REPORT ON

1996 EXPLORATION WORK

TSABLE RIVER COAL PROJECT

Prepared By:

Stephen Gardner, P. Geo.

Jan. 7, 1997

LIST OF MAPS & FIGURES

TEXT FIGURES:

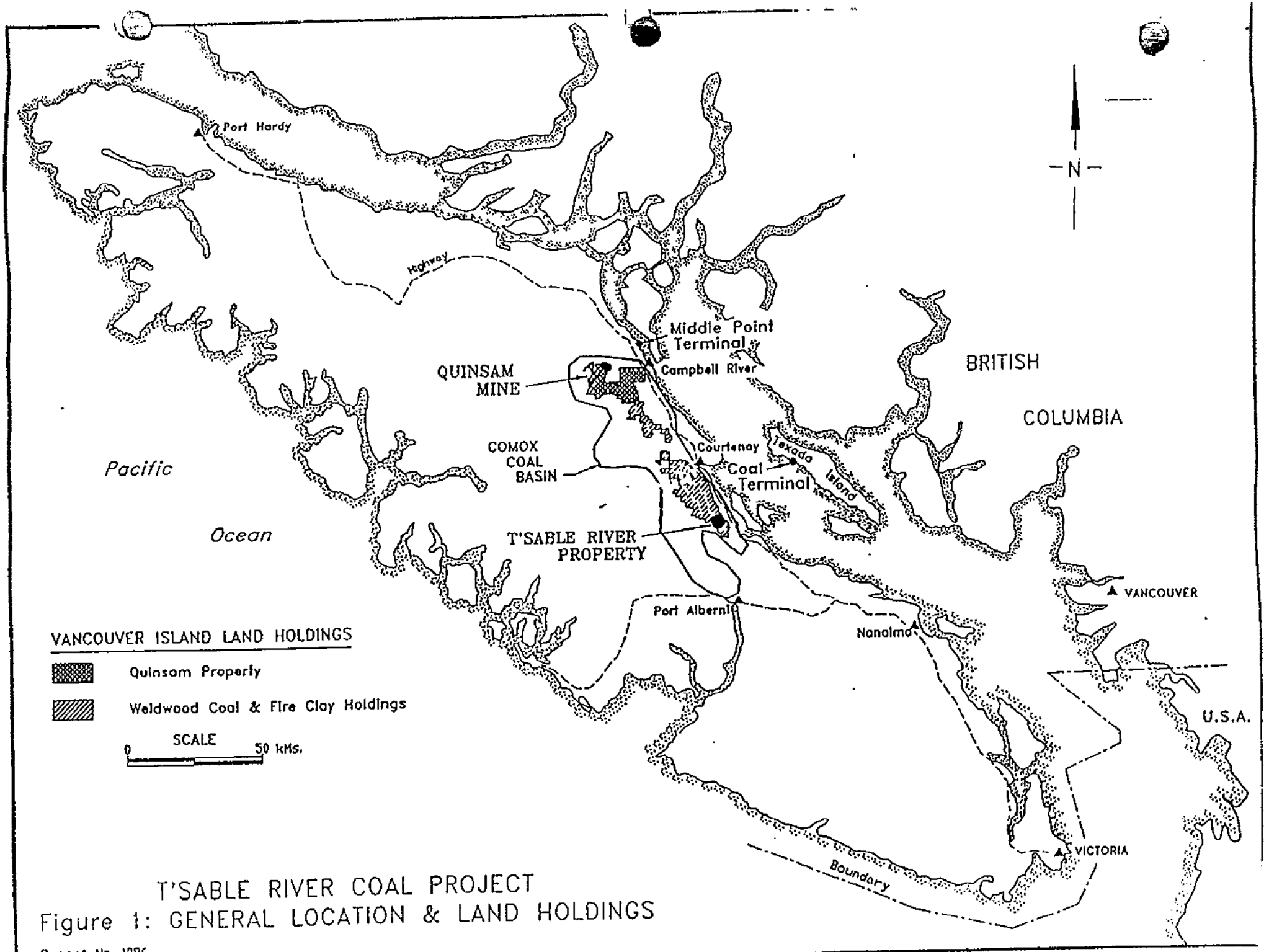
APPENDIX I. (MAPS)

APPENDIX II. (CROSS-SECTIONS)

APPENDIX III. (DRILLHOLE INFORMATION)

APPENDIX IV. (PHOTOGRAPHIC PLATES)

TABLE of CONTENTS



T'SABLE RIVER COAL PROJECT

Figure 1: GENERAL LOCATION & LAND HOLDINGS

Report No. 1096

1.0 SUMMARY

A total of 27 drillholes were completed at Tsable River in the 1996 calendar year, for 6543 metres total drilling and coring. The holes were all vertical rotary percussion with wireline coring from a pre-determined core point. The deepest hole was 507 metres, with average hole depth 240 metres. Quality testing of the coal seams was undertaken on selected holes.

The program was designed to place holes on a 600 metre spacing to determine a sufficient quantity of in-situ coal resources to justify further exploration and development. A total in-situ coal resource of 22.50 million tonnes was identified by the drilling. By adding the 9.96 million tonnes (proven and probable) defined by the 1991 work by Western Canadian Mining and 7.00 million tonnes inferred from old drilling to the north of the Tsable River, a total in-situ coal resource of 39.46 million tonnes has been indicated. A few holes were positioned to augment the information gained in 1991 in order to determine the most likely location for initial access to the deposit and the first few years of mining.

The Late Cretaceous Comox Formation in the area of interest contains a total of 5 coal intervals, numbered in ascending order. The No. 1 Seam, or lowest seam in the sequence, is the main economic target. The No. 3 Seam reaches thicknesses in excess of 2 metres and thus can be considered a secondary economic target *in localized areas.* The coal zones are separated by varying thicknesses of sandstone, siltstones and shaly interbeds.

The structure of the area is complex. The formation dips exceed 20 degrees north east on the western margin of the deposit, where it is in faulted contact with the underlying Triassic Karmutsen basaltic complex. A series of strike faults with displacements of 3 to 10 metres break the deposit up into a number of structural blocks. These faults are further complicated by other, more prominent tear fault features, displacements which vary in the tens of metres vertically, with undetermined horizontal dislocations. One of these faults cuts through the deposit on the north end, just south of the Tsable River, with indicated displacements of 10 to 100 metres. This fault isolates the area of near-surface coal on the northwest corner of the deposit, near where a test adit was installed in the 1950's. A

second major tear fault runs roughly parallel with Cowie Creek and is downthrown to the south by as much as 20 metres, thereby separating the south end of the deposit from the central portion.

The No. 1 coal seam deposition is of a variable nature over much of the deposit. It usually has a shale/mudstone roof and floor. The average seam thickness is 2.7 metres but ranges from less than a metre to over 4 metres in some areas. Varying amounts of shale parting are contained within the coal seam. The coal itself in many cases exhibits a brown streak, indicating a high percentage of inherent ash material.

The No. 1 seam generally has a sulphur content of less than 1 % except for an area near the western margin of the deposit where it is in contact with the overlying sandstone. It typically has an in-situ ash content of 20 to 35% (including the various partings). Even at ash contents exceeding 20%, the coal exibits a high Free Swelling Index of between 5 and 7 in many cases. On a Mineral Matter Free Basis, the No. 1 Seam has a calorific value of 8145 Kcal/kg (14,677 Btu/lb) a volatile content of 39.77%, indicating a rank of High Volatile Bituminous "A" coal. The mean maximum reflectance values of the No. 1 Seam are 0.82 to 0.84% (Ryan, 1996).

The No. 3 Seam, a secondary target, generally is of similar quality although much higher in sulphur content than the No. 1 Seam.

FIGURE 2.

TSABLE RIVER COAL PROJECT
PHASE I
DRILLHOLE SUMMARY (ALL HOLES)

HOLE NUMBER	CORED	NORTHING (m)	EASTING (m)	COLLAR (m)	TILL (m)	No. 5 SEAM DEPTH	THICK	No. 4 SEAM DEPTH	THICK	No. 3B SEAM DEPTH	THICK	No. 3A SEAM DEPTH	THICK	No. 1R SEAM DEPTH	THICK	No. 1 SEAM DEPTH	THICK	TOTAL DEPTH
TS-96-01	Y	5484144.1	364230.7	178.9	53.1	53.70	1.05	79.5	0.7	129.8	1.2	132.3	0.6	163.9	0.4	165.0	2.88	177.8
TS-96-02	Y	5483803.4	364350.7	194.2	60.1	0.00	0.00	78.0	0.9	114.5	0.9	116.3	0.5	146.4	0.3	147.2	2.47	195.1
TS-96-03	Y	5484101.0	363780.7	181.7	40.3	0.00	0.00	0.0	0.0	52.1	2.7	56.2	2.6	113.7	0.4	115.6	2.60	126.1
TS-96-04	N	5483348.2	364261.3	207.4	60.4													60.4
TS-96-05	Y	5484800.7	364157.3	128.1	5.3	0.00	0.00	91.9	1.2	127.0	1.3	128.6	0.6			158.4	2.10	173.0
TS-96-06	Y	5484920.1	364378.7	112.8	3.3	142.73	1.07	181.2	1.1	199.3	1.8	201.4	0.7	226.1	0.3	226.6	2.41	237.2
TS-96-07	Y	5484264.9	365505.4	93.3	18.6					224.8	1.6					271.6	3.20	321.9
TS-96-08	N	5484038.5	364403.1	169.0	49.0													49.0
TS-96-09	Y	5484853.9	365418.1	67.1	19.2	220.80	0.65	263.8	0.9	303.5	2.6					332.7	0.65	421.2
TS-96-10	Y	5484791.4	364842.4	91.7	5.0			238.2	1.3	278.3	0.4	279.2	0.6	297.6	0.5	298.4	2.36	319.0
TS-96-11	Y	5484068.5	365018.3	135.8	25.0			179.8	1.2	218.3	0.8	220.3	0.8			246.2	2.06	258.0
TS-96-12	Y	5483541.1	364615.1	191.5	53.3	83.60	0.68	84.5	1.5	124.2	1.3	126.1	0.7			160.9	2.53	177.3
TS-96-13	Y	5485684.0	363785.0	112.7	2.0	157.86	0.66	202.2	0.9	229.2	1.6	232.2	1.1			261.5	2.28	271.1
TS-96-14	Y	5485763.4	365335.5	70.3	26.0	327.20	0.70	365.7	0.9	404.1	2.1			428.4	0.4	429.1	2.20	437.2
TS-96-15	Y	5485403.7	364835.1	77.0	7.7	258.00	0.75	263.5	0.9	298.1	0.4	299.7	1.0			318.8	2.59	337.0
TS-96-16	Y	5485468.6	364209.0	99.2	11.5	199.80	0.90	238.7	0.3	274.7	0.5	280.2	0.2	306.6	0.5	307.6	2.57	318.3
TS-96-17	Y	5484749.6	363120.3	219.4	2.0					49.7	0.7	51.3	0.9			84.2	3.24	94.6
TS-96-18	Y	5486890.2	363994.7	92.9	41.0	294.50	0.80	335.0	0.6	383.2	1.3	385.2	0.4			417.0	1.20	425.0
TS-96-19	Y	5487408.9	363820.4	100.9	59.0			361.4	0.9	405.1	0.7					456.0	4.60	470.0
TS-96-20	N	5488336.0	363652.0	109.2	42.4			362.6	1.2	447.2	1.4					480.8	10.75	507.0
TS-96-21	N	5484589.9	362898.1	199.8	30.0													30.00
TS-96-22	Y	5484938.8	362908.6	226.7	5.5					54.52	0.61	55.73	1.27			94.10	1.65	108.10
TS-96-23	Y	5485002.4	363158.7	163.7	7.5					59.92	0.56	62.43	0.60			100.20	4.30	109.50
TS-96-24	Y	5485262.8	363181.4	139.8	8.0			49.20	0.50			85.43	1.37			121.00	2.87	129.10
TS-96-25	Y	5485530.6	363449.7	122.9	5.7	82.20	0.50	107.00	0.50			144.68	2.26			174.56	2.69	183.60
TS-96-26	Y	5486194.0	363351.4	122.0	27.5	142.70	0.40	188.80	0.40			227.92	1.36			257.10	0.80	275.00
TS-96-27	Y	5486899.1	363636.4	65.8	11.5			231.0	0.9	269.1	0.6	270.8	1.9			301.8	2.62	331.1

TOTAL METRAGE : 6543

NOTE : GROSS SEAM THICKNESS TABULATION, INCLUDING PTG. UP TO 0.50 m.

2.0 EQUIPMENT USED

A conventional truck-mounted Ingersoll Rand TH-55C rotary drill equipped with a 250 p.s.i. - 650 c.f.m. compressor and a set of Gardner Denver duplex mud pumps was used on the program. The drill was tooled with a downhole percussion hammer for rotary work and a Christensen wireline core string for coring work. Conventional light wall threaded casing was used for the bulk of the surface overburden, except a number of holes where significant thicknesses of gravel proved too difficult for conventional casing installation. The drilling contractor sub-contracted this gravel work to a water-well driller equipped with a drill-thru casing hammer.

Standard hole diameters of 15 cm (6 in.) were installed, with core diameters of 7.6 cm (3 in.). The normal drilling sequence included casing off the surface overburden using mud circulation, switching to air for downhole hammer work, then at approximately the 300 metre depth (depending on groundwater volumes) switching to mud circulation. The deepest hole bottomed at 507 metres (1663 ft.). Difficulty in retrieving pipe and recovering core was experienced by the drill at depths exceeding about 427 metres (1400 ft).

All holes were geophysically logged with a standard gamma-caliper-density-resistance tool. Problems were encountered with the resistance curve on some holes, which were attributed to highly- saline groundwater. A hole deviation survey was run on selected drill holes.

Line clearing, drill pad construction and reclamation work was completed with a tracked excavator and a rubber-tired backhoe.
A 955 Cat Tracked Loader was used for towing the drilling equipment and service trucks in and out of some of the more difficult sites.

3.0 SURVEYING

A total of 20 drilled holes and one proposed site was surveyed in 1991 by R. D. Galibois of McGladrey Surveys Ltd. A plan showing survey control, drill hole collars and baseline control was produced. Field data as part of this program was reduced to the NAD 27 Co-ordinate system, using an uncontrolled orthophoto produced by Eagle Mapping Services Ltd. of Vancouver. Bearings were derived by a time azimuth solar observation at Drillhole 90-03. At the beginning of the 1996 drill program, a survey was carried from 90-03 using the previous control. On Aug. 16, 1996, a total of 12 GPS points were established by Wright-Parry Surveyors of Nanaimo in conjunction with I. Forjan (Quinsam staff). Included in this survey were DDH 90-03 and GAL #32 from the previous work and T-96003 and T-96004 traverse points tied to the 1991 survey. All survey data, including drillhole co-ordinates, are plotted on the NAD 27 UTM Grid. The data can be transformed to NAD 83 Zone 10 UTM to conform to the Digital Maps of the Tsable River Area. As a follow-up to this survey work, McElhanney Consulting Services Ltd. (Vancouver Office) has been retained to produce a 2 metre surface contour map using existing air photo control and Quinsam ground survey data. This map will be available in early 1997.

4.0 PREVIOUS WORK

The area between Tsable River south to Cougarsmith Creek was first identified as having mining potential in the late 1940's by Canadian Collieries geologist A. F. Buckham while mining was being carried out on the north side of the river. During this time two outcroppings of coal were opened up and sampled, field mapping was undertaken (including bulldozer trenching), and more than a dozen drill holes were completed in the area. As a result of this work, Buckham calculated a mineable reserve of 7 to 8 million tonnes, located on 5 structural blocks, the largest block of which contained some 3 million tonnes.

Western Canadian Mining Ltd. (a subsidiary of Consolidated Brinco Ltd.) resumed exploration drilling in the same area in order to get a better definition of seam thickness, quality and structure. 20 diamond drillholes (HQ size) were installed in the area. The total in-situ proven reserve as a result of this work was identified at 10,000,000 tonnes. A subsequent study by D. M. Parkes (Parwest Mining International) revised the total proven reserve to 9,961,000 tonnes.

A program of surface mapping by Bickford Consulting Ltd. for the
B. C. Ministry of Energy, Mines and Petroleum Resources in 1992 produced surface geology maps on a scale of 1 : 20,000.

5.0 GEOLOGIC SETTING

The Tsable River area is located near the south end of the Comox Coal Basin, some 15 km south of Cumberland, on the east coast of Vancouver Island. The basin geometry in this area is confined to approximately 8 km wide on the landward side, extending eastward out under Baynes Sound and beyond. On the western margins, the coal-bearing Cumberland and Dunsmuir Members of the Late Cretaceous Comox Formation abut against the volcanic basement rock of the Triassic Karmutsen Fm. basalt in an unconformable and sometimes faulted contact. The topography of the area is characterized by linear northwest trending ridges which are sometimes steep-sided to the northeast (representing bedding plane dip), interspersed with parallel, linear, flat, sometimes swampy areas. The ridges become more prominent with increased proximity to the foot of the Beaufort Mountains, which represent tectonic uplift along the backbone of Vancouver Island. Elevations across the area covered by the coal-bearing formation varies from sea level at the coastline to 250 metres A.S.L. along the western sedimentary/volcanic contact. The sedimentary deposits are incised by a major river valley (the Tsable River) and two prominent creek valleys (Cowie Creek and Cougarsmith Creek). Between Cowie and Cougarsmith Creeks on the south end of the deposit, a major glacio-fluvial sequence of gravels up to 60 metres in thickness masks the bedrock topography. Elsewhere, glacial till overburden is commonly 2 to 10 metres thick.

6.0 STRATIGRAPHY

Earlier mapping and stratigraphic work by Bickford et al (1989, 1990, 1991) have labelled the coal seams numbered in descending order from 1 to 4. This system of numbering has been discontinued in favour of numbering the seams in ascending order in order to conform to the 1991 Western Canadian Mining Report, which closely compares with the seam numbering at the Quinsam Coal Mine near Campbell River.

The Late Cretaceous coal-bearing Comox Formation in the Tsable River area is characterized by three units:

1) the lowermost Benson Member, which is a basal conglomerate consisting of 0 to 60 metres of pebble to cobble-sized chert, granodiorite and basaltic clasts in a medium to coarse grained, poorly-sorted sandstone matrix. The Benson is in unconformable contact with the Triassic basement of the Karmutsen Formation (chiefly pillow basalt and flow lavas),

2) the Cumberland Member, which contains the chief economic coal seam (termed the No. 1, or lowest seam in the sequence), and consists of a 30 to 90 metre sequence of alternating siltstone, carbonaceous shale, minor sandstones and coal, and

3) the Dunsmuir Member, which on the area of interest is approximately 60 metres of predominantly medium to coarse grained sandstone, with minor shale, mudstone and coal. The secondary economic target is contained in the Dunsmuir Member, near its base and is termed the No. 3 Seam. The No. 3 Seam is normally consists of two prominent coal plies, labelled 3A and 3B in ascending order, separated by 0.3 to 2 metres of sandy siltstone.

The total thickness of the Cumberland and Dunsmuir Members over the area of interest ranges from 90 to 150 metres. Above the top of the Dunsmuir, a variable thickness of the overlying Trent River Fm. occurs which consists of predominantly silty shales. Above that, gritty sands equivalent to the Extension-Protection Fm. occur.

7.0 DRILLHOLE STRATIGRAPHY

As previously stated, the stratigraphic units of most interest is the Cumberland Member and the lower part of the Dunsmuir, which contain the No. 1 and No. 3 Seams. A third seam which is quite continuous and of uniform quality but seldom greater than 1 metre in thickness occurs as the No. 4 Seam, some 40 metres above the No. 3. The No. 4 Seam has a mudstone roof and sandstone floor.

