SK 46 NW 20

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FORM P 70
SERIES 680

31 AUG 1973 RCB 9.6.89

6-INCH MAP (County, Sheet and Qtr.)	B/H REGD.No.
SK 46 NW (Nat. Grid, Sheet & Qtr.)	26

Attach tracing from a map or sketch map if possible

Section of OWLCOTES FARM SURFACE BOREHOLE

Purpose To prove the Waterloos and the 2nd Ell seams

Exact Site E 444 059
N 367 888
Near Heath, Derbyshire.

Level at which shaft / bore / drift commenced relative to O.D. 479·85 ft. m or ft* A.O.D.

Date of sinking or boring 24/7/72 - 23/8/72

Sinker or borer Foraky Ltd. (W. Thompson)

Cores examined by J.A. Smith, Mine Geologist

*Delete as appropriate

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS m or ft*	THICKNESS cm or in*	DEPTH m or ft*	DEPTH cm or in*
				158	0
Sandstone	fine, poorly developed ripple drift at 58/2; diastems, micaceous planty planes	2	0+		
				160	0
Siltstone	fine, laminated, rare thin sandstone fine laminae, muddy in parts, abundant plant debris; massive from 61/2 - 62/0 passage	3	11		
				163	11
Mudstone	slightly silty in parts, poorly laminated; wormy, non-marine lamellibranch fragments in top 0/6	1	1		
				165	0
Mudstone	slightly carbonaceous, slightly shaly, ironstone nodules below 66/4, non-marine lamellibranchs 68/2, wormy	5	1½		
				170	1½
	CORE BOXED 170/1½ - 175/0				
*Mudstone,	grey, wormy	0	7		
				170.	8½
* FIRST WATERLOO	Coal 1 - 7 Siltstone, coarse, pyritic 0 - 1 Coal 1 - 4 Mudstone, listric 0 - 0½ Coal 0 - 2½ Coal, dirty and dirt 0 - 3½ Coal 0 - 4 3 -10½ Recovery 100% Dip less than 2°	3	10½		
				174	7
* Seat Earth	Mudstone, grey; silty in basal 2"	0	5		
				175	0
Seat Earth	Siltstone fine	0	1		
				175	1

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FORM P 71
SERIES 680

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31 [illegible] 1973

6 INCH MAP | B/H

Section of ..... OWLCOTES FARM SURFACE BOREHOLE

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS (Delete as appropriate) ft* cm or in*	DEPTH ft* cm or in*
			175 1
Siltstone	fine with sandstone fine; load casts at 75/7, abundant roots; micaceous planty planes	1 3	176 4
Siltstone	fine, abundant roots, pyritised Stigmaria at 76/10, faultlets to 77/1; ironstone at base, 0/3 thick, apparantly faulted	1 0	177 4
Sandstone	fine, common siltstone laminae from 78/9 - 79/0 and 79/9 - 80/6, vertical mineralized joint 77/4 - 80/2, Linguoid ripple sets at 77/8, ripple drift at 78/11, slump structure 79/8 - 80/0; diastems 81/10 - 82/4;; slurried layer 82/4 - 82/9; roots in top 3/0	5 5	
	erosive		182 9
Siltstone	fine laminated; common sandstone fine laminae 83/4 - 83/7 and 84/2 - 84/6; slump structures 84/2 & 84/4; poorly laminated below 86/0,	5 6	
	passage		188 3
Mudstone,	silty in top 0/6, laminated, thin ironstone bands; wormy; slightly carbonaceous below 90/6, non-marine lamellibranch fragments below 91/11, with guilielmites,	4 9	193 0
Mudstone	carbonaceous, abundant non-marine lamelli-branchs	0 5	
	attached		193 5
COAL	bright with fusain partings	0 2	
	unattached		193 7
Seat Earth	Mudstone highly listric	0 2	193 9
Seat Earth	Mudstone silty, listric, ironstone nodules from 94/3 - 95/0	3 4	197 1
Seat Earth	Siltstone muddy, listric; ironstone nodules	0 11	
	passage		198 0
Siltstone	fine, poorly laminated, rare roots, common large ironstone nodules	2 3	200 3
Siltstone	fine, poorly laminated, slurried sandstone fine layers 00/3 - 01/0 and 01/5 - 01/8; plant debris below 03/9; massive below 03/6,	4 9	205 0
Siltstone	fine with sandstone fine; minor slump structures and diastems throughout	1 1	206 1
Siltstone	fine with sandstone fine, slurried throughout, with abundant comminuted plant debris,	4 6	210 7

