Annex A

Redacted Application Form for

Petroleum Licence Application PLA2/16

Submitted to the Department

By

Tamboran Resources (UK) Limited

Tamboran Resources UK
Energy for Northern Ireland

Tamboran Resources (UK) Limited

Application for Petroleum Licence - Lough Allen Basin North

Submitted to Petroleum and Minerals Branch, Department for the Economy

19th September 2016

APPLICATION FORM FOR PETROLEUM LICENCE

Petroleum (Production) Act (Northern Ireland) 1964

Completion of this application form, including the Appendices, is required to satisfy the requirements in Regulation 3 of the Petroleum Production Regulations (Northern Ireland) 1987 (as substituted by regulation 2(4) of the Petroleum Production (Amendment) Regulations (Northern Ireland) 2010 ("the 2010 Regulations")) that a petroleum licence application should be completed on an approved form and should contain the information required by Schedule 1 to those Regulations (as substituted by regulation 2(5) of, and the Schedule to, the 2010 Regulations).

Apart from the obligation to complete in full this application form, each applicant company must also provide a completed Appendix A form. This information will be used to assess an applicant's financial viability and capability to complete the work programme submitted.

Applicants must also submit as part of their application, Appendix B – Parts B1, B2 and B5 should be completed using the specified forms, whereas the applicant has discretion as to how to submit the information required to fulfil the requirements of Parts B3 and B4.

An Appendix C form should also be included as part of the application in order to demonstrate the applicant's awareness of environmental issues and regulatory requirements. The applicant has discretion regarding the content of Appendix C.

Data Protection Act 1998 Contact details, including individuals' names and email addresses, will be held and used by DETI in communications relating to the application and to any Licence issued as a result of it. In the case of successful applications this information will be made publicly available by DETI, and this will include publishing contact details on its website. DETI will also use the information to answer queries from companies or individuals wishing to contact the applicant. Anyone who wishes to object to any of these uses should make clear their objections, and the grounds for them, in their application.

Contents

Tamboran Resources UK
Energy for Northern Ireland

Tamboran Resources (UK) Limited
27 Frances Street
Newtownards
Co. Down BT23 7DW
[redacted]
Company Number: NI605039

9th September 2016

Minerals and Petroleum Unit
Department of the Economy
Room 9
Dundonald House
Upper Newtownards Road
Belfast
BT4 3SB

Dear Sir/Madam,

Tamboran Resources (UK) Limited application for a Petroleum Licence under the Petroleum Production Act (Northern Ireland) 1964

Please find enclosed the documentation that makes up the above application and a cheque for the application fee.

[redacted]

[redacted]

Tamboran Resources (UK) Limited

Executive Summary

1. The application is in respect of **exploration only.** It is based on an area of approximately 608 sq. km in south west County Fermanagh. It follows Licence PL2-10 previously held by the Company. [redacted] Review proceedings. Unlike Licence PL2-10, this application does not include any part of Lower Lough Erne.
2. The first stage of the licence application is a proposal to drill a single conventional borehole at a site of approximately 1 hectare in size. The borehole will be about 1,500 metres deep with the sole purpose of establishing the rock sequence and collecting rock samples (core). The Bundoran Formation is the main target, which includes sandstone (Dowra Sandstone) near the base that is a potential conventional gas reservoir.
3. The rock samples mentioned above will be taken for laboratory analysis and will determine the direction of the second stage of the licence programme. At the end of the first stage above, a decision will be taken either to drop the licence or to proceed. The Company anticipates proceeding to the second stage and understands that further drilling will require planning permission, following a full planning application that will include an Environmental Impact Assessment. It could decide only to carry out further investigation of the conventional target of the sandstone within the Bundoran Formation or, additionally, to look at the shale (known as an unconventional target) within the formation. A programme for each of these target prospects is detailed.
4. The application describes similar natural gas operations elsewhere in the world. It makes the point that these sources of natural gas have substantially reduced carbon dioxide emissions in those countries where these operations are being carried out. This has significantly reduced energy prices and led to an industrial revival in those countries.
5. The past history of petroleum and gas exploration in the region is also described. It shows that County Fermanagh holds real prospects for significant quantities of natural gas, especially throught eh application of new extraction techniques. The present application demonstrates that the Company has the competence, resources and technical capacity to undertake the relevant exploration work. After the work under this licence has been successfully completed, a decision on whether to proceed to the extraction of natural gas would be taken. That, however, will require a production licence, be subject to the full rigours of the planning system and is several years away.
6. As at the time of this application, the Company believes that recovery of up to three times the gas reserves as assessed in 2012 (PL2-10 Licence report) is now possible. In real terms, this would mean a natural gas supply and energy security for Northern Ireland lasting until the end of this century. The reserves could be worth in excess of £20 billion, would lower present carbon emissions, yield billions of pounds in tax revenues and investment and millions of pounds in rates payments, creating around 3000 long-term jobs (directly and indirectly) in greater County Fermanagh and Northern Ireland.
7. The Company is locally based. It has experience in the licence area and has been approached with offers of suitable land for exploration. It has already invested in excess of £3 million locally and is committed to using local businesses, suppliers and workers as far as possible. It plans to create a substantial and generous Community Investment Fund. The Company team has significant experience of community and stakeholder relations and intends to implement a full communications plan, supported by a local engagement team ready to be mobilised on the ground to ensure that local people are fully informed about all aspects of the work. The Company will strongly promote the real economic, environmental and social benefits of natural gas and fully expects to be able to satisfy all reasonable people that the work will be carried out safely, to the highest professional standards and to the benefit of everyone.

8. The Company asks the Department to note that the former Minister of the Environment, Mark H. Durkan MLA, was asked the following question in response to his publication of the Strategic Planning Policy Statement (SPPS) on 28th September 2015:

   "To ask the Minister of the Environment whether the presumption against the extraction of unconventional hydrocarbons in the Strategic Planning Policy Statement, is in relation to the extraction phase only and not the exploration phase." AQW 50998/11-16

   It is noted that on 11th December 2015 the Minister stated categorically in a written response that:

   "the SPPS does not refer to the exploration of unconventional hydrocarbon extraction".

Part 1 Applicant information				
Name of each applicant in full	Registered office address	Company number	Proposed equity interest	SME?
1. Tamboran Resources (UK) Limited	27 Frances Street, Newtownards. County Down. Northern Ireland, BT23 7DW	NI605039	100%	

Part 2 Operator information

Name of proposed operator and contact details

Name of operator	Tamboran Resources (UK) Limited
Contact address	27 Frances Street, Newtownards, Co. Down, Northern Ireland, BT23 7DW.
Telephone number	[redacted]
Mobile number	[redacted]
Fax number	[redacted]
E-mail address	[redacted]

Part 3	Area applied for
Applicants are reminded that they are obliged to submit as part of their application an Ordnance Survey map on a scale of 1:50,000, or such other map as the Department may allow upon which the boundaries of the area in relation to which a licence is sought are clearly delineated.	
Description	The area lies in County Fermanagh to the southwest of Lower and Upper Lough Erne; a large part of the region is commonly termed the Fermanagh Highlands. It terminates south-westwards at the border with the Republic of Ireland. 1:50,000 scale maps appended. The area lies within the northern part of the Lough Allen Basin so is termed Lough Allen Basin North.
Area (km²)	Approximately 608 sq km (150,240 acres)
Irish Grid Co-ordinates of area perimeter	From the border between Northern Ireland and the Republic of Ireland at G92805800 take a straight line east to H10005800, then a straight line southeast to H34001940 where the line meets the national border. Follow the national border west-northwest to the starting point G92805800 where the perimeter is completed. [G92805800 to H10005800 to H34001940, border back to first reference point.]
Comments/notes	

Past research by the Company under licence PL2-10 has shown that some areas within the Fermanagh region are more prospective than others, so this licence application modifies the area requested for licensing. However, the work has not, so far, been able to continue to the stage where there is certainty about the size of the natural gas resource. The purpose of this licence application, [redacted] is to allow the size of the gas resource to be estimated with a much higher level of certainty than has been possible to date.

This will involve drilling at only one or two sites within the applicationarea, each site to be about 1 to 2 hectares in size. The first borehole, to a total depth of between 1,000 and 1,500 metres, will be for rock core collection only. The Company expects that permitted development rights will apply. Continuation of the project depends on the result of that drilling. It is expected that the data will justify going to a second phase of drilling when the levels with gas will be tested. The test holes will require full planning consent and this will only be applied for after further socio-environmental monitoring/impact assessment studies have been carried out.

The Company has developed a robust and comprehensive communications, public information and stakeholder engagement plan. It is committed to working at all times to, or exceeding, best industry and regulatory practice. It has shown in the previous licence work that it will operate closely with all interested parties.

The Company, in addition to sensitive and confidential financial data, has included in the appendices scientific data that must for commercial reasons, respectfully, also be held strictly confidential.

It is noted that the project will be managed directly by the Company's Chief Executive Officer who will be supported by a wider management team based in Belfast and Dublin. It is proposed that offices will be taken in County Fermanagh to assist with community and stakeholder engagement.

The selection of a site/s for drilling has not yet been finalised but the Company has been approached by a significant number of landowners in the licence area who are interested in working with the Company. There are several viable site options which meet the requirements of geology, access and minimal impact on the landscape, environment and people.

To date, the Company has spent over £3 million locally. It is committed to working with local people, organisations and businesses. It has supported local firms involved with security and installation, construction, transportation, hospitality and legal, communications, accountancy and insurance service providers.

The Company recognises that a small but vocal minority opposes exploration. It believes many of the concerns are due to misinformation and / or misunderstanding of the facts - with some following an agenda of being against the use of any hydrocarbons in the energy mix and some seeking to exploit concerns of others. It means that investment in a comprehensive awareness raising and information communications programme is required. The Company is fully committed to funding and implementing an extensive stakeholder engagement campaign.

A full communications overview and presentation can be made available to DfE on a confidential basis on request.

This will cover a full, integrated communications approach that will include appointment of local Community Liaison Officers; establishing working groups to represent the interested local communities and bodies; community information engagements; opinion polling and surveying; and arranging visits to places where shale natural gas sites are operating, all of which would reflect and be focused upon County Fermanagh.

The Company will communicate its plans proactively, positively and clearly to all key audiences. It will be a good and responsible long-term neighbour, employer and investor to the people of Fermanagh and Northern Ireland.

Since the discussion about the potential exploration for shale gas commenced in 2011, the shale gas industry has been exploring for and extracting natural gas from wells – safely – in the United States and elsewhere. This has provided significant social, environmental and economic benefits.

The Company is confident that rational, reasonable people looking at the facts and the opportunities will conclude that, based on the evidence of safe working operations around the world, that natural shale gas exploration in County Fermanagh should proceed, subject to the Company meeting all applicable environmental requirements and regulation.

In the long term, this project has the potential to transform Northern Ireland's economy, create thousands of local jobs, assist the ailing manufacturing sector through cutting energy costs and secure energy supplies for generations.

The Company believes it is critical that the people and Government of Northern Ireland are given the opportunity to know whether or not natural gas, capable of being extracted in commercial quantities, is in place A rational and informed decision about future operations, based on the facts, can then be made.

Part 4 Contact details

Give details of the person DETI should treat as its first point of contact about this application

Name of company	Tamboran Resources (UK) Limited
Name of contact	[redacted]
Contact address	27 Frances Street, Newtownards, Co. Down, Northern Ireland, BT23 7DW.
Telephone number	[redacted]
Mobile number	[redacted]
Fax number	[redacted]
E-mail address	[redacted]

Part 5 Declaration

A duly authorised officer from each of the applicants listed in Part 2 must approve the information given in this form.

I hereby declare that the information given in this application is correct:

Authorisations

Company	Name	Signature	Capacity	Date
Tamboran Resources (UK) Limited	[redacted]		[redacted]	19th September 2016

Tamboran Resources UK
Energy for Northern Ireland

Tamboran Resources (UK) Limited

Application for Petroleum Licence - Lough Allen Basin North

Submitted to Petroleum and Minerals Branch, Department for the Economy

Appendix A: Financial Capacity

APPLICATION FORM FOR PETROLEUM LICENCE

(Petroleum Production Act (Northern Ireland) 1964)

Appendix A: Financial capacity

Note: in the case of a multi-party Applicant, an Appendix A form must be completed by each Licence Partner

Part A1 Company Details

Company information

Registered name	Tamboran Resources (UK) Limited
Place of Incorporation	Northern Ireland
Registration Number	NI605039
Principal Place of Business	27 Frances Street, Newtownards, Co Down, Northern Ireland, BT23 7DW
Registered Office Address	27 Frances Street, Newtownards, Co Down, Northern Ireland, BT23 7DW
Place in the UK from which operations under the licence will be directed and controlled	Temporary Office at - 27 Frances Street, Newtownards, Co Down, Northern Ireland, BT23 7DW. The company intends to establish a main operations office in County Fermanagh following the award of this licence.
Place in the UK from which commercial activities in connection with the licence will be directed and controlled	Temporary Office at - 27 Frances Street, Newtownards, Co Down, Northern Ireland, BT23 7DW. The company intends to establish a main operations office in County Fermanagh following the award of this licence.
Details of holding / subsidiary companies – corporate structure diagram must be attached to this form	Corporate structure and organisational chart attached at the end of this Appendix.

Members of the board of directors or other governing body		
Name in Full	Usual Residential Address	Nationality
Karl Prenderville	[redacted]	Irish
Robert Anthony Bryn Bazley	[redacted]	British
Jeremy John Deeley	[redacted]	British

Contact details	
Contact details of the person DETI should treat as its first point of contact about the information in this Form.	
Name of contact	[redacted]
Postal address	27 Frances Street, Newtownards, Co Down, Northern Ireland, BT23 7DW
Telephone number	[redacted]
Fax number	[redacted]
E-mail address	[redacted]

TAMBORAN RESOURCES (UK) Limited
Organisational Chart

Spinner Directors:

- [redacted]
- [redacted]

Tamboran Resources (UK) Ltd. Directors:

- [redacted]
- [redacted]
- [redacted]

Consultants:

- [redacted]
- [redacted]
- [redacted]

Consulting companies:

- [redacted]
- Weber Shandwick, Northern Ireland and Ireland (Communications and Engagement)
- Approved Drilling Contractors (*to be appointed when appropriate*)

Tamboran Resources (UK) Limited: company number 605039

Registered address: 27 Frances Street, Newtownards, Co. Down, Northern Ireland BT23 7DW

Part A2 Financial Capacity Questionnaire

1. CAPITAL AUTHORISED AND ISSUED

Class of capital	Amount authorised	Amount issued	Voting rights of each class
Ordinary Share Capital	500,002	500,002	Full voting rights

2. ALL HOLDINGS OF NOT LESS THAN 5% IN NUMBER OR VALUE OF ANY CLASS OF CAPITAL THAT HAS BEEN ISSUED BY THE APPLICANT

Name of holder or names of joint holders, in full	Nationality of holder(s)	Class of holding	Amount
[redacted]	[redacted]	Ordinary	100% (500,002)

3. ALL CAPITAL ISSUED TO BEARER

Class of capital	Total amount issued	Amount issued to bearer
-	NONE	NONE

4. OBLIGATIONS / LIABILITIES

Item	Amount £
= Shareholders' funds (net assets)	108,000
At what date?	8 September 2016
Deduct:	
UK Capital Commitments as itemised in Part 2 Below	ZERO
Non-UK Capital Commitments as itemised in Part 3 Below	ZERO
Contingent liabilities not included in the balance sheet or Capital Commitments above	ZERO
Total A:	108.000

Q1: *If Total A is negative*, what assurances are available on the future solvency of the applicant?

All loans provided by the Company's previous parent and [redacted] have been waived and written off as part of the terms agreed with [redacted] to acquire TRUK.

All future funding of the Company's activities will be through advances from [redacted] with funding made available from its strategic funding partner for the further phases of the proposed 5 year work programme, subject to the results of the initial phase work programme and agreement with DfE on the terms applicable to subsequent phases of the Licence work programme.

TRUK therefore continues to have committed financial backing to continue its activities and the Directors are preparing all financial statements of the Company on the going concern basis.