FIGURE 3 : AVERAGE STRATIGRAPHIC SEPARATION BETWEEN MAJOR COAL ZONES, 1996 DRILLING

HOLE NUMBER	STRATIGRAPHIC SEPARATION (m) SEAM #4 TO #3	STRATIGRAPHIC SEPARATION (m) SEAM #3 TO #1
TS-96-01	49.70	30.95
TS-96-02	35.57	29.57
TS-96-03	52.06	54.88
TS-96-04		
TS-96-05	33.87	29.20
TS-96-06	16.98	23.97
TS-96-07		
TS-96-08		
TS-96-09		
TS-96-10	38.80	17.76
TS-96-11	37.28	25.11
TS-96-12	38.32	34.07
TS-96-13	26.20	28.18
TS-96-14	37.50	22.20
TS-96-15	33.71	18.17
TS-96-16	35.67	26.25
TS-96-17	49.73	32.04
TS-96-18	47.60	31.50
TS-96-19	42.75	50.25
TS-96-20		32.15
TS-96-21		
TS-96-22	54.52	37.10
TS-96-23	59.92	37.17
TS-96-24		34.20
TS-96-25		27.62
TS-96-26		27.82
TS-96-27	37.19	29.13
AVERAGE SEPARATION (m) :	40.41	30.88

The attached table shows the stratigraphic separation between the coal seams for the 1996 drillholes. The stratigraphic separation between the No. 1 Seam and the No. 3 Seam averages 31 metres (102 ft.). The maximum separation is 55 metres and minimum separation is 18 metres, however, these values are likely anomalous due to steep dips and shortening of the section by faulting. This stratigrapic interval consists of alternating layers of minor sandstone and siltstones, which are laminated and interbedded with shaly zones.

The stratigraphic separation between the No. 3 Seam and No. 4 Seam averages 40 metres (131 ft.) with a maximum of 60 metres and minimum of 17 metres. Again, the two extreme values are likely anomalous due to structure.

Figure 4 illustrates the stratigraphic correlation along a north-south 4.5 kilometre strike length in the centre of the area of interest. In general, the three major seams display a relatively even character along strike, with some zones of thinning evident. The stratigraphic column is also quite uniform and comparable between holes. Just south of the Tsable River valley, however, between holes DDH-91-16 and TS-96-27, a shale out of the No. 1 Seam occurs, thereby reducing its thickness to less than 1 metre (see Appendix Map 2).

There is a change to the stratigraphic correlation reported in the previous 1991 report with respect to the area around 91-19 and 91-20, south of Cowie Creek. The 1991 report indicates that the No. 1 Seam was intersected in these two holes. The current interpretation postulates that this seam was in fact the No. 3 seam, and the holes did not go deep enough to intersect the No. 1 Seam. This is evidenced by hole 96-03, which intersected both the No. 3 seam and No. 1 seam.

8.0 DESCRIPTION OF THE COAL SEAMS

The No. 1 Seam (main economic target) is characterized by an immediate roof of coaly mudstone of 0 to 3 metres. This immediate roof is overlain by strong sandstone or silty sandstone. The coaly mudstone is usually gradational in character, becoming more fissile and friable near the immediate contact with the coal seam. In the upper zones, the mudstone becomes more silty in character and resistant to weathering. In some holes (eg TS-96-25C), the mudstone is of minimal thickness (0.80 metres), and a strong silty sand is encountered directly above it. Within the mudstone roof numerous small slips and calcite-filled irregular fractures occur, adding to the friability of the material.

The No. 1 Seam consists of a 2 to 3 metre coal bed of varying quality. It generally displays a brown streak, with a high concentration of inerts. The in-situ ash content ranges from 11% to more than 35% in some cases. The base of the seam is variable in character, with one or two persistent mudstone partings splitting up the lower portion. Depending on the location, this lower section is of mineable quality where the partings are less than 0.2 metres in thickness. Where the lower section is predominantly coal, the total mineable thickness of the seam can exceed 4 metres.

In some areas a top coal ply of 0.3 to 0.5 metres thickness is separated by 0.3 to 0.7 metre mudstone parting (holes 96-01, 02, 03 06, 10, 14 and 16). The upper ply of coal in these instances contains up to 8 % of sulphur, chiefly pyritic. This is reminiscent of the character of the main No. 1 seam in some parts of the Quinsam deposit.

Figure 5 : Average Seam Thickness, 1996 Drilling

HOLE NUMBER	DEPTH TO #1 SEAM (metres)	TOP OF #1 ELEVATION	SEAM THICKNESS	IN-SITU ASH%(DB)
TS-96-01	165.0	13.9	2.88	23.10
TS-96-02	146.4	47.8	2.47	
TS-96-03	115.6	66.1	2.60	
TS-96-05	158.4	-30.3	2.10	23.42
TS-96-06	226.1	-113.3	2.41	25.48
TS-96-10	297.6	-205.9	2.36	23.22
TS-96-11	246.2	-110.4	2.06	17.34
TS-96-12	160.9	30.6	2.53	31.85
TS-96-13	261.5	-148.8	2.28	24.10
TS-96-14	428.4	-358.1	2.20	35.47
TS-96-15	318.8	-241.8	2.59	44.28
TS-96-16	306.6	-207.4	2.57	21.67
TS-96-17	84.2	135.2	3.24	31.20
TS-96-19	456.0	-355.1	4.60	
TS-96-22	94.1	132.6	1.65	
TS-96-23	100.2	63.5	4.30	
TS-96-24	121.0	18.8	2.87	
TS-96-25	174.6	-51.6	2.69	
TS-96-27	301.8	-236	2.62	24.01
		AVERAGE :	**2.69**	**27.10**

NOTE 1: SEAM THICKNESS INCLUDES PARTINGS UP TO AND INCLUDING 0.5 M.
NOTE 2: IN-SITU ASH INCLUDES NO ROOF OR FLOOR DILUTION.
NOTE 3: IN-SITU COAL AND PARTING THICKNESSES ADJUSTED FOR S.G.

The preceding table identifies average seam thickness for the No. 1 Seam in the 1996 drilling. Holes where anomalously low or high values for the No. 1 seam as a result of structural thickening or thinning, for example, have been discounted.

The table also illustrates the in-situ ash contents of the No.1 Seam analysed at Loring Labs. These values include all partings within the mining unit as indicated by the Seam thickness column. They do not include any dilution associated with roof or floor material. In these cases where there is a rider seam present above the No. 1 Main Seam (see Figure 2), the rider seam and intervening parting are not included.

The No. 3 Seam is of economic thickness in specific areas only. With a sandstone roof, it generally consists of 2 distinct plies, termed the 3A and 3B intervals. These intervals are separated by a silty shale parting of .2 to over 2 metres in thickness. Where it is thin, the 3A and 3B plies coalesce into a mineable entity exceeding 2 metres in thickness. The floor is generally a 1 to 2 metre thick mudstone, grading downward into a silty sandstone.

9.0 STRUCTURE

Appendix I. MAP B (Structure Contour Map, Tsable River Coal Property) illustrates the main fault features and top of seam elevations for the No. 1 Seam over the area of interest.

The structure contour plan (MAP B) has been compiled as a result of the 1991 and 1996 drilling. Where possible, the drillholes prior to 1991 have been used as data points, however, hole elevations are not available for some holes and no survey co-ordinates are available, so the exact locations of these holes is difficult to determine in some cases. The surface mapping conducted by Cathyl-Bickford has also played a part in identifying where the faults might be located.

The structural pattern of the Late Cretaceous sediments in the Tsable River area can be described as a monocline striking to the northwest and southeast. On the western margins of the monocline where the sediments are in faulted contact with the volcanic basement rocks, Post-Cretaceous uplift has resulted in steeply dipping sediments interrupted at intervals by tensional strike faults with normal displacements downthrown to the northeast. Displacements on these normal strike faults can vary from less than the seam thickness to tens of metres. Most of these faults, however, are indicated to be in the 3 to 20 metre range. Faults with a reverse displacement (upthrown to the northeast) are also present in specific areas.

The strike faults are superceded by a set of tear fault structures which cut across formation strike which are not well understood at the present time. They are indicated to be of major proportions. They may have significant lateral as well as vertical displacements. Cathyl-Bickford et al (1991) has indicated that low angle thrusting is present within the section. This low-angle thrusting may be dissected and complicated by the tear fault structures. Much more work is required to accurately define a structural model for the entire area of interest. This work will necessarily involve underground test mining, as well as surface exploration to close up the drill spacing, augmented by shallow reflection seismic work.

Figure 6 (Section W - W') illustrates the attitude of the coal seams at right angles to the formation strike through the centre of the deposit.

STRATIGRAPHIC CORRELATION

CUMBERLAND MEMBER

TSABLE RIVER COAL PROPERTY

(4.5 KM STRIKE LENGTH)

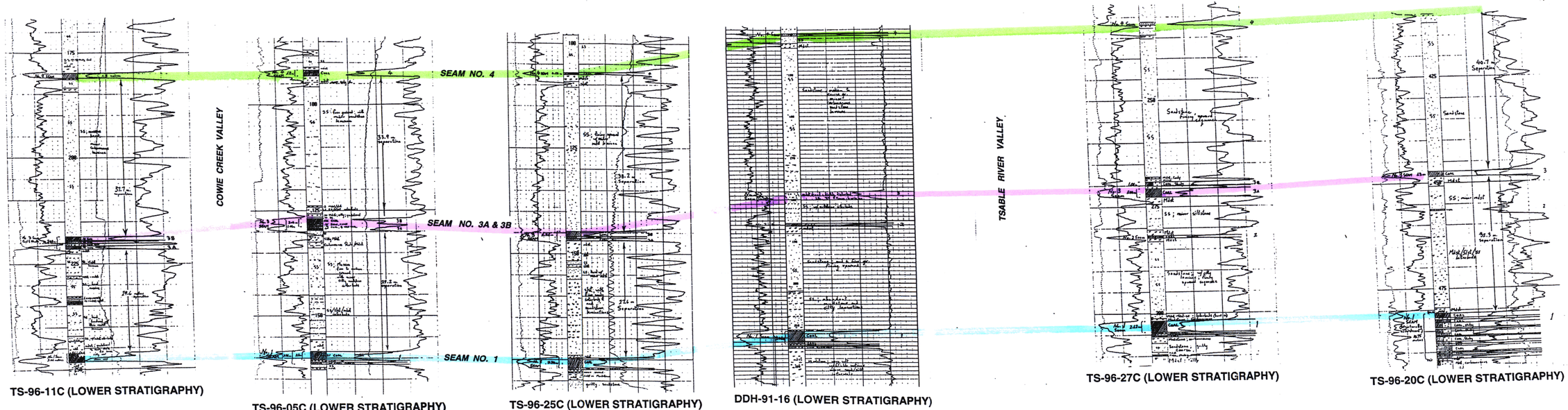
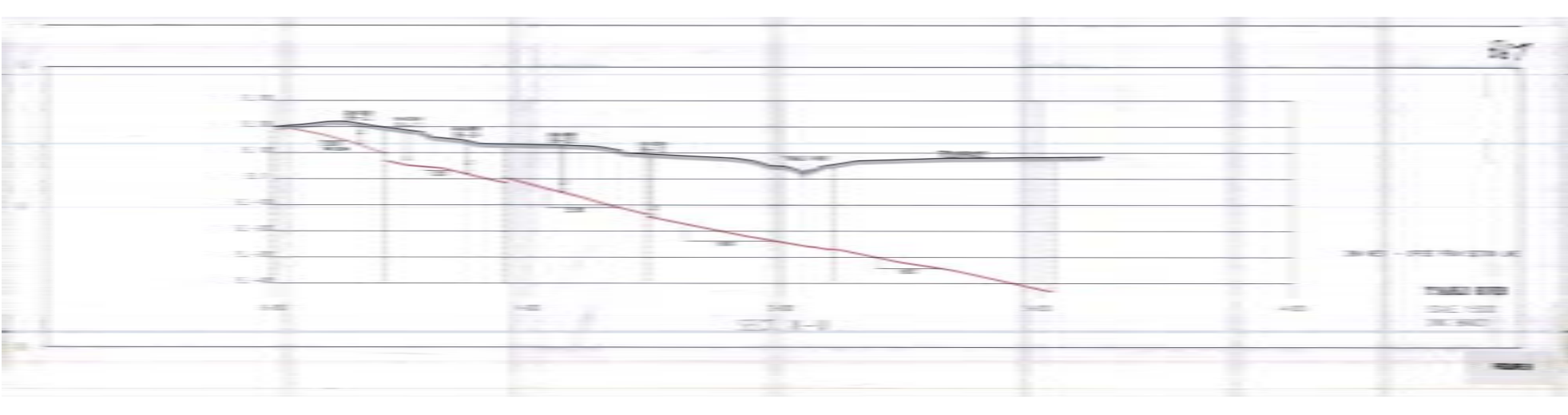


FIGURE 4.



In view of the density of the drillholes located on Block 1 (refer to Appendix I, Map A), the overall structural pattern has been fairly well-defined in this area. Block 1 contains up to 6 million tonnes of in-situ coal, which is sufficient in size to allow an initial layout for underground exploration and development. This block represents the best possibilities for portal development and ramp access on to the main coal seam. The block is characterized by 12 to 20 degree dips to the north-east along the southwestern edge, where the topography is characterized by a low, steep-sided ridge of sandstone. On the top of the ridge, holes 96-17 and 96-22 indicate moderate disturbance on the coal characterized by bedding plane slippage. Hole 96-22 in particular shows a thinner than normal No. 1 Seam of 1.65 metres and the core description indicates movement within the coal seam itself.

Along the northeast flank of the ridge, the first substantial fault is intersected. This fault is a normal gravity type with indicated displacements of up to 10 metres. The fault parallels the formation strike. It is postulated that this fault continues to the southeast across Cowie Creek, but may terminate against the major tear fault which forms the southern boundary of Block 1.

To the northeast of the above-mentioned gravity fault, the surface topography gradually flattens out in to a low-lying swampy area. The structure contours indicate dips flatten to as low as 16% in this area (less than 10 degrees). To the northeast of the swamp, a second fault structure is indicated, with displacements of 3 to 7 metres, upthrown to the northeast. This is opposite of the first fault, indicating a "graben-type" structure in the centre, or beneath the swamp. It is not known at this time whether the centre of the graben has been subjected to small-scale disturbance. To the northeast of the second fault, the bedding attitude increases again to 25% (14 degrees) and dips away fairly uniformly to the northeastern edge of the block.

The northwestern boundary of Block 1 is bounded by another major tear fault with significant lateral displacement indicated as well as vertical displacements of 30 metres and more. This fault is upthrown to the north, and isolates the small structural block labelled as Block 7 from the rest of the deposit. The structure of Block 7 and its immediate neighbour to the northeast is poorly understood. What is known is that dips exceed 15 degrees over the entire block and it is in faulted contact with the volcanics on the southwestern margin.

In a broad context, the two major tear faults identified in the preceding paragraphs roughly divide the Area of Interest into thirds:

a) the area south of Cowie Creek (containing Blocks 2 & 3).

b) the area between Cowie Creek and the major fault which strikes northeast and crosses the Tsable River Valley (containing Blocks 1 & 4), and

c) the area north of the major fault which crosses the Tsable River Valley (containing Blocks 5, 6, & 7).

Due to the wide spacing of the drill holes, structural interpretations outside of Block 1 are of a very sketchy nature.

Most of the core descriptions indicate greater or lesser amounts of jointing and fracturing within and immediately adjacent to the coal seam. Slickensides are common, both high angle and low angle slippage is indicated. The abundance of slickensides is not peculiar, given the steep dips and structural complexity of the area. There is no doubt much small-scale movement adjacent to and within the coal seams, which are encased in the weakest rock of the stratigraphic section. Core recoveries also give an indication of the amount of structural disturbance. In some holes, core recoveries within the coal intervals were less than 50%, indicating a disturbed sequence and soft, friable coal that has been subjected to more than the normal stress. In a general sense, the amount of small scale disturbance within the coal measures will lessen to the northeast, as the formation dips flatten. Major structural deformation decreases away from the uplifted areas to the southwest, thus impacting the degree of small scale deformation.

APPENDIX II. to this report includes a number of cross-sections which are referenced on the surface contour plan, illustrating the structure over the area of interest.

The Appendices also include a plan showing drillhole intersections of the coal zones, the corelog descriptions, geophysical log interpretations in the coal zones of interest, and selected photographs of the core.

10.0 OTHER WORK

Other work undertaken in conjunction with the exploration drilling and coring program consisted of the following:

1) Acid Generation Testwork : Hole TS-96-10C was selected as the best hole for which an overburden column above the coal was available for acid generation testwork. The hole is located in the south-central area (Block 4) of the deposit. Acid generation samples in one metre increments were bagged up and sent out for acid/base testwork. Additionally, as core from all the holes were being described, HCl solution was applied to get a visual observation of the degree of effervescence (fizz) from the various rock types. The corelog descriptions in the Appendix make reference to these field tests.

2) Methane Desorption Testwork : The Provincial Government (Ministry of Employment and Investment) allocated technical expertise and funding to evaluate the ability of the coal seams to desorb methane gas. Dr. Barry Ryan worked in the field to collect and analyse selected coal samples for methane desorption characteristics. A report on this testwork is being prepared by Dr. Ryan.

