



COMMERCIAL IN CONFIDENCE

Section of: Markham No. 18 Underground Borehole
(A. & B.)

1 - MAY 1982

Purpose: Coal exploration

(Nat. Grid, Sheet & Qtr.) B/H REGD. NO.

Exact Site: E 446372) L.101's
N 367645) Main Gate

SK 46 NE

47A(1st Hole)
47B(Redrill)

Level at which bore commenced relative to
O.D:- 386.80 m below O.D. (in the Clay Cross Soft seam)

SK 46 NE/51

Date of Boring: August to November 1981

Borer: North Derbyshire Area Boring Team, N.C.B.
Cores examined by D.J. Green and J.H. Rippon

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS		DEPTH	
		m	cm	m	cm
	Top of hole.			131	44
Sandstone	with siltstone, 80:20; abundant sandstone laminae, micro lenses and a few larger sandstone ripples with erosional bases; abundant micaceous planty planes passage	0	99	130	45
Siltstone	fine, poorly laminated in part; a few levels with plant debris; occasional larger plants including Lepidostrobus and 'strap' plants passage	1	25	129	20
Sandstone	with siltstone 70:30 decreasing upwards; abundant irregular sandstone ripples with erosional bases; crumpled bedding in parts; rare rootlets near top. sharp	1	78	127	42
Sandstone	with occasional discontinuous siltstone laminae; ripple sets passage	0	47	126	95



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GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS		DEPTH	
		m	cm	m	cm
Sandstone	with siltstone 80:20, abundant irregular and linguoid sandstone ripples with erosional bases, with discontinuous siltstone laminae and layers; micaceous planty planes; local ripple drift passage	1	30	125	65
Siltstone	fine and sandstone, 50:50; abundant sandstone laminae and irregular lenses, with local ripple drift. Abundant micaceous planty planes. rapid passage	0	85	124	80
Siltstone	fine, locally medium, laminated; occasional sandstone laminae; slurried in parts passage	2	25	122	55
Mudstone	silty in parts, laminated; occasional ironstone lenses upto 0.06	0	70	121	85
	<u>(From 121.85 to 117.14 the log is a composite of the original core and the re-drill, incorporating depths derived from penetration recorder charts)</u>				
CORE LOST	or fragmented; assumed all mudstones	1	26	120	59
	Boxed core 120.59 - 117.54				
	Mudstone (cylinders)	0	43	120	16
	Mudstone dark (cylinders) attached	0	20	119	96
	(Coal (cylinders, broken cylinders (and fragments)	0	80		
	(Mudstone (cylinders)	0	52		
	(Mudstone, cannelloid to base (cylinders)	0	24		
	(Inferior cannell (cylinders)	0	18		
	(Coal (fragments)	(0	14)		
	(Dirty coal	(0	07)		
	(LOST CORE interpreted as coal	(0	08)		
	(Mudstone and coal	0	07		
	(Mudstone silty, with mussels	0	32	117	54
	(LOST CORE interpreted as mudstone	0	16	117	38
	(Mudstone cannelloid; rare phosphatic nodules	0	14	117	24
	(CANNEL; inferior above with plant remains, clean in basal 0.02	0	08		
	Recovery c. 83%; dip 40	2	80	117	16

2ND WATERLOO



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GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS		DEPTH	
		m	cm	m	cm
Mudstone	carbonaceous with coalified plant remains; fragmented.	0	02	117	14
Siltstone	fine, laminated; common sandstone laminae; common plant debris on some bedding planes; common micaceous planty planes; less sandstone towards the top passage	1	14	116	00
Siltstone	fine, laminated passage	0	65	115	35
Siltstone	fine with common sandstone laminae and occasional horizons of micro lenses; occasional sand-filled burrows passage	1	10	114	25
Mudstone	silty in parts, poorly laminated; wormy in parts; rare Anthraconaia unattached	0	62	113	63
<u>COAL</u>	and mudstone, interleaved; cylinders unattached	0	01	113	62
Siltstone	fine laminated; common sandstone laminae; rootlets passage	0	22	113	40
Siltstone	fine to medium-grained; abundant sandstone laminae and ripple drift, occasional faultlets; local crumpled bedding; locally canky; common small micaceous planty planes; rootlets near the top	1	35	112	05
Siltstone	fine with abundant sandstone laminae and common micro lenses; frequent small sand filled burrows; micaceous planty planes; crumpled bedding in top 0.13; canky near base	0	73	111	32
Sandstone	fine; irregular ripples with micaceous planty planes and discontinuous siltstone laminae	0	27	111	05

