



GP Energy Ltd

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PEDL159 - Cannonbie

Relinquishment Report

1. Licence information

Licence Number: PEDL159
Licence Round: Out of Round
Licence Type: Land
Block number/s: NY36, NY37 & NY47

2. Licence synopsis

GP Energy Ltd. (a subsidiary of Dart Energy (Europe) Ltd, hereinafter “Dart Energy”) acquired PEDL159 in April 2012, through the acquisition of Greenpark Energy Ltd (hereinafter “Greenpark”). The licence acquired covered an area of 295 km². The location of the licence and exploration results available to Dart Energy are displayed in Figure 1. The licence was in its 2nd term.

The licence is located in the Canonbie Coalfield of the Pennine Coal Measures Basin straddling the Scotland/England Border at Dumfries and Galloway/Cumbria. The licence was considered prospective for CBM at the time of application due to the identification of numerous coal seams >1.5m thick and existing data identifying gas contents in the region of 10m³/t. The location of the licence and exploration results available to Dart Energy are displayed in Figure 1.

3. Work programme summary

The original work programme, agreed under the licensing terms, specified a drill or drop commitment to drill one vertical and three deviated horizontal wells. All commitments were met via drilling a total of seven wells across the licence. Greenpark licenced and obtained 160km of 2D seismic data from the UKOGL and Coal Authority.

4. Database

All available offset wells from the BGS and IHS and 2D seismic data purchased from the UKOGL and Coal Authority were used for geological analysis of the prospect. The DTi UK Onshore data initiative was also utilised.

Greenpark recovered continuous core for USBM desorption testing on three vertical wells, Canonbie 1 & 2 and Englishtown 1. The British Coal Gas Content database also provides some gas content data for the coalfield. Greenpark also drilled and tested four deviated wells, Canonbie 3/3z & 4/4z & 5/5z and Englishtown 1z. The wells and seismic used to evaluate the prospectivity of the licence are detailed in Figure 1.

Seismic reprocessing was carried out on all acquired 2D seismic across the licence by previous licence holders Greenpark but no new seismic data has been acquired by Dart Energy.

5. Prospectivity update

Seven wells have been drilled by Greenpark in recent times in PEDL159, details below in Table 1.

Well	Type	Date Drilled
Canonbie 1	Vertical	April 2007
Canonbie 2	Vertical	May 2007
Canonbie 3/3Z	Deviated Horizontal	August 2008
Canonbie 4/4Z	Deviated Horizontal	October 2008
Canonbie 5/5Z	Deviated Horizontal	November 2008
Englishtown 1/1Z	Deviated Vertical	March 2009
Bruntons Hill Farm 1	Vertical	December 2008

Table 1 – PEDL159 Drilling

The Canonbie 1 well was cored and desorption tests were carried out for most of the major seams. A full modern suite of wireline logs were run and DFIT (diagnostic fracture injection test) and swab tests were run on key selected coal seams. The swab test results are shown in Table 2. The tests showed a gas presence in all the zones, with the highest recovery being from the Nine Foot and Six Foot coal seams. The air dry gas contents ranged from 3.0m³/t to 8.5m³/t between the depths of 550-750m for the Canonbie 1 well.

Seam	Water Recovered (Barrels)	Gas Recovered (m ³)	Days
Six Foot	20.5	67.05	1.2
Nine Foot	26.4	68.05	1.0
Five Foot	23.7	28.54	1.1
Black Top/Seven Foot	61.4	13.56	1.7

Table 2 – Canonbie 1 Swab Test Results

The Canonbie 2 well appraised the coals in the deepest portion of the field with most of the coals below 1000m. The well was cored, logged and tested with DFIT tests. Between the depths of 990-1330m, air-dry gas content ranges from 4.2m³/t to 11.32m³/t.

Canonbie 4 was drilled as a horizontal pilot production test well into the Nine Foot Seam. Canonbie 5 was drilled as a horizontal pilot production test well into the Six Foot Seam. Both wells were drilled with a 200 metre lateral, structural complexity capped the length of each lateral. They were pump tested using jet pumps for approximately 6 months with the produced gas vented. The Canonbie 4 well was pump tested at rates up to 250,000 scfd but generally produced at a rate of 100,000 scfd. The Canonbie 5 well was pump tested at rates up to 100,000 scfd but generally produced at a rate of 30,000 scfd. Gas and water profiles for these wells are shown in Appendix 2. It is understood that this well was constrained by hole conditions. Canonbie 3 was drilled as a horizontal pilot production test well into the Nine Foot Seam but was never tested.

The Englishtown 1/1z well represents a moderate to deep portion of the Canonbie coal field and the Englishtown 1 was drilled as a vertical cored well which was logged and tested with DFIT tests. The well was then side-tracked out of the upper casing and Englishtown 1z well was drilled to allow for a future horizontal production test well. The well bore was cased and suspended. The air dry gas contents ranged from 4.2m³/t to 9.91m³/t over a depth range of 800-1000m.

The Bruntons Hill Farm 1 well was drilled as an exploration well to test the areal limit of the coal field. No Coal Seams were intersected. The well was logged but not cored.

All seven wells within PEDL159 have been plugged and abandoned. Abandonment schematics are located in Appendix 3. Table 3 below summarizes the abandonment of each well.

Well	Type	Date Abandoned
Canonbie 1	Vertical	July 2014
Canonbie 2	Vertical	July 2014
Canonbie 3/3Z	Deviated Horizontal	June 2014
Canonbie 4/4Z	Deviated Horizontal	May 2014
Canonbie 5/5Z	Deviated Horizontal	June 2014
Englishtown 1/1Z	Deviated Vertical	July 2014
Bruntons Hill Farm 1	Vertical	December 2008

Table 3 – PEDL159 Abandonments

Methane content acquired from coal samples taken from vertical core wells ranged from 83% to 88% and gas saturations demonstrated an average value of 95%. Coal Seam permeability results ranged from 3.0mD to 35.4mD across the three vertical exploration wells.