To calculate Total B, deduct the applicant's share of all exploration expenditure (capital or revenue) arising from the sum of all current UK licence applications from Total A, giving details of expenditure of each application on a separate Expenditure Profile (Part 4 below)

Total B: (£29.9 Million)

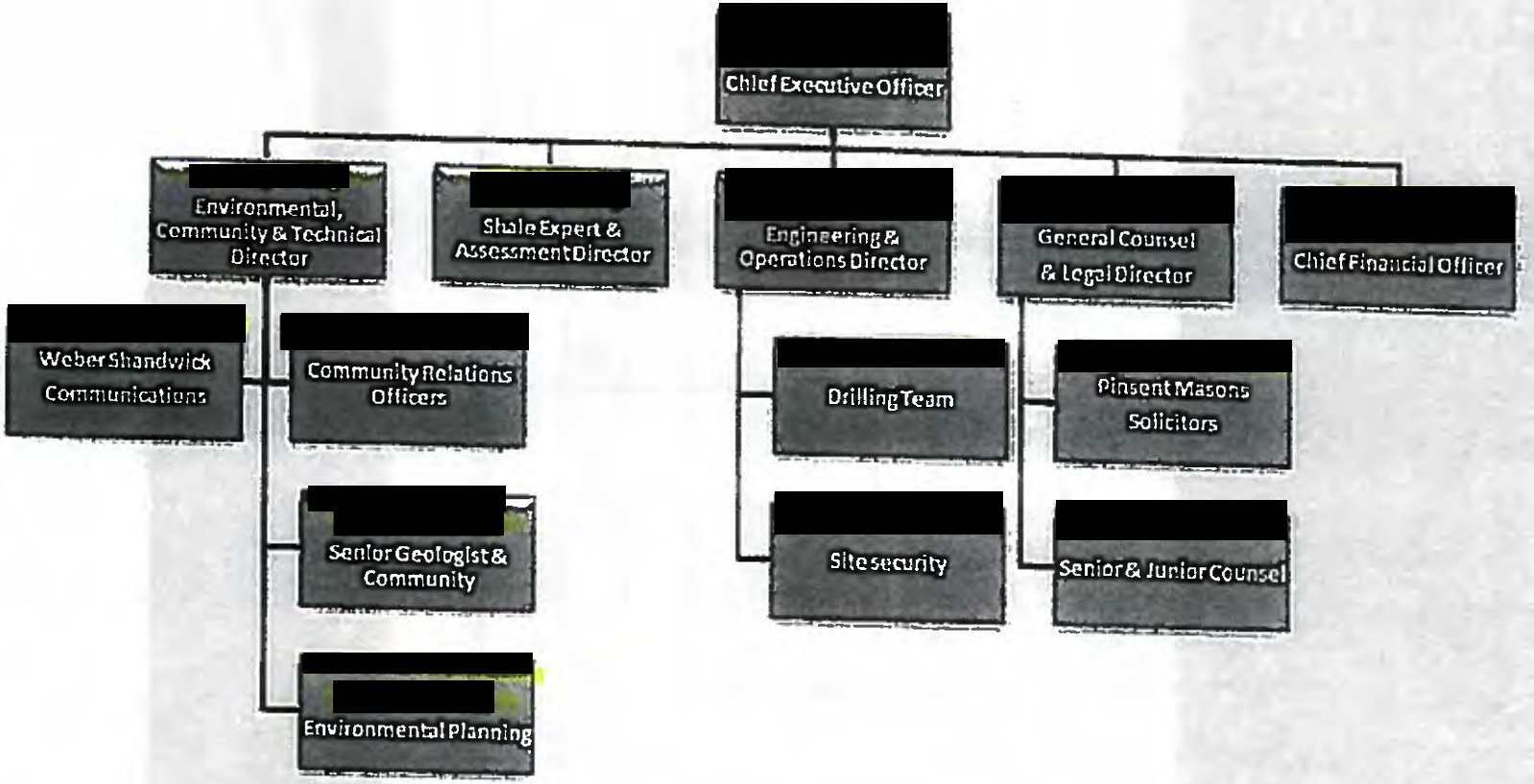
Q2: *If Total B is negative*, how does the applicant propose to fund its share of the expenditure arising from the sum of all applications submitted in this current period?	The commitments secured by [redacted] from its strategic funding partner in favour of its subsidiary, TRUK, will ensure the full capital funding of the project. See attached letter from the strategic funding partner confirming the availability of funding for the further phases of the proposed 5 year work programme. Further details of this funding arrangement and the future funding of the company / project will be discussed as deemed necessary with the Department on a strictly confidential basis [redacted]
To calculate Total C, deduct the balance of exploration expenditure arising from the sum of the joint and several liabilities incurred from all current applications from Total B (giving details of expenditure of each application on a separate sheet).	
Total C:	(£29.9 Million)
Q3: *If Total C is negative*, how does the applicant propose to meet the sum of the joint and several liabilities that could arise from all current applications?	Tamboran Resources (UK) Limited is applying for a 100% interest in the licence. See answers to Q1 and Q2 above.

Part A3 Existing UK Capital Commitments

Licence	Gross Costs £ million	Net Costs (Costs Applicable to Applicant only) £ million				
		Field Development Programme	Firm Wells	Firm Seismic	Drill-or-Drop	Total
NIL	NIL	NIL	NIL	NIL	NIL	NIL
					Total	

Part A4 Existing non-UK Capital Commitments

	Total £million
Enter sum of exploration and development commitments for all non-UK Oil and Gas assets for which there are agreed or planned work programmes.	NIL


[redacted]
Chief Executive Officer
[redacted]
Environmental, Community & Technical Director
[redacted]
Shale Expert & Assessment Director
[redacted]
Engineering & Operations Director
[redacted]
General Counsel & Legal Director
[redacted]
Chief Financial Officer
[redacted]
Weber Shandwick Communications
[redacted]
Community Relations Officers
[redacted]
Drilling Team
[redacted]
Pinsent Masons Solicitors
[redacted]
Senior Geologist & Community
[redacted]
Site security
[redacted]
Senior & Junior Counsel
[redacted]
[redacted]
Environmental Planning

Part A5	Planned Expenditure Profile				
Applicant	Tamboran Resources (UK) Limited				
Licence Area	Approximately 608 sq km in southwest County Fermanagh as precisely detailed in Part 3 of this application				
Licence Partner(s)	None				
Year of Licence	Gross Costs £ million	Net Costs (Costs Applicable to Applicant Only) £ million			
		Firm		Drill-or-Drop	Total
		Wells	Seismic		
1	1.75				1.75
2	1.75	4.00			5.75
3	2.00		2.00		4.00
4	2.00	5.00			7.00
5	2.00	9.50			11.50
Total	9.50	18.50	2.00		30.00

Submit estimates of your share of the costs of the proposed work programme associated with the area you are applying for. 100%

Part A6 Declaration

A duly authorised officer must approve the information given in this form.

I hereby declare that the information given in Appendix A is correct:

Name	Signature	Capacity	Date
[redacted]	[redacted]		9th September 2015

Tamboran Resources UK
Energy for Northern Ireland

Tamboran Resources (UK) Limited

Application for Petroleum Licence - Lough Allen Basin North

Submitted to Petroleum and Minerals Branch,
Department for the Economy

Appendix B: Technical Information Form

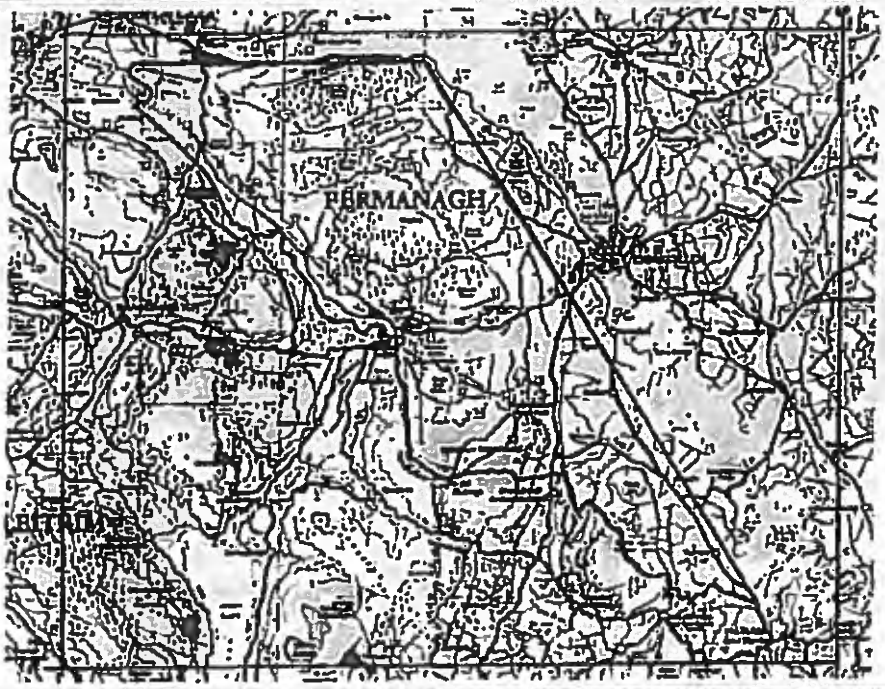
APPLICATION FORM FOR PETROLEUM LICENCE

Petroleum (Production) Act (Northern Ireland) 1964

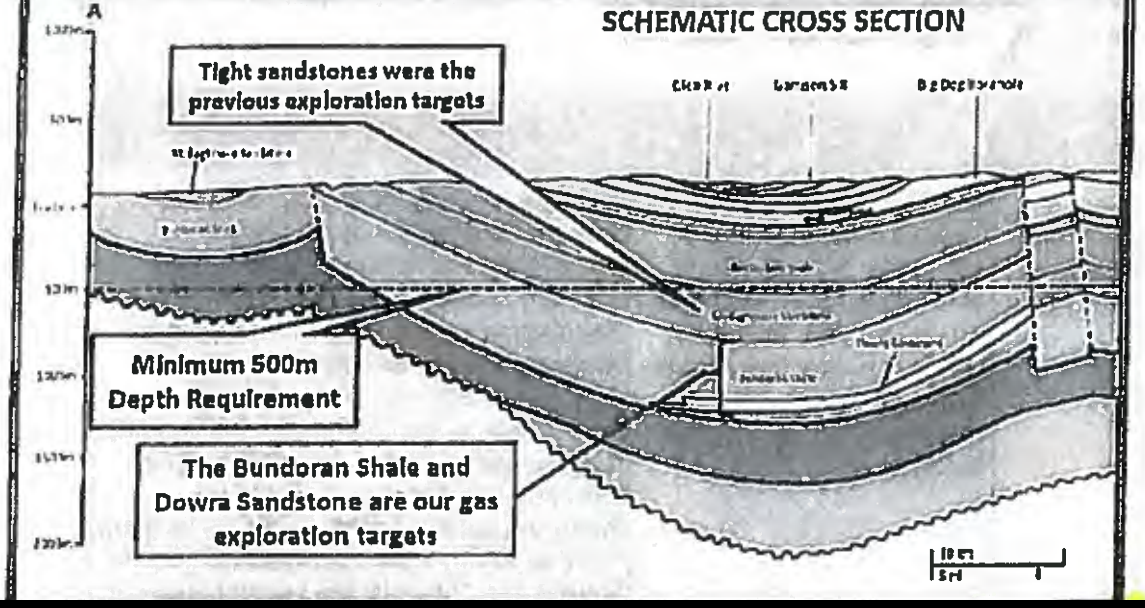
Appendix B: Technical Information Form

Contents

Part B1	Lead/Prospect summary sheet	
Area	Name of lead, prospect, new play or discovery	
Southwest Fermanagh	Lough Allen Basin North play	
Brief description of lead, prospect, new play or discovery		
Type:	Description	Key technical work needed
Natural gas from shale and sandstone	Part of a substantial Carboniferous age basin with shale and sandstone formations some hundreds of metres thick. The main lead is the Bundoran Shale Formation which includes the Dowra Sandstone near its base.	The play is ready for drilling following research carried out by Tamboran Resources Ltd/ Tamboran Resources (UK) Ltd under the terms of DETI Petroleum Licence PL2-10. Initially rock samples need to be collected from the Bundoran Shale by drilling a single borehole in a deep part of the basin. They require testing for a range of properties including total organic content and fracturing potential. This is key to deciding whether to apply for permission to test for natural gas, the potential second stage of the exploration.
Map (Annotate the scale and corner coordinate points, using Irish National Grid co-ordinates)		



Geologic cross-section – base source Geological Survey of Northern Ireland



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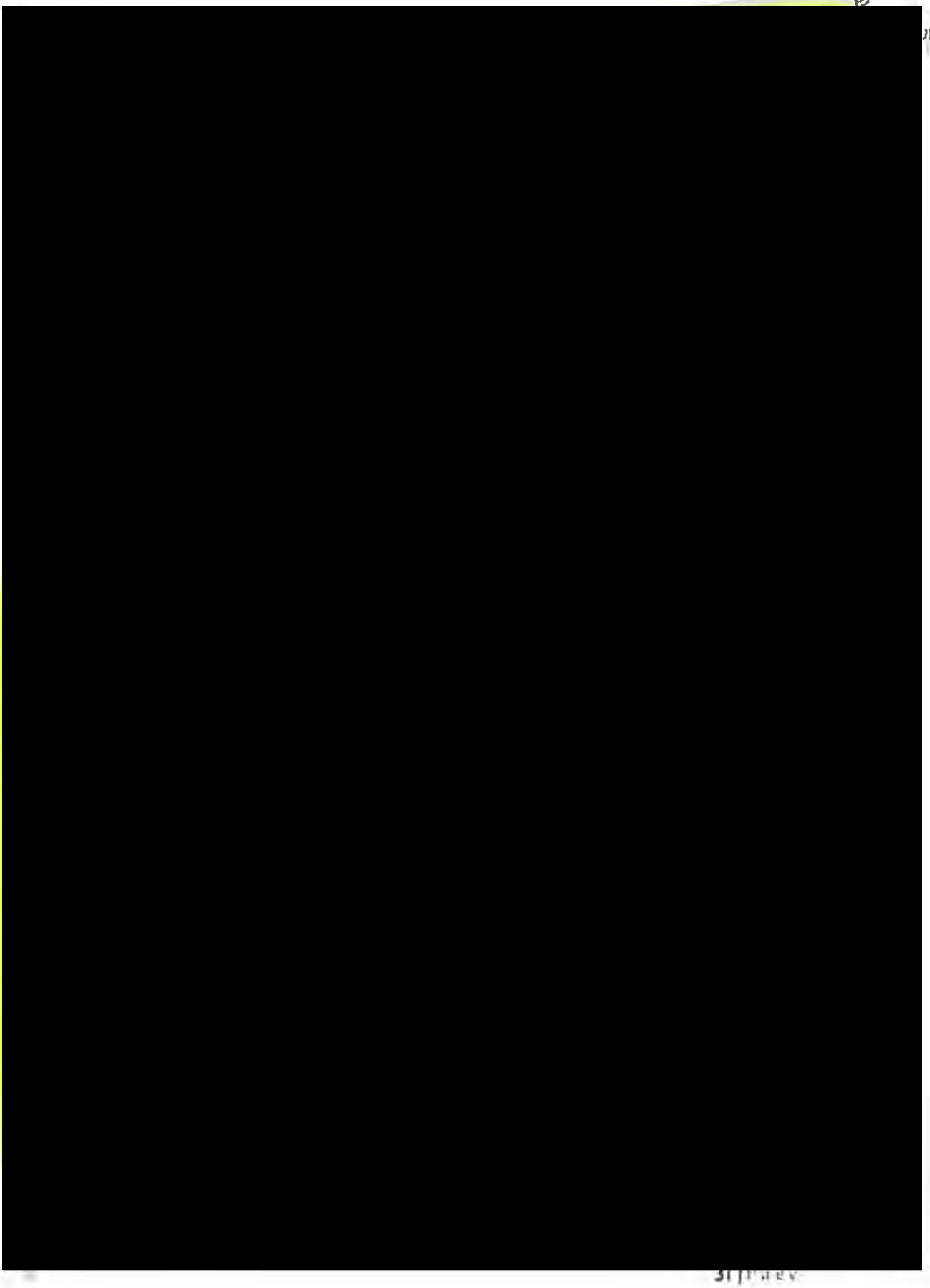


Part B2	Work Programme summary sheet	
Operator:	Area(s):	
Number of Wells	Firm	Drill-or-Drop
For each well, specify the minimum depth in metres and the horizon to which you will drill	One exploration hole to minimum 1,000 m drilled to top of the limestone formation below the shale. Core samples and geophysics	Results good from first borehole then at least 2 wells, each minimum depth 1000m to fully penetrate the Bundoran Shale Formation. Test one in vertical and then others to have laterals for testing.
New shoot 2D seismic (firm) Specify in line kilometres. Please indicate proposed survey area and/or distribution in Irish National Grid 100 km squares		To be decided according to site of the drill pad. Uncertain if necessary at this stage
New shoot 3D seismic (firm) Specify in square kilometres. Please indicate proposed survey area and/or distribution in Irish National Grid 100 km squares		50 sq km around the selected drill site. To be shot after the Drill or Drop decision is taken.
Obtain existing 2D seismic (firm) Specify in line kilometres and survey ID. Key: O – Obtain; R – Reprocess; OR – Obtain and reprocess		This has been carried out by the Company under DETI licence PL2-10 and the Company has the results
Other work Examples: geotechnical studies, gravity/magnetic data acquisition, magneto-telluric surveys, geochemical surveys		Environmental studies, including geochemical work, have been carried out by the Company under DETI licence PL2-10
Number and technical competence of staff to undertake the work programme (please include any relevant technical qualifications held by those staff and details of training undertaken by those staff in the 3 years prior to the date of application) – use separate sheet, if necessary		See attached sheet

Comments	See also Appendix B4 (Operator competence and technical ability)

Number and technical competence of staff to undertake the work programme (including relevant technical qualifications held by the staff and details of training undertaken in the past 3 years)

There are five staff named in this application and their full curriculum vitae are given. All hold relevant advanced degrees and professional qualifications. This applies equally to a larger number of experts of the companies who will be contracted to carry out key aspects of the work programme.

It should be noted that the team includes two of Northern Ireland's leading geologists, one having completed a doctorate on the subject of black shales and with experience in conservation having a degree that includes zoology and been on the Council for Nature Conservation & the Countryside for some years. The designations that team members hold such as Chartered Geologist, European Geologist and Chartered Engineer show a professional standard that has to be maintained by continuing professional development through practical experience, attendance at appropriate workshops and approved conferences. Other professional designations, apart from research degrees, will be seen in staff CV's. They include APEGGA, MCIMM, MPetSoc, MIAEG. FSEG, MIMMM as well as there being a qualified lawyer and accountant.

Our overseas named staff have continued their professional development within the petroleum (particularly natural gas) industry by the practical application of their skills, professional workshops and attachment to university departments.

