



SK 46 NE/56

Section of: Markham No. 22 Underground Borehole

Purpose: Coal Exploration

Nat. Grid, Sheet & Qtr. B/H REG. NO.

Exact Site: E446644 N469168

SK 46 NE

61

Level at which bore commenced relative to
O.D. -437.4m.
in the Clay Cross Soft seam

Date of Boring: Sept. - Dec. 1983

Sinker or Borer: N.C.B.

Cores examined by D. J. Green

| GEOLOGICAL CLASSIFICATION | NATURE OF STRATA | THICKNESS | | DEPTH | |
|-------------------------------|--|-----------|----|-------|----|
| | | m | cm | m | cm |
| | Top of hole | | | 82 | 50 |
| Mudstone | | 6 | 70 | 75 | 80 |
| <u>COAL</u> | | 0 | 80 | 75 | 00 |
| Mudstone | | 3 | 00 | 72 | 00 |
| Sandstone and Mudstone | | 3 | 00 | 69 | 00 |
| Mudstone and Sandstone | | 3 | 00 | 66 | 00 |
| Mudstone | | 3 | 85 | 62 | 15 |
| | (Driller's record 62.15 - 82.50) | | | | |
| Mudstone | laminated, 0.05 septarian ironstone band at the base; locally common worm tracks; locally common non-marine lamellibranchs | 0 | 75 | 61 | 40 |
| <u>SEATEARTH</u> Siltstone | fine; carbonaceous; unlaminated, occasional roots | 0 | 17 | 61 | 23 |
| Siltstone | fine and sandstone fine 50:50; irregularly interlaminated; common roots | 0 | 27 | 60 | 96 |

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| | | | | |
|-------------------|--|----|-----|-------|
| | | | 60 | 96 |
| Sandstone | fine with common irregular siltstone fine laminae 70:30 locally 80:20; locally ripple bedded; common roots including <u>Stigmaria</u> in top 0.60 | 1 | 76 | 59 20 |
| Siltstone | fine with occasional sandstone fine laminae 95:5; common micaceous carbonaceous planes | 0 | 35 | 58 85 |
| Mudstone | silty; laminated; common thin ironstone bands; locally common worm tracks; common and locally abundant non-marine lamellibranchs including <u>Anthracosia</u> and <u>Naiadites</u> | 1 | 40 | 57 45 |
| Mudstone | carbonaceous; shaly; occasional plant remains; locally common non-marine lamellibranchs including <u>Naiadites</u> | 0 | 93 | 56 52 |
| Mudstone | dark; laminated; occasional non-marine lamellibranchs including <u>Naiadites</u> | 0 | 45 | 56 07 |
| | detached | 0 | 12 | 55 95 |
| CORE LOST | | | | |
| <u>SECOND ELL</u> | | | | |
| <u>COAL</u> | mainly bright, fragments; 0.45 recovered | | | |
| | Driller records | (0 | 84) | 55 11 |
| CORE LOST | | 0 | 03 | 55 08 |
| SEATEARTH | detached | | | |
| Mudstone | silty, grey, unlaminated; common irregular polished surfaces, common roots | 0 | 18 | 54 90 |
| Siltstone | fine, dark, unlaminated; occasional ironstone nodules; common roots | 0 | 43 | 54 47 |
| Mudstone | silty; dark; unlaminated; common roots | 0 | 11 | 54 36 |
| Mudstone | silty; grey becoming dark in top 0.08; occasional large ironstone nodules; common roots | 0 | 40 | 53 96 |
| Siltstone | fine to medium with occasional diffuse sandstone fine laminae and micro-lenses 80:20; locally ripple bedded with ripple sets; minor erosional surfaces; rare roots | 0 | 71 | 53 25 |
| Siltstone | fine to medium; laminated | 0 | 15 | 53 10 |