LEGEND:

DEPTH TO TOP OF SEAM → 362.6 | TILL 42.4 ← DEPTH TO BEDROCK
1.20 #4 ← SEAM DESIGNATION
THICKNESS OF COAL (METERS) ↑

BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
BLOCK 5
BLOCK 6
BLOCK 7

SUBCROP LIMIT
NO. 1 SEAM
OLD ADIT SEAM #3
COAL THICKNESS LESS THAN 1.5 METERS
PROPOSED MAIN ENTRIES
GRAVEL PIT
GRAVEL PIT
PAD 1
Tsable River
COWIE CREEK
SMITH CREEK
COUGAR CREEK
NELSON LAND DISTRICT
NEWCASTLE LAND DISTRICT

96-20: TILL 42.4 | 362.6 1.20 #4 | 447.2 1.30 #3 | 480.8 10.75 #1 | TD 507
96-19: TILL 59.0 | 361.4 0.90 #4 | 405.1 0.70 #3 | 456.0 4.60 #1 | TD 470
96-27: TILL 11.5 | 231.0 0.90 #4 | 269.1 0.60 #3B | 270.8 1.90 #3A | 301.8 2.60 #1 | TD 331
96-18: TILL 41.0 | 294.5 0.80 #5 | 335.0 0.60 #4 | 383.2 1.30 #3B | 385.2 0.40 #3A | 417.0 1.20 #1 | TD 425
96-26: TILL 27.5 | 142.7 0.40 #5 | 188.8 0.40 #4 | 227.9 1.36 #3 | 257.1 0.80 #1 | TD 275
TILL 5.7 | 82.2 0.50 #5 | 107.0 0.50 #4 | 144.7 2.26 #3 | 174.6 2.69 #1 | TD 183.6
TILL 2.0 | 157.9 0.66 #5 | 202.2 0.90 #4 | 229.2 1.80 #3B | 232.2 1.10 #3A | 261.5 2.28 #1 | TD 271.1
TILL 5.5 | 54.7 0.40 #3B | 55.9 0.90 #3A | 70.7 0.40 #1 | 94.1 1.65 #1 | TD 108.1
96-24: TILL 8.0 | 49.2 0.50 #4 | 85.4 1.37 #3 | 121.0 2.87 #1 | TD 129.1
96-23: TILL 7.5 | 59.9 0.56 #3B | 62.4 0.60 #3A | 100.2 4.30 #1 | TD 109.5
96-17: TILL 2.0 | 49.7 0.70 #3B | 57.3 0.90 #3A | 84.2 3.20 #1 | TD 94.6
TILL 11.5 | 199.8 0.90 #5 | 238.7 0.30 #4 | 274.7 0.50 #3B | 280.2 0.20 #3A | 306.6 0.50 #1R | 307.6 2.60 #1 | TD 318.3
96-16: TILL 7.7 | 258.0 0.75 #5 | 263.5 0.90 #4 | 298.1 0.40 #3B | 299.7 1.00 #3A | 318.8 1.27 #1 | 320.2 0.34 #1 | 320.8 0.42 #1 | 322.1 1.32 #1 | TD 337
TILL 3.3 | 142.7 1.07 #5 | 181.2 1.10 #4 | 199.3 1.80 #3B | 201.4 0.70 #3A | 226.1 0.30 #1R | 226.8 2.40 #1 | TD 237.2
96-14: TILL 26.0 | 327.2 0.70 #5 | 365.7 0.90 #4 | 404.1 2.10 #3B | 428.4 0.43 #1R | 429.1 2.20 #1 | TD 437
96-05: TILL 5.3 | 91.9 1.20 #4 | 127.0 1.30 #3B | 128.6 0.60 #3A | 158.4 2.10 #1 | TD 167
TILL 40.3 | 52.1 2.70 #3B | 56.2 2.60 #3A | 113.7 0.40 #1R | 115.6 2.60 #1 | TD 126.1
96-03: TILL 60.2 | 78.0 0.90 #4 | 114.5 0.90 #3B | 116.3 0.50 #3A | 146.4 0.30 #1R | 147.2 2.50 #1 | TD 195.1
TILL 53.1 | 53.7 1.05 #5 | 79.5 0.70 #4 | 129.8 1.20 #3B | 132.3 0.60 #3A | 163.9 0.40 #1R | 165.0 2.90 #1 | TD 177.8
96-10: TILL 5.0 | 238.2 1.30 #4 | 278.3 0.40 #3B | 279.2 0.60 #3A | 297.6 0.50 #1R | 298.4 2.20 #1 | TD 319
96-09: TILL 19.2 | 220.8 0.65 #5 | 263.8 0.90 #4 | 303.5 1.25 #3B | 305.1 1.03 #3A | 332.7 0.65 #1 | TD 421
96-11: TILL 25.0 | 179.8 1.20 #4 | 218.3 0.81 #3B | 219.4 0.30 #3B | 220.3 0.75 #3A | 246.3 2.06 #1 | TD 258
96-07: TILL 18.6 | 224.8 1.60 #3 | 271.6 0.66 #1 | 273.2 1.32 #1 | 275.1 0.34 #1 | 275.8 1.43 #1 | TD 322
96-12: TILL 53.3 | 83.6 0.68 #5 | 84.5 1.50 #4 | 124.2 1.30 #3B | 126.1 0.70 #3A | 160.9 2.50 #1 | TD 177.3

T= 3.58m
T= 4.50m
T= 3.96m
T= 2.4m
T= 4.45m

0 200 400m SCALE

LEGEND

- RIVER OR CREEK
- SWAMP
- ROAD
- TRAIL
- STRUCTURAL BOUNDARY
- COAL SUBCROP (PROJECTED)
- ▲ COAL OUTCROP (LOCATION FIXED)
- △ COAL OUTCROP (LOCATION APPROXIMATE)
- ● 80 DRILL HOLES PRIOR TO 1996
- ○ 96-01 COMPLETED DRILL HOLES FOR 1996

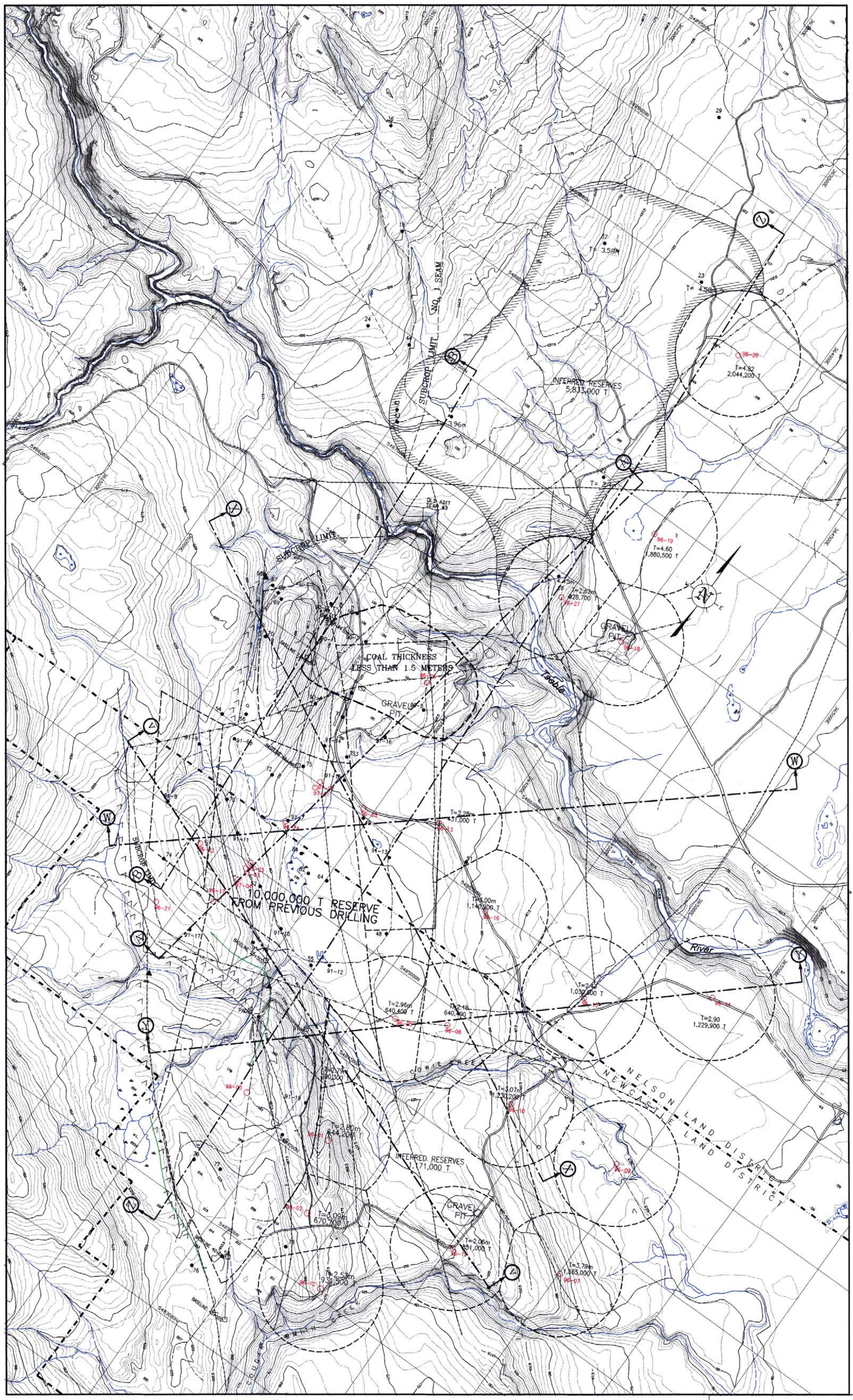
867

DESCRIPTION OF REVISION	DATE	BY
DESCRIPTION OF REVISION	DATE	BY

SCALE: 1:10,000 | DATE
DESIGNED: S.GARDNER
DRAWN: BDP | 96-12-12
CHECKED: S.GARDNER
APPROVED:

T'SABLE RIVER COAL PROJECT
DRILLHOLE INTERSECTIONS (1996)

T'SABLE RIVER COAL CORPORATION
BRAMPTON, ONT. — CAMPBELL RIVER, B.C.
DWG. NO. MAP A | REV.



LOWER COAL SEAM (#1)

BOREHOLE	GROSS COAL THICKNESS	PARTING THICKNESS	NET COAL THICKNESS	TONNES (MT) MEASURED & INDICATED	BOREHOLE	GROSS COAL	PARTING THICKNESS	NET COAL THICKNESS	TONNES (MT) MEASURED & INDICATED
9601	2.80	---	2.80	644,200	9616	3.00	---	3.00	1,140,900
9602	3.09	0.62	2.47	670,700	9618				
9603	2.60	0.20	2.40		9619	4.60	0.18	4.42	1,880,500
9604					9620	4.82	0.85	3.97	2,044,200
9605	2.96	0.41	2.55	640,400	9621				
9606	2.15	---	2.15	640,400	9622				
9607	3.79	0.94	2.85	1,565,000	9623				
9608					9624				
9609					9625	2.31		2.31	
9610	3.07	0.32	2.75	1,230,200	9626				
9611	2.06	0.07	1.99	851,000	9627	2.62		2.62	928,700
9612	2.53	---	2.53	931,500	91-20	2.79	---	2.79	200,300
9613	2.28			431,000				TOTAL:	16,059,500
9614	2.90	0.27	2.63	1,030,600					
9615	2.43	0.40	2.03	1,229,900	INFERRED				7,004,000

LEGEND

- RIVER OR CREEK
- SWAMP
- ROAD
- TRAIL
- STRUCTURAL BOUNDARY
- ○ 96-01 1996 DRILLHOLES

DESCRIPTION OF REVISION	DATE	BY

SCALE: 1:10,000 DATE:
DESIGNED:
DRAWN: BDP 97-03-26
CHECKED:
APPROVED:

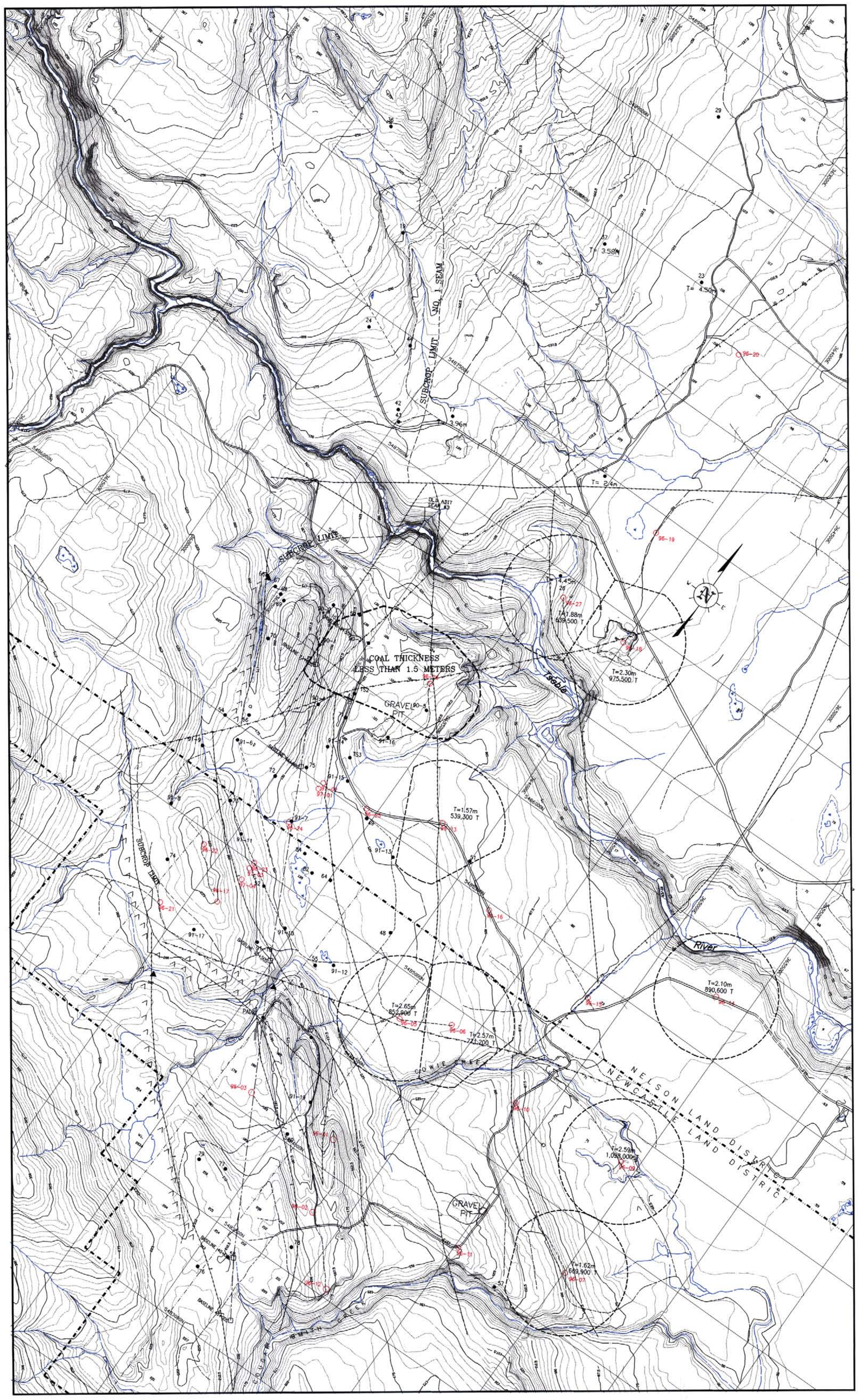
T'SABLE RIVER PROJECT
EXISTING DRILLING & POTENTIAL RESERVES

T'SABLE RIVER COAL CORPORATION

BRAMPTON, ONT. CAMPBELL RIVER, B.C.

DWG. NO. MAP – C 97-D-074 REV.

867



UPPER COAL SEAM (#3)					UPPER COAL SEAM (#3)				
BOREHOLE	GROSS COAL THICKNESS	PARTING THICKNESS	NET COAL THICKNESS	TONNES (MT) MEASURED & INDICATED	BOREHOLE	GROSS COAL THICKNESS	PARTING THICKNESS	NET COAL THICKNESS	TONNES (MT) MEASURED & INDICATED
9601					9616	2.10			890,600
9602					9618	2.30			975,500
9603					9618				
9604					9619				
9605	2.65	0.30	2.35	852,900	9620				
9606	2.57	0.64	1.93	771,150	9621				
9607	1.62		1.62	669,900	9622				
9608					9623				
9609	2.59	0.31	2.28	1,098,000	9624				
9610					9625				
9611					9626				
9612					9627	2.62			639,500
9613	1.57			539,300					
9614									
9615								TOTAL:	6,436,850

LEGEND

———	RIVER OR CREEK
⩛ ⩛ ⩛	SWAMP
============	ROAD
------------	TRAIL
------------	STRUCTURAL BOUNDARY
● 80	DRILL HOLES PRIOR TO 1996
○ 96-01	COMPLETED DRILL HOLES FOR 1996

			SCALE:	1:10,000	DATE	
			DESIGNED:			
			DRAWN:	BDP	97-03-26	
			CHECKED:			
DESCRIPTION OF REVISION	DATE	BY	APPROVED:			

T'SABLE RIVER PROJECT
EXISTING DRILLING
& POTENTIAL RESERVES

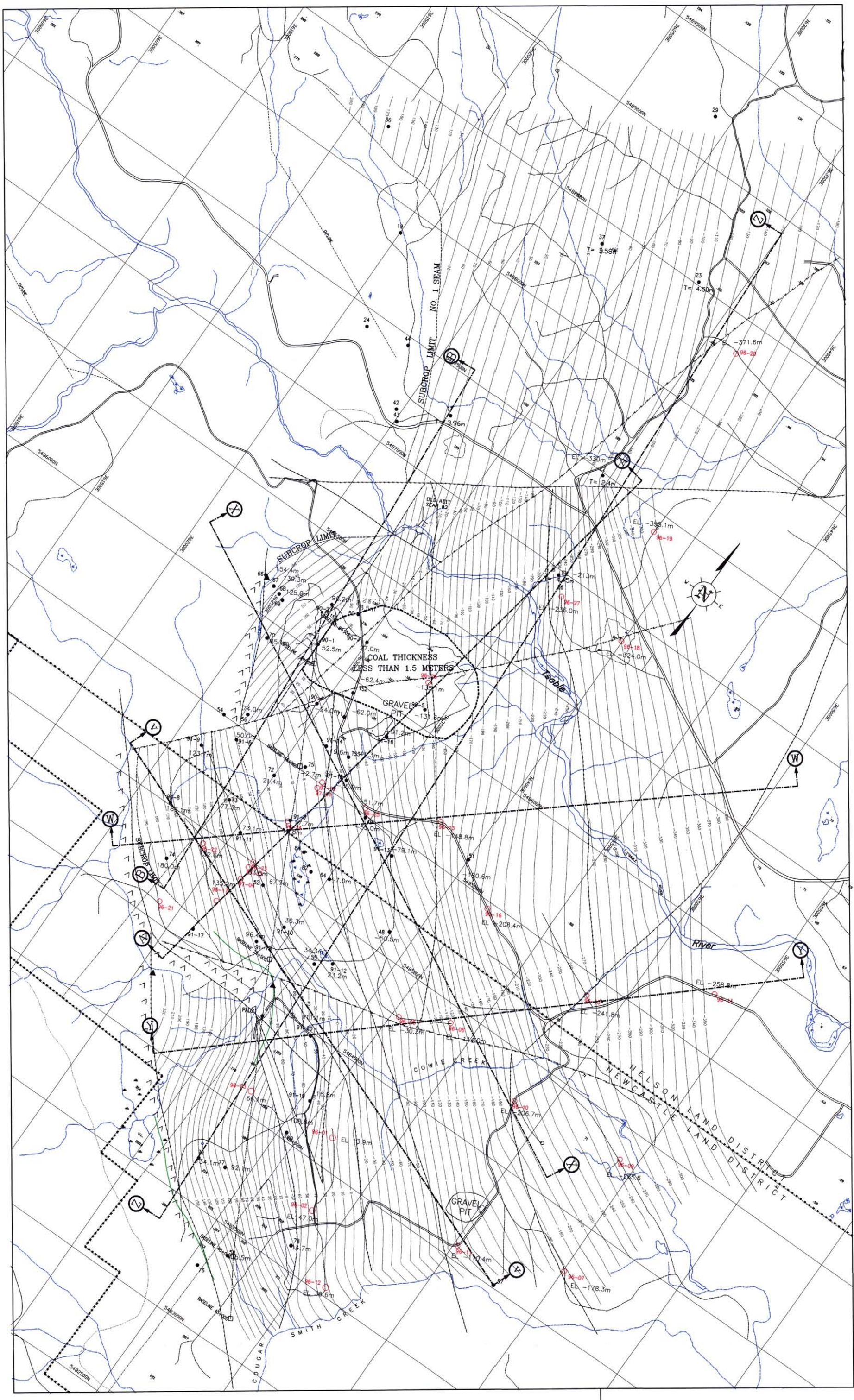
T'SABLE RIVER COAL CORPORATION

BRAMPTON, ONT.
CAMPBELL RIVER, B.C.

DWG. NO. MAP - D 97-D-073

REV.