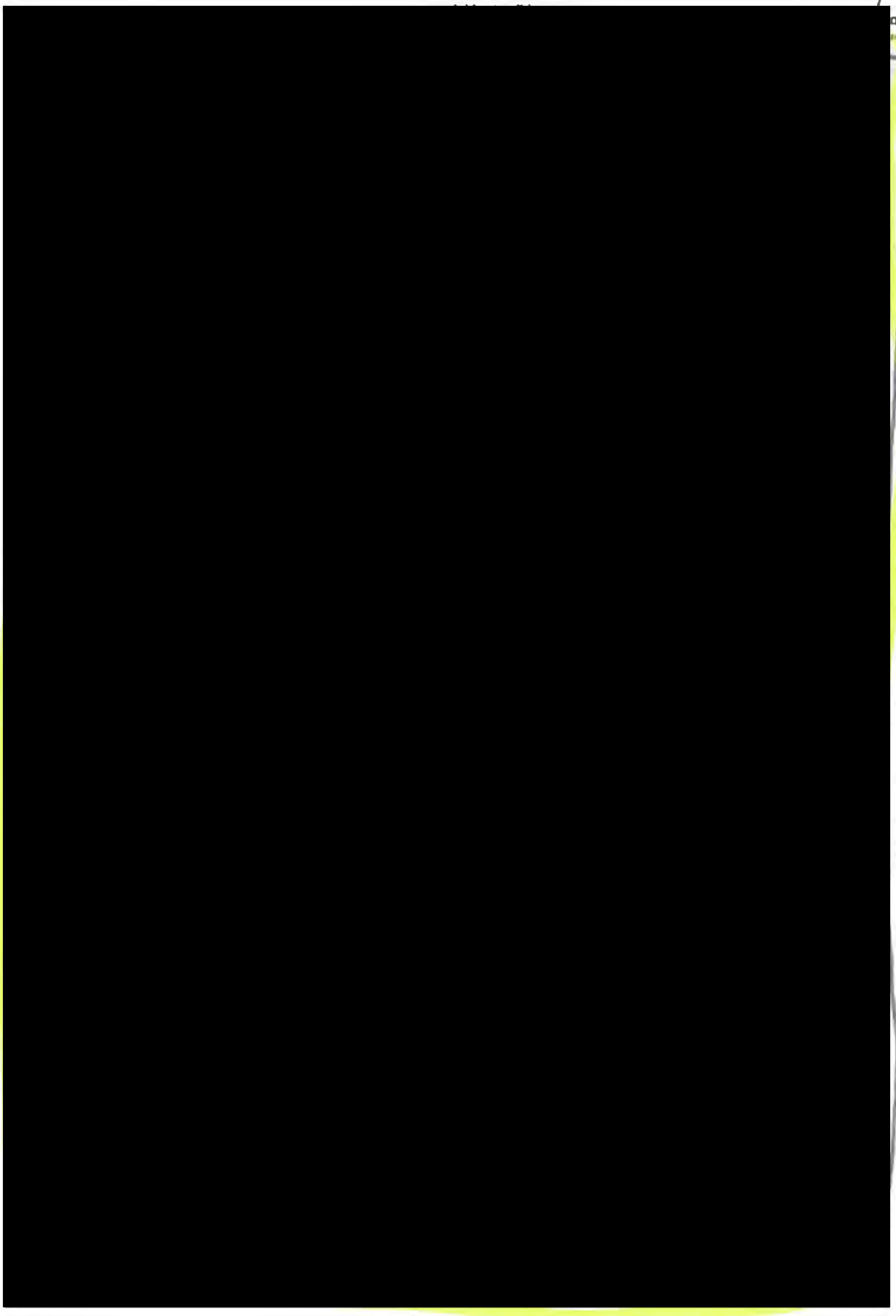
The necessary expertise/technical capacity is available to cover all aspects of the geology/geophysics of Northern Ireland, geology/geophysics/geochemistry of international shale gas basins, techniques for estimating quantity/quality of gas, drilling, the environment and health and safety. There is expertise and prior experience in managing both the research programme and the drilling.

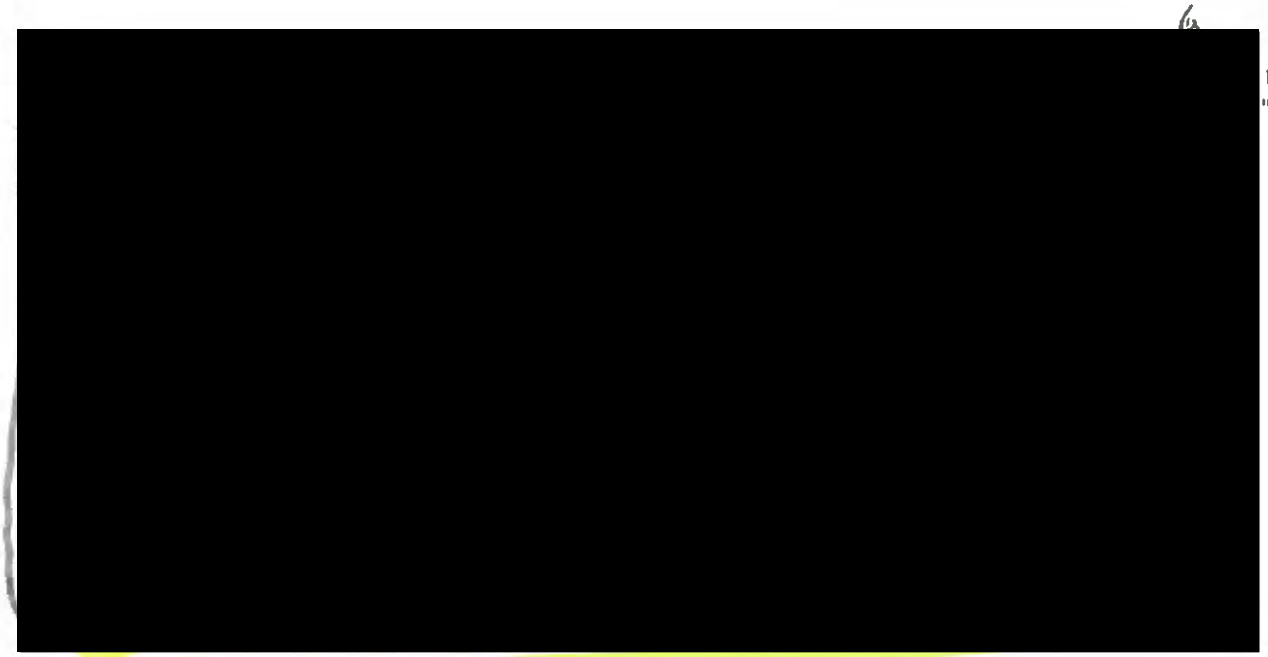
In the last 3 years staff have attended computer skills training, media training, Health & Safety management training. Staff attended many conferences, and some of the workshops attached to them, as well as the meetings themselves at Shale UK in London, UK Shale Gas Summit, Shale World UK. All are designated learning experiences apart from giving other advantages. Local meetings held in Belfast and Dublin such as Engineers Ireland and Energy Ireland, are also considered significant.

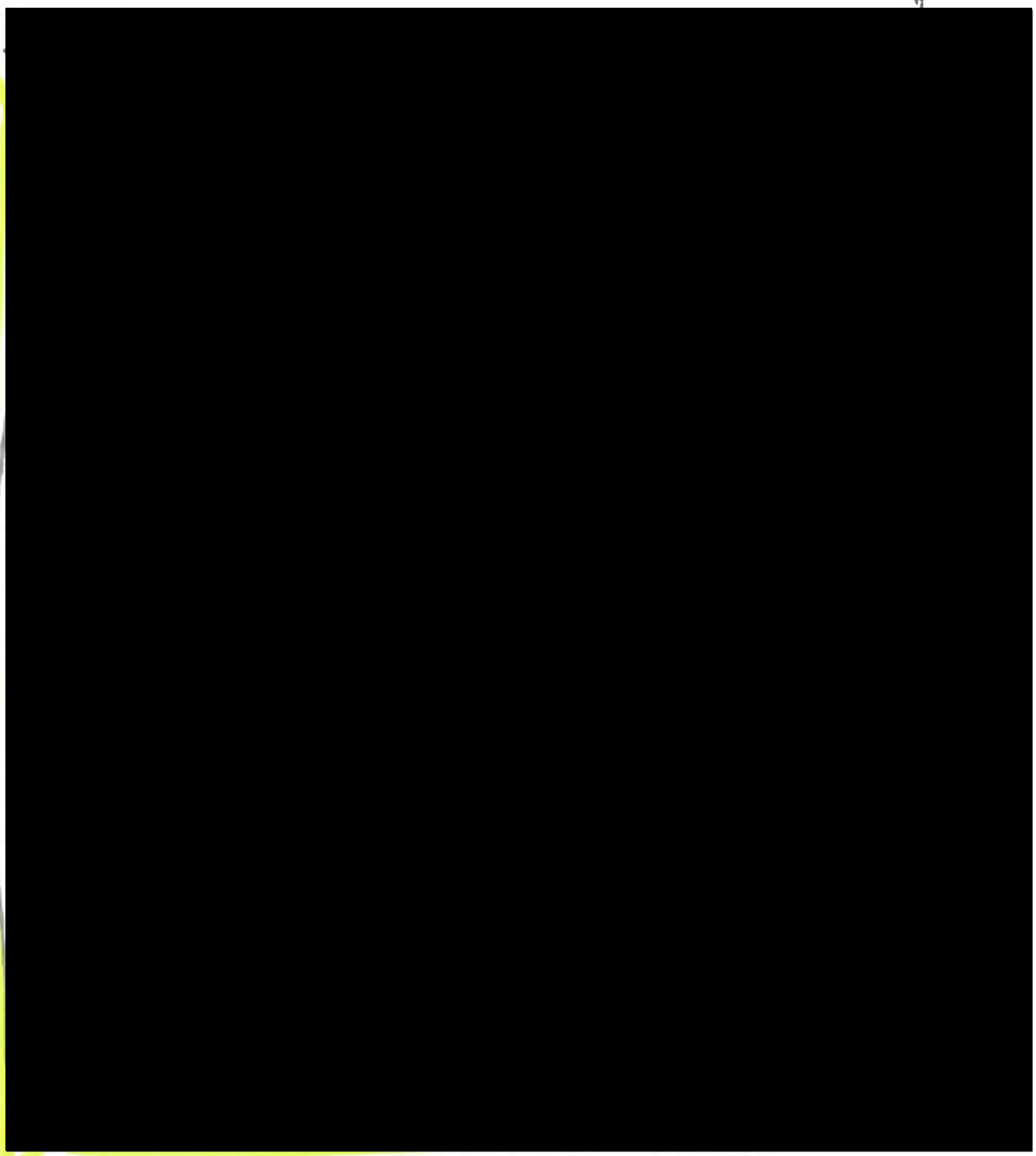
The drilling team assembled by TRUK in order to complete the first stage of Licence PL10-2 in summer 2014 was interviewed by DETI officials and in our opinion demonstrated the high quality and professionalism demanded by TRUK. The drilling company is a UK leader in the industry and was chosen over competitors from the UK and Ireland. The same high standards will be demanded for this licence work and as will the appropriate professional and technical qualifications. The same is true of [redacted] staff who have been used for the past 4 years to prepare and act on the stringent environmental requirements of licensing. The Department knows these experts and it is planned that they will also operate on this licence.

Work on the last licence involved [redacted] and [redacted] These are leaders in the shale gas industry and similar expertise will be applied to the current application although UK/Irish companies will be asked to compete for the work and all else being equal will be favoured.

Very important is community relationships/outreach and this will be guided by the team at Weber Shandwick, Belfast; well known to the department.







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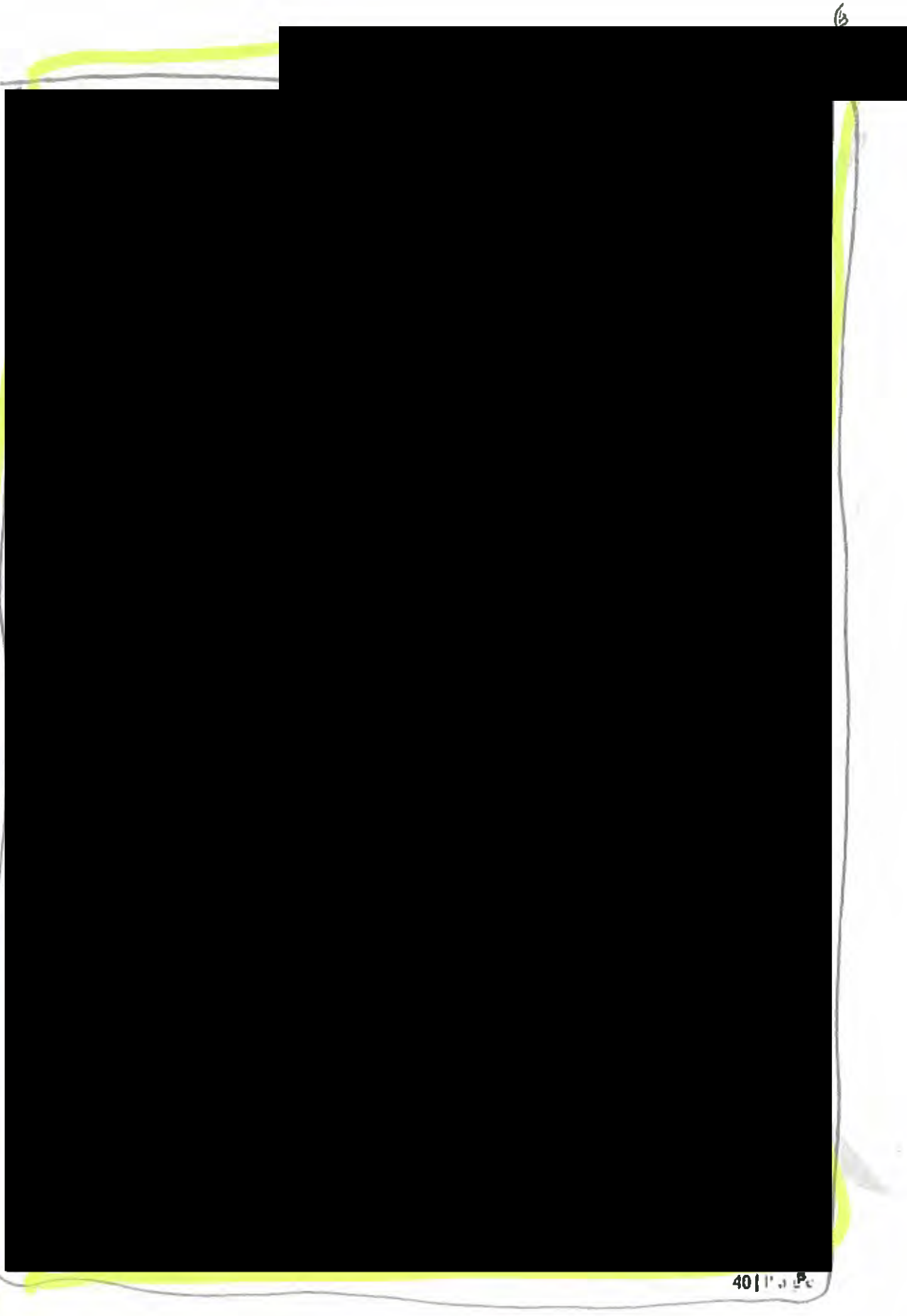