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| | | | | | |
|-----------|--|---|----|----|----|
| | | | | 53 | 10 |
| Mudstone | silty with occasional minor siltstone fine passages, rare ironstone bands; occasional worm tracks | 2 | 35 | | |
| | | | | 50 | 75 |
| Siltstone | fine, locally muddy; laminated | 0 | 36 | | |
| | | | | 50 | 39 |
| Siltstone | fine with rare sandstone fine laminae and lenses 95:5 | 0 | 10 | | |
| | | | | 50 | 29 |
| Mudstone | laminated; occasional vague worm tracks | 0 | 24 | | |
| | | | | 50 | 05 |
| Mudstone | silty; dark; laminated; occasional 30 degree-hade unmineralised joints; rare poorly preserved non-marine lamellibranchs; rare roots | 0 | 52 | | |
| | | | | 49 | 53 |
| Mudstone | dark; unlaminated; common irregular polished surfaces, occasional roots | 0 | 26 | | |
| | | | | 49 | 27 |
| Mudstone | silty; dark; slightly carbonaceous; occasional irregular polished surfaces; occasional irregular coaly laminae | 0 | 02 | | |
| | | | | 49 | 25 |
| Siltstone | fine; locally muddy, dark; poorly laminated | 0 | 05 | | |
| | sharp | | | 49 | 20 |
| Siltstone | fine and sandstone fine 50:50 irregularly interlaminated and interlayered; locally vaguely ripple bedded; common root nodules, common roots | 0 | 46 | | |
| | | | | 48 | 74 |
| Sandstone | fine with occasional siltstone fine laminae 95:5; occasional discontinuous micaceous carbonaceous planes; locally vaguely ripple bedded; sub-vertical calcite - filled joint between 47.60 and 47.90 | 1 | 14 | | |
| | | | | 47 | 60 |
| Sandstone | fine with occasional siltstone fine laminae 80:20; common iron-rich layers; common micaceous carbonaceous planes; locally ripple bedded with well-developed ripple sets; large load and pouch structures between 47.00 and 47.46; sub-vertical calcite-mineralised joints in basal 0.30 | 2 | 02 | | |
| | | | | 45 | 58 |
| Siltstone | medium with occasional sandstone fine laminae 95:5; strong; 0.04 ironstone at the base | 0 | 52 | | |
| | | | | 45 | 06 |
| Siltstone | fine, muddy, dark, laminated; rare wispy thin sandstone fine laminae and un-connected lenses; locally common sand-filled burrows | 0 | 91 | | |
| | sharp | | | 44 | 15 |

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| | | | | |
|-------------------|--|---|----|----|
| | | | 44 | 15 |
| Siltstone | medium with rare diffuse sandstone fine laminae; load and pouch structures in basal 0.08; small sandstone load structures throughout | 0 | 48 | |
| | sharp | | 43 | 67 |
| Siltstone | fine, muddy; laminated | 1 | 17 | |
| | passage | | 42 | 50 |
| Mudstone | slightly silty; laminated; occasional ironstone bands; occasional worm tracks on some bedding planes | 0 | 90 | |
| | passage | | 41 | 60 |
| Mudstone | silty; laminated; occasional thin ironstone bands; rare non-marine lamellibranchs including <u>Naiadites</u> ; rare shell slip marks | 1 | 84 | |
| | | | 39 | 76 |
| Siltstone | fine; dark; poorly laminated; abundant non-marine lamellibranchs with mineralised shells | 0 | 14 | |
| | | | 39 | 62 |
| Siltstone | fine; unlaminated; iron-rich | 0 | 16 | |
| | | | 39 | 46 |
| Mudstone | silty; laminated; common non-marine lamellibranchs becoming less common towards the top | 2 | 01 | |
| | | | 37 | 45 |
| <u>CLAY CROSS</u> | | | | |
| <u>MARINE</u> | | | | |
| <u>BAND</u> | | | | |
| Mudstone | slightly silty; laminated, fissile; rare non-marine lamellibranch fragments, occasional ostracods; common <u>Lingula</u> between 35.65 and 35.90 | 1 | 85 | |
| | passage | | 35 | 60 |
| Mudstone | laminated; slightly carbonaceous in the basal 0.10; <u>Lingula</u> at 34.95 and 35.80 | 2 | 94 | |
| | | | 32 | 66 |
| Mudstone | highly carbonaceous, shaly, abundant ostracods; common fish remains; occasional detached <u>Spirorbis</u> | 0 | 10 | |
| | | | 35 | 56 |
| Mudstone | laminated | 0 | 01 | |
| | detached | | 32 | 55 |
| <u>JOAN</u> | | | | |
| <u>COAL</u> | | | | |
| | and DIRT (cylinder) | 0 | 04 | |
| | detached, fitting | | 32 | 51 |