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6-INCH MAP	B/H

*Delete as appropriate

Section of OWLCOTES FARM SURFACE BOREHOLE

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS m or ft*	THICKNESS cm or in*	DEPTH m or ft*	DEPTH cm or in*
				210	7
Siltstone	fine, common sandstone fine laminae, discordant bedding, diastems, micaceous planty planes	1	0		
				211	7
Siltstone	fine with sandstone fine, slurried throughout; common plant debris	2	7		
				214	2
Siltstone	fine, common sandstone fine laminae, abundant faultlets, shreds of sandstone fine	1	4		
				215	6
Siltstone	coarse, very finely laminated, abundant micaceous planty planes, rare thin sandstone fine laminae, increasingly common towards base	5	1		
				220	7
Sandstone	fine, common layers of micaceous planty material, rare diastems, discordant bedding	2	0		
				222	7
Sandstone	medium; breccia 23/4 - 24/9 of shredded siltstone and ironstone; breccia 32/9 - 34/0 of shredded sandstone with micaceous planty planes; ironstone and siltstone clasts at 35/2; abundant coaly micaceous planty planes 36/4 - 38/0, common vertical jointing, sometimes mineralised; fine-grained 40/0 - 42/10; coaly micaceous planty planes 42/10 - 43/4 and 46/1 to base; bedding inclined at 25° at 43/0, 15° at 46/7; abundant faultlets from 47/0 to base, with throws of up to ¼", some penetrating the mudstone below	25	8		
	erosive			248	3
Siltstone	with thin sandstone fine laminae, ironstone mottles, discordant bedding	0	6		
	erosive			248	9
Mudstone,	silty in top 0/6, slightly carbonaceous, faultlets, slightly shaly, listric in parts, guilielmites, non-marine lamelli-branch fragments and abundant Spirorbis	0	6		
	passage			249	3
Mudstone	carbonaceous; inclined listric surfaces, non-marine lamellibranch fragments, abundant Spirorbis	1	0		
				250	3

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SK 46 NW/20

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Section of OWLCOTES FARM SURFACE BOREHOLE

*Delete as appropriate

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS m or ft*	THICKNESS cm or in*	DEPTH m or ft*	DEPTH cm or in*
				250	3
	CORE BOXED 250/3 - 256/3				
* Mudstone,	dark grey, shaly non-marine lamellibranchs and Spirorbis	0	5		
	core attached			250	8
* SECOND WATERLOO	Coal 1 - 11				
	Mudstone, carbonaceous 0 - 1				
	Seatearth Mudstone 0 - 3				
	Coal 0 - 11				
	Mudstone, carbonaceous 0 - 1				
	Mudstone, grey, listric 0 - 8				
	Coal, dirty 0 - 3				
	Coal 1 - 0				
	5 - 2				
	Recovery 100%				
	Dip 5°	5	2		
	core unattached			255	10
* Seat Earth,	Mudstone, grey, listric; rootlets	0	5		
				256	3
Seat Earth	Siltstone fine; common sandstone fine laminae, rare sandstone fine layers	1	0		
				257	3
Sandstone	fine and siltstone; abundant roots	0	9		
				258	0
Sandstone	fine and siltstone, finely interlaminated; abundant roots; common burrows, up to 0/2" long	1	6		
				259	6
Siltstone	fine; rare sandstone fine laminae; common roots, Stigmaria at 260/4; faultlets at 60/5,	1	7		
				261	1
Siltstone	fine, poorly laminated, rare sandstone fine laminae; comminuted plant debris, Cochlichnus at 62/9; rare roots; massive 63/2 to base	5	1		
	passage			266	2
Siltstone	muddy, poorly laminated; wormy	1	0		
				267	2
Mudstone,	slightly silty, slightly carbonaceous, several highly listric surfaces	0	3		
				267	5
BAT		0	2		
				267	7
Seat Earth	Siltstone muddy, greenish, several large listric surfaces	0	10		
				268	5
Siltstone	fine, poorly laminated; common roots, occasional root nodules, Stigmaria at 69/8	1	6		
				269	11