No Shale or Conventional Oil and Gas Resources have been identified across the licence. There are no oil and gas wells within the licenced area.

6. Further technical work undertaken

No further technical work has been undertaken on the licence by Dart Energy since the previous licence holder, Greenpark.

7. Resource and risk summary

An assessment of CBM resources has been carried out for PEDL159. The CBM net reserves in PEDL159 are estimated to be zero as there are no commercially recoverable quantities that have been justified for development. Resources in the licence were classified as contingent. A table with the gross estimates is included in Appendix 1.

Structural complexity is considered to be the greatest risk to this project. As with elsewhere in Europe the low coal permeability and surface management issues pushes CBM completions in the direction of horizontal wells which become increasingly risky as the degree of structural complexity increases.

Figure 2 provides examples of structural mapping provided indicate a series of E-W faults at approximately 1km spacing running across the acreage. In addition to this major faulting and E-W seismic line through the Canonbie 1 (Broadmeadows) well location indicates dense faulting with relatively large throws on a spacing of between 100 and 500m.

Similarly in the southern area, which appears relatively benign based on Greenpark's mapping, a seismic line in Figure 3 shows a relatively complex structural picture around the Canonbie 2 (Becklees) well location.

8. Conclusion

PEDL159 is being relinquished due to the complex structures within the Carboniferous strata making the area unsuitable for CBM development. Current economic and geopolitical conditions would also limit the viability and pace of a field development.

Oil and gas exploration in the region has, by-in-large, proved unsuccessful.

The recent BGS Shale Gas Study did not consider this area prospective for shale gas.

9. Clearance

All 3rd party data used in this report has been reproduced with the permission of the 3rd party and referenced accordingly. All information contained within this report is believed to be correct at the time of writing. Dart Energy does not accept any liability or any direct, indirect or consequential loss or damage of any nature, however caused, which may be sustained as a result of reliance upon such information.

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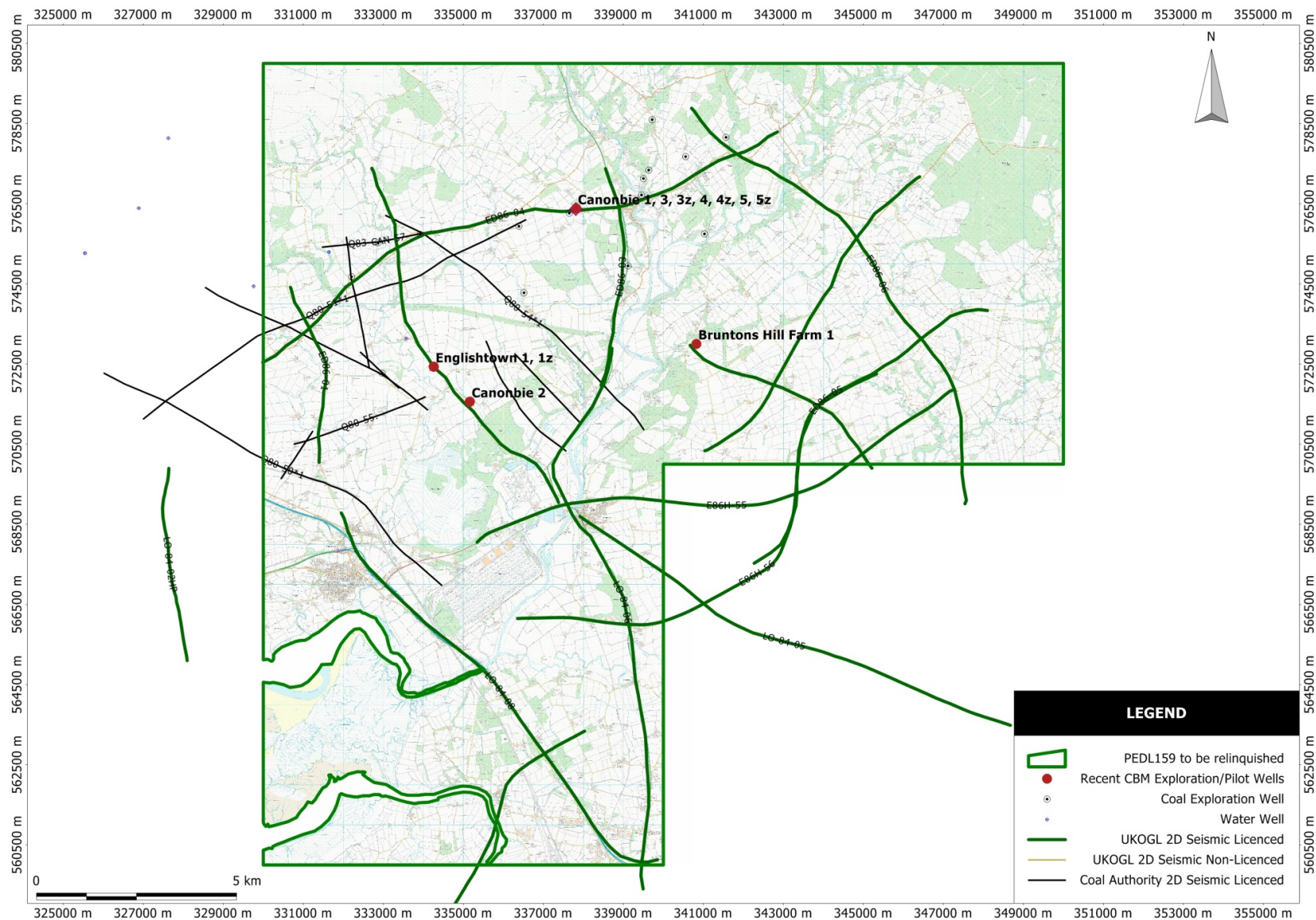