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| | | | | |
|-----------|--|------|----|----|
| | | | 32 | 51 |
| SEATEARTH | | | | |
| Sandstone | fine to medium with occasional irregular micaceous carbonaceous planes; common roots | 0 09 | 32 | 42 |
| Siltstone | fine and sandstone fine 50:50; irregularly interlaminated and interlayered; common micaceous carbonaceous planes; common roots | 0 32 | 32 | 10 |
| Sandstone | fine with rare irregular siltstone fine laminae; occasional micaceous carbonaceous planes; occasional roots | 0 13 | 31 | 97 |
| Siltstone | fine with common irregular sandstone fine laminae 80:20; common micaceous carbonaceous planes; rare roots | 0 61 | 31 | 36 |
| Mudstone | silty; laminated | 0 34 | 31 | 02 |
| | sharp | | | |
| Sandstone | fine with rare siltstone fine laminae; common micaceous carbonaceous planes; vaguely ripple bedded throughout | 0 21 | 30 | 81 |
| | sharp | | | |
| Mudstone | silty; laminated | 0 51 | 30 | 30 |
| | passage | | | |
| Mudstone | locally slightly silty; laminated; rare shell slip marks; locally common worm tracks; rare plant fragments | 1 08 | 29 | 22 |
| Mudstone | dark, slightly carbonaceous; locally common ostracods | 0 12 | 29 | 10 |
| Siltstone | medium with occasional sandstone fine laminae 70:30; locally vaguely ripple bedded; sandstone load and pouch structures between 28.60 and 28.80 | 0 88 | 28 | 22 |
| Siltstone | medium; unlaminated; strong; occasional roots | 0 10 | 28 | 12 |
| Siltstone | fine, locally muddy; laminated, becoming poorly laminated towards the top; rare plant remains including Calamites; occasional roots | 0 46 | 27 | 66 |
| Sandstone | fine; common micaceous carbonaceous planes; locally ripple bedded | 0 28 | 27 | 38 |
| | sharp | | | |
| Siltstone | fine with common sandstone fine laminae 70:30, becoming 90:10 near the top; common micaceous carbonaceous planes; common comminuted plant debris | 0 63 | 26 | 75 |

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| | | | | | |
|------------------------------|---|---|----|-----------|-----------|
| | | | | 26 | 75 |
| Siltstone | fine, locally muddy, laminated; locally common plant fragments near the base | 0 | 35 | 26 | 40 |
| Mudstone | silty, laminated, locally abundant comminuted plant debris | 0 | 10 | 26 | 30 |
| Mudstone | silty, laminated; common worm tracks and burrows; occasional non-marine lamellibranchs near the base and between 26:20 and 26:30; occasional shell slip marks | 1 | 65 | 24 | 65 |
| Mudstone | slightly silty; laminated; rare coalified plant remains; abundant non-marine lamellibranchs with mineralised shells sharp | 0 | 26 | 24 | 39 |
| Mudstone | silty; highly carbonaceous; unlaminated; iron-rich sharp | 0 | 11 | <u>24</u> | <u>28</u> |
| <u>SEATEARTH</u> Mudstone | silty; dark; unlaminated; abundant roots including <u>Stigmaria</u> sharp | 0 | 06 | 24 | 22 |
| Sandstone | fine with common irregular siltstone fine laminae 60:40; common discontinuous micaceous carbonaceous planes; occasional roots | 0 | 27 | 23 | 95 |
| Sandstone | medium with common discontinuous micaceous carbonaceous planes; occasional roots | 0 | 53 | 23 | 42 |
| Siltstone | fine to medium with occasional sandstone fine laminae and ripple-marked lenses 95:5; rare roots sharp | 0 | 49 | 22 | 93 |
| Sandstone | fine with rare siltstone fine laminae near the top; common micaceous carbonaceous planes; sub-vertical calcite-mineralised joints throughout; locally vaguely ripple bedded | 0 | 68 | 22 | 25 |
| Sandstone | fine to medium with occasional siltstone fine laminae, 90:10, common micaceous carbonaceous planes; locally vaguely ripple bedded | 0 | 67 | 21 | 58 |
| Siltstone | fine with rare wispy sandstone fine laminae | 1 | 46 | 20 | 12 |
| Siltstone | fine with occasional sandstone fine laminae and lenses, 95:5 | 0 | 15 | 19 | 97 |