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SK46NW120

6-INCH MAP	B/H

FORM P 71
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Section of OWLCOTES FARM SURFACE BOREHOLE

*Delete as appropriate

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS m or ft*	THICKNESS cm or in*	DEPTH m or ft*	DEPTH cm or in*
				269	11
Siltstone	fine, common sandstone fine laminae compacted around ironstone nodules; common "strap" plants in top 1/0; rare faultlets, rare diastems; Calamites at 73/7	5	5		
				275	4
Sandstone	fine, common siltstone laminae in top 0/6, slump structures 76/2 - 76/6, vertical mineralized joints; diastems	3	3		
				278	7
Siltstone	fine, common sandstone fine laminae and lenses, common isolated ripple marks above 82/0, massive 82/1 - 84/1; 0/2" ironstone from 86/5 - 86/7 (286/6: reduction of core diameter from 5·65" to 4·65")	10	5		
				289	0
Mudstone	large inclined listric surfaces 89/6 - 89/9, highly listric 90/3 - 90/5 passage	2	8		
				291	8
Mudstone	highly carbonaceous, shaly; fish fragments, non-marine lamellibranchs fragments	0	4		
				292	0
Coal	dirty	0	3		
				292	3
Seat Earth	Mudstone, coaly laminae, abundant ironstone nodules	0	4		
				292	7
Seat Earth	Mudstone, highly listric	1	2		
				293	9
Mudstone	silty, poorly laminated; common roots; some ironstone nodules with listric surfaces	2	0		
				295	9
Mudstone,	slightly carbonaceous, listric	0	2		
				295	11
Coal,	slightly dirty, abundant fusain	0	8		
				296	7
Seat Earth	Mudstone, completely listric	0	9		
				297	4
Seat Earth	Mudstone, carbonaceous, listric	0	8		
				298	0
Seat Earth	Siltstone, muddy, greenish, Sphaerosiderite, listric	3	6		
				301	6
Siltstone	fine, poorly laminated, common roots, abundant plant debris, occasional ironstone nodules faultlets at 10/6	10	5		
				311	11

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6-INCH MAP	B/H

Section of OWLCOTES FARM SURFACE BOREHOLE

*Delete as appropriate

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS m or ft*	THICKNESS cm or in*	DEPTH m or ft*	DEPTH cm or in*
				311	11
Sandstone	abundant diastems; micaceous planty planes; irregular joints;	1	2		
	passage			313	1
Sandstone	and siltstone finely interlaminated; common diastems	0	9		
				313	10
Siltstone	common thin sandstone laminae	1	1		
				314	11
Siltstone	fine, massive abundant faultlets	2	10		
				317	9
Sandstone	and siltstone; diastems, faultlets	1	7		
				319	4
Siltstone	rare thin discordant sandstone laminae; faultlets throughout; comminuted plant debris, massive in parts	4	4		
				323	8
Siltstone	fine, common thin sandstone fine laminae, bedding inclined at 35° at 35/2, locally massive, abundant faultlets, crumpled bedding 28/8 - 29/6	6	0		
				329	8
Sandstone	and siltstone; diastems and faultlets to 31/6, finely interlaminated 31/6 to base, with discordant bedding and rare diastems; inclined bedding at 40° at 34/9	5	6		
	discordant			335	2
Siltstone	fine, massive; abundant faultlets, rare thin sandstone laminae; common plant fragments; several polished striated, inclined planes at 43/0 and 51/0 - 52/0; common sandstone laminae with numerous intersecting faultlets 45/5 - 46/1, 49/11 - 51/9,	30	3		
				365	5
Bat		0	3		
				365	8
Seat Earth	Mudstone; coaly laminae 65/8 - 65/9; 66/11 - 67/0, listric,	1	10		
				367	6
Seat Earth	Siltstone fine; ironstone nodules	1	5		
				368	11
Siltstone	fine, rare thin sandstone fine laminae; common roots in top 2/0; Stigmaria at 37/11 sandstone laminae 73/0 - 73/1,	4	2		
				373	1
Mudstone	silty, poorly laminated	0	11		
	passage			374	0
Siltstone	fine, common thin sandstone fine laminae, crumpled bedding 74/10, 76/9; dominant sandstone 79/9 - 80/8	10	0		
				384	0