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Sandstone

fine; dune sets; a few micaceous
planty planes; sub-vertical
mineralised joint.

0 89 110 16

Sandstone

fine; linguoid ripple sets; occasional
irregular ripples with discontinuous
siltstone laminae near the base; small
micaceous planty planes
sharp

1 14 109 02

Siltstone

fine, laminated; common sandstone
laminae and unconnected ripples;
micaceous planty planes in part

0 38 108 64

Siltstone

fine, poorly laminated; rare discontinuous
sandstone fine wisps; local iron-rich
layers
passage

1 34 107 30

Siltstone

fine, muddy, poorly laminated
passage

0 30 107 00

Mudstone

laminated; rare thin ironstone bands
near base. Common worm tracks;
Cochlichnus at 06.53. Rare non-
marine lamellibranchs between
06.00 and 06.10.

1 25 105 75

Mudstone

highly carbonaceous, locally slightly
silty, shaley. Locally common fish
scales.

0 15 105 60

Mudstone

laminated; weak listric. Common ironstone
bands up to 0.08

1 55 104 05

detached

Mudstone carbonaceous coaly laminae 3)
Coal bright 16)
Dirt 34)
Coal dirty and dirt 6) cylinders
Dirt 4)
Coal 3)
Dirt 1)
Coal dirty 2)
69

detached

0 69

SEATEARTH

103 36



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Siltstone	fine, unlaminated, grey; common roots	0	12	103	24
Siltstone	medium with common, diffuse, root-disturbed sandstone fine laminae and thin layers 70:30. Common micaceous planty planes. Common roots passage	0	84	102	40
Siltstone	medium, grey, unlaminated; occasional roots	0	57	101	83
Mudstone	silty, grey, unlaminated; common roots	0	16	101	67
Mudstone	slightly silty, poorly laminated; abundant plant remains including Lepidostrobus; occasional roots	0	23	101	44
	detached				
COAL	and dirt; broken cylinders				
	detached	0	05	101	39
SEATEARTH					
Sandstone	fine, ganisteroid, very strong; rare sub-vertical mineralised joints; rare root traces	0	34	101	05
Siltstone	fine and sandstone fine, interlaminated and interlayered; common micaceous planty planes; rare small ironstone nodules near top; occasional roots	0	55	100	50
Siltstone	fine and sandstone fine, interlaminated and interlensed; common ripples throughout; common micaceous planty planes; slurried texture in basal 0.08; common comminuted plant debris	0	48	100	02
Sandstone	fine; common micaceous planty planes; ripple bedded, occasional diastems; common iron rich patches; large load and pouch structure in top 0.12	0	64	99	38



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Siltstone

fine and sandstone fine interlaminated and interlayered; ripple bedded; occasional diastems; locally developed 'train' drift; common micaceous planty planes; occasional iron-rich patches

0 21 99 17

Siltstone

fine with occasional sandstone fine laminae 80:20; occasional micaceous planty planes; occasional rippled layers near top; rare plant remains including Calamites sharp

1 77 97 40

Sandstone

fine to medium with rare siltstone fine laminae and layers up to 0.03 in basal 0.30; common micaceous planty planes; locally ripple-bedded with locally developed ripple drift near base; rare ironstone clasts between 96.40 and 96.55; occasional iron-rich patches sharp

2 04 95 36

Siltstone

fine with occasional sandstone fine laminae 90:10; locally common microlenses; poorly developed ripples near top; rare micaceous planes near top; rare comminuted plant debris