867



LEGEND

- RIVER OR CREEK
- SWAMP
- ROAD
- TRAIL
- STRUCTURAL BOUNDARY
- ● 80 — DRILL HOLES PRIOR TO 1996
- ○ 96-01 — COMPLETED DRILL HOLES FOR 1996

NO.	DESCRIPTION OF REVISION	DATE	BY

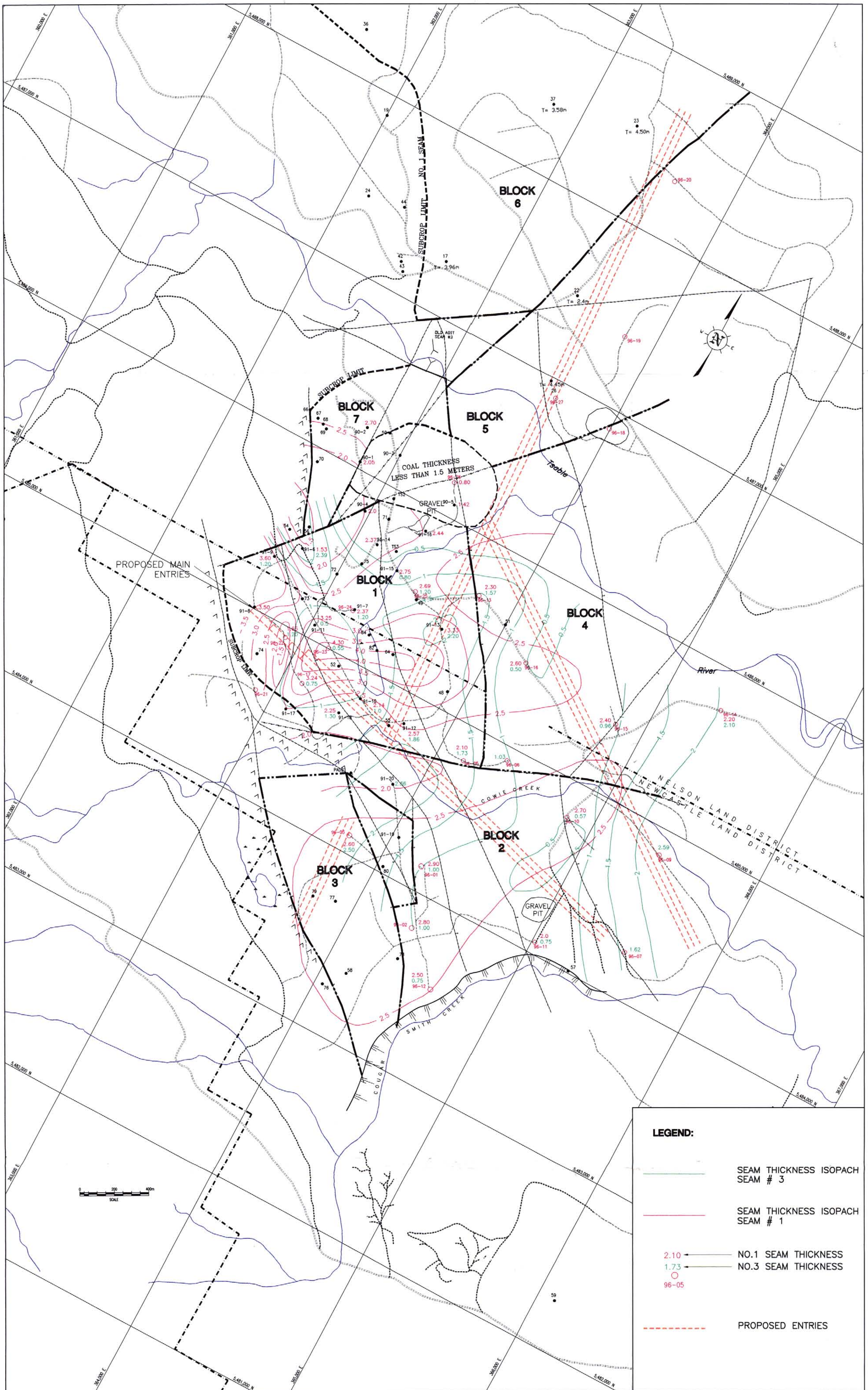
DESIGNED:
DRAWN: BDP 97-03-26
CHECKED:
APPROVED:

T'SABLE RIVER PROJECT
STRUCTURE CONTOUR PLAN
NO. 1 SEAM

T'SABLE RIVER COAL CORPORATION

BRAMPTON, ONT. — CAMPBELL RIVER, B.C.

DWG. NO. MAP - B 97D072 REV.



LEGEND:

- SEAM THICKNESS ISOPACH SEAM # 3
- SEAM THICKNESS ISOPACH SEAM # 1
- 2.10 — NO.1 SEAM THICKNESS
- 1.73 — NO.3 SEAM THICKNESS
- 96-05 — DRILL HOLE
- PROPOSED ENTRIES

NO.	DESCRIPTION OF REVISION	DATE	BY

SCALE:	1:10,000
DESIGNED:	S.GARDNER
DRAWN:	BDP
CHECKED:	S.GARDNER
APPROVED:	
DATE	97-01-04

T'SABLE RIVER COAL PROJECT

SEAM THICKNESS ISOPACHS*

NO.1 & NO. 3 SEAMS, INITIAL AREA OF INTEREST

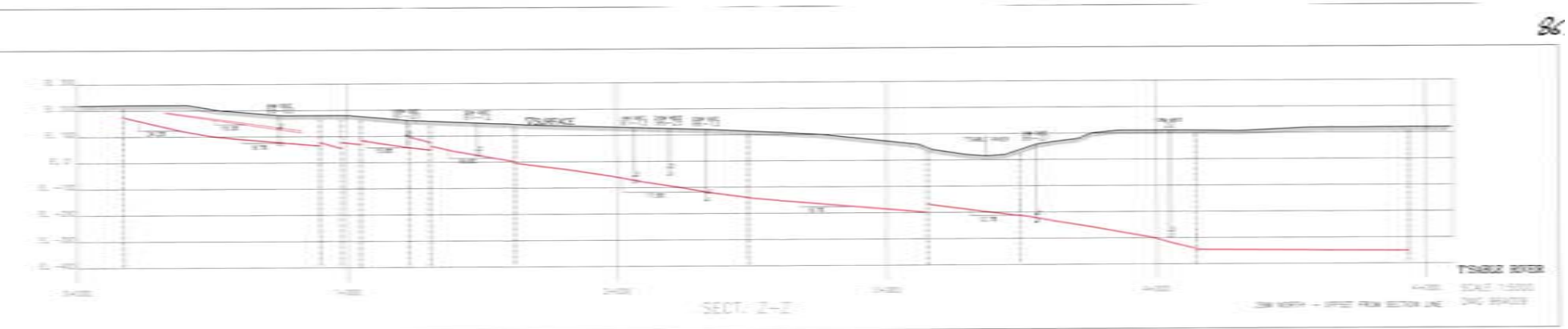
*EXCLUDES PARTINGS > 0.30M

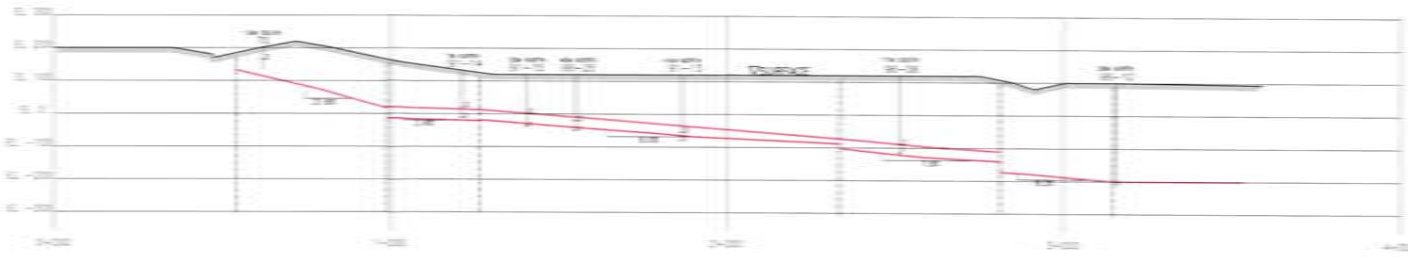
T'SABLE RIVER COAL CORPORATION

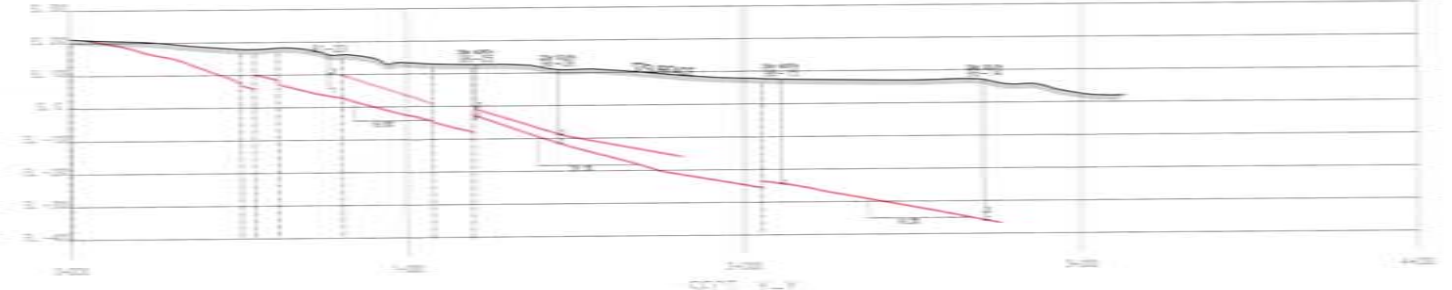
BRAMPTON, ONT. — CAMPBELL RIVER, B.C.

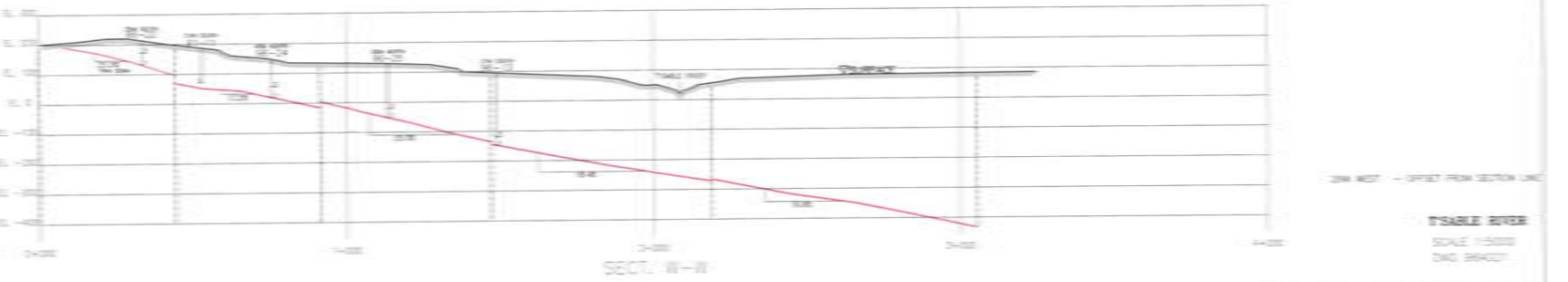
DWG. NO. MAP E 97-0-000 — REV.

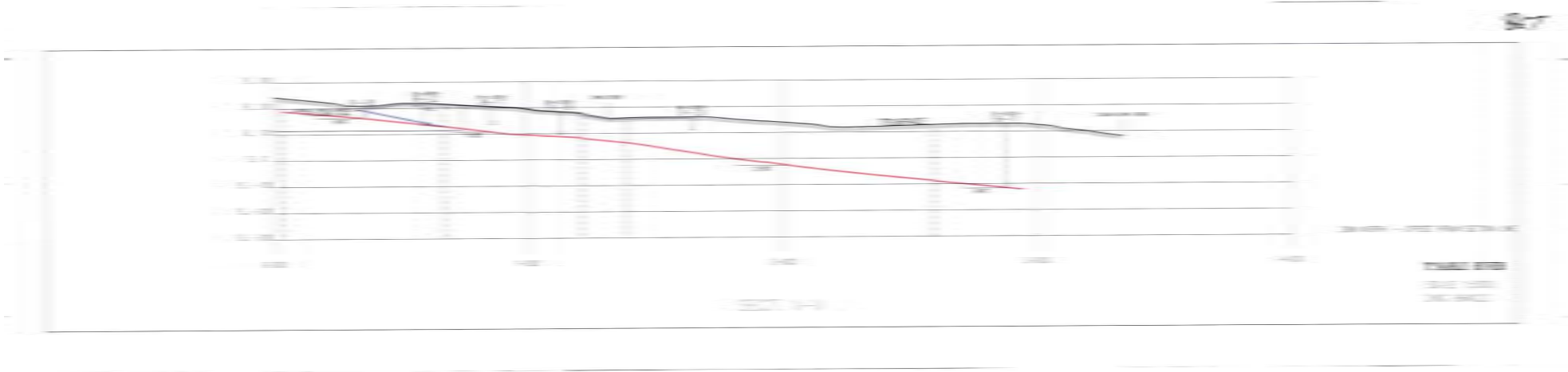
867

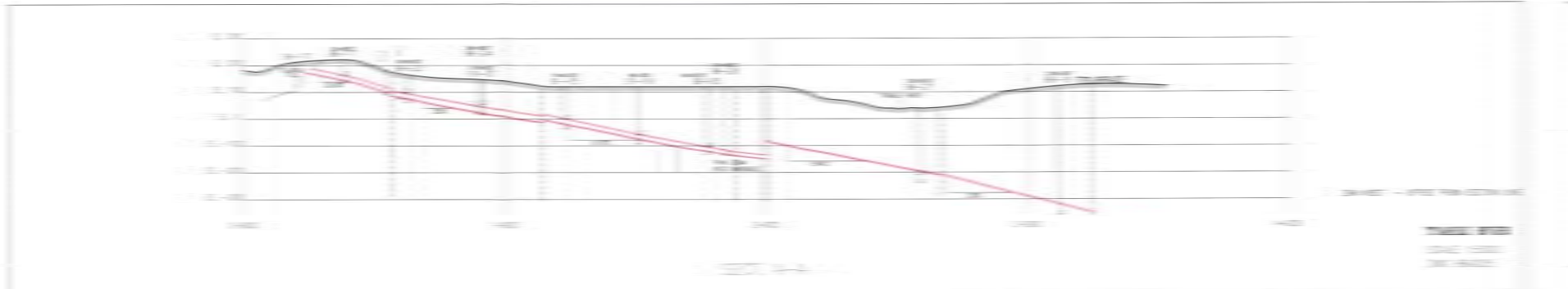












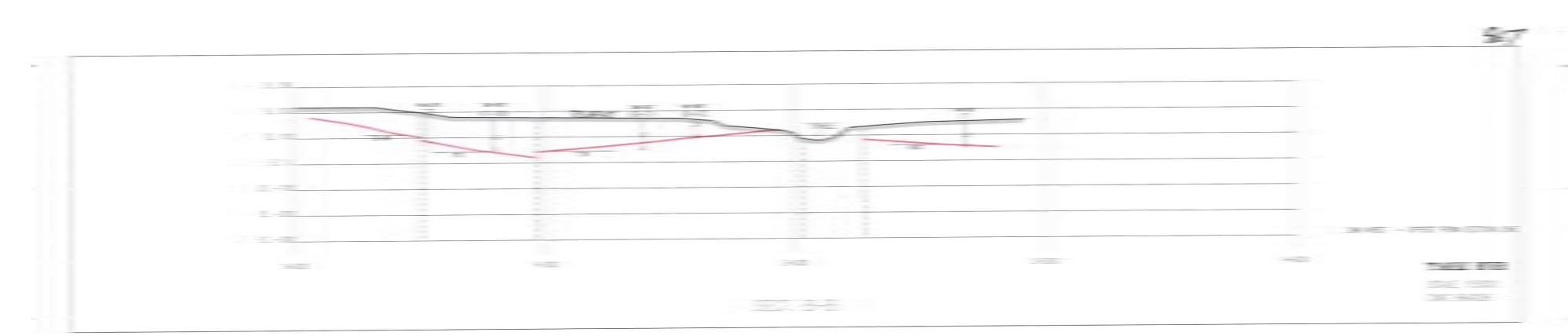


FIGURE 2

TSABLE RIVER COAL PROJECT
DRILL HOLE SUMMARY (1996 HOLES)

HOLE NUMBER	CORED	NORTHING (m)	EASTING (m)	COLLAR (m)	TILL (m)	No. 5 SEAM DEPTH	THICK	No. 4 SEAM DEPTH	THICK	No. 3B SEAM DEPTH	THICK	No. 3A SEAM DEPTH	THICK	No. 1R SEAM DEPTH	THICK	No. 1 SEAM DEPTH	THICK	TOTAL DEPTH
TS-96-01	Y	5484144.1	364230.7	178.9	53.1	53.70	1.05	79.5	0.7	129.8	1.2	132.3	0.6	163.9	0.4	165.0	2.9	177.8
TS-96-02	Y	5483803.4	364350.7	194.2	60.1	0.00	0.00	78.0	0.9	114.5	0.9	116.3	0.5	146.4	0.3	147.2	2.5	195.1
TS-96-03	Y	5484101.0	363780.7	181.7	40.3	0.00	0.00	0.0	0.0	52.1	2.7	56.2	2.6	113.7	0.4	115.6	2.6	126.1
TS-96-04	N	5483348.2	364261.3	207.4	60.4													60.4
TS-96-05	Y	5484800.7	364157.3	128.1	5.3	0.00	0.00	91.9	1.2	127.0	1.3	128.6	0.6			158.4	2.1	173.0
TS-96-06	Y	5484920.1	364378.7	112.8	3.3	142.73	1.07	181.2	1.1	199.3	1.8	201.4	0.7	226.1	0.3	226.8	2.4	237.2
TS-96-07	Y	5484264.9	365505.4	93.3	18.6					224.8	1.6					271.6	3.2	321.9
TS-96-08	N	5484038.5	364403.1	169.0	49.0													49.0
TS-96-09	Y	5484853.9	365418.1	67.1	19.2	220.80	0.65	263.8	0.9	303.5	2.6					332.7	0.7	421.2
TS-96-10	Y	5484791.4	364842.4	91.7	5.0			238.2	1.3	278.3	0.4	279.2	0.6	297.6	0.5	298.4	2.2	319.0
TS-96-11	Y	5484068.5	365018.3	135.8	25.0			179.8	1.2	218.3	0.8	220.3	0.8			246.2	2.0	258.0
TS-96-12	Y	5483541.1	364615.1	191.5	53.3	83.60	0.68	84.5	1.5	124.2	1.3	126.1	0.7			160.9	2.5	177.3
TS-96-13	Y	5485684.0	363785.0	112.7	2.0	157.86	0.66	202.2	0.9	229.2	1.8	232.2	1.1			261.5	2.3	271.1
TS-96-14	Y	5485763.4	365335.5	70.3	26.0	327.20	0.70	365.7	0.9	404.1	2.1			428.4	0.4	429.1	2.2	437.2
TS-96-15	Y	5485403.7	364835.1	77.0	7.7	258.00	0.75	263.5	0.9	298.1	0.4	299.7	1.0			318.8	2.4	337.0
TS-96-16	Y	5485468.6	364209.0	99.2	11.5	199.80	0.90	238.7	0.3	274.7	0.5	280.2	0.2	306.6	0.5	307.6	2.6	318.3
TS-96-17	Y	5484749.6	363120.3	219.4	2.0					49.7	0.7	51.3	0.9			84.2	3.2	94.6
TS-96-18	Y	5486890.2	363994.7	92.9	41.0	294.50	0.80	335.0	0.6	383.2	1.3	385.2	0.4			417.0	1.2	425.0
TS-96-19	Y	5487408.9	363820.4	100.9	59.0			361.4	0.9	405.1	0.7					456.0	4.6	470.0
TS-96-20	N	5488336.0	363652.0	109.2	42.4			362.6	1.2	447.2	1.4					480.8	10.8	507.0
TS-96-21	N	5484589.9	362898.1	199.8	30.0													30.00
TS-96-22	Y	5484938.8	362908.6	226.7	5.5					54.52	0.61	55.73	1.27			94.10	1.65	108.10
TS-96-23	Y	5485002.4	363158.7	163.7	7.5					59.92	0.56	62.43	0.60			100.20	4.30	109.50
TS-96-24	Y	5485262.8	363181.4	139.8	8.0			49.20	0.50			85.43	1.37			121.00	2.87	129.10
TS-96-25	Y	5485530.6	363449.7	122.9	5.7	82.20	0.50	107.00	0.50			144.68	2.26			174.56	2.69	183.60
TS-96-26	Y	5486194.0	363351.4	122.0	27.5	142.70	0.40	188.80	0.40			227.92	1.36			257.10	0.80	275.00
TS-96-27	Y	5486899.1	363636.4	65.8	11.5			231.0	0.9	269.1	0.6	270.8	1.9			301.8	2.6	331.1

TOTAL METRAGE : 6543

NOTE : GROSS SEAM THICKNESS TABULATION, INCLUDING PTG. UP TO 0.50 m.