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6-INCH MAP	B/H

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Section of OWLCOTES FARM SURFACE BOREHOLE

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS m or ft*	THICKNESS cm or in*	DEPTH m or ft*	DEPTH cm or in*
				384	0
Mudstone	silty, slightly carbonaceous, poorly laminated; wormy, non-marine lamellibranchs fragments, guilielmites. common throughout	2	9	386	9
Siltstone	muddy, poorly laminated, rare guilielmites	2	2	388	11
Siltstone	fine, common sandstone fine laminae, load and pouch structures 92/2 - 92/5, isolated ripple marks 91/6 - 92/6	7	7	396	6
Siltstone	fine, massive	10	3		
	passage			406	9
Mudstone	silty, poorly laminated; wormy; guilielmites in basal 2/0	4	2	410	11
Mudstone	silty in parts, shaly in parts, highly carbonaceous	3	3½	414	2½
	CORE BOXED 414/2½ to 417/1				
* Mudstone	shaly, dark grey; non-marine lamellibranchs 2" thick ironstone band at 14/7	0	5½	414	8
* FIRST ELL	Coal bright 0 - 8½ Mudstone 0 - 1 Coal, bright 1 - 2 1 - 11½ Recovery 100% Dip less than 2°	1	11½	416	7½
* Seat Earth	Mudstone, grey; roots	0	5½	417	1
Seat Earth	Mudstone, completely listric	0	2	417	3
Sandstone	abundant roots	1	0		
	passage			418	3
Sandstone	common roots in top 1/0; massive; ironstone mottles	5	10	424	1
Siltstone	fine, with sandstone fine, slurried layer 25/4 - 25/8; diastems	3	3	427	4
Sandstone	fine with siltstone fine; diastems and burrows common throughout	1	8	429	0

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Section of OWLCOTES FARM SURFACE BOREHOLE

*Delete as appropriate

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS m or ft*	THICKNESS cm or in*	DEPTH m or ft*	DEPTH cm or in*
				429	0
Siltstone	fine and sandstone fine; poorly developed ripple marks and diastems throughout, slurried layer 32/1 - 32/5; burrows at 29/5, 29/8	6	6	435	6
Sandstone	fine, micaceous planty planes	1	1	436	7
Sandstone	fine and siltstone fine; fine irregular interlamination	0	11	437	6
Siltstone	with sandstone fine; slurried layer 37/6 - 37/11, slump structures 37/11 to 38/8, isolated ripple marks at 40/3	3	5	440	11
Siltstone	fine, rare wispy sandstone fine laminae	1	9	442	8
Mudstone	silty, poorly laminated; guilielmites locally throughout, Naiadites at 44/8, inclined unpolished breaks 45/0 - 48/5 with core badly broken, passage	8	1	450	9
Mudstone	slightly carbonaceous, poorly laminated, common non-marine lamellibranchs	2	2	452	11
Siltstone	with sandstone fine; abundant burrows throughout	3	5	456	4
Siltstone	and sandstone fine; slump structures 56/7 - 57/4; abundant burrows up to 0/2 long	2	7	458	11
Siltstone	fine, common thin sandstone fine laminae, common small cup-shaped burrows	2	5	461	4
Siltstone	fine, poorly laminated, non-marine lamellibranchs fragments 62/6 - 62/8 and 63/10 to base passage	3	5	464	9
Mudstone	silty, slightly carbonaceous, poorly laminated; Naiadites with attached Spirorbis 65/5, abundant non-marine lamellibranchs throughout, common ironstone lenses;	3	5	468	2
	CORE BOXED 468/2 - 472/2				
* Mudstone	silty; non-marine lamellibranchs; ironstone lens passage	0	4	468	6
* Mudstone	silty near the top; ironstone lens; abundant thin-shelled non-marine lamellibranchs with attached Spirorbis core attached	0	7	469	1