Figure 1

W-E Seismic Line through Broadmeadows

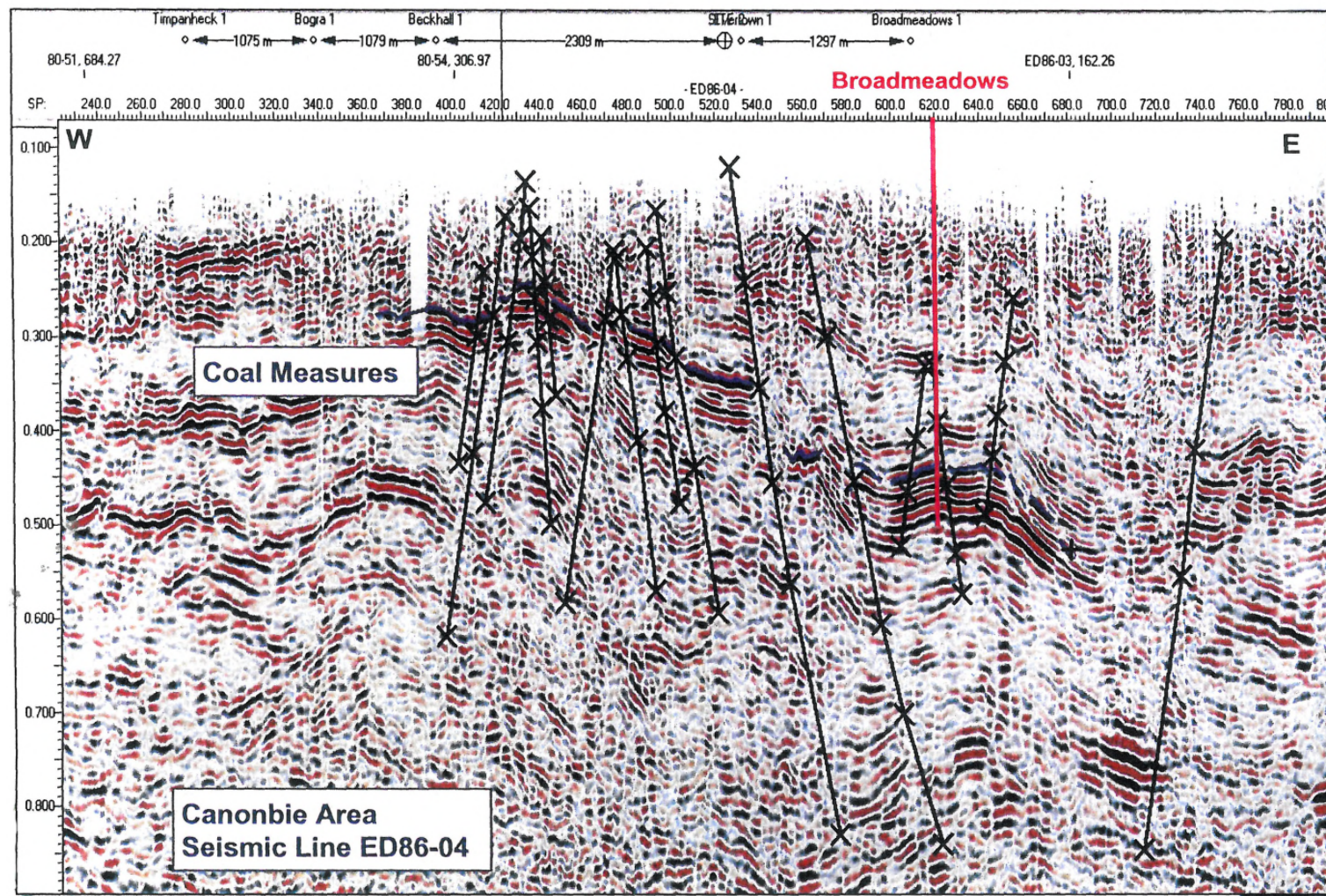
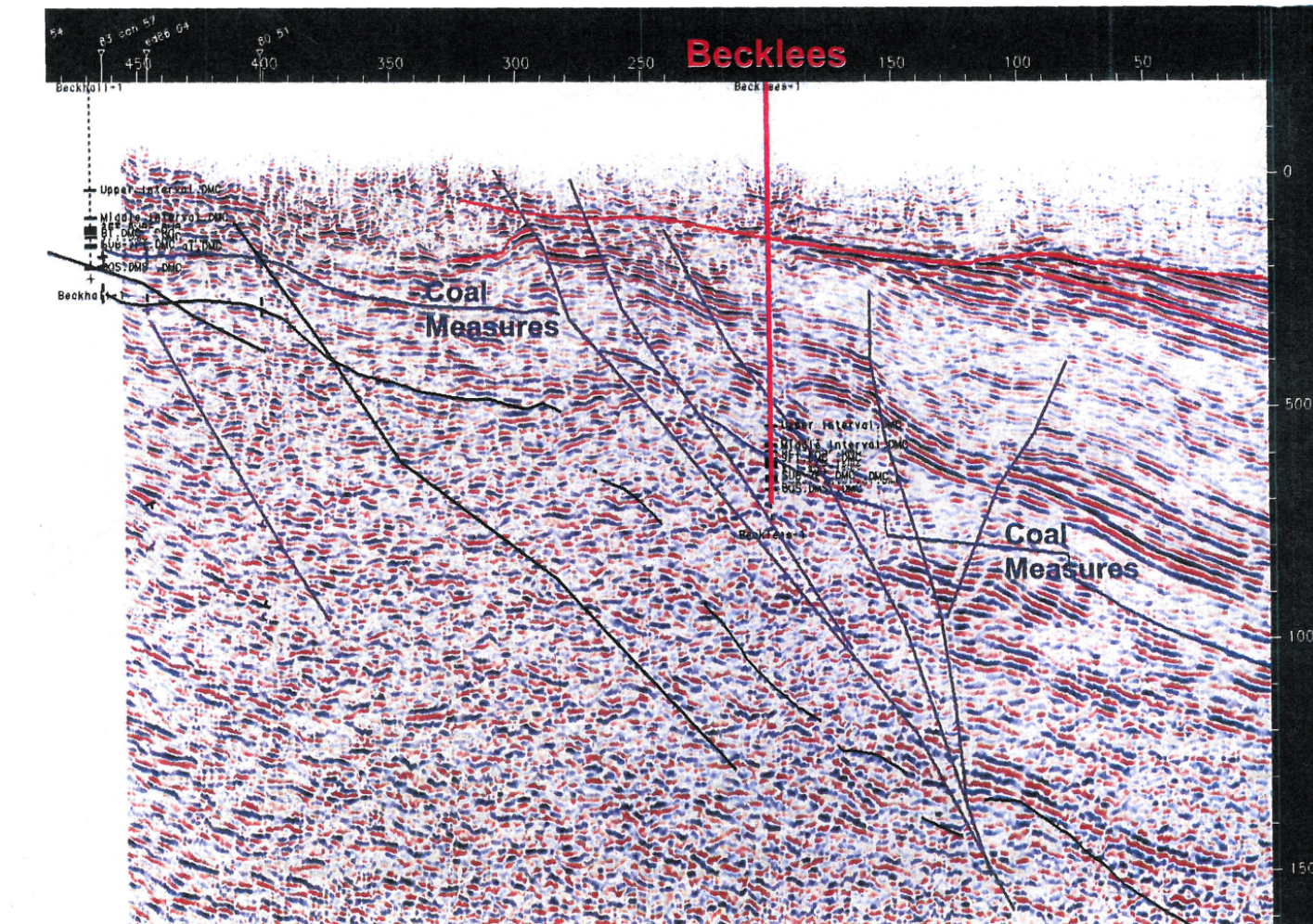