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m

DATE DRILLED: June 28, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	53.0	Sand & Gravel overburden (loose)
53.0	75.0	Sandstone; light grey, medium grained; minor siltstone layers
75.0	132.0	Sandstone; coring started at 75m
132.0	134.0	Coal & Shale; No. 3 Seam
134.0	137.0	Siltstone/Shale: dark grey
137.0	155.0	Sandstone; light grey; hard
155.0	164.4	Mudstone/siltstone interbeds
164.4	169.0	Coal & Shale; No. 1 Seam
169.0	170.0	Mudstone; dark grey
170.0	172.0	Sandstone; white; hard, coarse
172.0	173.7	Siltstone; medium grey
173.7	175.0	Sandstone; fine to coarse grained
175.0	177.8	Siltstone; medium grey
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						NOTE: Many small runs taken at beginning of coring and boxed in boxes 5,6 and 7. Normal 3 meter runs begin with Run 8. Therefore the core wil begin with Run 5 and will be described as best as possible until Box 8 where the description and depths will be accurate.
5	75.00	78.00	3.00	0.18	2.64	SANDSTONE
						Broken Core
						.12m or 40% missing
						Light to medium grey
						Fine to medium grained
						Poor to well sorted
						Salt & pepper texture
						Medium hard
						Calcite in thin veins and 1 cm inclusions
						Calcite violent fizz
						Basal contact broken
				1.03		SANDSTONE
						As above
						.07 m or 6% missing
						Thick calcite in wedge vein of 3.5 cm: thickest at .6m from top
						Core broken to rubble just below the calcite
						More minor calcite veins throughout and thin carbonaceous stringer near the base
						Calcite at 55 degrees to CA
						Calcite high fizz and sandstone moderate fizz
						Core broken and missing at contact with next section
				1.43		SANDSTONE
						As above
						.07 m or 5% missing
						Hard
						Medium grey
						Salt & pepper texture
						Fine to medium grained
						Fine muddy carbonaceous laminae in upper part and more predominant and up to 1 cm thick in lower 10 cm of Section. 35 degrees to CA
						Less calcite but still some fine laminae
						Low fizz increasing to almost moderate in basal .1m
						Base of core broken and contact with next section probably missing
6	78.00	81.00	3.00	0.74	2.67	SANDSTONE
						Soft to medium hard. Hardest in top 20 cm
						Small calcite vein at 55 degrees to CA near top
						Light to medium grey
						Soft to medium hardness
						Fine to Medium grained
						Well sorted
						No fizz to low near top
						Basal contact at 80 degrees to CA with a dark mudstone
						Sharp contact
				0.04		MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Silty/soft/no fizz
						dark grey to black with carbonaceous material
						basal contact ground up in coring and very broken
				1.59		SANDSTONE
						Soft Muddy Siltstone in top broken and ground portion estimated at 20 cm
						Medium hard
						Medium grey
						Salt & Pepper texture
						some portions broken up during coring.63 meters of core missing or 21%
						COAL: From E-Log 0.6m of coal may be missing at 79.5 m in this section
						Calcite on fracture planes at 51% to CA
						Soft, wet sand below broken siltstone for 10 cm is probably from core grinding
						Moderate fizz throughout
						Basal contact unknown
7	81.00	83.40	2.40	0.69	1.44	SANDSTONE
						Probably missing core from top of run
						Upper contact unknown
						Soft to Medium hard
						Fractured at 40 degrees & 75 degrees to CA
						Medium grained
						Light grey salt and pepper texture
						Strong fizz throughout
						Basal contact sharp at 70 degrees to CA
				0.35		SILTSTONE
						Medium to dark grey
						Upper contact is 2 cm band of carbonaceous mudstone
						Medium hard
						Muddy
						Webbed calcite veins 10 cm from top
						No fizz except in the area of calcite
						Basal contact sharp at 70 degrees to CA
				0.40		SANDSTONE
						This unit is the same as in the next run
						Medium grained
						Hard
						Very fine calcite veinlets
						Massive unit
						Little to no fizz
						NOTE: GOOD CORE STARTS NOW
8	83.40	86.40	3.00	3.00	3.00	SANDSTONE
						Homogenous unit of massive sandstone/light grey/ salt & pepper
						Medium grained with very thin calcite bands and mudstone stringers
						Minor fractures along mudstone beds at 60 degrees
						Calcite < 1%
						Upper contact along fracture with Run 7
						Low fizz in top 20 cm to no fizz until low to moderate fizz in basal 1.5m.
9	86.40	89.40	3.00	0.18	3.00	MUDDY SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Light to medium grey
						Wet and ground up from drilling
						Gradually grading into the 3 cm dark grey mudstone bed at the base
						Soft
						Moderately good fizz throughout
						Base of mudstone is sharp contact with sandstone at 60 degree to core axis
				2.82		SANDSTONE
						Massive unit with minor calcite veins <1%
						Mudstone laminae < 1 cm and < 2 %
						Calcite & mudstone at 30 - 65 degrees of CA
						Fine grained
						Hard
						Minor carbonaceous bands uncommon
						Top and bottom thirds are moderately good fizz and centre third is low to none.
10	89.40	92.40	3.00	3.00		SANDSTONE
						Massive but fractured and broken at base and in the central 30 cm.
						Hard except for broken areas where it is soft
						Light salt and pepper texture
						Fine grained
						Some < 1% mudstone and calcite laminae
						Top 20 cm and bottom 2.1 m have good fizz. Central 0.7m is nil.
						Basal contact broken
11	92.40	95.40	3.00	3.00	3.00	SANDSTONE
						Same as above
						More homogeneous and only fractured and broken in one 10 cm area 1.3 m from the top.
						Small calcite veins < 1 cm at 20 degrees to CA
						Alternates from medium to fine grained hard
						Moderate to low fizz in next 0.7m of moderate hard and broken
						Little to no fizz except basal 10 cm of moderate
						Good contact with next core run.
12	95.40	98.40	3.00	3.00	3.00	SANDSTONE
						Fine grained grading to medium in basal meter
						Small carbonaceous stringers < 1 cm throughout < 1%.
						Mudstone inclusion and parting at base and at .07m muddy sandstone be
						At 70 degrees to CA located 1.33 cm from the top
						Medium hard in medium grained and hard in fine grained
						Massive
						Minor calcite veins in basal 1/2
						Fizz low to nil except on calcite and basal 10 cm
						Basal sandstone matches Run 13
13	98.40	101.40	3.00	3.00	3.00	SANDSTONE
						Massive
						Very Hard
						Some fractures at 80 degrees & 30 degrees to CA
						Medium grained with more calcite veining than Run 12 but still < 1%

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						2 minor silty mudstone beds: One 5 cm from the base and 1 cm thick and the other in the middle and less than 1 cm thick
						Light grey
						Good contacts with Runs 12 & 14 at top and bottom
						Fizz moderate to good throughout core interval
14	101.40	104.40	3.00	3.00	3.00	SANDSTONE
						Fine grained
						Very Hard
						Massive
						Fractures at calcite veins < 1% at 75 degrees to CA
						Light grey
						Excellent continuity with core runs above and below.
						Salt & pepper texture
						Top 0.5 m no fizz, central meter moderate and basal 1.5 m nil.
15	104.40	107.40	3.00	3.00	3.00	SANDSTONE
						Same as above
						Minor carbonaceous laminae
						Fracture planes at 30 degrees to core angle
						No calcite veins
						Massive
						Very hard
						Fine grained
						Good top & basal contact with other runs
						Fizz very low to nil
16	107.40	110.40	3.00	1.75	1.75	SANDSTONE
						Good contact at top with Run 15 core - Ground up at base and 1.25 m missing or only 58% recovery
						Fine grained grading to medium at base.
						Carbonaceous laminae beds at 70 degrees to CA
						Calcite veining at CA
						One fracture plane in top section of 50 degrees to CA
						Light grey salt and pepper texture
						Fizz light at top to nil in bottom half
17	110.40	111.40	1.00	0.45	0.45	SANDSTONE
						Top .55m is missing
						Base matches Run 18 and marks a carbonaceous bed < 1 cm at 90 degrees to CA
						Fizz very light
						Same lithology as Run 16
18	111.40	112.40	1.00	1.03	1.03	SANDSTONE
						Fine grained
						Hard
						Light grey
						Carbonaceous stringers and laminae < 1 cm and at 90 degrees to 75 degrees to CA
						Fizz none
						Basal contact matches Run 18
19	112.40	114.20	1.80	1.20	1.20	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Core stuck in core barrel and was ground badly
						Base is broken sandstone with 0.6m missing (67% Recovery)
						Calcite veining prevalent in bottom half at < 1 cm
						Top .38m is fine grained light sandstone. Remainder is coarser grained medium grey.
						Fizz - none in fine grained top but good in basal coarser grained section
20	114.20	117.20	3.00	1.91	2.83	SANDSTONE
						Top contact with Run 19 missing
						Hard, massive, fine grained.
						Salt & Pepper texture
						Calcite veining from 0 degrees to thirty degrees CA
						Few thin mudstone layers at fracture angle of 60 degrees to CA
						Basal 20 cm has thin carbonaceous laminae at 0 degrees to CA
						Basal contact with fizz: Low - Medium in top 3rd. Nil in remainder.
						Soft muddy sandstone unit is gradational
				0.25		MUDDY SANDSTONE
						Soft
						fine to Medium grained
						Light grey
						Ground up
						Carbonaceous laminae
						Fizz - low
						Basal contact undefined
						May be .17 m missing from this portion for a 94% recovery
				0.67		SANDSTONE
						Base matches top of Run 21
						Fine grained
						no fizz
						Small mudstone parting near base <1 cm at 50 degrees to CA
						Some fractures at 40 degrees to CA
						Very minor stringy carbonaceous inclusions
21	117.20	120.00	2.80	2.70	2.70	SANDSTONE
						Core was dropped in transport and mixed up.
						Top of core matches Run 20 and Base Run 22
						Light grey to medium grey near zones of concentrated mudstone and carbonaceous laminae.
						Many dark grey mudstone laminae in top quarter and bottom half 10% of core.
						Mudstone at 70 degrees to 90 degrees CA.
						Some fractured at 45 degrees to CA
						No fizz except on calcite veining which is greatest in lowest 40 cm 3%
						Hard - very hard.
22	120.00	123.00	3.00	3.00	3.00	SANDSTONE
						Very hard
						Light grey, salt & pepper texture
						Massive/ homogeneous
						No fracturing
						Medium grey

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

Core No.	CORE FOOTAGE'S DRILLED From	To	Total	RECOVERED Section	Total	GEOLOGICAL DESCRIPTION Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding Angle, Alteration, Wetness Contamination
						Very minimal calcite or mudstone laminae
						Fizz good in top 2.09 meters and nil in remainder
						Top and basal contacts match the other runs
23	123.00	126.00	3.00	3.00	3.00	SANDSTONE
						Same as Above
						Carbonaceous mudstone laminae if basal 1.8 m
						5-10% at 70 degrees to CA
						Fizz medium good throughout with a bit low in the middle meter.
24	126.00	129.00	3.00	3.00	3.00	SANDSTONE
						Fine grained
						Very hard
						Top carbonate band is at 70 degrees to CA as is basal one
						Top .68 meters and basal 1.6m has 10-20% carbonaceous mudstone laminae less than 1 cm thick at 60 - 80 degrees to CA
						Medium grey in area of laminae to light grey in the middle of the core
						Fizz - nil in top 0.7 m, low to moderately good in central 1.3 m and low to nil in basal 1m.
25	129.00	132.00	3.00	0.79	1.92	SANDSTONE
NOTE: Drillers had trouble coring in this run and						1.08 meters missing according to drillers some top and some base.
and next 2 runs. Tube split and core was lost						Fine grained
						Brown grey
						20% mudstone/carbonaceous laminae @ 70-75% to CA
						Brown & light grey colour banding at same angle
						Hard
						ground gouge and broken (64% recovery) pieces at the top
						Basal contact gradational in to mudstone @ 80 degrees to CA.
						Fizz - low to nil
				0.58		MUDDY SILTSTONE
						Mudstone bands @ 80 degrees to CA
						Less silty in basal 3 cm.
						Basal contact sharp at 75 degrees to CA
						Fizz - nil
						Light grey
				0.29		SANDSTONE
						Medium grained, medium grey, carbonaceous laminae < 1 cm near base at 70 degrees to CA
						Hard, nil to low fizz, bottom 3 cm broken up. Basal contact with mudstone broken
				0.12		MUDDY SILTSTONE
						Hard, dark grey, shiny basal contact polished at 85 degrees to CA
						Fizz - nil
NOTE: Coal starts at 131.86 according to core but at 129.8 on the E-Log depth.						
NO.3 SEAM				0.14		COAL
						1 meter coal missing at base. Bright bands alternating with dull brown muddy bands
						90% coal, 10 % mudstone
						Hard, blocky, unbroken. Base is polished bedding at 85 degrees to CA

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						No fizz
26	132.00	134.00	2.00	0.36	1.00	COALY SHALE
						Hard, blocky. Brown shale and dull coal bands with some thin < 1 cm <5% shiny bands.
						30:70 Coal to Shale
						Minor fizz
				0.20		SHALY COAL
						Calcite finely disseminated throughout. Very fine pyrite - powdery
						Coal hard & blocky
						70% coal 30% shale
						Bright & dull black bands with brown shale bands
						beds at 85 degrees to CA
				0.14		COALY SHALE
						Broken and gouged during coring. 85% shale/ 15% coal
						Hard brown to dark grey black. Minor fizz
				0.12		COAL
						Minor fizz. Visible finely disseminated pyrite
						Coal was put in methane test cylinder & removed and is broken up
						Mainly dull with < 5% bright bands. Medium hard.
				0.18		COALY SHALE
						60% shale 40% coal
						More shaley near base but core is broken and ground up and missing over a large interval. Hard to medium hard. Medium grey to black. Fizz - low
				1.00		MISSING
				0.05		COAL
						Blocky, hard, lots of pyrite finely disseminated
						Core missing above and below so quite ambiguous as to where it goes even by E-log.
27	134.00	135.00	1.00	0.04	0.92	COAL
						Hard, dull with minor bright bands. Lots of calcite veining. Fairly clean. Most likely part of the coal in the bottom of the last run #26
				0.16		SANDSTONE
						Muddy and silty at top grading down to light grey fine grained sandstone.
						Some small < 1 cm muddy laminae near base. Basal bed contact is 75% to CA. No fizz
				0.17		SILTY MUDSTONE
						Dark grey/brown. Medium hard to soft. Darker & more carbonaceous near the base.
						Sharp contact with basal coal lense @ 75 degrees to CA. No fizz
				0.09		SHALY COAL
						Calcite veining throughout. Polished bedding planes. Bottom 2/3 quite shaly
						60/40. Top 1/3 mostly coal
				0.40		SILTY MUDSTONE
						Dark grey brown. Carbonaceous bands in top 1/2 less than 1 cm.
						Medium hard. Basal contact with gouge and broken coal /sandstone fragments. Fizz - nil

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
				0.06		COAL
						Broken coal fragments and sandstone ground up and rounded. Probably unusable as core.
28	135.00	138.00	3.00	1.75	3.00	SILTSTONE/MUDSTONE
						Finely laminated beds of siltstone and mudstone. Mudstone dark grey. Siltstone lighter grey.
						Mudstone more prevalent at top grading down to siltstone.
						Medium hard. Beds at 75 degrees to CA. Gradual transition at base to fine grained sandstone. No fizz
				0.90		SANDSTONE
						Fine grained. Light to medium grey. Mudstone laminae < 1 cm and 10% of bed. Hard. No fizz. More mudstone 30% in basal half.
						Basal contact on carbonaceous bed at 75 degrees to CA.
				0.35		SANDSTONE
						Same as above but with many carbonaceous beds <1cm thick and 4 cm muddy zone at top. No fizz
29	138.00	141.00	3.00	3.05	3.05	SANDSTONE
						Top matches base of last run. Bedding at 70 degrees to CA. Massive hard unit. Light to medium grey. Fine to medium grained.
						No fractures. Top has 10 - 20 degrees carbonaceous mudstone laminae for .14m
						Remainder of core has 4-5% mudstone and carbonate laminae and inclusions < 1 cm in thickness
						Fizz - top 10 cm low, next 30 cm low to med low, next 1.4m nil, next .8m good fizz and rest to base nil.
30	141.00	144.00	3.00	3.00	3.00	SANDSTONE
						Massive. Fine grained. Light to medium grey. Mudstone bands and blebs up to 1 cm in to 0.5m.
						Thin carbonaceous laminae prevalent in top of basal meter. Mudstone and carbonaceous bands at 70 degrees to CA.
						Good top and bottom contacts with the other runs. No fractures. Fizz low to moderate in basal 0.8m, very good in next 1.2m, and moderately low in top meter.
31	144.00	147.00	3.00	3.00	3.00	SANDSTONE
						Massive. Homogeneous. No fractures. Very hard. Fine to medium grained. Carbonaceous laminae very fine 0.8m from top for 0.3 meters.
						Laminae bedding @ 70 degrees to CA. Excellent contact with runs above and below.
						Light grey grading to medium grey in basal meter. Well sorted. Fizz Moderate in top and bottom 1/2 meters but nil in middle 2m.
32	147.00	150.00	3.00	3.00	3.00	SANDSTONE
						Same as above with a few minor calcite bands near base.
						Finer grained to silty in basal 30 cm.
						Fizz good in top 1m, low to good in next 1.5m and excellent in basal 0.5m
						Core matches with runs above and below.
33	150.00	153.00	3.00	3.00	3.00	SANDSTONE
						Massive. Fine to medium grained. Very hard. Light to medium grey.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Very hard. Light to medium grey. Very few mudstone partings < 1 cm @ 70 degrees to 90 degrees CA.
						Good contact with core runs above and below. Fizz very good top 30 cm low to nil next 1.2m and low to moderate in basal 1.5m
34	153.00	155.00	2.00	0.54	2.05	SANDSTONE
						fine grained. Light grey. Very hard. Massive. Mudstone bands near bottom @ 75 degrees to CA.
						Basal contact sharp with mudstone @ 75 degrees to CA. Fizz - none.
						Some calcite veining near base. Mudstone dark grey, siltstone sandstone red to light grey. Very minor calcite veins in bottom 1/3. Fizz - none.
				1.51		MUDSTONE/SILTSTONE/SANDSTONE
						Banded interbeds varved, 1-2 cm beds at different bedding 60-75 degrees to C.A.
35	155.00	156.50	1.50	1.45	1.45	MUDSTONE/SILTSTONE/SANDSTONE
						Banded interbeds, varved. 1-2 cm beds at different bedding 60 - 75 degrees to CA
						MUDSTONE/SILTSTONE/SANDSTONE
						Same as above. some carbonaceous mudstone broken and slickensided on surfaces near center of core 2 cm bed. No fizz.
36	156.50	159.00	2.50	2.11	2.11	MUDSTONE/SILTSTONE
						Some sandstone interbeds at top. Top gouged and broken and .39m missing. Interbeds become predominantly mudstone & silty mudstone near base
						Fizz - none. Calcite on bedding planes and some slickensides in evidence on polished bedding. Minor calcite veinlets. Medium grey.
						Soft to medium hard. Good contact with basal core on bedding at 70 degrees to CA.
37	159.00	161.50	2.50	2.50	2.50	SILTY MUDSTONE
						Small < 1 cm sandstone and siltstone interbeds. Dark grey. Medium hard.
						Bedding at 75 degrees to core angle. Some disseminated pyrite inclusions near the base.
						Some fizz in middle meter, none in top or base. Good contact with #38 core run on bedding.
38	161.50	163.00	1.50	1.50	1.50	SILTY MUDSTONE
						Same as above. No fizz. Good contact with basal core on bedding at 75 degrees to CA.
39	163.00	166.00	3.00	1.39	3.00	SILTY MUDSTONE
						Hard. Black, Small thin laminae beds of lighter siltstone. Thinly disseminated pyrite in bedding at base up to 3 cm of core.
						Basal contact with coal is sharp at 70 degrees to CA. No fizz.
NOTE: Coal starts at 164.4 on core and at 163.9 on the E-Log. Only 0.5m difference						
SAMPLE TS960101				0.43		COAL: TOP of NUMBER 1 SEAM
Ash 28.08%						Dull & Bright bands. Partially ground and broken. Calcite on joint and bedding planes. Top 0.11 m has 4% disseminated pyrite.
SAMPLE TS960102				0.28		SHALY COAL
Ash 41.25%						Shale: Coal 30 :70