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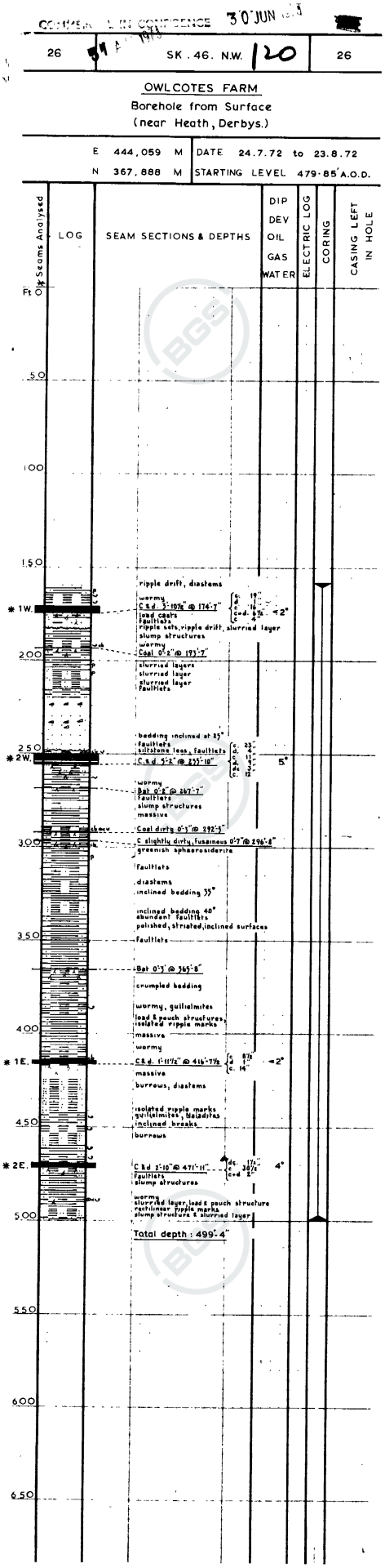
Section of OWLCOTES FARM BOREHOLE

*Delete as appropriate

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS m or ft*	THICKNESS cm or in*	DEPTH m or ft*	DEPTH cm or in*
				469	1
* SECOND ELL	Coal, dirty, bright 0 - 1¼				
	Coal, bright 1 - 6½				
	Coal, banded 0 - 5				
	Coal, bright 0 - 7				
	Mudstone, carbonaceous 0 - 1				
	Coal, dirty bright 0 - 1				
	2 - 10				
	Recovery 100%				
	Dip 4°	2	10		
	core attached			471	11
* Seat Earth	Siltstone coarse, with sandstone laminae below 72/0, roots	0	3		
				472	2
Seat Earth	Siltstone coarse and seatearth sandstone fine	1	7		
				473	9
Siltstone	common sandstone fine laminae; abundant roots in top 2/0. Stigmaria at 77/3 and 77/8; faultlets at 47/9 and 83/6; slump structures 78/9 to 79/3, 80/9	11	9		
				485	6
Siltstone	fine, poorly laminated	1	8		
				487	2
Mudstone	silty, laminated; wormy, fish tooth 88/6; non-marine lamellibranchs fragments at 89/0	2	1		
				489	3
Siltstone	fine, poorly laminated; wormy, non-marine lamellibranchs fragments at 90/9	1	8		
				490	11
Siltstone	common sandstone fine laminae; slurried layer 91/7 - 92/0, load and pouch structure 92/0, Stigmaria at 91/0	1	4		
				492	3
Siltstone	fine and sandstone fine; slump structures from 92/6 - 92/9, 93/10 - 95/8 and 97/5 - 97/8; rectilinear ripple marks at 93/5; slurried layer 97/1 - 97/5	5	6		
				497	9
Siltstone	coarse, diastens	1	7+		
	Base of hole			499	4

BGS ID: 753895 : BGS Reference: SK46NW20
British National Grid (27700) : 444060,367895



W. R. Board

SK 46 NW/20 SK 46/39

Report No. EMRL/102/72.

