate the rig, the personnel accommodations and a terminal for vehicle service;
- 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) <u>The Drilling Operations</u>

-- 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 levelling and civil engineering work contained in the preceding paragraph is employed to minimize the affects 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.
- 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 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 rules 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.