Figure 2

NW-SE Seismic Line ED86-02 through Becklees



Appendix 1 – Resource and Risk Summary Tables

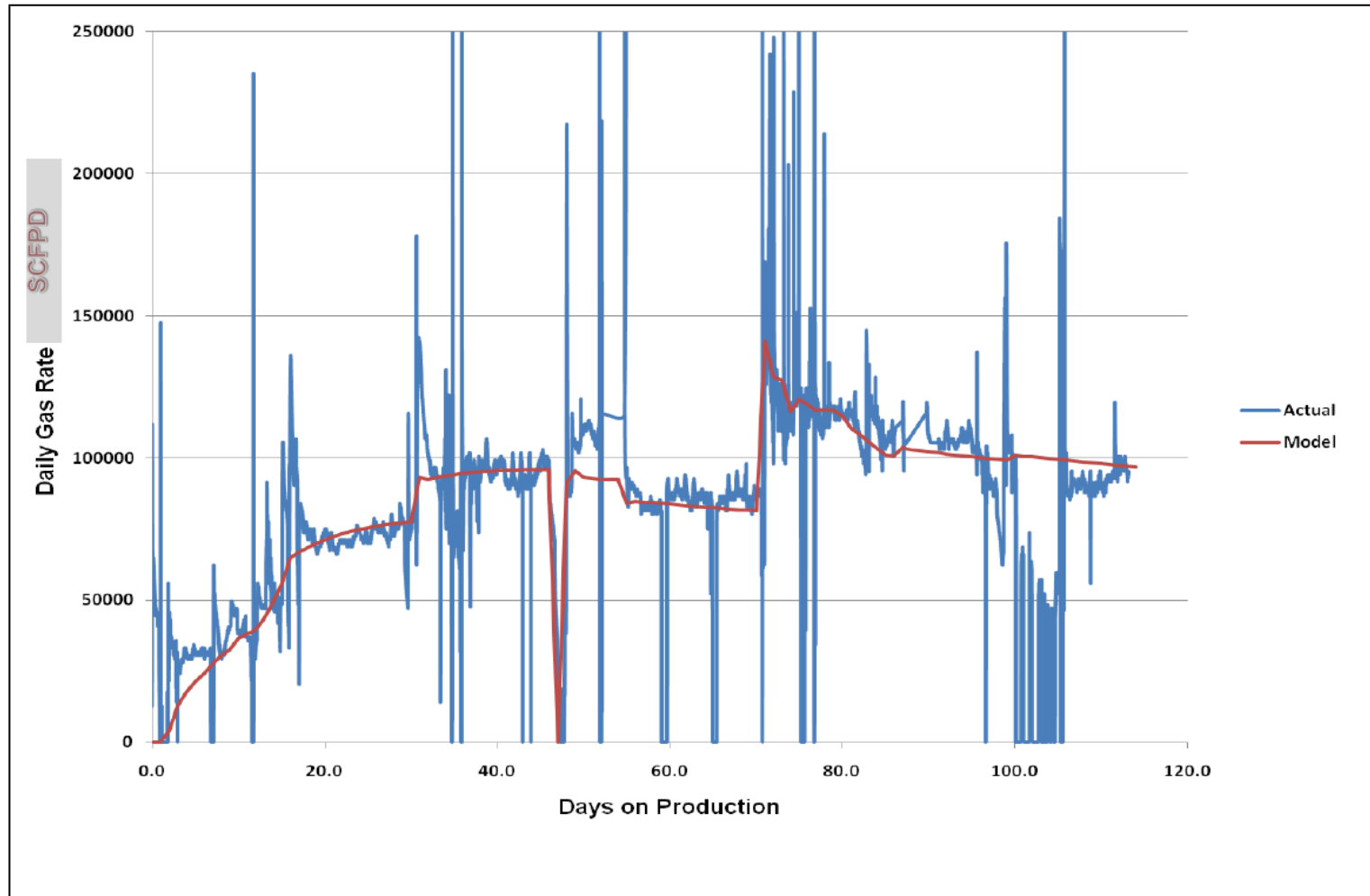
Stratigraphic Level	Estimates of Gross Oil and Gas Reserves					
	Oil (bbl)			Gas (bscf)		
	Proved	Proved + Probable	Proved + Probable + Possible	Proved	Proved + Probable	Proved + Probable + Possible
Westphalian, Carboniferous	0	0	0	0	0	0