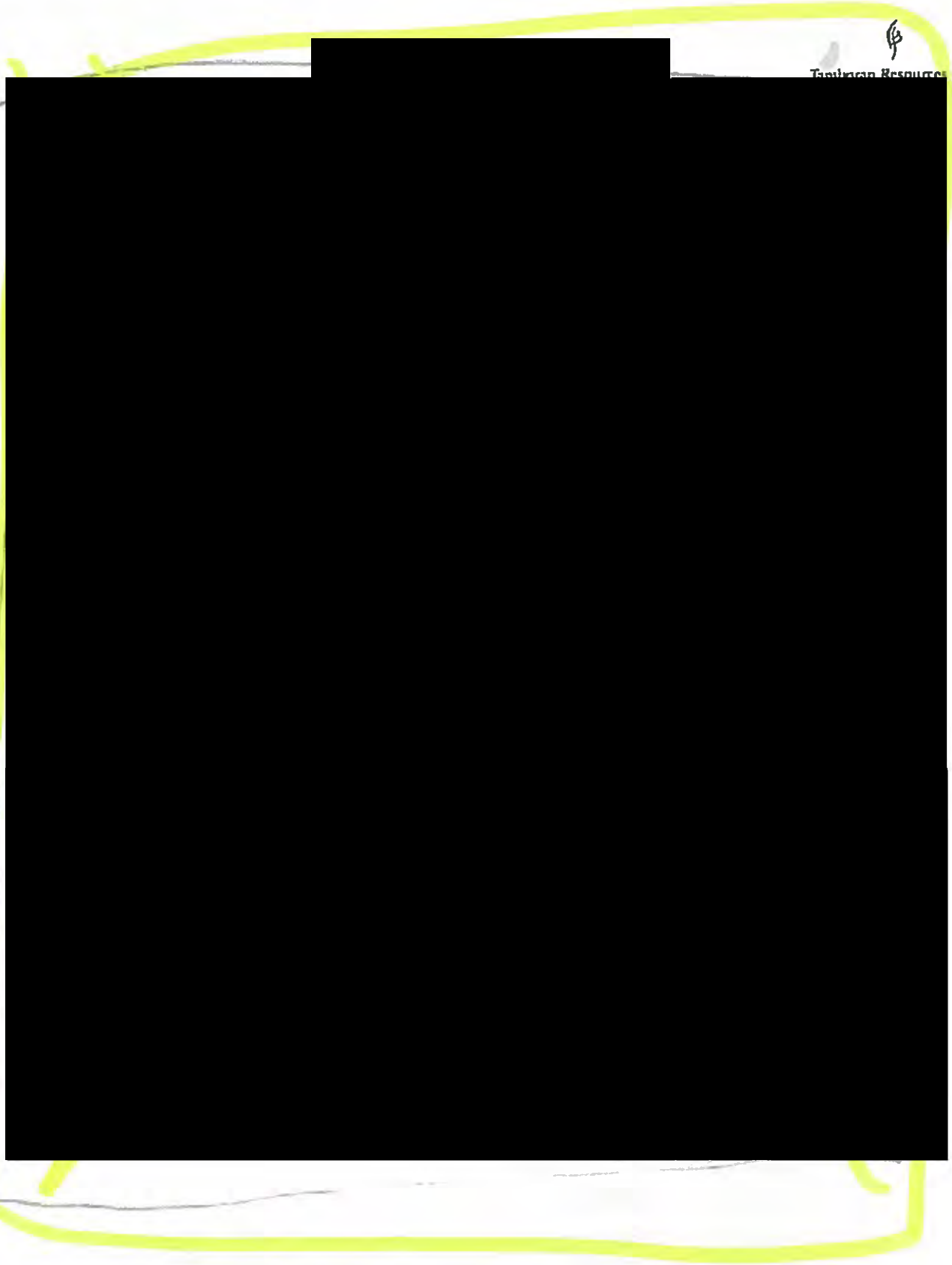

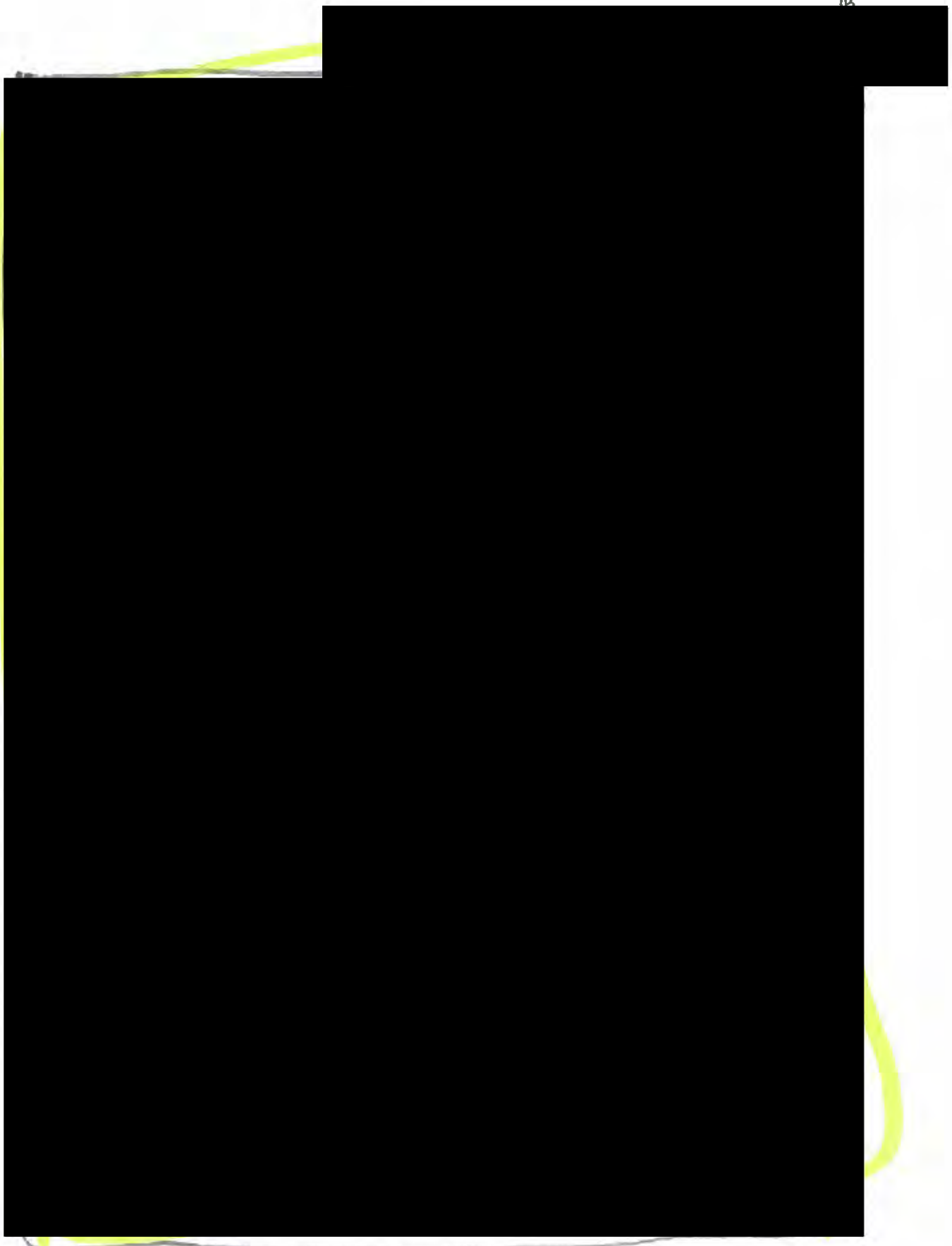

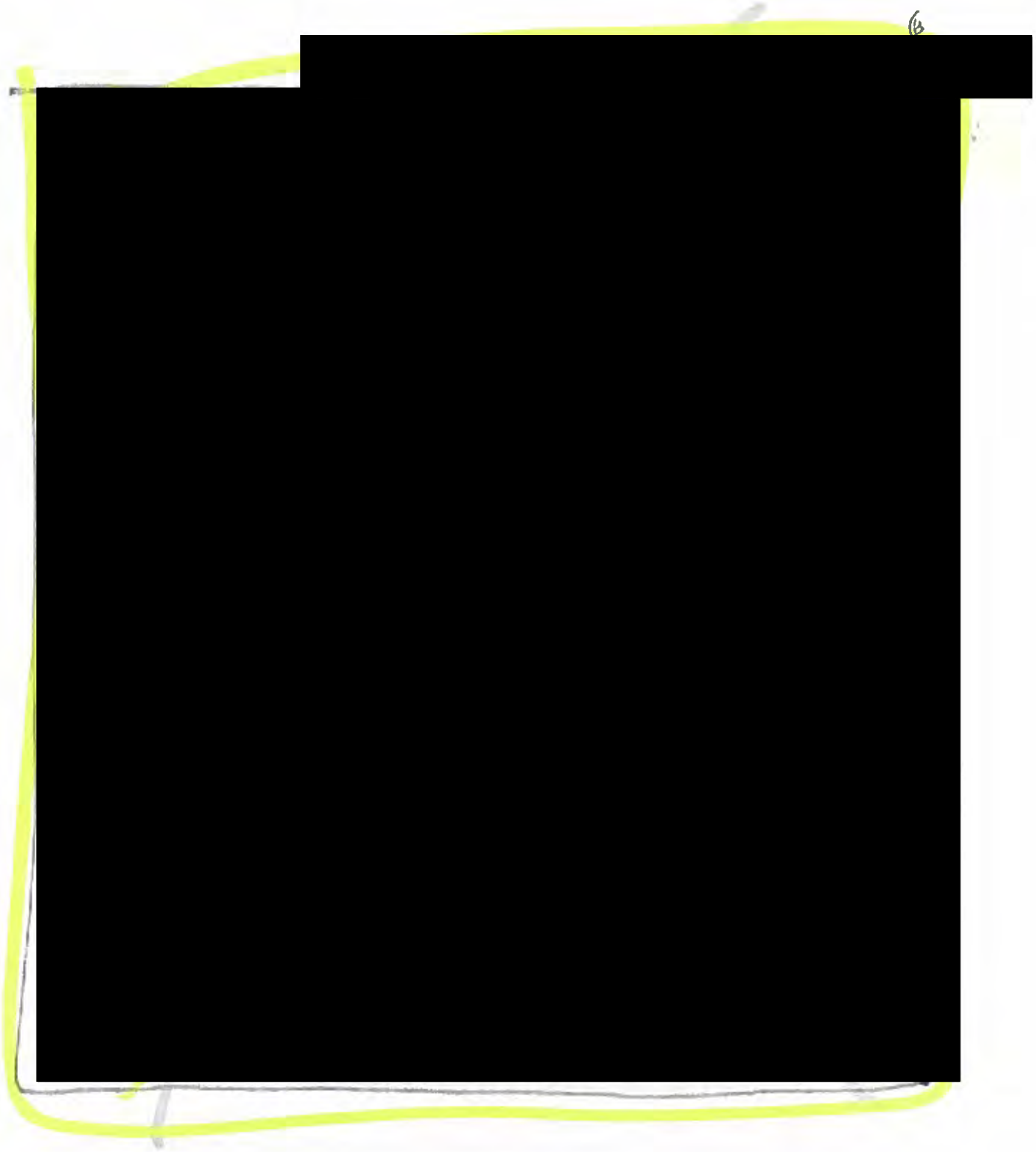

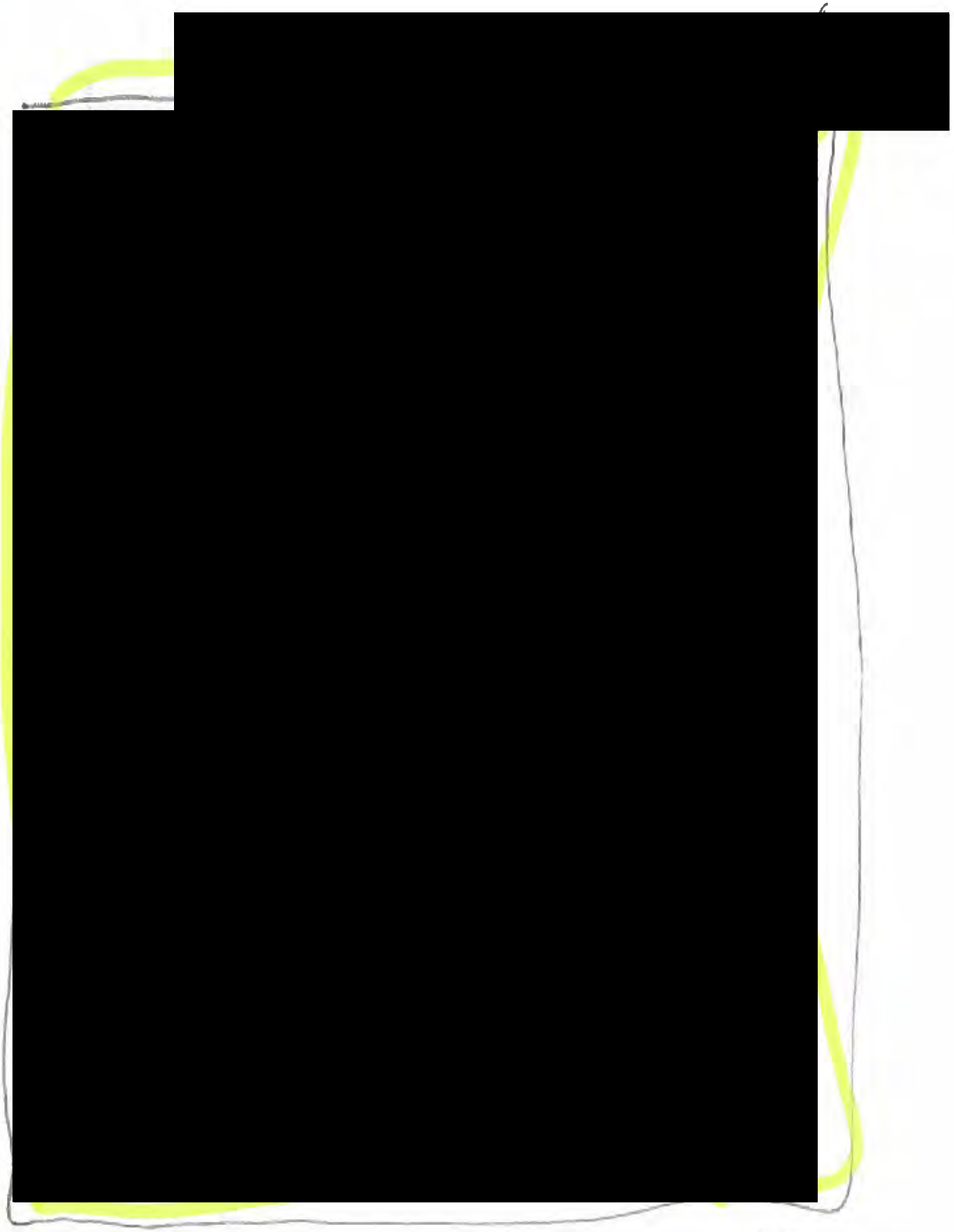

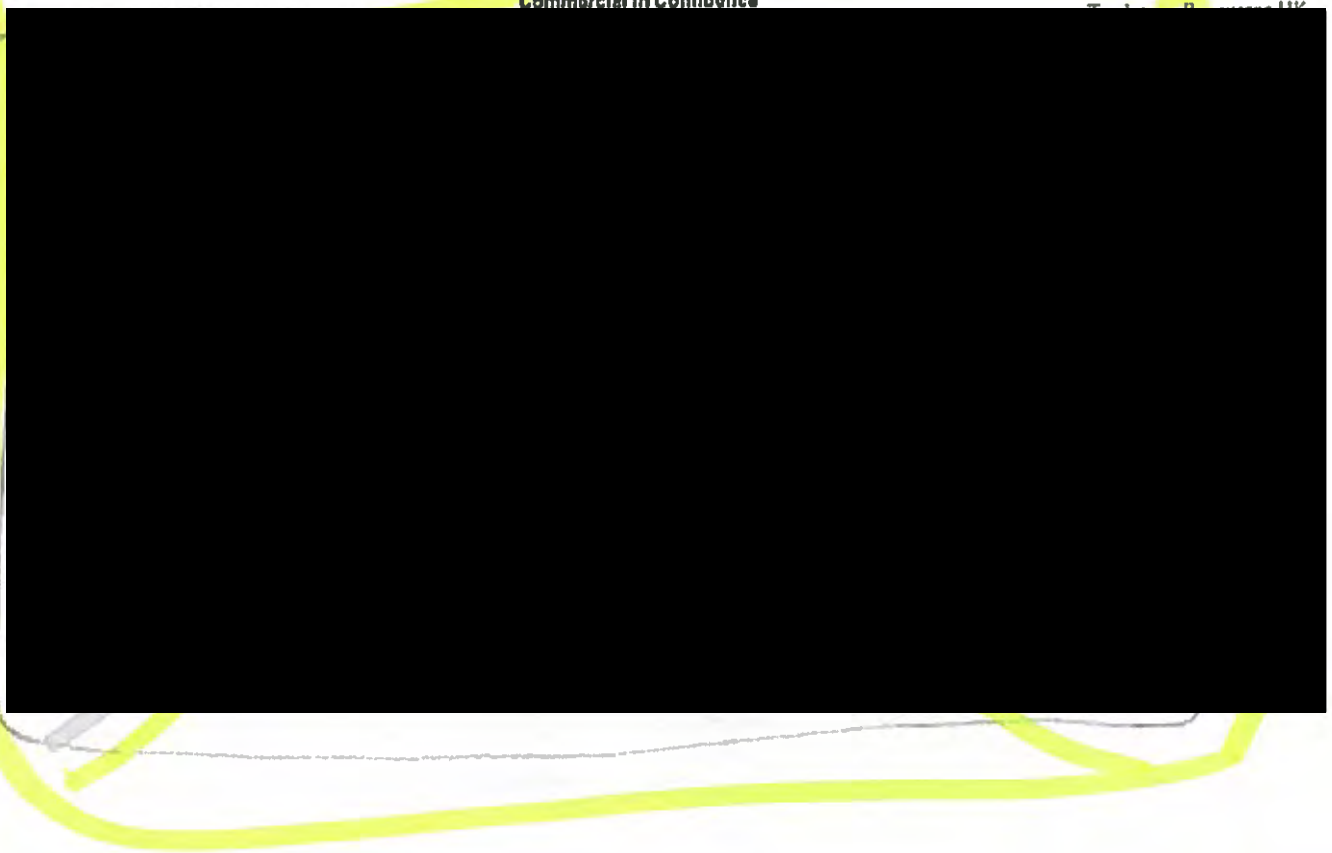

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APPENDIX B3 – Supporting Technical Information

Introduction

The application follows on from DETI Licence PL2-10, which was granted on 1st April 2011 to Tamboran Resources Ltd, based in Sydney Australia. The licence was formally assigned to Tamboran Resources (UK) Ltd in July 2014. This licence application benefits from the work carried out by Tamboran Resources Ltd since April 2011. That included a reassessment of all past drilling in the area, including reanalysing selected conserved rock samples from several of the boreholes. The geology and geophysics previously carried out was also reassessed, with the latter being reworked using the most modern techniques. A 3D model of the ground beneath the licence area was developed. The work was carried out by Tamboran geologists/geophysicists with contracted input from US companies [redacted] and [redacted] The results indicated an area favourable for shale gas development.

Below is a summary and context of unconventional exploration and production in North America. This is critical to understand and appreciate the value that this relatively new source of energy and the methodology of exploration, if successful, will bring to the country and communities involved.

The Significance of Unconventional Gas and Oil Production and its Relevance to Northern Ireland and Ireland

The Shale Gas Revolution

Shale gas and shale oil production represent perhaps the most important advances in geosciences since the Plate Tectonics Theory. The fact that commercial quantities of natural gas and oil can be produced from nano-darcy rock is truly startling. It is a great achievement for geoscience and petroleum engineering like no other.

As a result, the USA is now the largest natural gas producer in the World (ahead of Russia and Canada) at 74 bcf/d (July 2014 EIA data), thanks to the shale gas revolution that was pioneered by the late George Mitchel in 1981. Shale gas production is 36 bcf/d (26 times larger than the entire UK gas production!). Shale gas represents 49% of total US gas production (EIA, 2015, Figure 1). In 2005, shale gas share of total production was a mere 3%! Production comes from several large basins across the continental USA (Figure 2), due to the presence of historic conventional production in many of these basins.

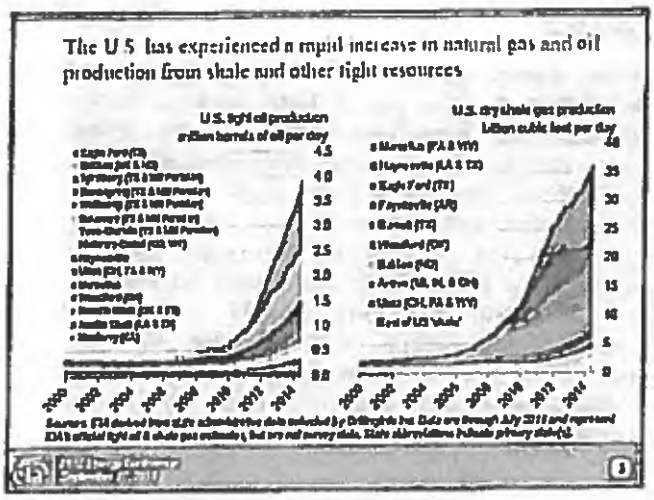


Figure 1

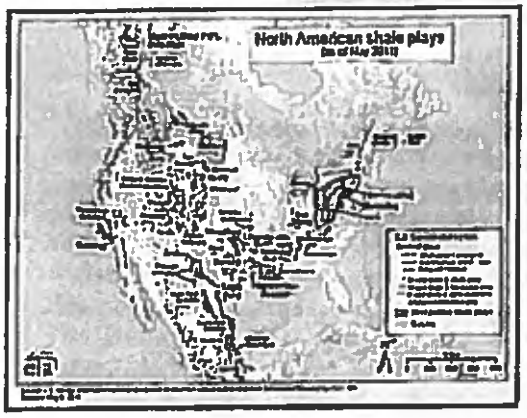


Figure 2

The US is the largest natural gas consumer at 74 bcf/d. The US is now virtually self-sufficient in terms of gas consumption from domestic production. Thus, many LNG projects are underway for export of the surplus gas to the World markets. Many of these projects were originally designed as import facility of natural gas to the USI Without this revolution the US will be importing about half of what it needs annually at a much higher cost!

The impact of the shale gas revolution on the domestic gas price is also dramatic. Currently, the USA population enjoys a stable and low gas price (about 3.5 dollars per Mcf). The gas price was much higher 10 years ago and reached 14 or 16 dollars at peak consumption period through the winter months. Worldwide, countries and companies are exploring for shale gas and tight gas like never before in order to try to emulate the North America's success story. Of the top 20 gas fields in the World, five are shale gas fields from the USI These are the Marcellus, Haynesville, Barnett, Fayetteville and Utica shales (Chesapeake Energy, 2012).