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

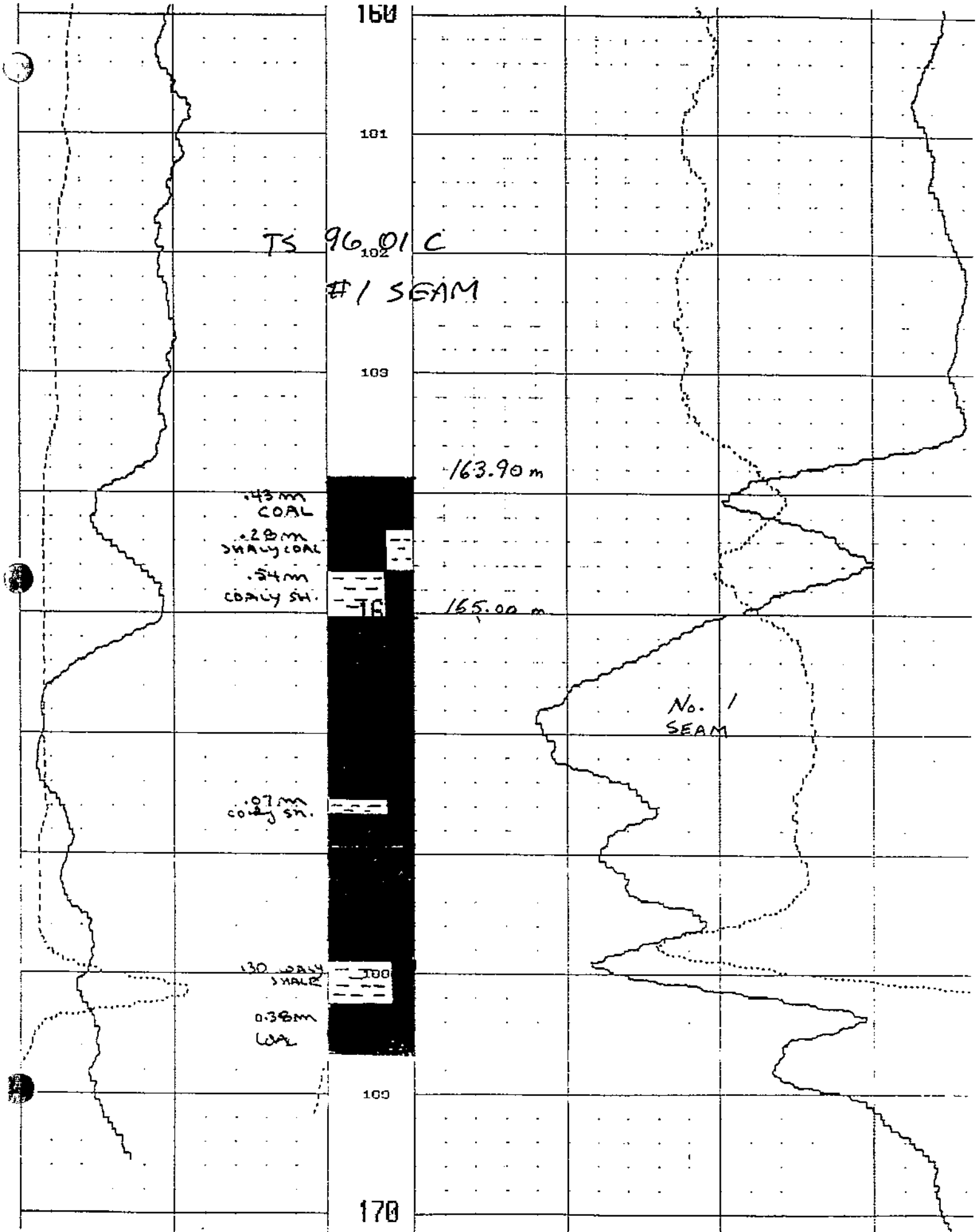
HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

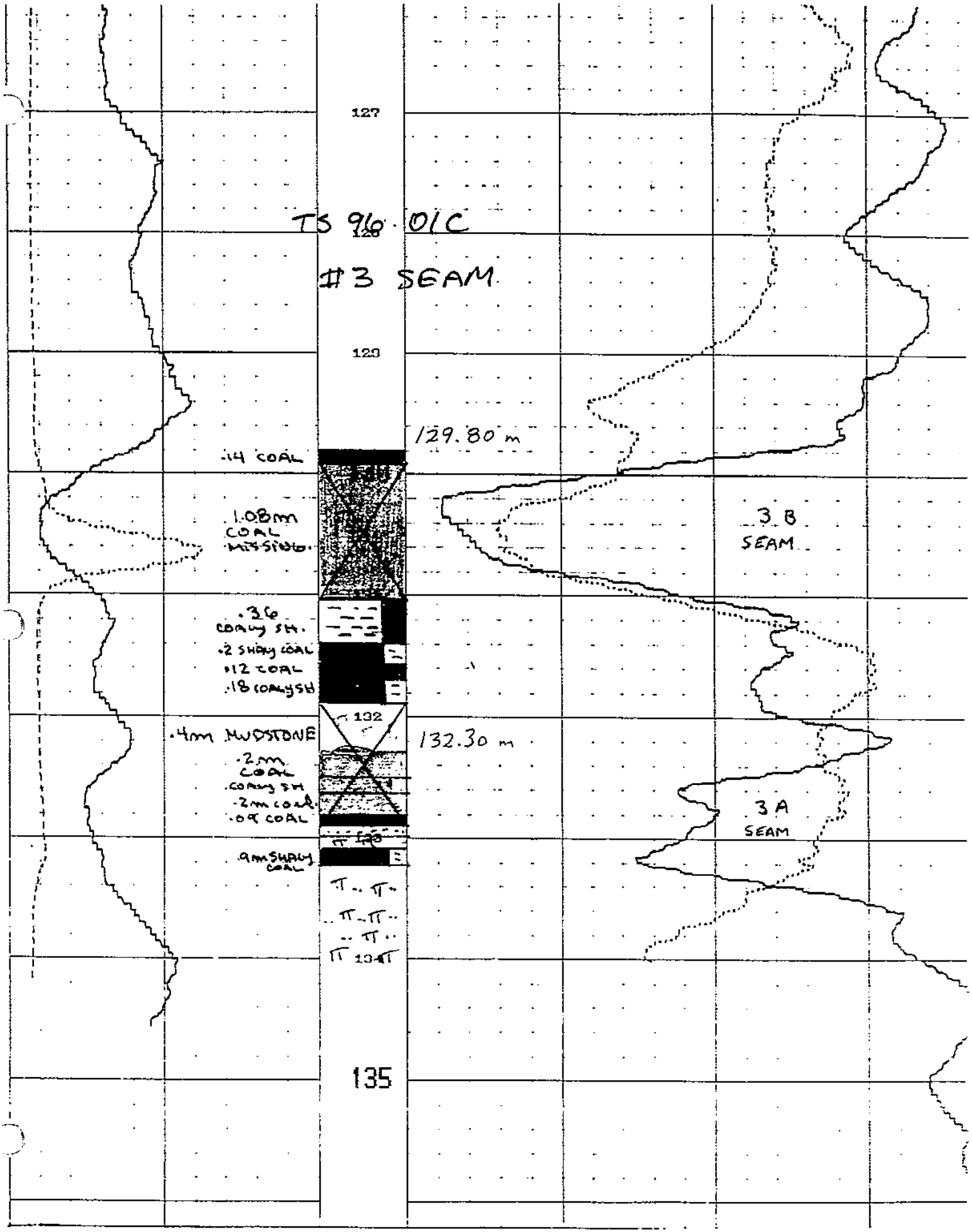
CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Disseminated pyrite in bedding near base. Dull and bright bands in coal. Calcite on cleavages and bedding planes.
						Hard and blocky. Bedding to 75 degrees to CA.
SAMPLE TS960103				0.54		COALY SHALE
Ash 62.37						Friable and broken. Medium to dark grey brown. Soft to medium hard. One 2 cm coal band near the top with calcite veins at core angle throughout.
						Polished and black along slip faces. No fizz.
SAMPLE TS960104				0.14		COAL
Ash	VM	FC	S MJ/kg	FSI		
22.98	31.67	45.34	.54 26.65	7.5		
						Medium hard. Dull and shiny bands. Calcite at 90 degrees on polished slop faces and 0 degrees to CA. No fizz
SAMPLE TS960104				0.06		SHALE
						Small shale band with possibly 20% coal in thin shiny laminae.
SAMPLE TS960104				0.16		COAL
						TOP of MAIN SEAM INTERVAL
						Banded and hard. Unbroken core. Calcite veining throughout. Some pyrite on fracture planes.
40	166.00	169.00	3.00	2.64	2.84	COAL
						94% recovery. Coal missing from top.
						#1 METHANE SAMPLE.
SAMPLE TS960104 (Top 1.68m)						#2 METHANE SAMPLE. .40 m in top 1.5m
						Coal hard, blocky, shiny. Banding throughout. Calcite and pyrite on cleavage faces. Slip face at 0 degrees to CA with slickensides on these faces at 90 degrees to CA
						Pyrite in 1 cm band just above #2 Methane sample. Bedding at 75 degrees to CA
	167.68	167.75	0.07			INTERBED of COALY SHALE; 1.68m from top of core
SAMPLE TS960105 ((0.07m)						" " " "
SAMPLE TS960106				0.81		COAL
						As above
Ash	VM	FC	S MJ/kg	FSI		
20.16	32.15	47.69	.41 27.17	7.5		
SAMPLE TS960107				0.20		COALY SHALE
Ash 54.97						Shale: Coal 65:35
						Brown to dark grey. Medium hard. Polished black and shiny on bedding where it has slipped.
4	169.00	171.80	2.80	0.10	2.80	COALY SHALE
SAMPLE TS960107						As above. Rubble. 50% recovery. Really .20m thick
SAMPLE TS960108				0.38		COAL
						Footwall coal. Methane Test #4. All taken to test.
				0.27		MUDSTONE
						No fizz. Dark grey. Bedding unknown. Polished slip surfaces. Shiny black. More silty towards base.
				0.74		SILTY MUDSTONE
						90% recovery. More silty to base. Hard. Medium grey. No fizz. Bedding 70 degrees to CA. Grades down to sandstone.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-01-C
CO-ORDINATES : 5484144.1 N. - 364230.7 E.
ELEVATION : 178.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 20 degrees to 30 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
				0.38		SANDSTONE
						Fine to medium grained at base. Some darker silty bands. Base marked by a 1 cm silty/muddy band partly carbonaceous.
						Hard. No fizz. Base bedding at 65 degrees to CA.
				0.83		SANDSTONE
						Coarse. Subrounded to angular. 1 cm fragments (white tuffa or rhyolite fragments). Very hard. Medium brown.
						2 silty mudstone bands 2 cm wide near middle. Good fizz.
42	171.80	174.80	3.00	0.30	3.00	SANDSTONE
						Same as above. Basal contact on mudstone bed 70 degrees to CA. Fizz good/very good at base.
				1.70		MUDDY SILTSTONE
						Good hard massive unit. A thin bed of coarse grained sandstone 3 cm thick 20 cm from top. Grading down to fine grained sandstone.
						Transition gradual. Medium grey. Fizz - none.
				1.00		SANDSTONE
						Fine grained in top 30 cm grading down to coarse grained at base. Fizz nil in fine and very good after 30 cm in coarse.
						Coarse sandstone subangular dark brown as in top of this run and base of run 41. Massive. No fractures. Unsorted.
43	174.80	177.80	3.00	0.19	2.72	SANDSTONE
						As above. Carbonaceous laminae throughout bottom half. Good fizz.
				2.53		MUDDY SILTSTONE
						Medium grey. Medium hard. Homogeneous. 91% recovery. Some coarse white grainy inclusions and small bands of coarse angular sand grains 30 cm from top. No fizz.
						END OF CORE


160
101
TS 96-01 C
#1 SEAM
102
103
163.90 m
.43m
COAL
.28m
SHALY COAL
.54m
COALY SH.
T6
165.00 m
No. 1
SEAM
.07m
COALY SH.
.30 COALY
SHALE
T00
0.38m
COAL
100
170


TS 96-01C
#3 SEAM
127
128
129
129.80 m
.14 COAL
1.08m COAL MISSING
.36 COALY SH.
.2 SHALY COAL
.12 COAL
.18 COALY SH
132
.4m MUDSTONE
132.30 m
.2m COAL
.COALY SH
.2m COAL
.09 COAL
.9m SHALY COAL
135
3B SEAM
3A SEAM

QUINSAM COAL LIMITED

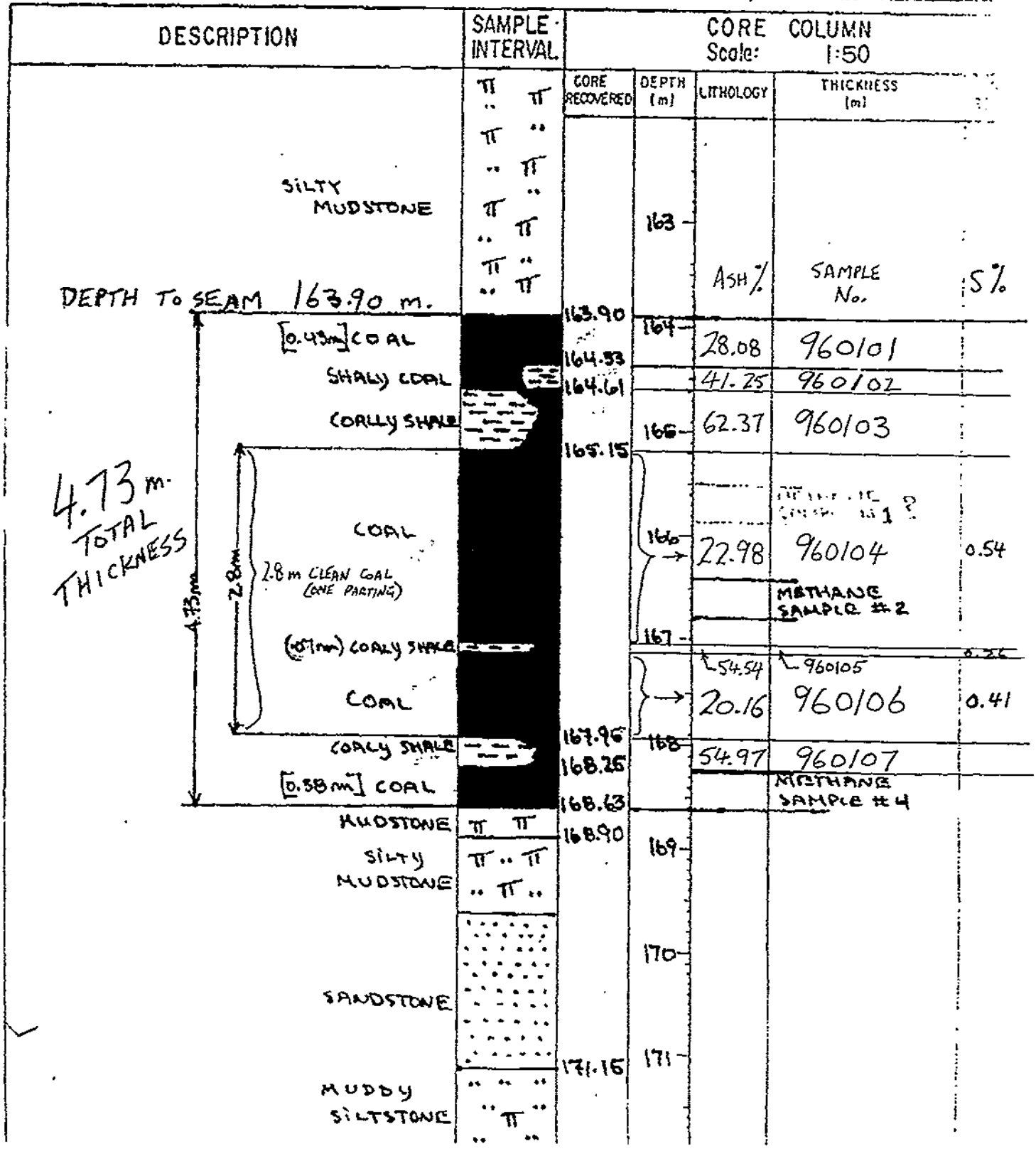
NOTE: DEPTHS FROM G-LOG

TSABLE RIVER EXPLORATION PROGRAM

Hole Number: TS 96-01C Pit Number: NUMBER 1 SEAM (LOWEST)

Location: NORTH 6403995 Elevation: 189.14m

EAST 642309.96 Page ___ of ___



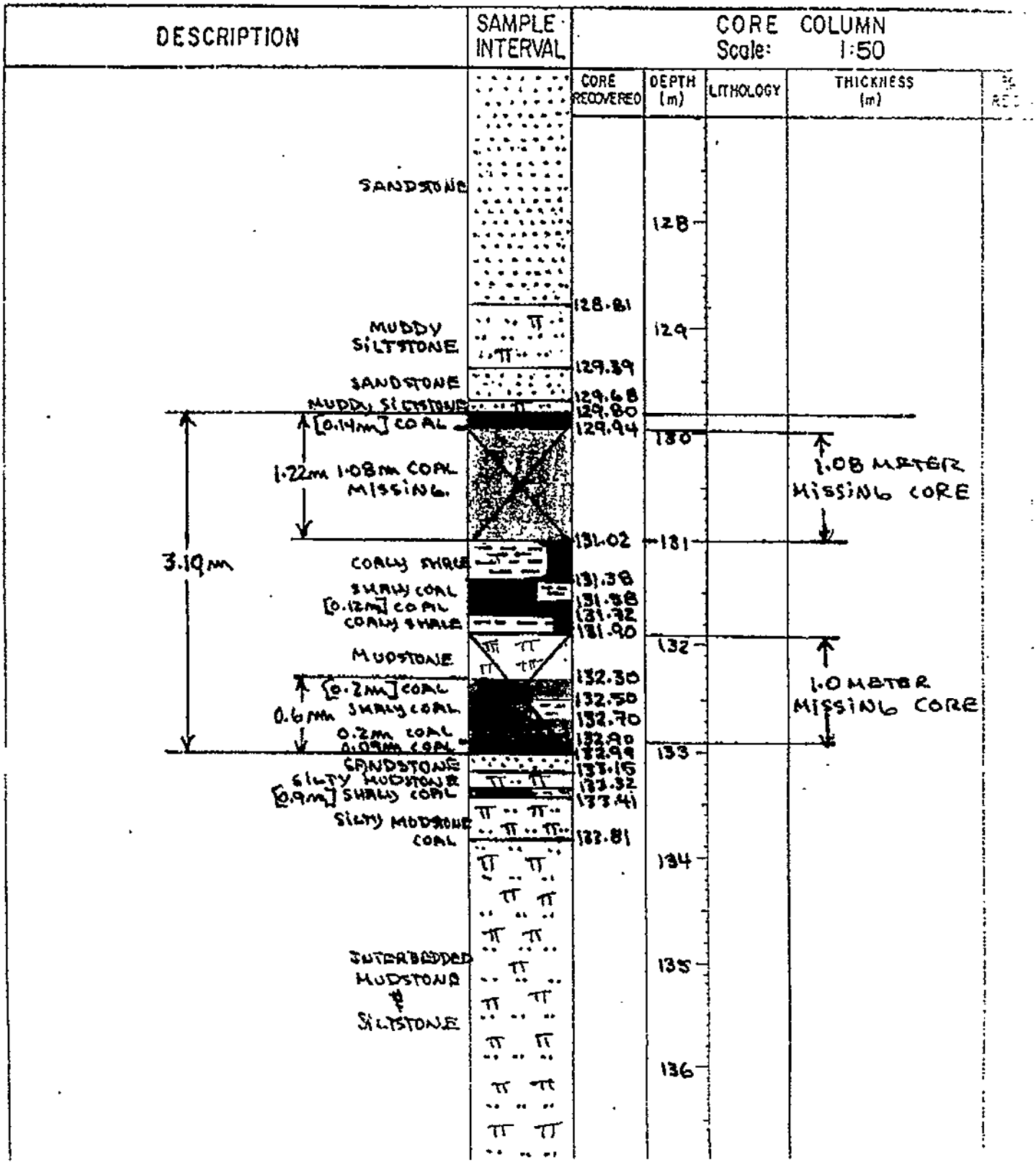
Quinsam
COAL LIMITED

NOTE: DEPTHS FROM D-LD6

Hole Number: T3 96-01C Pit Number: NUMBER 3 SEAM (UPPER)

Location: NORTH 84039.55 Elevation: 189.14m.