Resource and Risk Summary							
Stratigraphic Level	Estimates of Gross Oil and Gas Contingent Resources						Risk Factor
	Oil (bbl)			Gas (bscf)			
	Low	Best	High	Low	Best	High	
Westphalian, Carboniferous	0	0	0	116	127	138	0.20

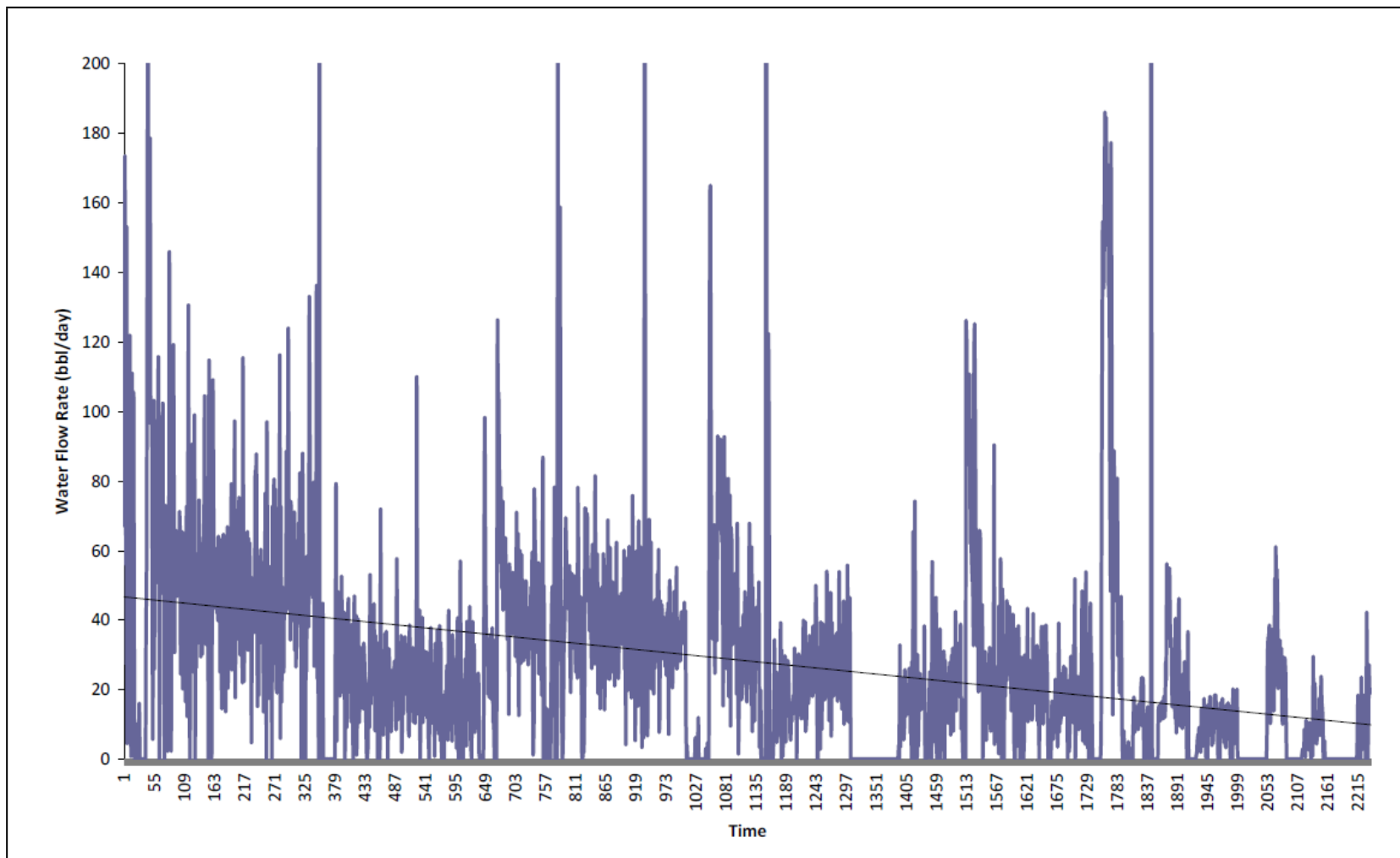
Resource and Risk Summary							
Stratigraphic Level	Estimates of Gross Oil and Gas Prospective Resources						Risk Factor
	Oil (bbl)			Gas (bscf)			
	Low	Best	High	Low	Best	High	
Westphalian, Carboniferous	0	0	0	39	45	51	0.20

Independently verified by NSAI, July 2012.