Unconventional Shale Oil and Tight Oil Production

The second phase of the shale gas revolution started around 2008. The geologists and engineers involved in the exploration and exploitation of shale gas in North America started experimenting with production of oil and condensate from these tight formations using similar methodologies to those that made the shale gas a success story; namely horizontal drilling and hydraulic fracturing. The results were amazing! From Barnett to Eagle Ford, Bakken and Permian Basin, a new wave of oil and condensate started being produced at an ever-increasing rate. As a result and in a very short time frame, the USA also became the largest crude oil producer (12.3 Million bbl/d) ahead of Saudi Arabia (11.7 Million bbl/d) and Russia (10.8 Million bbl/d). The shale oil and tight oil production is 3.6 Million bbl/d (July 2014) a 32 % of total domestic crude oil production. This is the result of the second shale revolution that was exponentially accelerated after 2009 (see Figure 1). The USA is the largest crude oil consumer at 19 Million bbl a day ahead of China (10.3 Million bbl/d) and Japan (4.4 Million bbl/d). This production is 65% of total consumption and is growing.

Figure 2 shows the major unconventional producing basins in North America. Many basins, integrated infra-structure and markets as well as innovation centres and data dissemination among other factors, contributed positively to the phenomenal increase in production of oil and gas in the USA and made it less reliant on importing oil and gas from abroad.

UK and Ireland Oil and Gas Production and Consumption

In 2013, the UK produced 801,000 bbl/d and consumed 1,508,000 bbl/d. The UK imported 53% of its daily use of oil. As for natural gas, the UK produced 1.4 Tcf in 2013 and consumed 2.7 Tcf. A net import of 1.4 Tcf or 52% of its needs (EIA website, accessed 2015). The Republic of Ireland has no indigenous crude oil production and thus imports 100% of its needs (142,000 bbl/d, in 2013). The country produced 12.2 bcf of natural gas in 2013 and consumed 168.5 bcf in the same year. An import dependency of about 92%. (EIA website, 2015 and OECD/EIA 2014). Clearly, any increase in the indigenous oil and gas production in the two countries will be of great benefit to the societies and economies of the two countries. The exploration and production of unconventional oil and gas offers such an opportunity. The presence of good natural gas infrastructure in Northern Ireland and the Republic of Ireland will help in the marketing of any produced gas in the future.

The Science and Engineering of Unconventional Resources (shale gas/oil and tight gas/oil): How does it work?

The essence of the unconventional revolution is the bedrock understanding that large amounts of oil and gas are present in relatively thick formations with very tight or very low permeability. By contrast conventional oil and gas fields have enough permeability and pressure to enable oil and gas to flow to the wellbore with little assistance. In the case of unconventional reservoirs the lack of permeability is the key challenge. Thus, to overcome that challenge years of innovation resulted in introducing artificial permeability into the rocks by means of increasing the surface area in contact with the wellbore. This is accomplished by a combination of horizontal drilling and hydraulic fracturing. Without these two essential technologies, the shale gas/oil production will not work. Shale and tight sand rocks have permeability values in the order of 10 million times less than that of a typical or a conventional reservoir. Figure 3 illustrates the range of permeability values and the comparison between conventional and unconventional reservoir values.

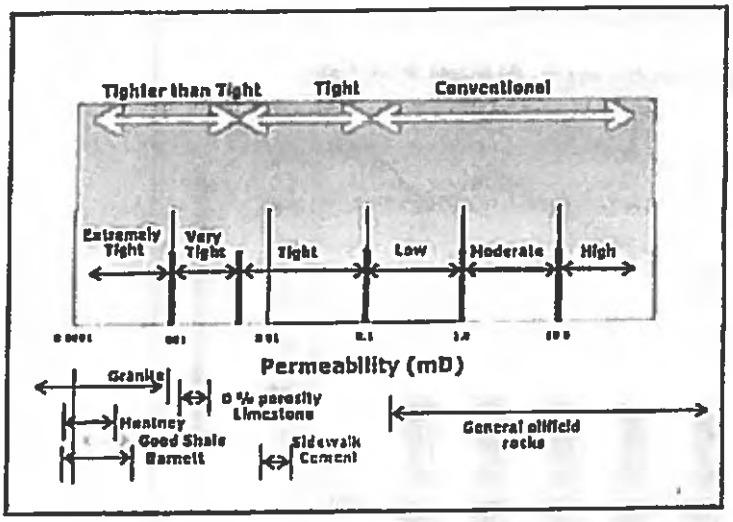


Figure 3 Permeability terminology. The unconventional rocks are extremely tight. Permeability in shale is about 10 million times smaller than the average conventional reservoir permeability! (Modified by B. Faraj after DOE, 2007).

As a result of the very low matrix permeability, the production decline curves are very steep as shown in Figure 4. Shale gas and oil wells are characterised by steep decline. Between 50% and 70% of production rate declines in the first two years of production. As a result, 50% to 90% of EUR (Estimated Ultimate Recovery) is produced in the first two to three years, providing a much-needed cash flow to continue exploring and producing. Figure 5 shows an example of Southwestern Energy well design evolution over a period of two years. It was able to increase the lateral length from about 1200 ft to 3700 ft. After stimulation, the IP of the wells increased from about 2 MMcf/d to 3.9 MMcf/d and was able to do that with minor increase of cost.

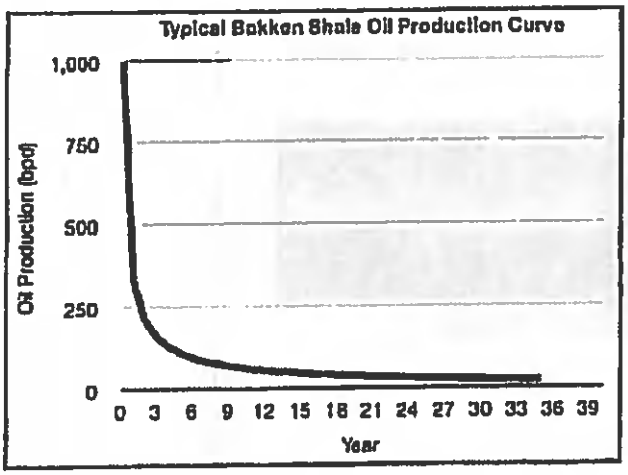


Figure 4: Typical decline rate from the light oil play of the Bakken Play. Oil production exhibits even more steep decline rate that gas wells (http://www.peakoilproof.com/search/label/Bakken).

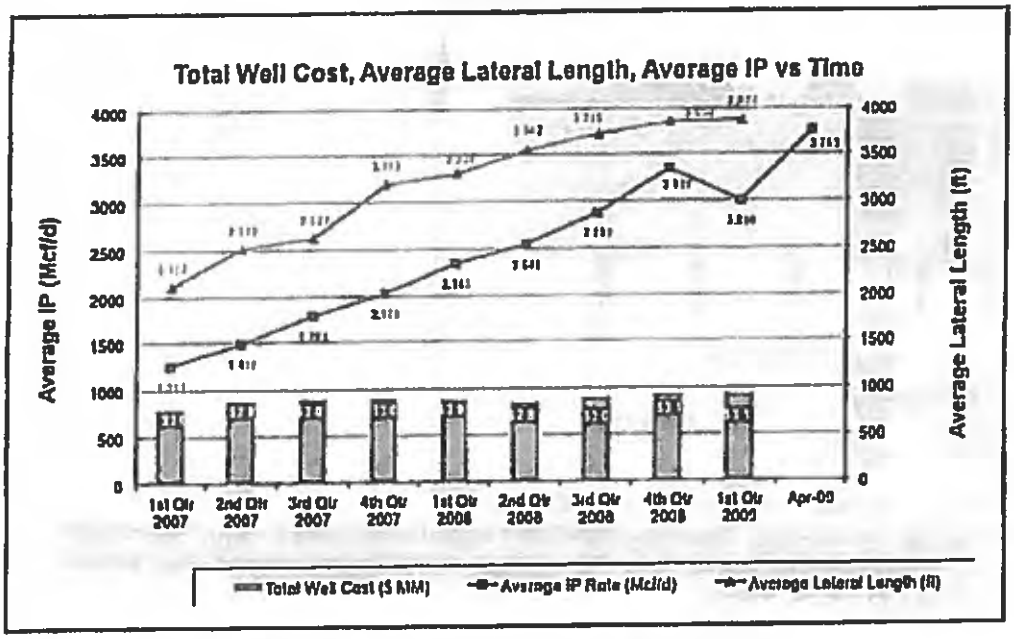


Figure 5: An example of the innovation in shale gas well design. Southwestern Energy was able to increase the lateral length from about 1200 ft to 3700 ft. After stimulation, the IP of the wells increased from about 2 MMcf/d to 3.9 MMcf/d and

Environmental Aspects of Shale Gas and Oil Wells Production

Figure 6 shows the measures taken and regulated by the oil industry for many decades now to protect groundwater from contamination. Three layers of steel casings cemented together protect the groundwater from contact with the drilling, fraccing or production operations during the life of the well. Groundwater is safe. Hundreds of thousands of wells have been drilled in North America this way and it is the best way to engineer protection of our valuable groundwater resources.

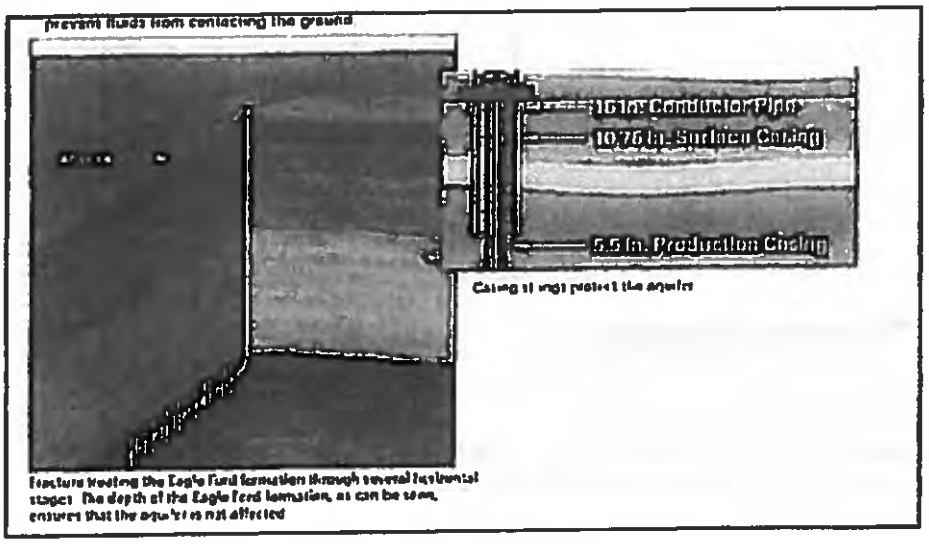
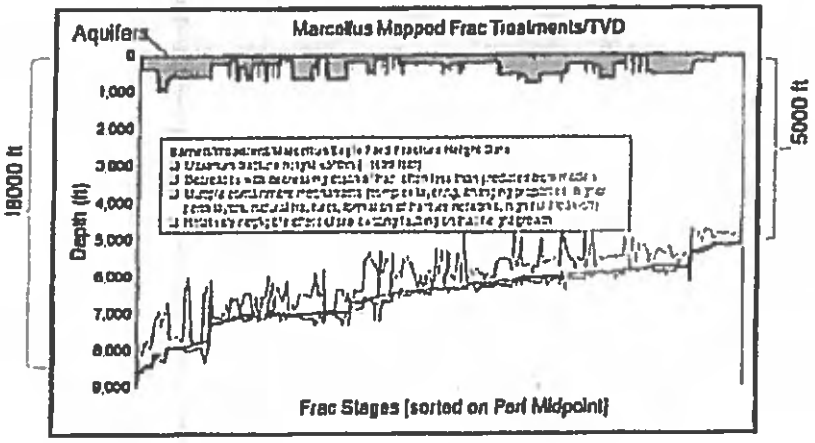


Figure 6

In addition, Fisher and Warpinksi, 2011 in an SPE study of shale frac height relative to aquifers locations, demonstrated the great distances involved between the shale and the aquifers locations. Figure 7 shows one example in the paper from the Marcellus shale. This showed a frac height of between 5000 ft to 8000 ft below the aquifers. The study showed there was no risk of the fracs reaching anywhere close to the aquifers as a result of fracturing shale below the ground.

Frac Height Growth Data from US Shale Plays



After Fisher and Warpinski, 2011, SPE paper 145949

Figure 7

Another important aspect of increased gas production, which resulted in cheaper gas in the US, is the use of natural gas in power generation instead of coal, which has more CO_2 emission than gas per unit of electricity generated. Figure 8 is a graph showing significant decreases in CO_2 emission as a result (about 0.5 Million metric ton per year) (EIA website, 2013).

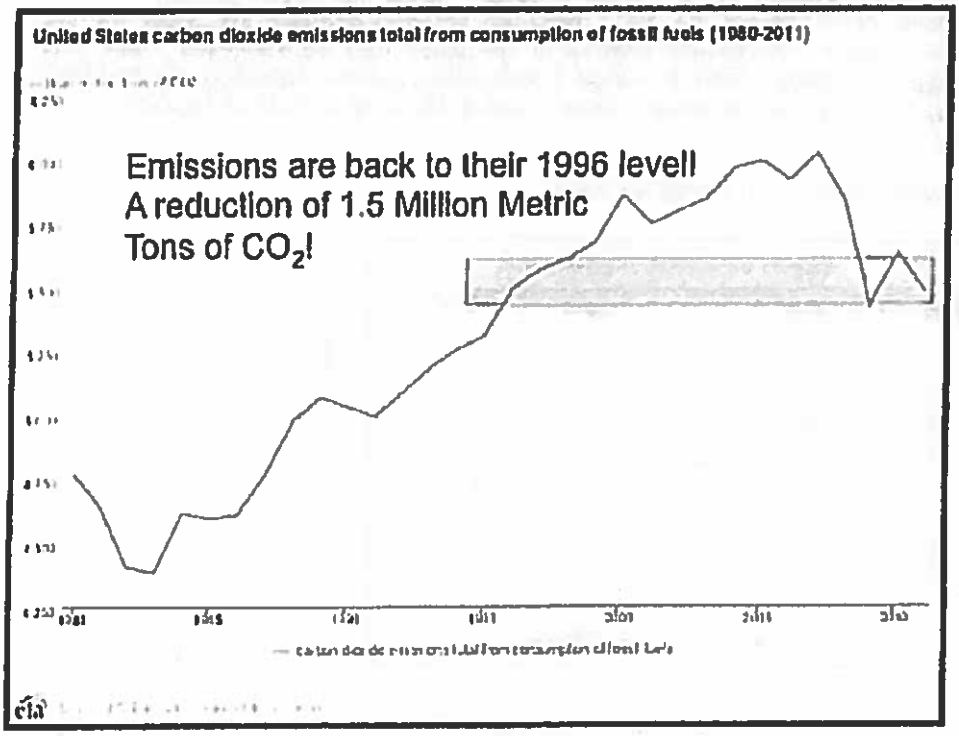


Figure 8

Conclusion

Shale gas and shale oil offer a new source of energy that until a few years ago we did not even know it was possible to produce. This new innovation of extracting oil and gas from virtually impermeable rocks introduces a paradigm shift in the science of geology and petroleum engineering.

The new source of energy has greatly benefited North American domestic markets and the expectation is that this success will be replicated in other parts of the World. Given the proven economic benefits that natural gas from shale has delivered elsewhere in the world, our objective is for Northern Ireland and the Republic of Ireland to receive the benefits from this potentially significant energy source. In addition, this will provide concomitant advantages to the local exchequer and economy.

Natural gas from shale has the potential to deliver long term energy security for the entire Island of Ireland. We also note the support by the UK government for shale gas exploration and the positive findings from the USEPA report. This has the potential to be one of the largest and most economically significant projects in Northern Ireland's history.