EAST 64230.96 Page ___ of ___



TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-02C
CO-ORDINATES : 5483803.4 N. - 364350.7 E.
ELEVATION : 194.2 m

DATE DRILLED: July 9, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	60.1	Sand & gravel overburden (loose)
60.1	78.0	Sandstone; medium grey, hard
78.0	78.5	COAL
78.5	114.0	Sandstone; medium grey, hard, groundwater at 97.1m. Started coring at 79.1m
114.0	116.6	COAL; with minor shale, No. 3 Seam
116.6	119.5	Mudstone; soft, minor sandstone
119.5	140.0	Sandstone; medium grey
140.0	146.0	Mudstone; soft
146.0	147.7	COAL, minor shale; No.1 Seam,
147.7	153.9	Mudstone; shaly; soft
153.9	157.5	Sandstone; hard; white
157.5	163.0	Siltstone; muddy; thin sandstones
163.0	195.1	Sandstone/Siltstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-02C
CO-ORDINATES : 5483803.4 N. - 364350.7 E.
ELEVATION : 194.2 m
LOGGED BY: L. A. Swaren
COMMENTS: Bedding 5 degrees to 12 degress @ 113m

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	79.10	82.10	3.00	2.97	2.97	SANDSTONE
						Massive. Medium hard. Fractures at 85 degrees to horizontal. Ore extends over 0.8m of core.
						Dark carbonaceous silty laminae band over 0.5 of a meter 0,5 meters from the top. Bands are deposited with shallow 10 degree bedding from horizontal. Also very minor calcite bands. Fizz - nil.
2	82.10	85.00	3.00	0.30	3.00	COAL/ COALY SHALE
						Ground up into large fragments. More coaly shale than coal. 70:30. Most likely some coal is missing. No good bedding contacts. Coal is hard and blocky. No visible pyrite but calcite on fracture planes.
				2.70		SANDSTONE
						Massive Medium grained to coarse grained. Very hard. One calcite fracture in fill. Irregular at 90 degrees to horizontal extending .8m into next core run. Moderately good Fizz in basal 0.7m. None in rest.
3	85.10	88.10	3.00	2.83	2.83	SANDSTONE
						Massive as above. Coarse grained grading down to medium. Medium grey to lighter grey. Bottom 1m is excellent fizz and upper is nil.
4	88.10	91.10	3.00	3.18	3.18	SANDSTONE
						Still massive. Very, very hard. Medium to coarse grained. Fractures in two places at 75 degrees to horizontal. Fizz excellent except nil in middle 0.6m.
5	91.10	94.10	3.00	3.00	3.00	SANDSTONE
						Medium grained. Very hard. Minor carbonaceous stringers < 1 cm. Light grey. Bedding unknown - no fractures. Fizz excellent in top 30 cm and over .6m. 1.5m down. The rest is nil.
6	94.10	97.10	3.00	3.00	3.00	SANDSTONE
						Massive. Very hard. Homogeneous. No bedding or fractures. Medium grey. No fizz.
7	97.10	100.10	3.00	3.00	3.00	SANDSTONE
						Same as above. Lighter colour. Low to moderate fizz.
8	100.10	101.60	1.50	1.46	1.46	SANDSTONE
						As above. Darker, No fizz.
9	101.60	104.60	3.00	3.02	3.02	SANDSTONE
						Fizz moderate to excellent over middle 1.5m. As above.
10	104.60	107.60	3.00	3.04	3.04	SANDSTONE
						As above. Broken and fractured in areas where the sandstone is softer. No good fracture lanes nor bedding. Fizz excellent in top 1.5m and nil in rest.
11	107.60	110.60	3.00	3.00	3.00	SANDSTONE
						Extremely hard. Fine to medium grained. Light to medium grey. Massive. Fizz good in middle 1 meter and basal .3m and nil in rest.
12	110.60	113.60	3.00	1.50	2.98	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-02C
CO-ORDINATES : 5483803.4 N. - 364350.7 E.
ELEVATION : 194.2 m
LOGGED BY: L. A. Swaren
COMMENTS: Bedding 5 degrees to 12 degress @ 113m

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Good fizz in top 0.4m and none in rest. Small carbonaceous stringers in centre. Bedding 5 degrees to 12 degrees. Grades down into sandstone/carbonaceous muddy siltstone interbeds.
				1.48		SANDSTONE/CARBONACEOUS SILTSTONE
						Interbedded fine laminate of carbonaceous siltstone. Beds 5 degrees to 12 degrees from horizontal. Hard. More sandstone near bottom. No fizz.
13	113.60	116.60	3.00	0.18	1.69	SANDSTONE
						Fine grained. Medium grey. Siltstone laminations throughout at 0.05cm. Hard. No fizz. Bedding at 10 degrees.
				.80		COAL
						Hard & blocky. Some small sandstone wedges in top 5 cm. Two mudstone beds, one 1 cm and one 3 cm thick in upper 1/2. Coal is shiny with finely disseminated pyrite throughout and calcite on cleats. One joint plane at 90 degrees to horizontal. Bedding at 10 degrees to horizontal.
				0.26		COALY SHALE
						Up to 0.40 m missing (E-Log). 90 degrees shale 10 degrees coal. Coal in small veinlets with much calcite.
				0.24		SILTSTONE
						Hard and competent. Some 1 cm coaly and mudstone bands throughout. Medium browny grey. Bidturbation of muddy laminae.
				0.21		COAL
						.39 missing from E-Log. Hard blocky. Shiny throughout with minor bands of shiny layers. Calcite & pyrite throughout. Little regular . Bedding at 8 degrees to 10 degrees to horizontal
14	116.60	118.10	1.50	0.20	1.35	COALY SHALE
						Broken up in coring. Probably another .15 missing. Some coaly chunks.
				0.70		SANDSTONE
						Fine grained. Bedding at 10 degrees to horizontal. Sharp upper & lower contacts. Medium brown grey. Hard. 1-2 cm mudstone bands. No fizz.
				0.45		MUDSTONE
						Coaly material in lenses about 7 degrees. Broken and fractured. Dark grey. Slightly silty. Thins calcite veins on bedding slip planes.
15	118.10	119.90	1.80	0.50	1.90	MUDSTONE
						Black. Medium hard - soft. Broken and ground. Coaly bands within. No fizz.
				0.90		MUDSTONE/SILTSTONE
						Interbedded. More mudstone in top 1/2 and more siltstone in bottom 1/2. Partly broken up. Beds laminae and thin. Minor calcite in bedding planes. 0.2 silstone bed at top of section. No fizz.
				0.50		SANDSTONE
						Bedding at 10 degrees to horizontal. Fine grained. Grading to siltstone at bottom. Low fizz at base. Fracture at 45 degrees to horizontal. Sandstone hard with carbonaceous laminae stringers.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-02C
CO-ORDINATES : 5483803.4 N. - 364350.7 E.
ELEVATION : 194.2 m
LOGGED BY: L. A. Swaren
COMMENTS: Bedding 5 degrees to 12 degress @ 113m

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
16	119.90	122.90	3.00	3.02	3.02	SANDSTONE
						Fine grained at top grading to medium at base. Low fizz in bottom 1 meter. Carbonaceous and mudstone stringers & blebs throughout < 1 cm. Core joins upper and lower runs. Bedding at 11 degrees to horizontal. Sandstone hard, massive and medium grey.
17	122.90	125.90	3.00	3.00	3.00	SANDSTONE
						Hard and medium to coarse grained. Mudstone bands up to 1 cm. Up to 40 degrees carbonaceous in some. Bedding at 10 degrees to horizontal. No fracturing. Low fizz in middle 0.7m and good to very good at base and top.
18	125.90	128.90	3.00		2.95	SANDSTONE
						Fractures at 80 degrees to horizontal. Middle 0.4m has 35 degrees mudstone around sandstone casts and mudstone lamellae and bands all irregularly bedded. Very good fizz in top 0.4 meters and nil in remainder. Sandstone light grey hard. Medium grained, massive.
19	128.90	131.90	3.00	2.88	2.88	SANDSTONE
						Medium grained at top grading to fine grained in bottom 0.5 m with mudstone interbeds up to 1 cm in thickness but usually smaller. Some carbonacebus materials in the mudstone. Bedding at 5 to 10 degrees. Sandstone hard and massive with no fracture planes. No fizz in core.
20	131.90	134.40	2.50	2.54	2.54	SANDSTONE
						Calcite filled fracture plane at 80 degrees to horizontal and 2 cm displacement of beds. Bedding at 7 degrees to horizontal. Fine grained in top .6 m and medium in rest./ Massive and hard. Light to medium grey. Low fizz in basal .2m and central 1m.
21	134.40	137.40	3.00	2.99	2.99	SANDSTONE
						Massive. Medium grained. Medium grey. No bedding. No fracturing. Very hard. Fizz - very good in top .3m and central 0.6m and nil in rest.
23	138.30	141.30	3.00	1.81	2.90	SANDSTONE
						As above. Good fizz.
				0.24		MUDSTONE
						Small siltstone interbeds. Moderately hard. Dark grey/black. Broken and fractured from drilling.
				0.16		SILTSTONE
						Hard. Light grey buff. Hard. Some thin mudstone/siltstone lamellae.
				0.49		MUDSTONE/CARBONACEOUS MUDSTONE/SILTSTONE
						Interbedded. Fractured and broken in drilling. Calcite in carbonaceous beds in joints. Thin brownish muddy beds interspersed. All beds < 0.2 cm thick. No fizz.
24	141.30	144.30	3.00	1.44	1.44	MUDSTONE
						2-3 cm pyretic lenses of fine pyrite near top of section. Broken from coring and shattered. Some carbonaceous laminae. Small interbedded siltstone throughout and calcite on fracture planes when visible. 1.56 mudstone missing. No fizz.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-02C
CO-ORDINATES : 5483803.4 N. - 364350.7 E.
ELEVATION : 194.2 m
LOGGED BY: L. A. Swaren
COMMENTS: Bedding 5 degrees to 12 degress @ 113m

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
25	144.30	145.80	1.50		1.41	MUDSTONE
						Same as above. Maybe 3-5 % carbonaceous stringers. .09 missing.
26	145.80	148.60	2.80	0.08	1.88	MUDSTONE
						Minimal carbonaceous material. Medium grey. Medium hard.
TS960201				0.39		COALY SHALE
						Coal:Shale 15:85
						Thinly banded disseminated coaly material in shale.
TS960202				0.45		SHALY COAL
						Shale in thin beds with coal and coaly shale. Broken up badly when coring. Coal has calcite on cleats.
				0.97		COAL
						Hard and blocky. Possibly is main part of upper portion of the seam. Mainly shiny throughout with very thick dull bands < 5% of sample. Calcite on veins. No visible pyrite.
27	148.60	151.60	3.00	0.50	1.35	MUDSTONE
						Slightly carbonaceous. Medium hard. Dark grey. Slightly silty.
				0.62		COAL/COALY SHALE
						Interbedded. Broken and ground from coring.
						NOTE: of 1.65m missing at top of core, 1.05 is coal from E-Log and .60 mudstone.
				0.23		MUDSTONE
						As above.
28	151.60	153.60	2.00	0.25	0.25	SHALE (1.75 missing)
						Carbonaceous. Fractured, polished and slickensided. Ground up badly.
29	1 3.60	154.90	1.30	0.30	2.10	MUDSTONE
						Dark grey. Red. Hard. Crumbly.
				1.80		SANDSTONE
						Coarse. Base of #1 Seam. Angular white grains. Brown to red grey. Hard. Good fizz to excellent at bottom 2/3.
30	155.40	156.60	1.20	1.10	1.10	SANDSTONE
						Coarse basal sandstone always under #1 seam. Medium brown grey. Hard. Subangular white grains. 1-2 mm in size (tuffaceous or feldspathic possibly) Cherty grains throughout. No fizz. Good contact with next run.
31	156.60	159.50	2.10	0.90	2.68	SANDSTONE
						As above. Carbonaceous irregular thin inclusions. Much lighter - almost white for bottom .36m. Basal .36 m has excellent fizz and the remainder is nil.
				1.78		SILTY MUDSTONE
						Medium hard. Dark grey. Visible pyrite on fractures. Fractures at 85 degrees to horizontal. Broken up and ground up. Thin beds of siltier material throughout. Polishing and slickensides showing movement horizontally at an angle of 40 degrees along the face of the 85 degrees from horizontal fractures. Calcite also found on fractures. Bedding 8-10 degrees to horizontal along sharp upper contact with the sandstone.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-02C
CO-ORDINATES : 5483803.4 N. - 364350.7 E.
ELEVATION : 194.2 m
LOGGED BY: L. A. Swaren
COMMENTS: Bedding 5 degrees to 12 degress @ 113m

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
32	159.50	162.00	2.50	1.16	2.37	SILTY MUDSTONE
						Medium hard. Broken and incompetent. Coaly inclusions and bands <5% calcite in coal. Fractures at 75 degrees to horizontal. Muddy band at base poorly marks contact with next unit.
				1.17		MUDDY SANDSTONE
						Harder and more competent. Some medium to coarse grained sandstone near the bottom. Good contact with next core run.
33	162.00	162.70	0.70	0.29	0.63	MUDDY SILTSTONE
						As above. Somewhat broken and .07 missing. Sharp contact with underlying sandstone at 15 degrees to horizontal
				0.34		SANDSTONE
						Coarse. Angular chert and white grains. Medium brown grey. Some carbonaceous bands. Fracture irregular at 90 degrees to horizontal. Excellent fizz.
34	162.70	164.70	2.00	2.00	2.00	SANDSTONE/MUDDY SILTSTONE
						Interbedded. Top .3 muddy siltstone. Next .45 coarse to fine sandstone. Next .25 fine sandstone. Next .50 coarse sandstone. Basal 0.5m is muddy siltstone. Coarse sandstone fizzes good and the rest is nil. Irregular carbonaceous bands and lenses are through all the beds. Calcite on irregular fracture and bedding planes. Core is broken.
35	164.70	167.70	3.00	0.54	2.85	SILTY MUDSTONE
						Polished slickensided fracture plane at 45 degrees to horizontal. Incompetent. More silty in top .1m. Thin carbonaceous bands <1%. No bedding.
					1.06	MUDDY SILTSTONE
						More competent. Thin mudstone bands interbedded throughout.. Medium grey brown.
				1.25		SANDSTONE
						Coarse grained. White irregular grains. Feldspathic or tuffaceous soft material. Chert throughout. Medium brown grey. Excellent fizz. Very hard and competent. Small irregular carbonate laminae.
36	167.70	170.60	2.90	1.18	2.88	SANDSTONE
						Coarse grained. Lots of chert. Angular to subangular white grains. Brown to medium grey. Pyrite veinlets. Mudstone slants and wedges up to 3 cm <2 %. Carbonaceous vein type inclusions near base. Fizz excellent. Slickensided, polished fracture at base at 55 degrees to horizontal. Contacts, siltstone at base in fractured area.
				0.76		SILTSTONE
						Turns muddy near base. Hard. Medium grey. Lighter colour at top. No fizz. No bedding.
				1.04		SILTY MUDSTONE
						Soft to moderately hard. Fractured and broken near top. Some very thin calcite bands. Quite homogeneous with little or no inclusions. No fizz.
37	170.60	173.40	2.80	2.01	2.65	SILTY MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-02C
CO-ORDINATES : 5483803.4 N. - 364350.7 E.
ELEVATION : 194.2 m
LOGGED BY: L. A. Swaren
COMMENTS: Bedding 5 degrees to 12 degress @ 113m

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Competent moderately hard unit. Dark grey. Some carbonaceous inclusions near base. Grades down into o siltstone. Fractures at 45 degrees to horizontal. Medium to dark grey.
				0.64		MUDDY SILTSTONE
						Calcite filled fracture planes at 60 degrees to horizontal. Ground up from coring in part. Hard. Medium to dark grey.
38	173.40	174.90	1.50		1.45	SILTSTONE
						Calcite filled fractures at 40 degrees to bedding. Slickensided in some direction as fracture. Medium grey. Calcite veins parallel fracture planes. Core ground and broken at top where some .05 is missing. Not a good contact with the next core run either.
39	174.90	177.90	3.00	0.15	2.16	SILTSTONE
						Fine grained. Good fizz in basal .2m. Hard. Medium to light grey at base.
				1.48		SILTSTONE
						More muddy in upper half. Carbonaceous inclusions as small veins <1% in lower 1/3. Dark grey. No fizz. No bedding.
40	177.90	180.30	2.40	1.35	3.15	SILTSTONE
						Hard. Dark grey. As above.
				0.39		SANDSTONE
						Moderately good fizz. Coarse grained. Thin carbonaceous lanellae throughout. Calcite veinlets vertical. Grades down into siltstone. No good bedding angles. Colour medium grey brown. Subangular white grains.
				1.41		SILTSTONE
						Same as one above the sandstone above. Ground and broken in bottom 0.1m of the run. No bedding or fracture planes.
41	180.30	183.30	3.00	0.30	3.10	SILTSTONE
						Small carbonaceous fragments. As above.
				1.38		SANDSTONE
						Fine to very fine grained. Medium grey - lighter near bottom. Hard. No to very low fizz at bottom. Grades down into siltstone.
				1.42		SILTSTONE
						Some turbid interbedding of coarse sandstone for 12 cm near the base. Carbonaceous fragments and lenses <1%. Medium hard and dark grey. No fizz.
42	183.30	186.30	3.00	0.10	2.72	SILTSTONE
						Carbonaceous coaly bed 2 cm thick 3 cm from base. Sharp contact with underlying sandstone on bedding. Bedding at 15% to horizontal. Fractures
				0.84		SANDSTONE
						Coarse grained. Subangular white grains throughout. Medium grey brown. 5% coaly carbonaceous angular blebs and inclusion and veinlets. Very hard. Excellent Fizz. Vertical calcite veining. Sharp basal contact.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-02C
CO-ORDINATES : 5483803.4 N. - 364350.7 E.
ELEVATION : 194.2 m
LOGGED BY: L. A. Swaren
COMMENTS: Bedding 5 degrees to 12 degress @ 113m