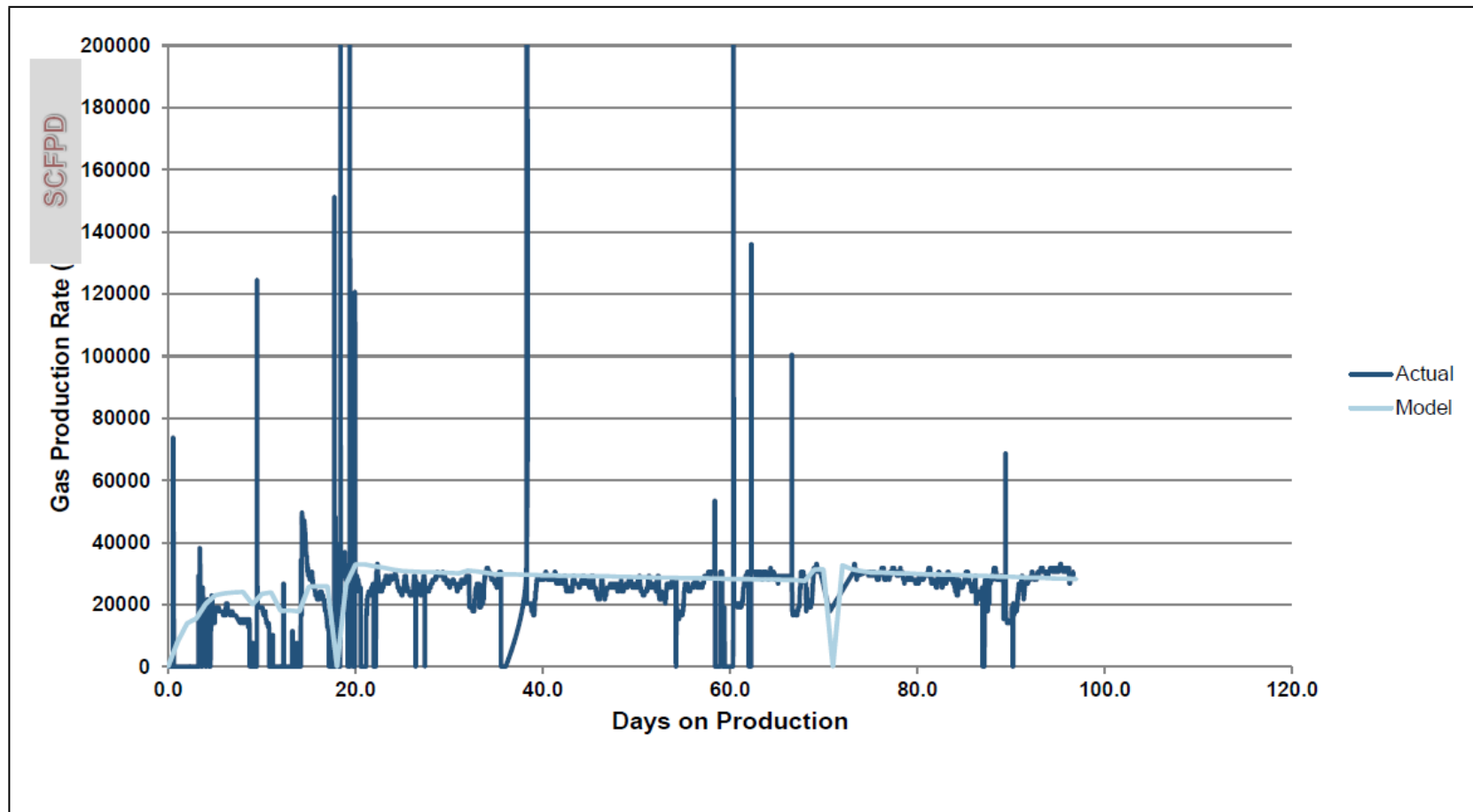
Appendix 2 – Gas and Water Production Profiles