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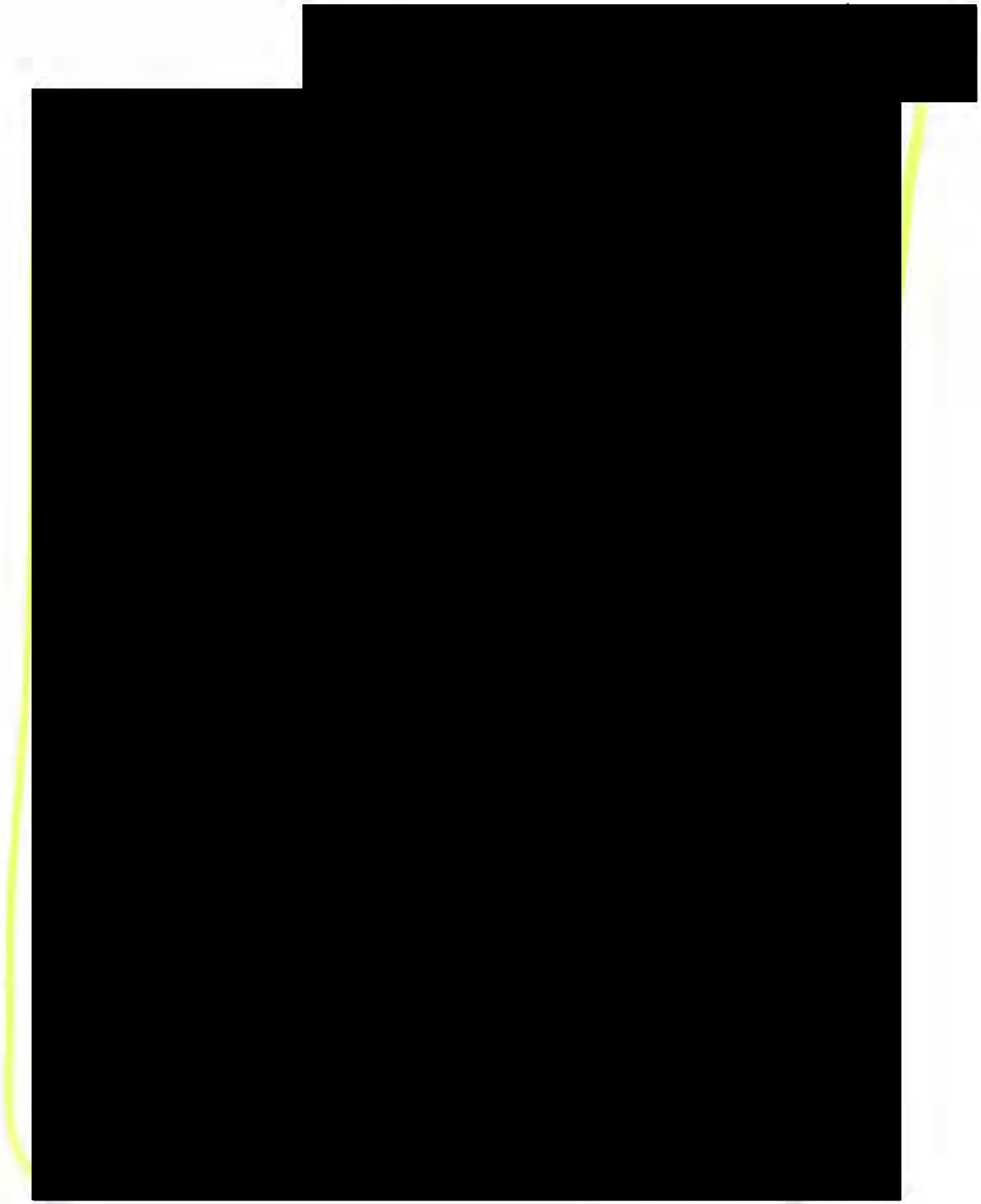
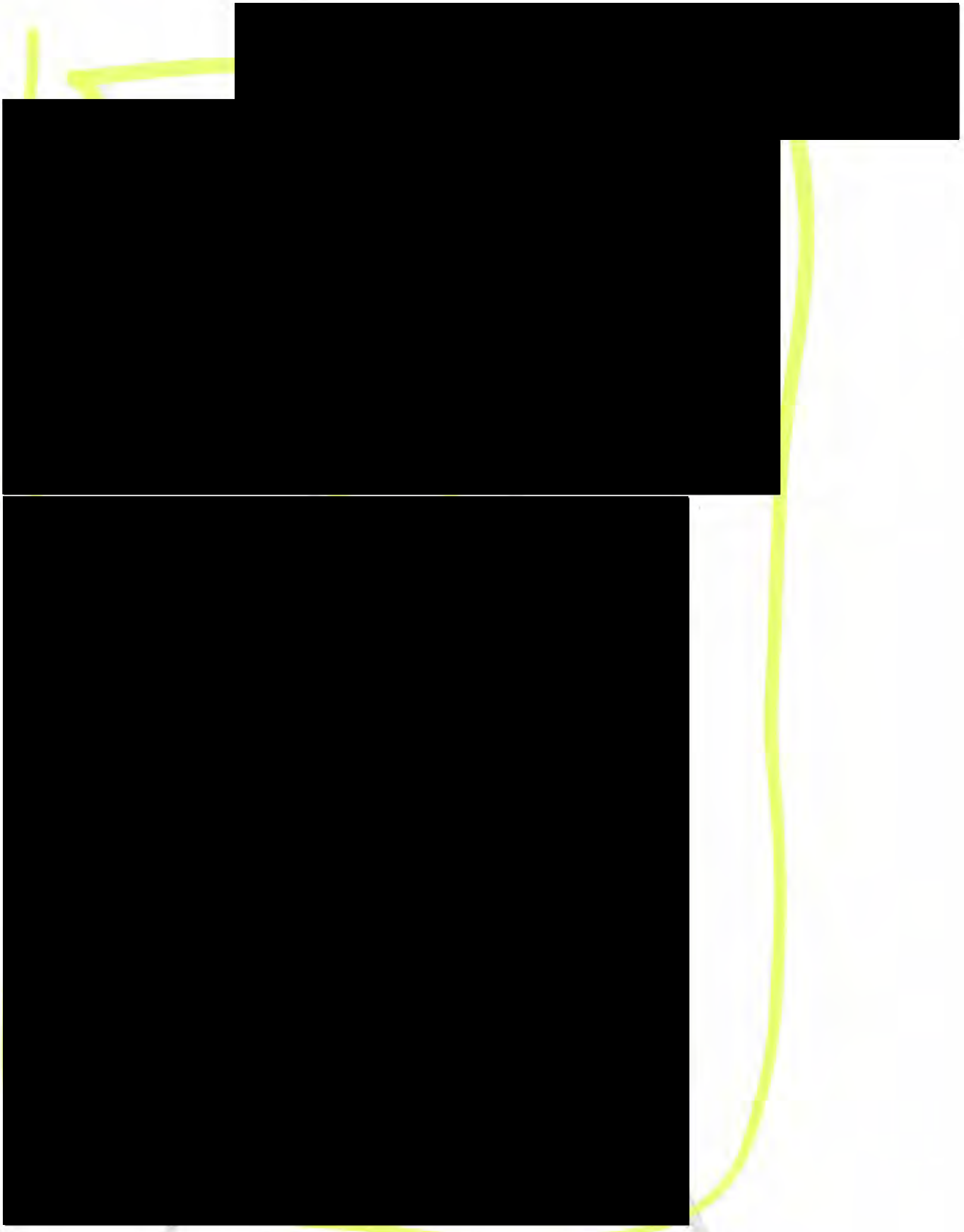
EIA website accessed 2015. http://www.eia.gov

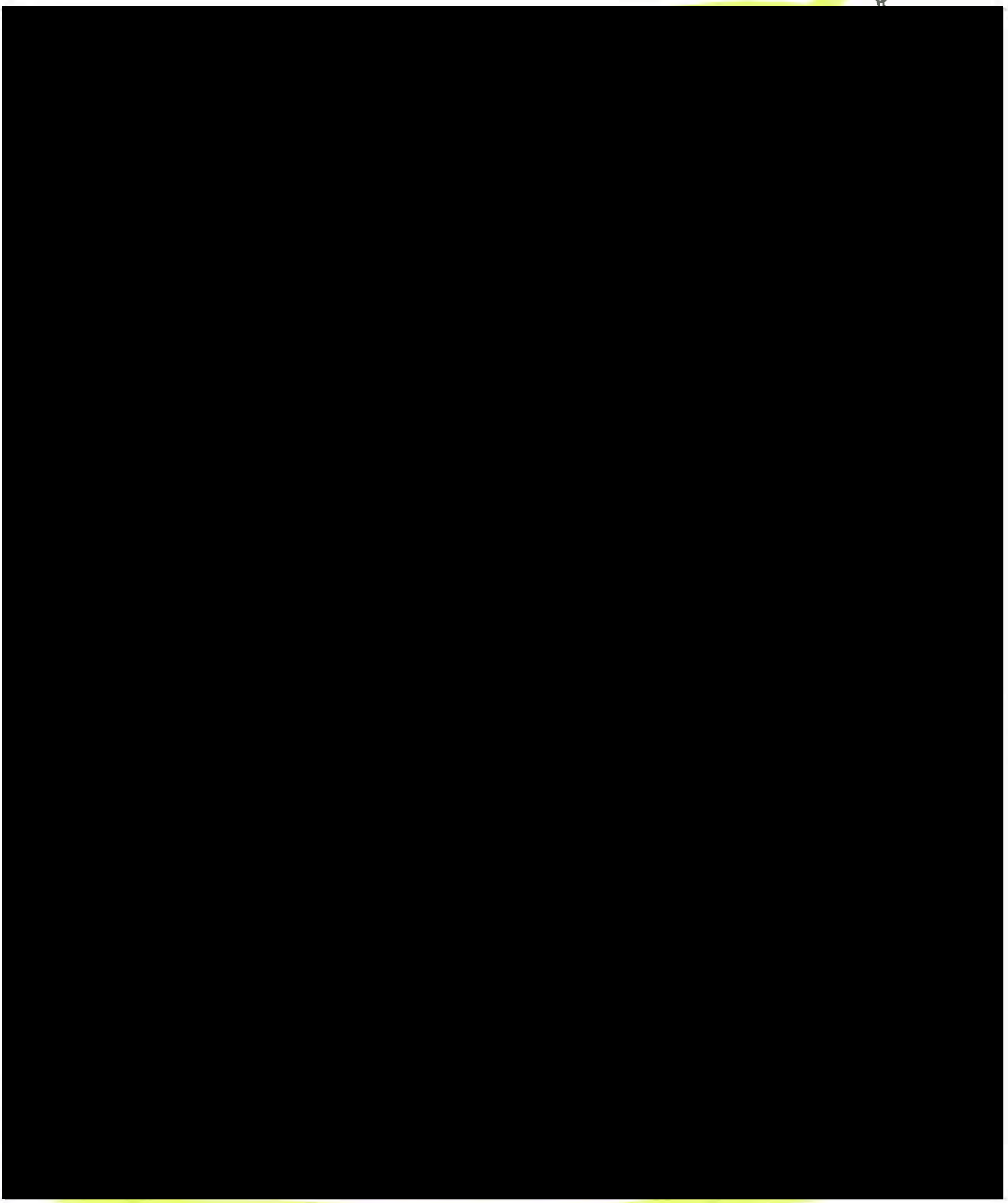
Fisher and Warpinski, 2011, Fracture height and water wells by county. SPE paper 145949

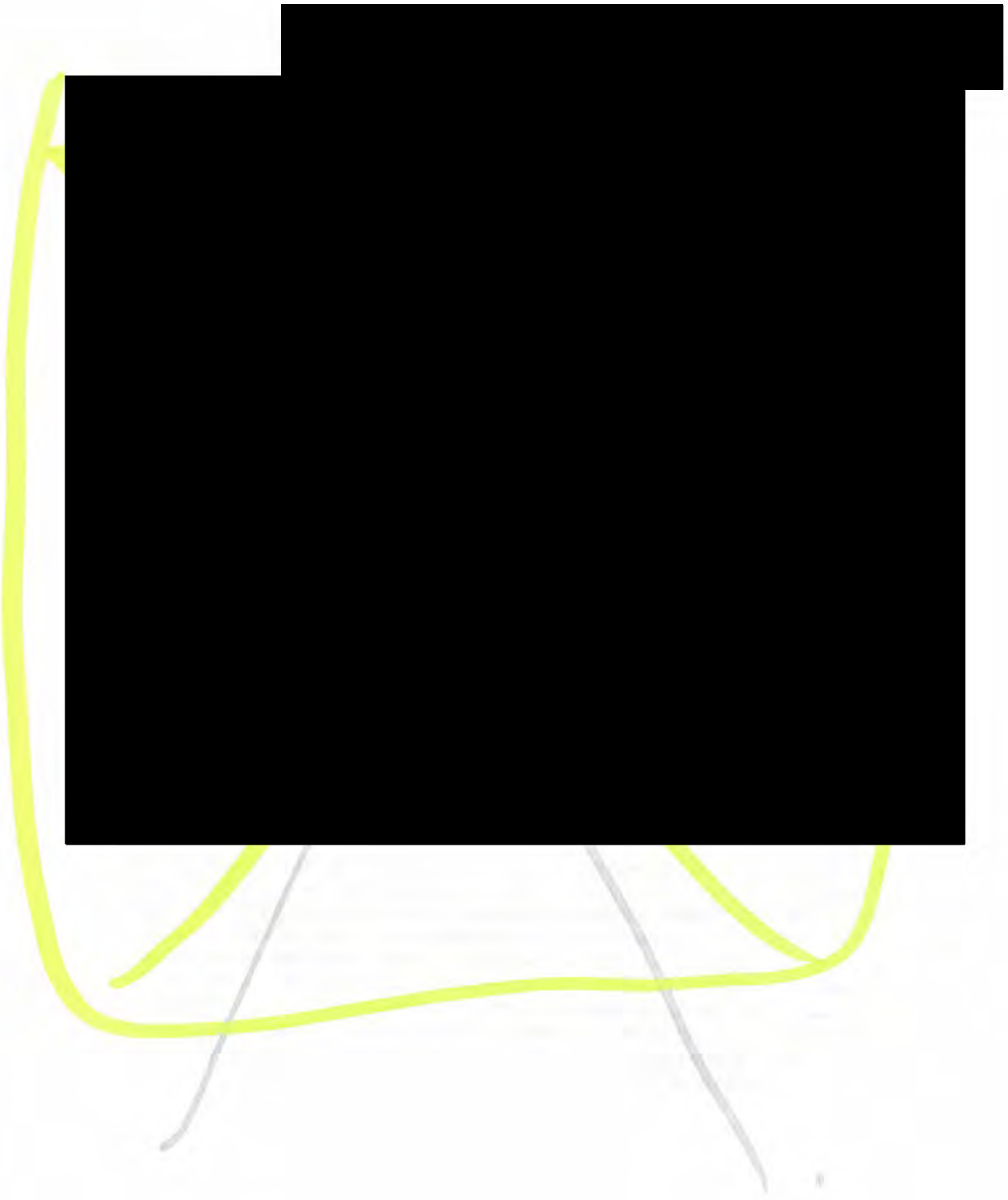
http://www.chk.com/Documents/investors/20120225_IR_Presentation.pdf

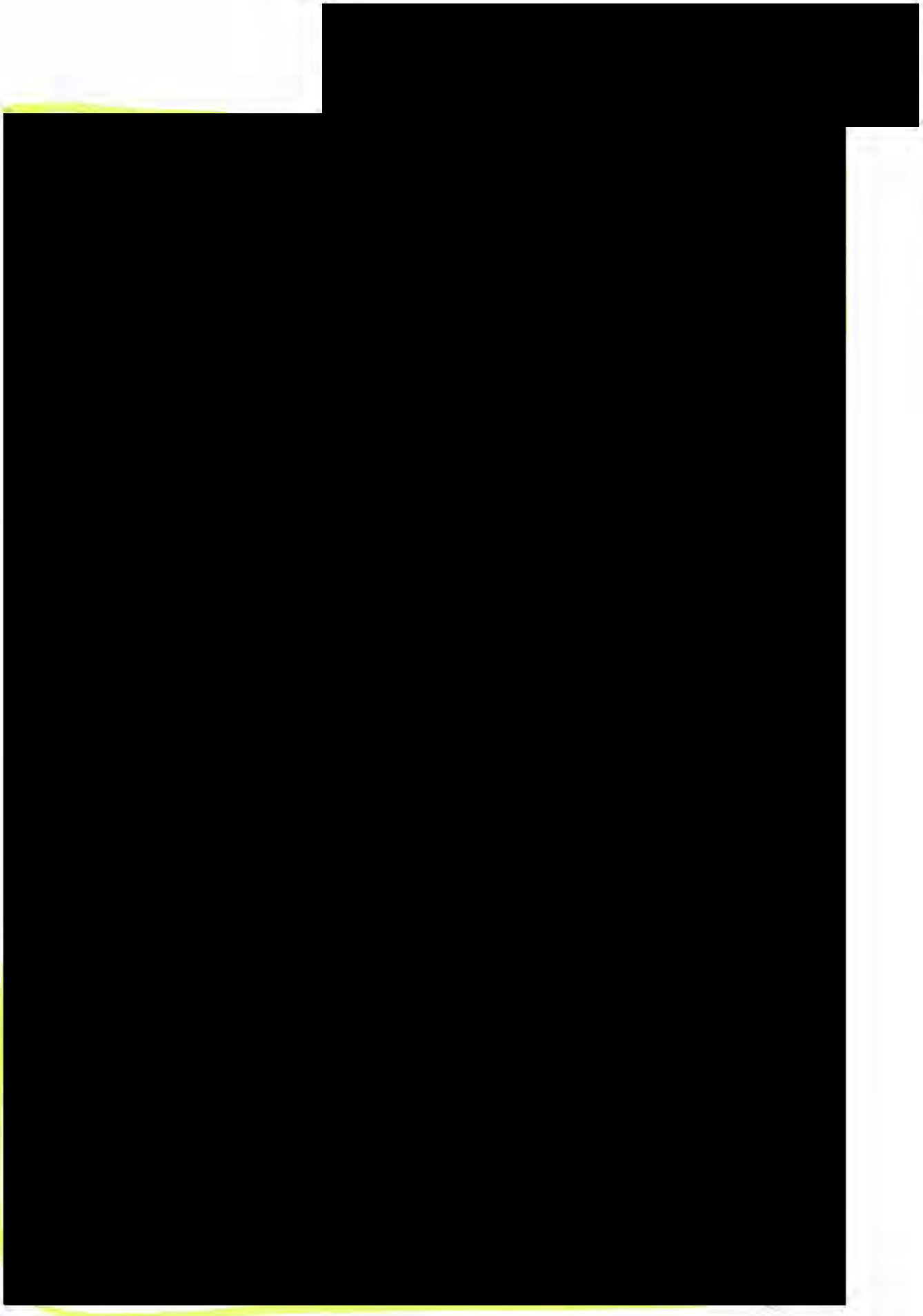
OECD/EIA 2014











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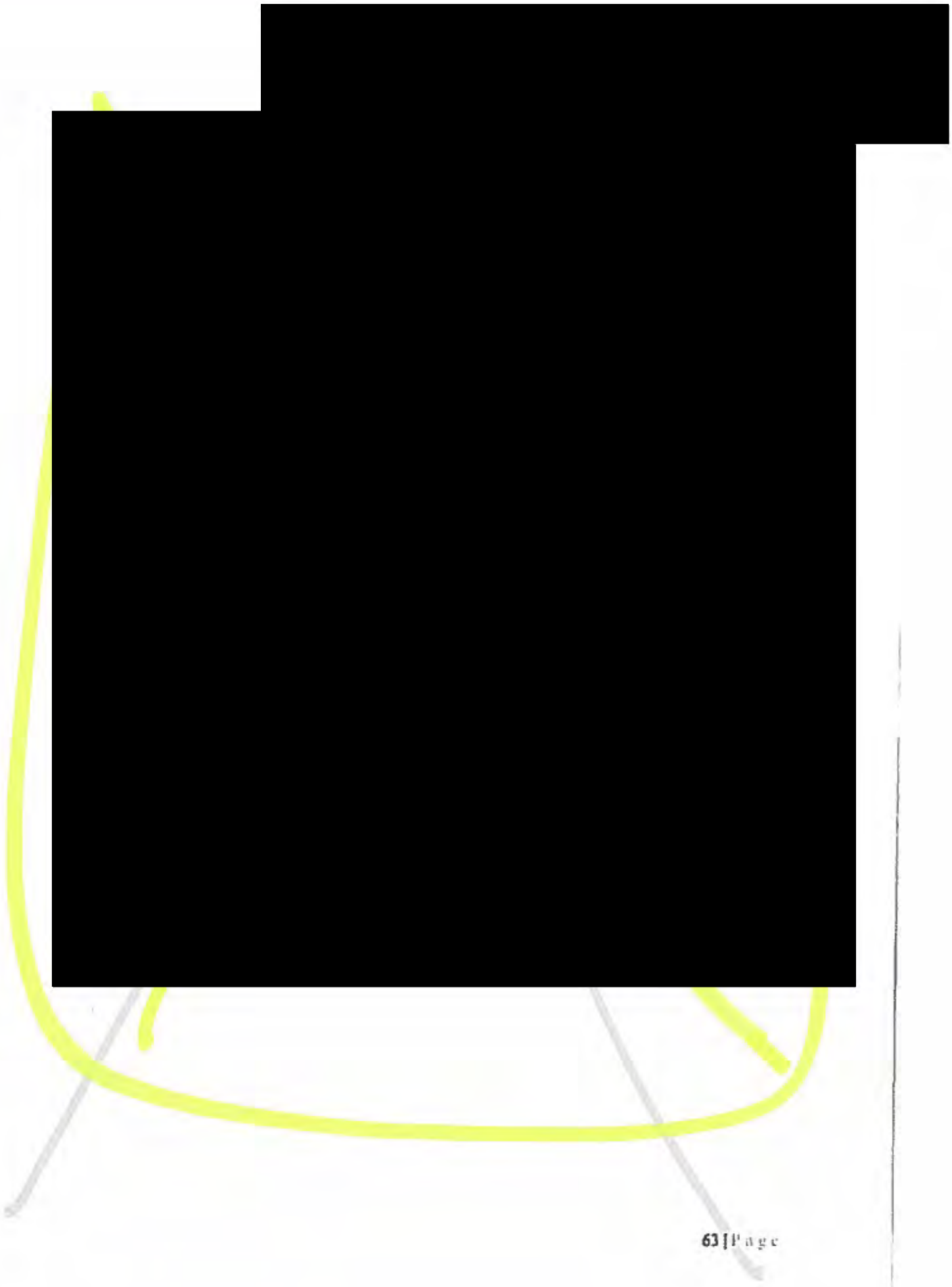