1 02 94 34

Mudstone

slightly silty, laminated; occasional ironstone bands

0 54 93 80

Mudstone

laminated, core fragmented detached

0 24 93 56

COAL

bright fragments detached

0 07 93 49

Mudstone

core fragmented detached

0 37 93 12

COAL

mainly bright fragments detached

0 26 92 86

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Mudstone	listric, core completely fragmented	0	42	92	44
Siltstone	fine to medium, rare wispy sandstone fine laminae; common roots and root nodules	0	19	92	25
Siltstone	fine with occasional sandstone fine laminae and micro lenses 80:20; 0.05 ironstone at base; common roots becoming rare towards base	0	32	91	93
Mudstone	silty, poorly laminated; occasional small burrows; rare plant remains	0	23	91	70
Mudstone	poorly laminated; occasional irregular listric surfaces near base; very weak	0	76	90	94
Siltstone	medium, dark unlaminated, strong; common faultlets; occasional 30 degree hade irregular breaks; common ironstone nodules; common wormy ironstone bands; occasional Neuropteris leaves	4	44	86	50
Siltstone	fine, poorly laminated; locally dark; common plant remains including Neuropteris and Alethopteris	1	05	85	45

SEATEARTH

Siltstone	medium to fine, unlaminated; occasional root nodules; common roots	0	67	84	78
Siltstone	fine, poorly laminated, dark; common faultlets; occasional ironstone patches and small nodules; locally common plant remains including Neuropteris	1	98	82	80
Siltstone	medium to coarse, unlaminated; common faultlets; rare ironstone patches near top	0	50	82	30



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Siltstone

fine, muddy, poorly laminated, dark

0 24

82 06

Siltstone

fine with occasional sandstone fine
laminae 80:20; 30 degree hade unmineralised
joint; colonial burrows

0 47

81 59

Siltstone

fine and sandstone irregularly
interlaminated and interlayered;
common micaceous planty planes;
locally-developed ripples

0 20

81 39

Siltstone

fine to medium, poorly laminated,
dark; common 45 degree listric
breaks; occasional non-listric
breaks to 76:50; common and locally
abundant faultlets; abundant small
irregular ironstone nodules between
80:50 and 81:00; colonial burrows
between 77.25 and 77.30

7 24

74 15

Siltstone

fine, locally muddy, poorly laminated;
occasional ironstone patches, locally
common small burrows

1 23

72 92

Mudstone

highly carbonaceous, shaley,
sub-canneloid)

0 18

72 74

SEATEARTH

Mudstone

silty; abundant irregular listric surfaces

0 54

72 20

Sandstone

fine with occasional irregular siltstone fine
laminae 80:20; common micaceous planty planes;
occasional ironstone patches; common roots

0 26

71 94

Siltstone

fine with common sandstone fine laminae
70:30; occasional ironstone nodules;
occasional roots

0 40

71 54

Sandstone

fine with occasional siltstone
fine laminae; common micaceous planty
planes; ripple bedded with occasional
ripple drift; large load structure near
top; common sand-filled burrows between
71.00 and 71.06

0 90

70 64



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1082

Siltstone	fine and sandstone; abundant sandstone lenses and laminae; common micaceous planty planes; local faultlets passage	1	59	69	05
Siltstone	fine grained with common sandstone laminae and occasional small ripples; common micaceous planes with plant debris; local faultlets passage	1	00	68	05
Siltstone	fine, laminated; occasional small anthracosids	0	15	67	90
Mudstone	shaley; occasional thin ironstones; occasional small non-marine lamellibranchs; wormy in parts * core fragmented from 67.60 to 64.56	3	00	64	90
Siltstone	fine grained, unlaminated; local faultlets; common plant remains including Neuropteris, Mariopteris and 'strap' plants; local Pinnularia	3	40	61	50
Siltstone	fine with sandstone laminae and ripples sharp	0	19	61	31
Sandstone	with minor discontinuous siltstone laminae; abundant irregular ripples with erosional bases	0	16	61	15
Siltstone	fine grained, laminated; common sandstone laminae and occasional larger lenses; micaceous planes with plant debris including Cyclopteris; small anthracosids near the base passage	1	20	59	95
Mudstone	silty; abundant small Anthracosia and Naiadites; ironstones up to 0.04 passage	1	35	58	60
Mudstone	shaley; carbonaceous; abundant Naiadites with Spirorbis near the base; abundant Anthracosia and Anthracosia towards the top; occasional ostracods; wormy in parts Core boxed from 57.50 to 56.02 Mudstone (fragments)	1 0	10 25	57	50 25