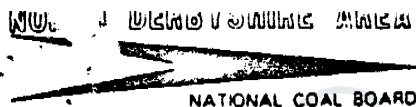


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|-------------|---|---|----|-------|
| | | | 19 | 97 |
| Mudstone | silty, laminated; occasional thin ironstone bands; common worm tracks and burrows | 1 | 92 | 18 05 |
| Mudstone | silty, laminated; common non-marine lamellibranchs; common shell slip marks | 0 | 33 | 17 72 |
| Mudstone | silty, dark; laminated; common non-marine lamellibranchs, common ostracods detached | 0 | 24 | 17 48 |
| <u>COAL</u> | dirty 0.08 broken cylinders and fragments detached | 0 | 08 | 17 40 |
| SEATEARTH | | | | |
| Siltstone | fine, grey; unlaminated, common roots | 0 | 42 | 16 98 |
| Mudstone | grey; unlaminated; occasional irregular polished surfaces; common roots | 0 | 66 | 16 32 |
| CORE LOST | | 0 | 42 | 15 90 |
| Mudstone | laminated; locally slightly carbonaceous; occasional thin ironstone bands; occasional shell slip marks | 1 | 20 | 14 70 |
| CORE LOST | | 1 | 50 | 13 20 |
| Mudstone | laminated; occasional shelly ironstone bands; core highly fragmented | 0 | 45 | 12 75 |
| Mudstone | laminated; occasional thin ironstone bands | 0 | 50 | 12 25 |
| Mudstone | carbonaceous; laminated; abundant non-marine lamellibranchs with mineralised shells | 0 | 25 | 12 00 |
| Mudstone | laminated; common thin ironstone bands; core highly fragmented; locally common worm tracks; rare non-marine lamellibranch fragments | 1 | 40 | 10 60 |
| CORE LOST | | 2 | 60 | 8 00 |
| | Start of coring 8.00m above origin in Clay Cross Soft seam | | | |
| N.B. | BOREHOLE NOT SEALED | | | |

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SK 46NE/56

SURVEY DEPARTMENT

BOREHOLE DATA AND HISTORY

BOREHOLE NAME: L 99^S UP-BORE (MARKHAM N°22)
Approximate Location: 2½ km SOUTH OF MARKHAM COLLIERY
National Grid Reference: E 446644 N 369168.2
6 inch sheet: 46 NE
Level of Origin: -437.41 metres
Date of Drilling: Commenced 14-9-83
Finished 9-12-83
Contractor's Name: N.C.B.
Name of Boremaster: J. MOTTRAM

| Depth (m) (±) | Diameter of Core (in) | Diameter of Hole (in) |
|------------------|-----------------------|-----------------------|
| 00-3 | 1— | 126 mm |
| 3-82.50 | 48 mm | 76 mm |
| | | |
| | | |
| | | |
| | | |

Drilling Difficulties: THE HOLE CAVED BADLY THROUGHOUT AND
WAS AT A STANDSTILL. EVENTUALLY AT A DISTANCE OF 82.50m DRILLING
WAS AT A STANDSTILL. SOME 20m SHORT OF 2ND WATERLOG
THEN THE 1 YEAR STRIKE INTERVENED DURING WHICH TIME A FIRE
MAIN BURST ON THE DISTRICT AND FLOODED SEVERAL GATES TO
Method of Sealing Off Borehole: THE WATER WAS PUMPED AWAY ONLY TO
ENABLE THE DRILLING EQUIPMENT TO BE RETRIEVED
THEN THE DISTRICT WOULD BE SEALED OFF
HENCE THE ABANDONMENT OF THE HOLE

HOLE WAS NOT SEALED

Purpose fulfilled by Borehole:

PROVED ONLY THE 1ST 2ND & 3RD SEAMS

Official Responsible for above Report:

R. T. Wells

Area Chief Surveyor & Minerals Manager