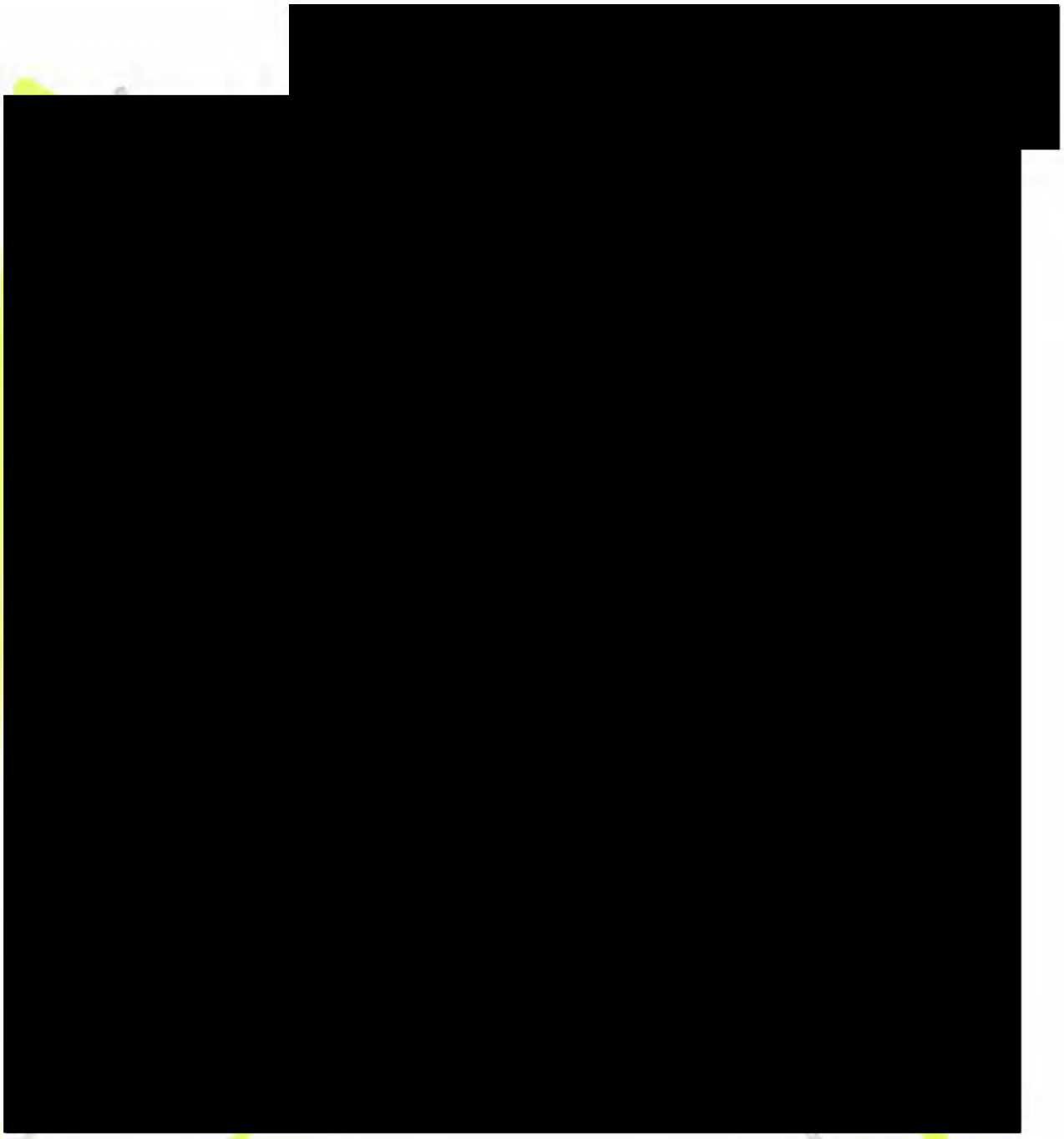

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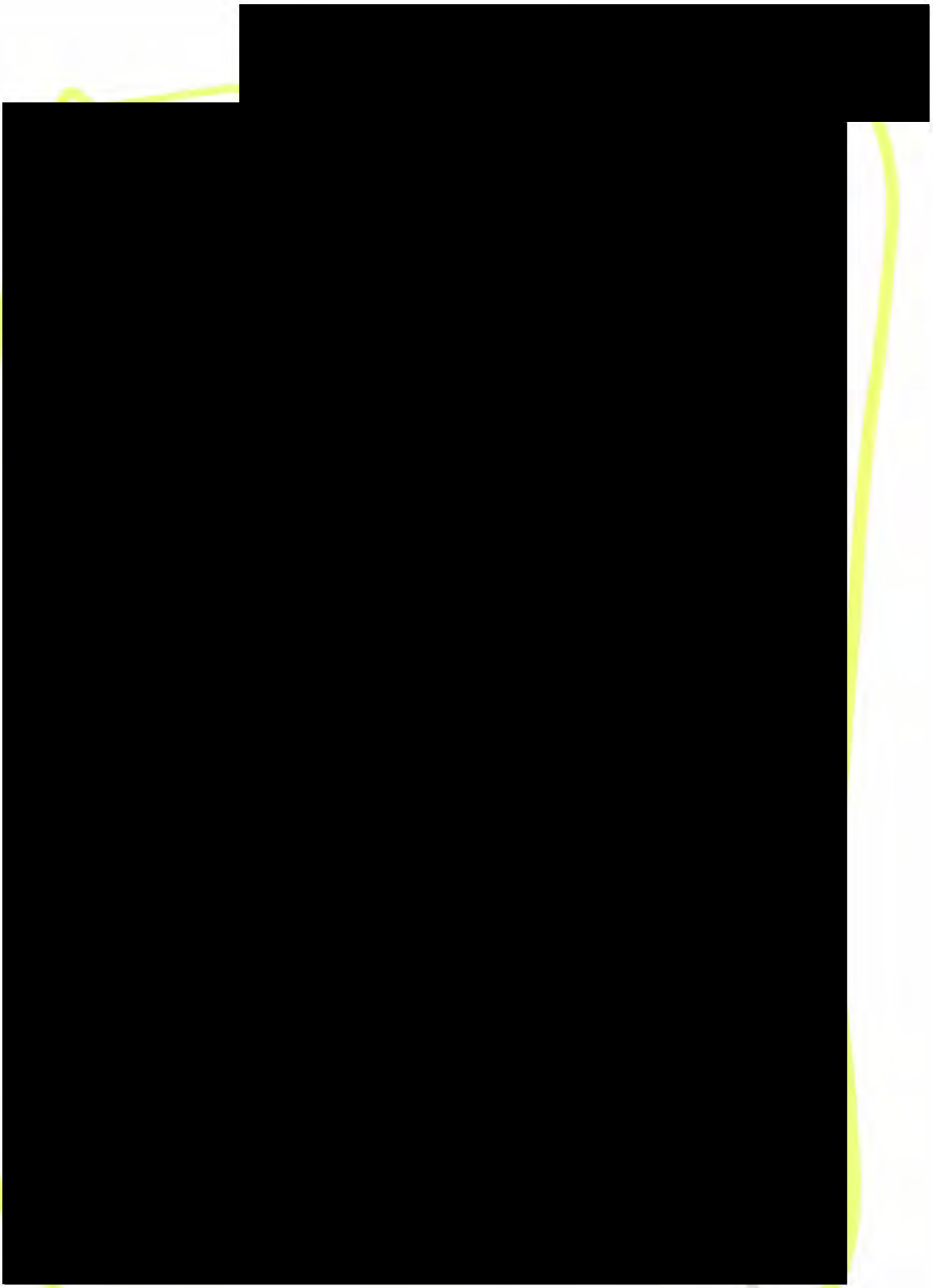

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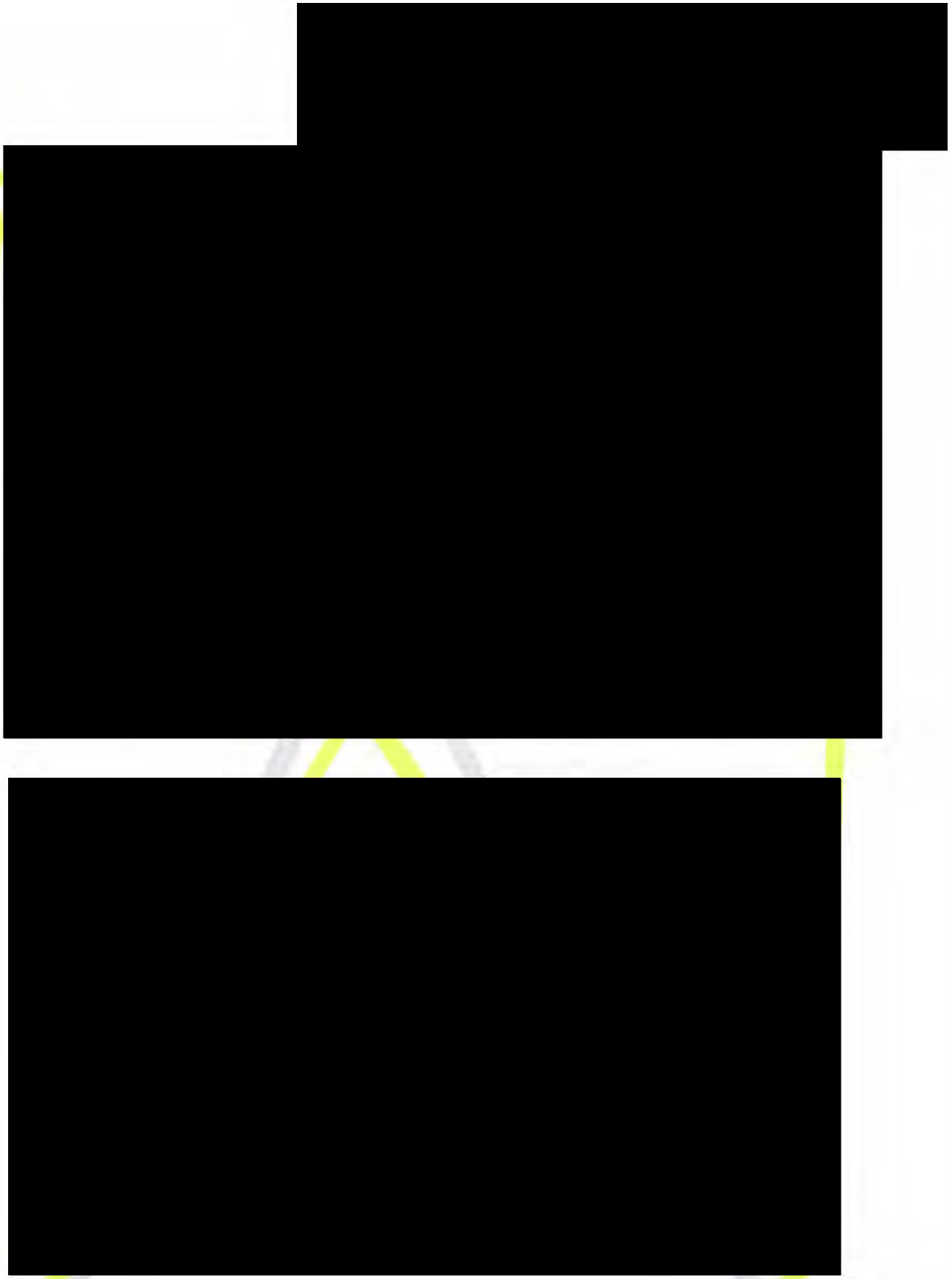

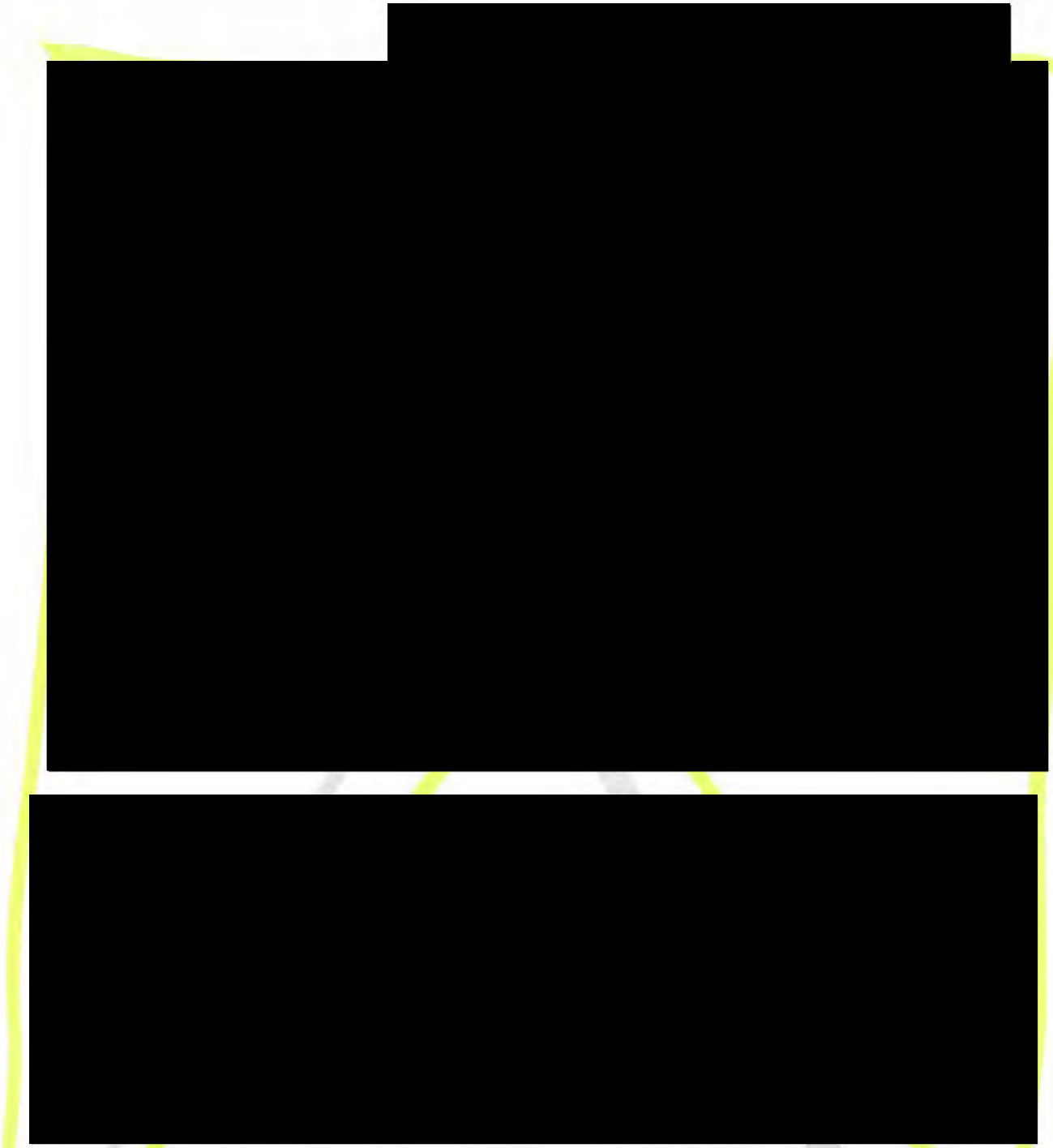

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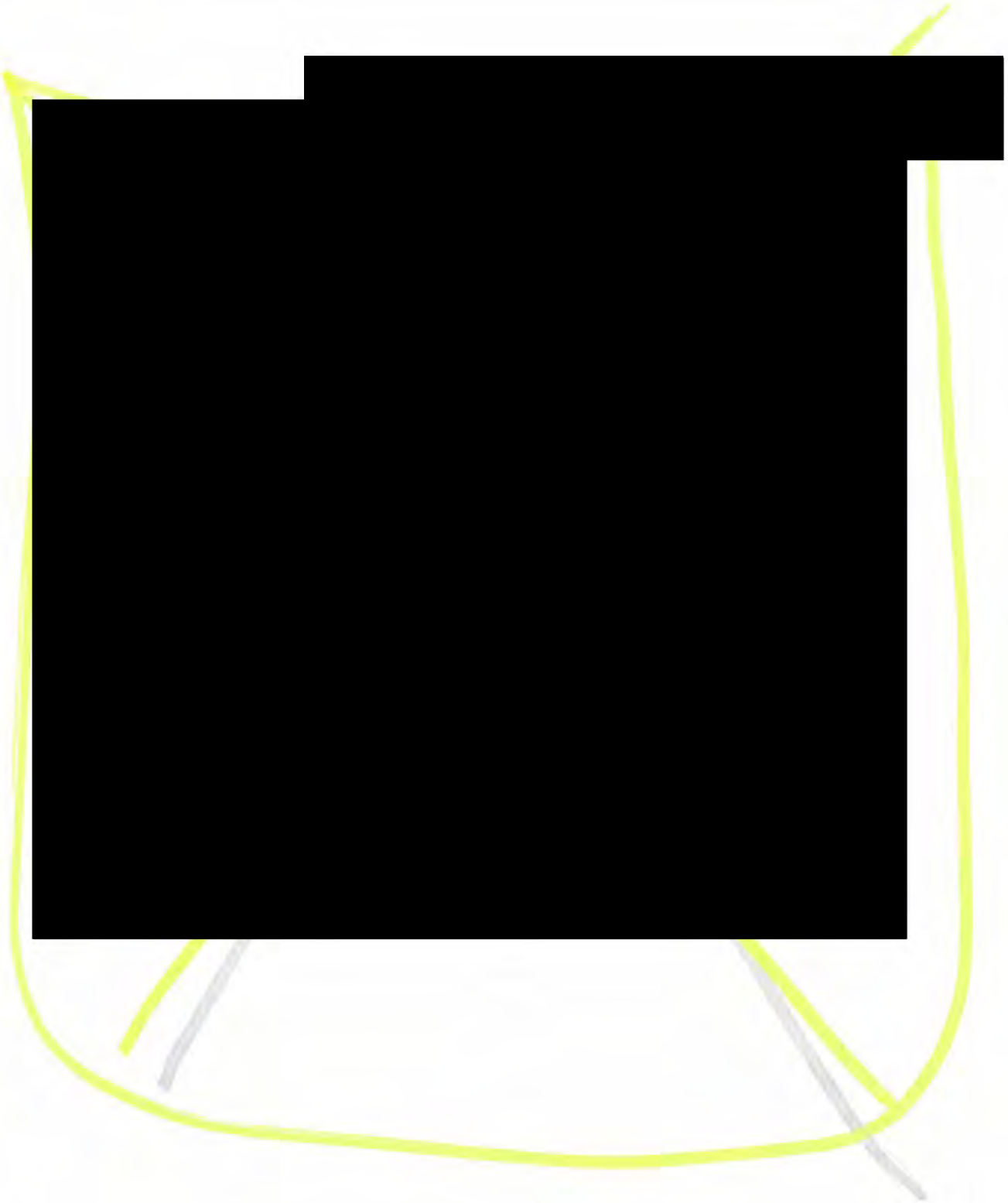