SK 4406 6789

Report on the

OWLCOTES FARM BOREHOLE

(North Derbyshire Area)

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Appendices

1. Assessment of Core Recovery
2. Preparation of Core Samples
3. Standards for Description of Properties.

Preface

The report has been prepared by the Regional Chief Scientist of the East Midlands Region.

The borehole cores were examined by Mr. J. A. Smith of the East Midlands Regional Geological Services, and Mr. J. Rippon has confirmed the correlations and seam names. The location plan and the information for the "Borehole Data and History" has been provided by Mr. B. Tideswell of the North Derbyshire Area Survey Department.

The detailed geological records of the strata proved by the borehole cores are at the Headquarters of the East Midlands Regional Geological Services.

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Summary

The borehole was put down to prove the thickness and quality of the Second Waterloo and First and Second Ell seams to the South of Arkwright Colliery. The coal core recoveries were excellent.

The First Waterloo, 46½ inches thick, contains 43½ inches of medium quality coal with a moderate ash of 6.2 per cent; the exclusion of 3 inches of dirt and 2 inches of dirty coal lowers the ash to 5.5 per cent.

The Second Waterloo, 62 inches thick, contains 46 inches of medium quality coal with a moderate ash of 7.4 per cent. The First Ell, 23½ inches thick, contains 22½ inches of rather poor quality coal with a moderately high ash of 8.7 per cent.

The Second Ell, 34 inches thick, contains 33 inches of medium quality coal with a moderate ash of 7.0 per cent; the exclusion of 1 inch of dirt and 2½ inches of dirty coal lowers the ash to 5.4 per cent.

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Borehole Data and History

Name: Owlcotes Farm Borehole

Approximate Location: 1¼ miles S.30°E of Arkwright Colliery

National Grid Reference: E.444 059. N.367 888

6 inch O.S. sheet: SK.46 N.W.

Level of origin: 480 feet A.O.D.

Date of Drilling: 24th July, 1972. - 23rd August, 1972.

Contractor's Name: Foraky Limited

Name of Boremaster: W. Thompson

Core and hole sizes:

Depth (feet)	Diameter of Core (inches)	Diameter of Hole (inches)
0 - 90	Openhole	9⅝
90 - 158	Openhole	7⅝
158 - 304	6	7
304 - 500	5	6

Drilling Difficulties: The mud was lost at the Top Hard old working at about 40 feet, but the insertion of casing to 91 feet overcame the problem very quickly. All casing was recovered.

Method of Sealing off Borehole: Cement seal.

Purpose of borehole: To prove the Second Waterloo and First and Second Ell seams to the South of Arkwright Colliery.

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Basis of Seam Thickness

Seam	Depth Ft. ins.	Thickness from Boremaster's Report (inches)	Thickness on Complete Solid Core (inches)	Thickness accepted prior to analysis (inches)	Thickness after adjustments from analysis (inches)	% Recovery	Dip relative to sides of core (degrees)	Remarks
1st Waterloo	174 7	60	47	47	46½	100	< 2	
2nd Waterloo	255 10	60	62	62	62	100	5	
1st Ell	416 7½	24	24	24	23½	100	< 2	
2nd Ell	471 11	33	32	32	34	100	4	

Record of Borehole

The major horizons encountered in the borehole, drilled openhole to 158 feet, are as follows:-

Horizon	Thickness Ft.	ins.	Depth Ft.	ins.
* First Waterloo	3	10½	174	7
Un-named	-	2	193	7
* Second Waterloo	5	2	255	10
Un-named	-	3	292	3
Un-named	-	7	296	8
* First Ell	1	11½	416	7½
* Second Ell	2	10	471	11
Base of borehole	-	-	500	0

* These seams have been analysed at the Regional Laboratory. The thicknesses and depths shown are the final figures given in the table "Basis of Seam Thickness".