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	Mudstone (cylinders and broken cylinders) detached	0	29	56	96
<u>SECOND ELL</u>	Coal (fragments) Recovery c. 55% detached	0	75	56	21
SEATEARTH Mudstone	(cylinders and broken cylinders)	0	10	56	11
Siltstone	fine (cylinders)	0	18	55	93
Siltstone	medium-grained with abundant sandstone laminae and ripples; common ripple drift and 'train' drift; occasional small scours; ironstone nodules becoming common towards the top	1	43	54	50
Siltstone	fine grained; common sandstone ripples in parts; occasional ironstones; frequent micaceous planty planes and larger plant fragments	1	90	52	60
Siltstone	fine grained; occasional sandstone laminae; large sandstone load structure at the top	1	10	51	50
Siltstone	fine to medium-grained, slurried texture	0	65	50	85
Siltstone	fine grained with common sandstone laminae and thin lenses; micaceous planty planes; ironstones up to 0.06	0	85+	50	00
	Start of coring at 50.00 m above origin in Clay Cross Soft seam.				

JR/90408/DL.XI



NORTH DERBYSWIRE AREA

MAY 1982

SK/46/NE/51

NATIONAL COAL BOARD

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SURVEY DEPARTMENT

BOREHOLE DATA AND HISTORY

BOREHOLE NAME: MARKHAM NO 18 UNDERGROUND BORE HOLES (A & B)

Approximate Location: 4,390 METRES S 7° E MARKHAM SHAFTS.

National Grid Reference: E 446 372.4 N 367 645.4

6 inch sheet: SK 46 N.E.

Level of Origin: 386.8 METRES BELOW O.D.

Date of Drilling: Commenced 17/8/81 Finished 1/10/81
1A' HOLE 1B' HOLE
6/10/81 5/11/81

Contractor's Name: N.C.B.

Name of Boremaster: B. WARD, DRILLER IN CHARGE

Depth (m)	Diameter of Core (mm)	Diameter of Hole (mm)
0 to 50 m	OPEN HOLE	73.025 mm
50 m to 131.44 m	NQ CORE BARREL 47.6 mm	75.8 mm
0 to 94 m	OPEN HOLE	73.025 mm
94 m to 123 m	5'0" (1.52 m) NQ CORE BARREL 47.6 mm	75.8 mm

Drilling Difficulties: HAD CONSIDERABLE TROUBLE WITH CAVINGS BELOW 2ND WATERLOO SEAM, ALSO RECOVERY WAS POOR, SO DECIDED TO RE-DRILL 2ND WATERLOO BY CEMENTING UP FIRST HOLE (A) & MOVE OVER AND RE-DRILL.

Method of Sealing Off Borehole: 1A' BOREHOLE INJECTED 850 KG SHALLOW OIL WELL CEMENT, MIXED WITH 454.6 LITRES FIRE MAIN WATER UP THE STAND PIPE UNTIL PRESSURE BUILT UP TO 450 lbf/in². 1B' BOREHOLE WAS NOT SEALED, STILL 77 x 1.52 m DRILL RODS & 1.52 m CORE BARREL LEFT IN THE BORE DUE TO VENTILATION DIFFICULTIES. ALL DRILLING EQUIPMENT LEFT ON SITE WHEN SEALS PUT ON. Purpose fulfilled by Borehole:

OBTAINED CORE OF 2ND WATERLOO SEAM ALSO QUALITY & THICKNESS OF STRATA OVERLYING COAL SEAM UP TO MARKER BAND

Official Responsible for above Report:

A.F. BOYMER