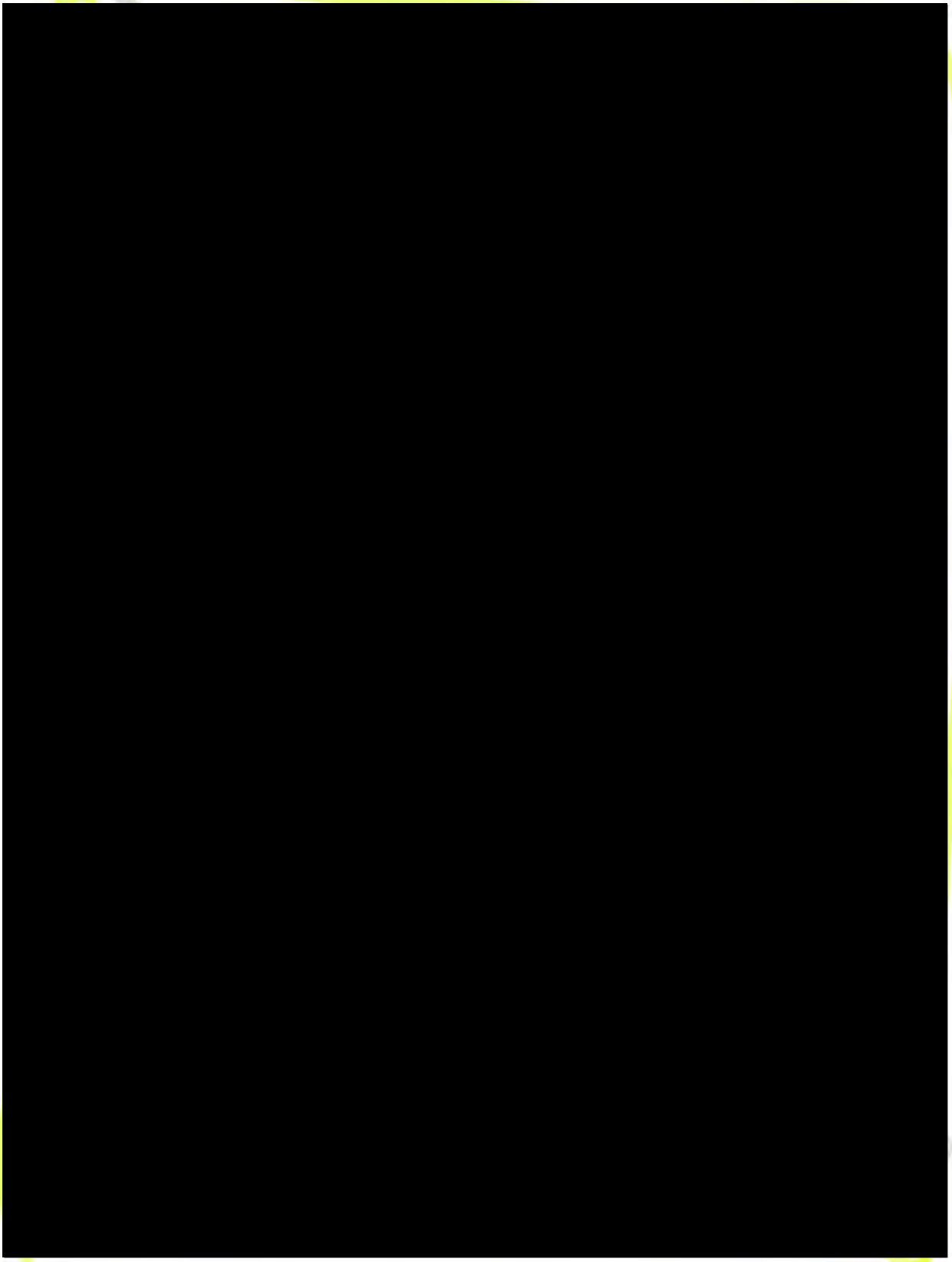

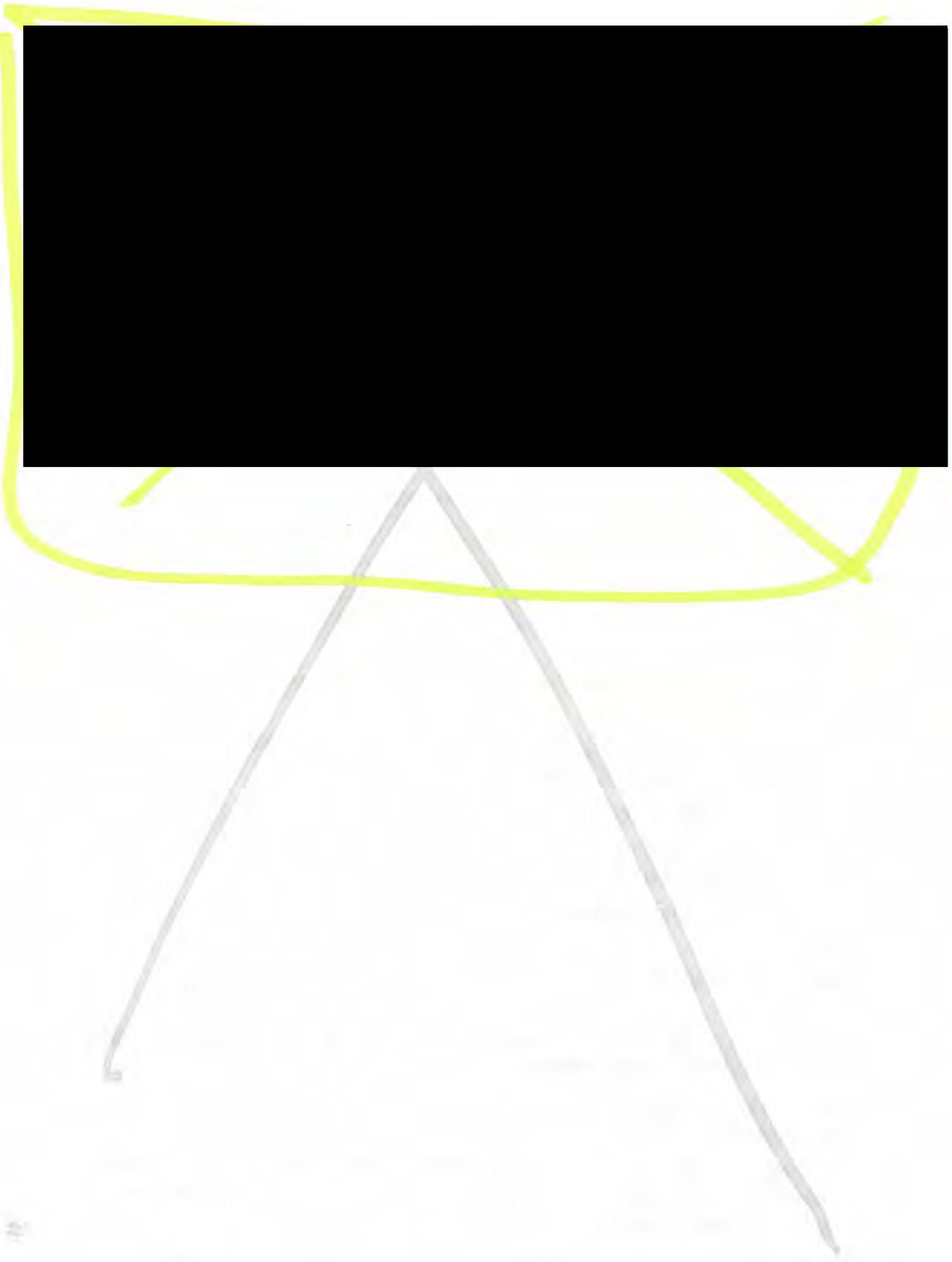

POSTSCRIPT to Appendix B

The application is for natural gas early stage exploration in Northern Ireland. The purpose of the exploration is to determine details of the potential hydrocarbons within the shale rocks, something never attempted before in this country. Accordingly there are a greater number of uncertainties than usual that need to be resolved by the exploration. Forecasts/estimates without detailed drilling data of our own have to be based on comparison with exploration/production from similar rocks in North America.

It should be noted that in the last couple of years technological advances mean the percentage of natural gas retrieved from shale has more than doubled, if not tripled. Also the well life has been extended. Well pad numbers and drilling costs have been considerably reduced. Techniques in the process of hydraulic fracturing/well construction have also advanced.

The background we give in this appendix is similar to that given in Licence PL2-10 although the work programme proposed is different. The latter benefits from previous experience but the background and gas volume projections in County Fermanagh, as mentioned above, are subject to uncertainties and variables that are the very reason for the exploration and rock analysis. Accordingly we do not consider it helpful to try to make new estimates but repeat those given by an independent appraisal of the Tamboran Resources Pty Ltd conclusions (Competent Persons Report by [redacted] Despite the fact the licence area applied for in this new application is a bit smaller the potential gas resource is we consider probably similar. The following is noted for possible discussion when the licence application is being considered:

Given a geological sequence that includes thick sealing shales high above the Bundoran Shale, the depth of detailed exploration will extend down from 600 m (nearly 2000 ft.) with the initial rock sample borehole going to about 1,500 m (nearly 5,000 ft.).

Part of the exploration programme after the drill or drop decision (probably in the third year) will be to further examine the faulting in the licence area. Faulting is generally less pronounced than further north. There are two main sets of faults; normal faults that are on the line of ancient structures (Caledonian) and that were reactivated in late Palaeogene time, and small strike-slip faults caused by compressive forces in Eocene to Miocene time. Detailed 3-D seismic studies will show their precise nature which is unlikely to be deleterious to the project.

Past seismic records show the licence area is tectonically relatively stable compared with Britain. This is a very positive factor. No significant earth tremors have been recorded in the past and certainly none at the level of the English midlands. It indicates the rocks are under little or no tension and will not be vulnerable to drilling activities.

We do not go into details of the methods used to test for natural gas because that will not be happening until after a drill or drop decision in the third year when full planning permission will be required to test. Suffice to say the company has explained publicly on many occasions the techniques it plans to use and that they will incorporate all industry safeguards/government requirements. It is confident that if an economically viable resource

is present it can be extracted entirely to the benefit of Northern Ireland and the local community.

[redacted]

Appendix B4 - Operator competence and technical capacity

The Company will have in place, apart from those named in this application (Appendix B2), a team that includes financial and legal staff. The technical experts (listed elsewhere) hold relevant degrees and professional qualifications (such as chartered status) which require continual professional development. All are encouraged to keep abreast of the most recent developments in the business.

In addition to the staff named in this licence application there will be more working for its consultants. It will be seen that the named staff are all highly qualified in areas relevant to shale gas exploration both locally and internationally.

Every member of Tamboran Resources (UK) Limited and its consultants will be responsible for HSE awareness and adherence. The HSE programme will be overseen by our Engineering & Operations Manager [redacted] and developed, implemented, audited and improved by our HSE consultants, [redacted] Tamboran has developed its own internal HSE management system that has been followed by TRUK and is UK compliant. It is designed to ensure the service providers have existing HSE systems that are specific to their expertise, are up to date, actively adhered to and that those systems comply with existing regulation.

Environmental and regulatory services are provided by [redacted] is a leading environmental consultancy and truly international with 77 offices across Europe, North America, Asia Pacific and Africa [redacted] operates throughout Ireland and Northern Ireland. [redacted] is not only able to assist with identification of regulatory and environmental requirements, but also design and provide the monitoring and follow up work to ensure compliance. The regulatory side of [redacted] work and preliminary environmental work such as scoping and field studies will be overseen by [redacted] Integration of the environmental requirements for the field operations will be overseen by [redacted] and audited by the HSE manager/consultant for a record of performance and to ensure early compliance.

The Drilling & Completions company will provide drilling and well related project management services. Specifically well design, procurement of supplies, tender, review and award of contractor services, logistics planning and execution, inspection personnel, and ongoing engineering support/change management during drilling or completion operations. The company will probably be that awarded the contract for drilling in licence PL2-10 although the work will go out to competitive tender with the chosen company being the best for the job – not necessarily the lowest price. In 2014 the consultants which Tamboran utilised took the drilling location to drill-ready status. It was a UK based company and highly qualified having worked with many UK based oil and gas projects in recent years.

Tamboran Resources (UK) Ltd was extremely pleased with the performance of the drilling company and the professional manner demonstrated by all contractors and personnel involved with Licence PL2-10. This also included all the non- scientific service providers such as PR/Communications (Weber Shandwick) and security.

Following the "dry-run" in summer 2014 the company is confident in the selection and use of these contractors once again for future work. It has to emphasise its unique experience in operating in County Fermanagh (since April 2011), including holding public meetings, communicating with local councils and people, and operating with all the regulatory authorities. It is pleased to be able to continue working with the international professionals at Weber Shandwick in Northern Ireland, Republic of Ireland and throughout the UK.

Part B5	Declaration		
A duly authorised officer must approve the information given in this form. I hereby declare that the information given in Appendix B is correct:			
Name	Signature	Capacity	Date
[redacted]	[redacted]		9 September 2016

Tamboran Resources UK
Energy for Northern Ireland

Tamboran Resources (UK) Limited

Application for Petroleum Licence - Lough Allen Basin North

Submitted to Petroleum and Minerals Branch,
Department for the Economy

Appendix C: Environmental Awareness Statement

APPLICATION FORM FOR PETROLEUM LICENCE
Petroleum (Production) Act (Northern Ireland) 1964
Appendix C: Environmental Awareness Statement

Appendix C Environmental Awareness Statement

Two statements are provided: The Health & Safety Policy and The Environmental Policy. Previous versions of these statements are being updated so the current versions have the status of draft policy statements. Final versions are not expected to vary significantly from the original versions and will be forwarded on as soon as they are available.

1. Health and Safety Policy

Tamboran Resources (UK) Limited is committed to achieving a high standard of health and safety performance for its employees, contractors, service providers, visitors and affected communities involved in, or impacted by, its operations and work activities.
Tamboran Resources (UK) Limited will:

- Create, implement and maintain a Health, Safety and Environment Management System to prevent injury or ill health to employees and others affected by the undertaking
- Ensure continuous improvement of the Health Safety and Environment Management System through the auditing process, consultation with its employees and regular reporting of performance in the management review process
- Seek every reasonable means and required resources to provide a safe work environment for all workers
- Use practices and procedures that meet or exceed relevant health and safety statutory and regulatory requirements as well as recognised industry standards
- Encourage the active participation and support of its employees in promoting and implementing an effective safety programme
- Set and review objectives and targets to achieve the aims of this policy and monitor performance against the targets, revising them as required
- Commit management and supervisory personnel to have a direct responsibility for ensuring that these objectives are met
- Create a culture of work where it is understood that no task is too important that time cannot be taken to ensure the task is performed safely
- Facilitate the recovery and return to work of any injured employee
- Require all contractors and service providers to manage their health and safety using standards and practices in-line with this Policy
- Communicate this policy to employees, contractors and service providers by displaying it prominently in Company premises and informing other stakeholders through publishing the policy on websites and in information literature specific to the location

2. Environmental Policy

Tamboran Resources (UK) Limited is committed to minimising the impact of its activities on the environment while managing all operations economically and efficiently.
Tamboran Resources (UK) Limited will:

- Comply with applicable environmental legislation, industry standards, and its own policies in order to prevent pollution and prevent unacceptable impacts on the Environment
- Define strategic objectives and set targets to meet those objectives, measure and monitor performance and progress against targets, including revising targets where necessary to ensure continual improvement in both management systems and environmental performance
- Conduct a Management Review Meeting, attended by top management, at regular intervals (never more than one year apart)
- Integrate environmental considerations into its planning process
- Seek and implement reasonable means to minimise resource usage and disturbance to ecosystems
- Promptly provide relevant information to all stakeholders affected by its operations and to be responsive and sensitive to legitimate stakeholder concerns
- Identify and mitigate the adverse impacts of its operations on the environment in keeping with good environmental and business practices
- Respond to environmental emergencies in a prompt and efficient manner through the development of appropriate response plans based on significant environmental aspects
- Ensure that its employees, contractors, service providers and site visitors are fully informed of their responsibilities to comply with Company environmental management plans to protect the environment while performing their duties
- Inform all stakeholders of this policy and of any potential environmental impacts or controls that they must implement or which may affect them

Position	Signature	Date	Review Date

Both policies will be formally signed off as above and regularly reviewed.