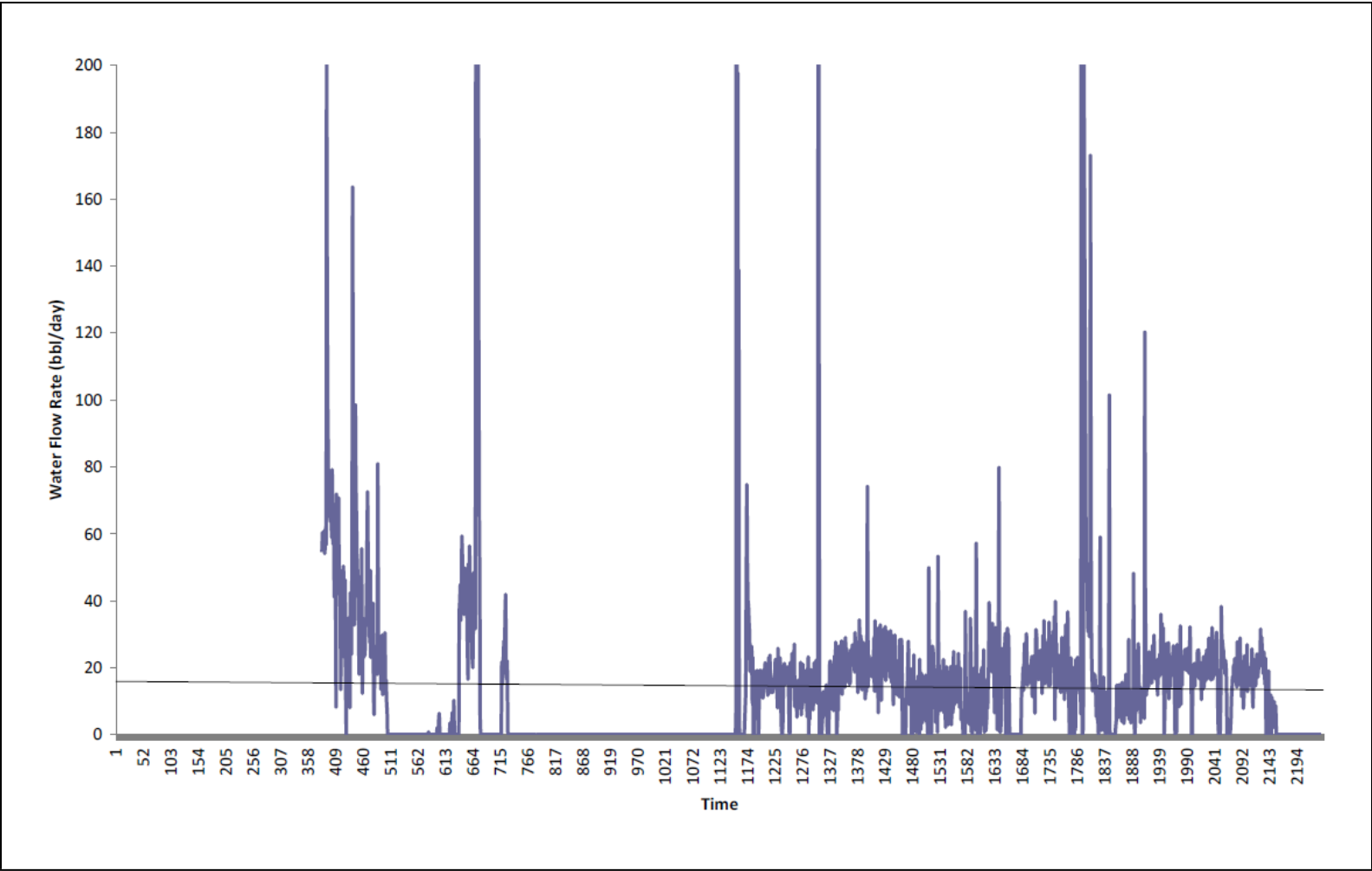
Canonbie 4 Long Term Gas Test



Canonbie 4 Water Production

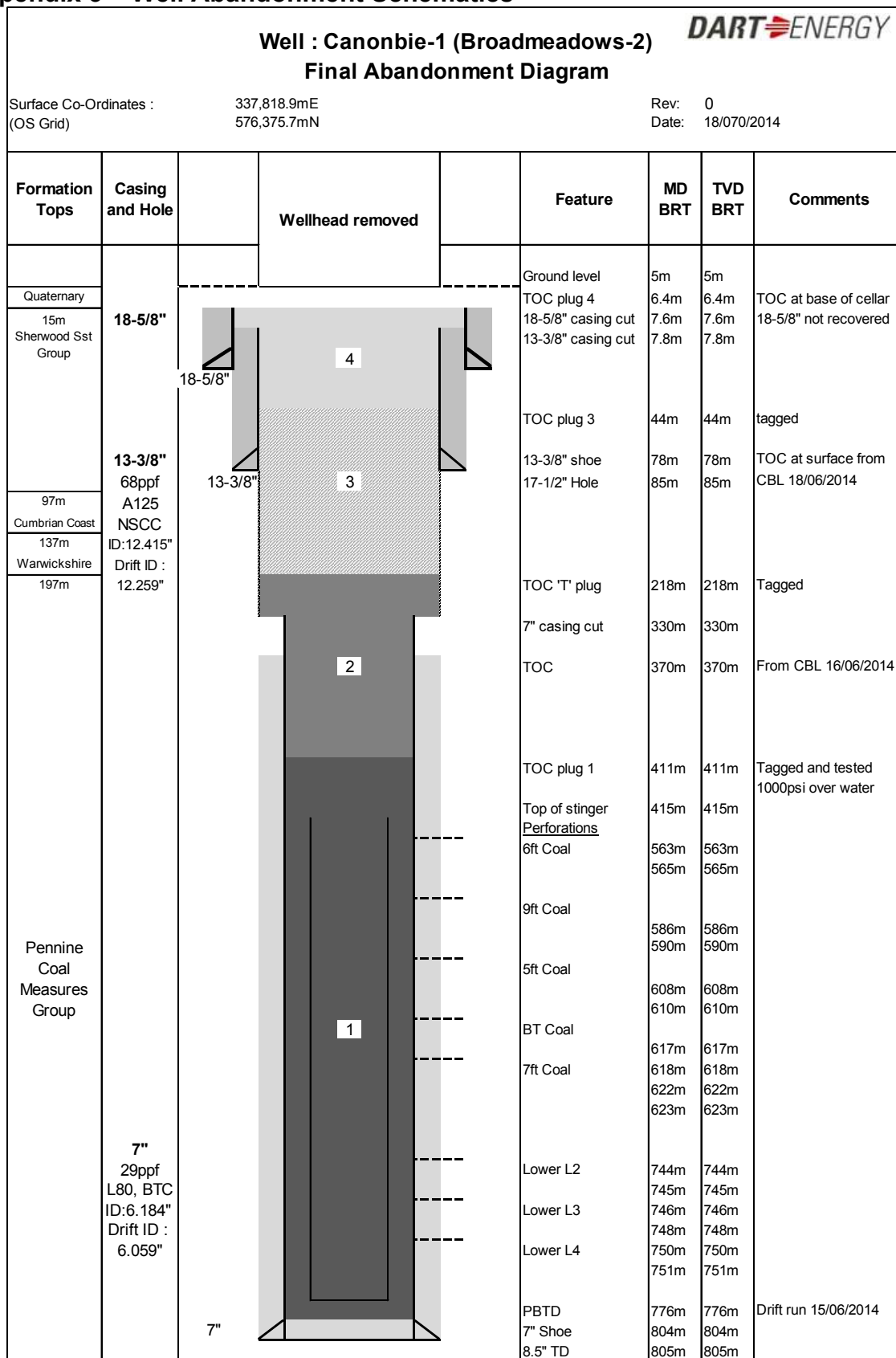


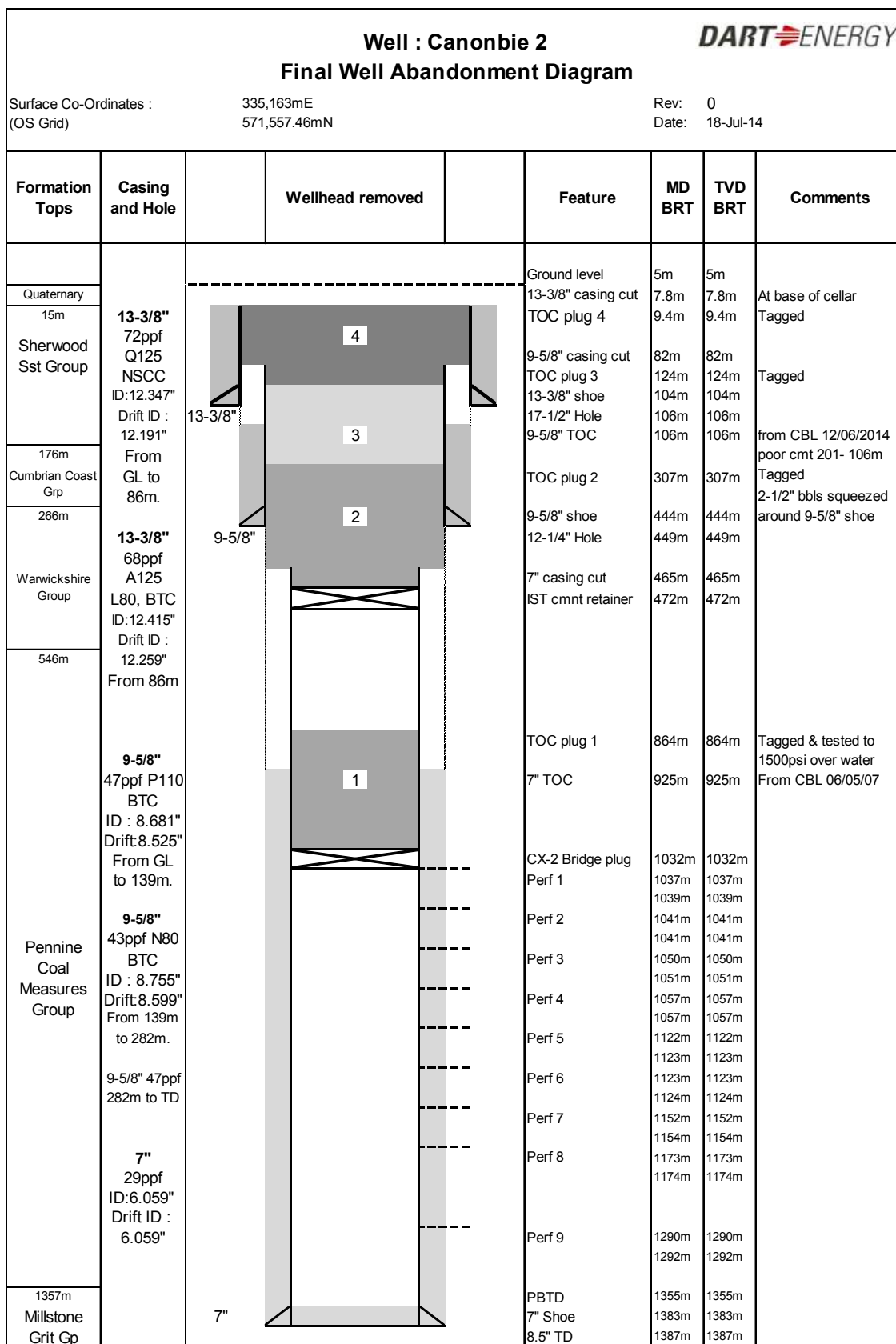
Canonbie 5 Long Term Gas Test

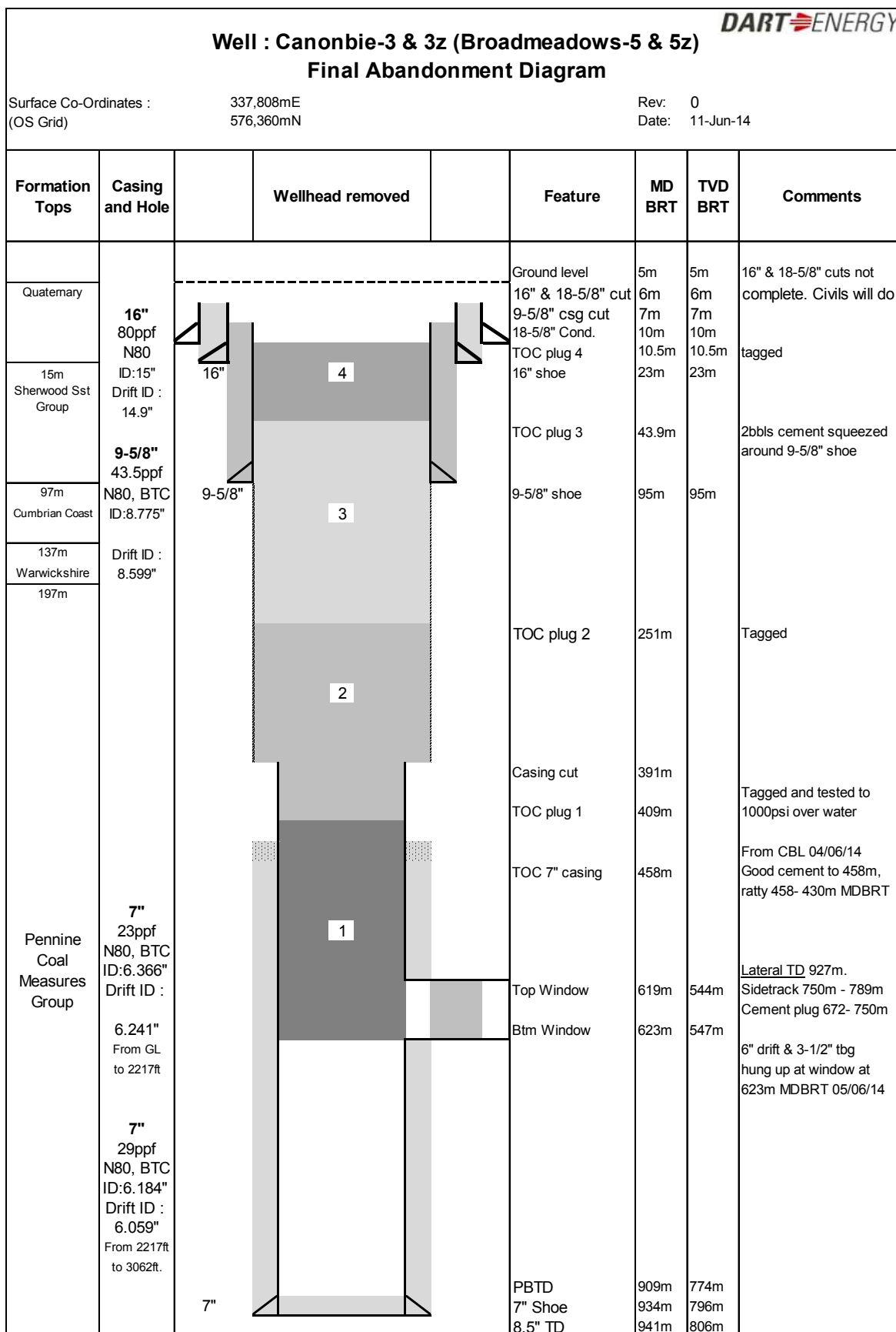


Canonbie 5 Water Production

Appendix 3 – Well Abandonment Schematics







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