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
				1.36		SILTSTONE
						Grades into fine grained sandstone at base. < 10% carbonaceous veins. Bard. Dark grey. No fizz.
				0.42		SANDSTONE
						Fine grained. Medium grey. No fizz. Grades down into coarse grained sandstone in next run. Calcite veins up to 0.5 cm thick irregularly vertical to 75 degrees from horizontal. Siltstone clast 2 cm thick in lense from.
43	186.30	189.10	2.80	1.60	2.90	SANDSTONE
						Coarse grained. Large. Up to 5 cm siltstone clasts 3%. Fine carbonaceous lanellae horizontal <1%. Calcite veinlets also horizontal. Subangular white grains throughout. Fizz - good. Fine grained sandstone in top 0.1m. Colour medium brown grey.
				0.28		SANDSTONE
						Fine grained. Red brown grey.Thin mudstone lanellae throughout.
				1.02		SANDSTONE
						Coarse. As above at top of this run. Some parts broken and fragmented. Bedding on 1 cm siltstone band at 12 degrees to horizontal. Very poorly sorted. Large 3m white grains. Mudstone clast to 5mm. Carbonaceous lanellae. Low to moderate fizz. Base of core joins same unit in next core run.
44	189.10	192.10	3.00	3.08	3.08	SANDSTONE
						Same unit as above for .30 meters and then becomes more sorted and homogeneous for remainder. Joins next core in same unit. Fractures at 50 degrees to horizontal. Bedding at 12 degrees. Fizz excellent.
45	192.10	195.10	3.00	1.66	2.84	SANDSTONE
						As above. Small 3 cm siltstone bed .3m from bottom. Sharp contact with next siltstone unit. Excellent fizz.
				1.18		SILTSTONE
						Medium grey. Medium hard. Grades down to fine grained sandstone. Small calcite veins throughout fractures at 40 degrees to horizontal.
						END OF HOLE AND CORE

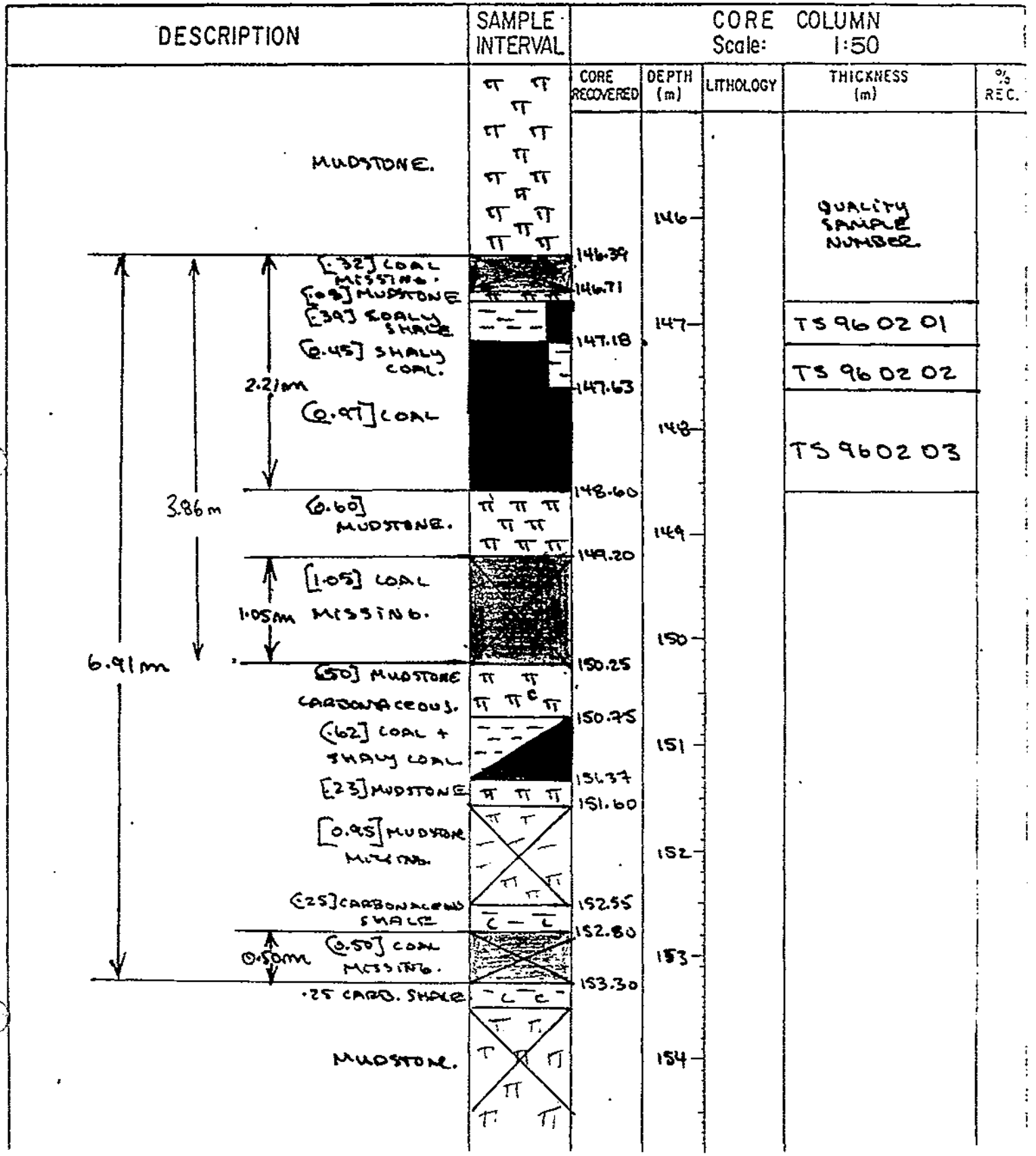
QUINSAM
COAL LIMITED

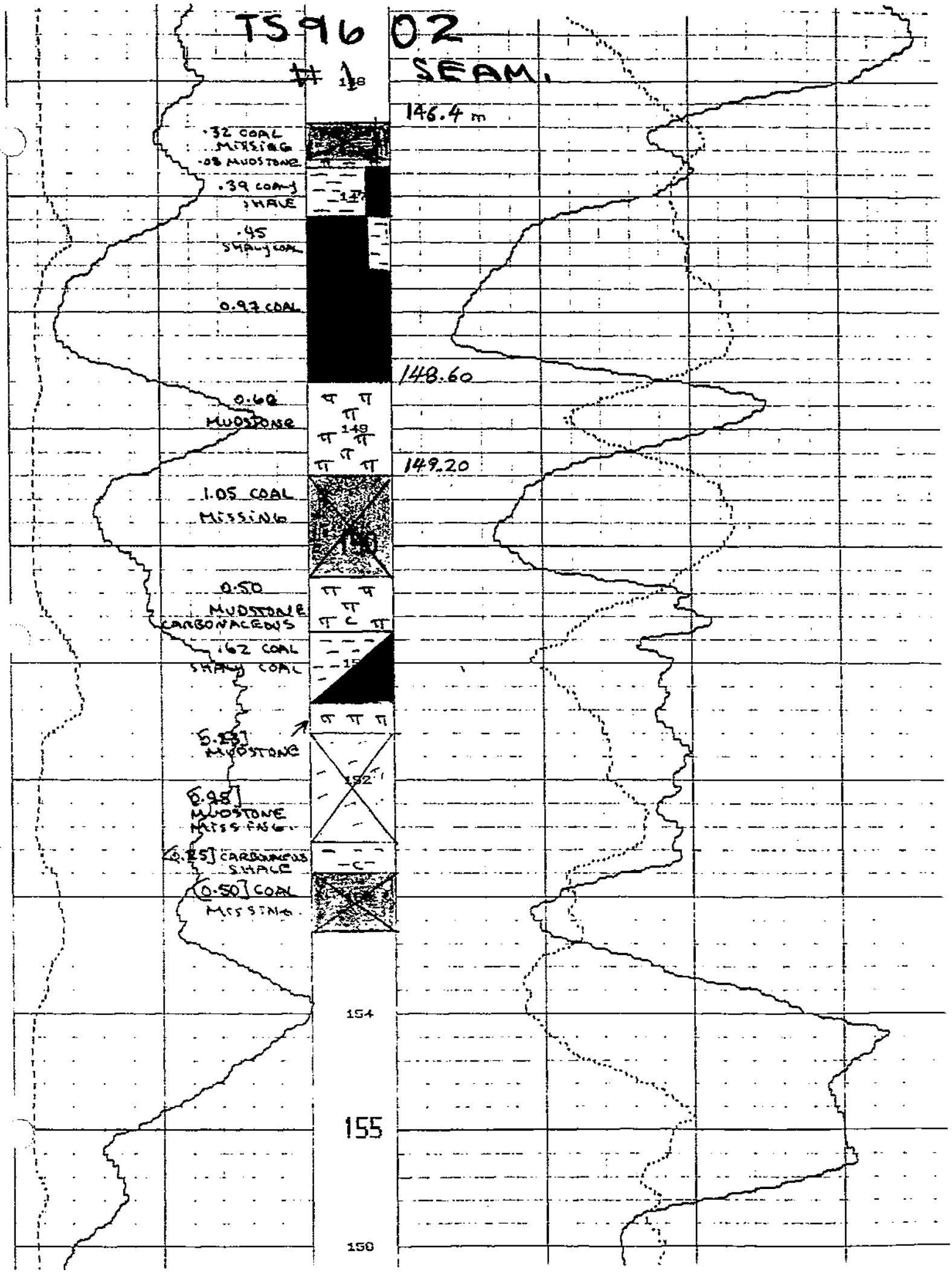
DEPTHS FROM E-log

Hole Number: TS 9602C Pit Number: # 1 SEAM.

Location: TSABLE RIVER Elevation:

Page ___ of ___




TS96 02
#1 SEAM.
146.4 m
.32 COAL
MISSING
.08 MUDSTONE
.39 COALY
SHALE
.45
SHALY COAL
0.93 COAL
148.60
0.60
MUDSTONE
149.20
1.05 COAL
MISSING
0.50
MUDSTONE
CARBONACEOUS
.62 COAL
SHALY COAL
[0.25]
MUDSTONE
[0.98]
MUDSTONE
MISSING
[0.25] CARBONACEOUS
SHALE
[0.50] COAL
MISSING
154
155
150

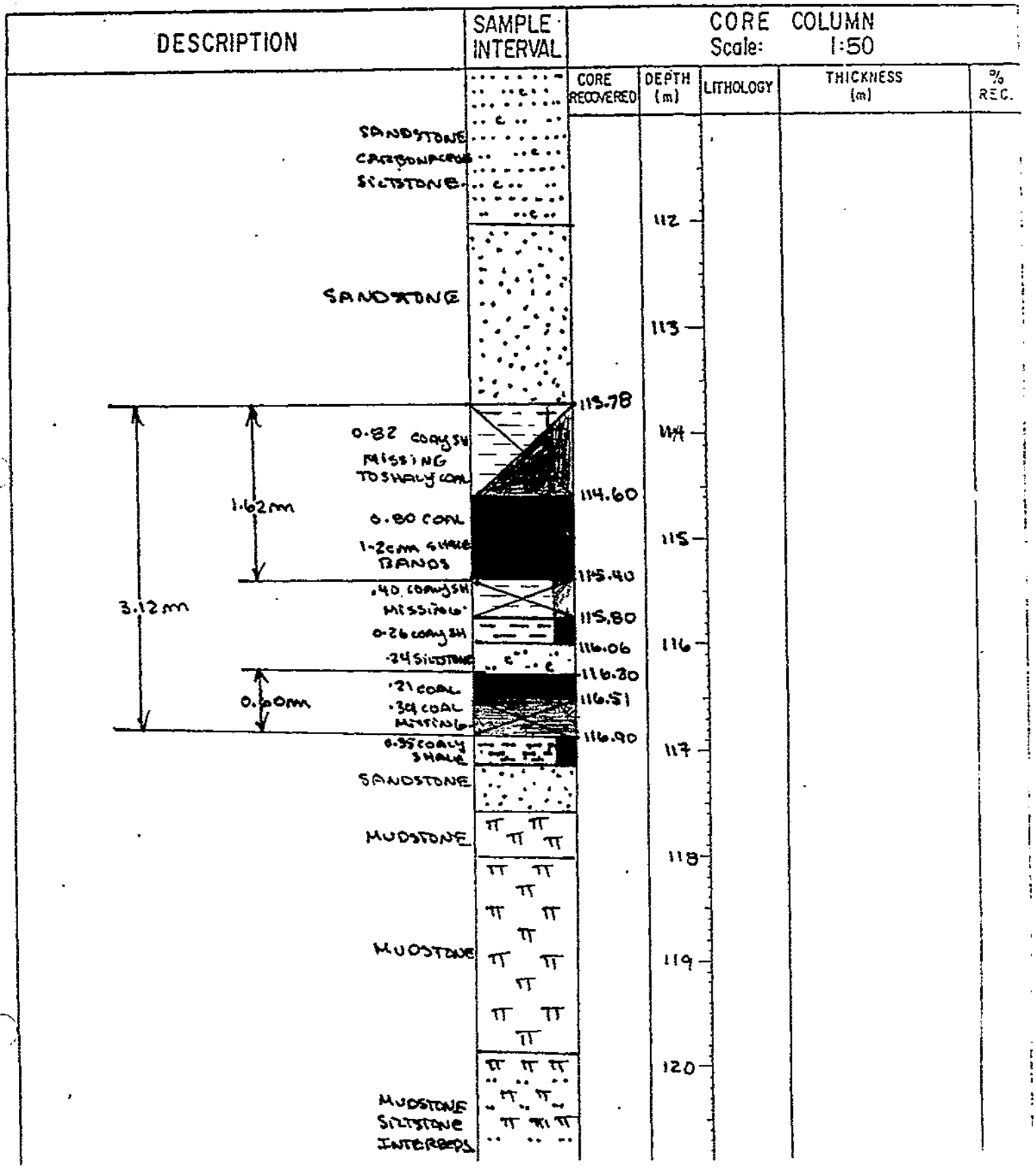
QUINSAM COAL LIMITED

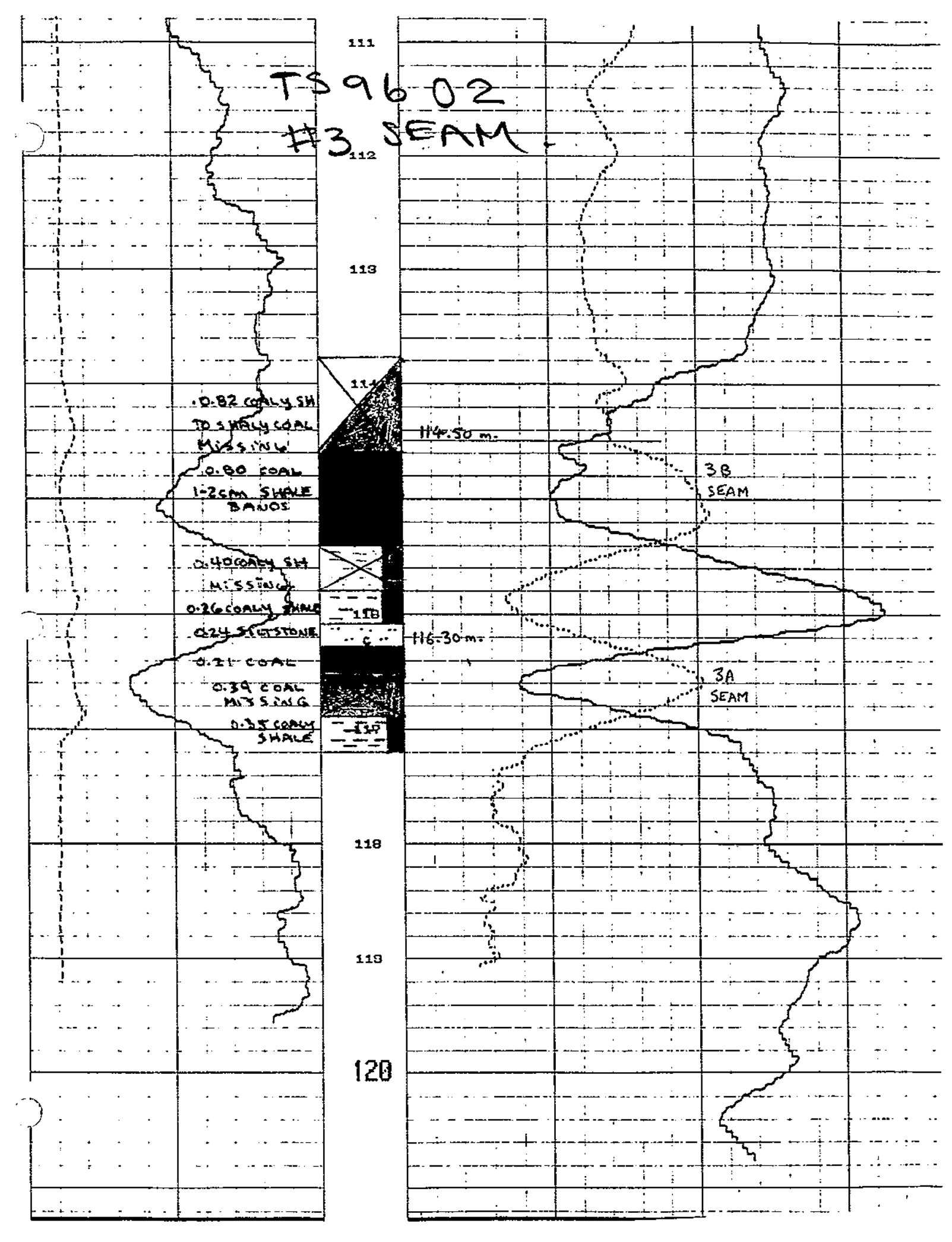
DEPTHS FROM E-LOG

Hole Number: TS 96 02C Pit Number: # 3 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___




TS9602
#3 SEAM
111
112
113
114
118
119
120
0.82 COALY SH
TO SHALY COAL
MISSING
0.80 COAL
1-2cm SHALE
BANDS
0.40 COALY SH
MISSING
0.26 COALY SHALE
0.24 SILTSTONE
0.21 COAL
0.39 COAL
MISSING
0.35 COALY
SHALE
1B
1A
114.50 m.
116.30 m.
3B
SEAM
3A
SEAM

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-03C
CO-ORDINATES : 5484101.0 N. - 363780.7 E.
ELEVATION : 181.7 m
DATE DRILLED: July 4, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	40.3	Glacial till overburden
40.3	52.0	Sandstone; medium grey; hard. Started coring at 42.8
52.0	54.8	COAL; No. 3 Seam?
54.8	55.7	Mudstone
55.7	62.0	COAL & sandstone mixed
62.0	103.0	Sandstone; medium grey; hard
103.0	116.2	Silty mudstone; medium to dark grey
116.2	118.0	COAL; No. 1 Seam
118.0	122.5	Mudstone; dark grey to black
122.5	126.1	Sandstone; with interbedded siltstone
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-03C
CO-ORDINATES : 5484101.0 N. - 363780.7 E.
ELEVATION : 181.7 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 20 degrees above #3 Seam, 40 degrees between Seams, 20 degrees below #1 Seam

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	42.80	45.80	3.00	3.04	3.04	SANDSTONE
						Fine grained. Hard. Carbonaceous laminae at 70 degres to CA. Light to medium grey. .5m of softer sandstone with mudstone and carbonaceous mudstone laminae throughout
						20% brownish near base of unit. One fracture plane near base of core run at 40 degrees to CA. Good contact with top of next run. Some calcite veins in for 0.5m at 2m from top. Fizz good from .3 to 1.1m from top and nil in next run.
2	45.80	48.80	3.00	3.02	3.02	SANDSTONE
						Hard. Massive. Homogeneous. Fine grained. Medium grey. Very few minute carbonaceous stringers. Very long fractures at 0 degrees to CA throughout. Rust and mudstone in some fractures. Medium grey. No fizz. good contact with upper and lower core runs.
3	48.80	51.80	3.00	2.95	2.95	SANDSTONE
						Fine to medium grained. Finest in basal 1 meter. Medium grey. Two brown medium sandstone beds 0.8 m from top and 3 cm thick. Carbonaceous mudstone laminae beds throughout at 75 degrees to CA. More concentrated in basal 0.5m (15%). Again, fracture planes at 0 degrees to CA with mudstone and carbonaceous mudstone in fill. Calcite veins <1%. No fizz. Good match with core runs above and below.
4	51.80	54.80	3.00	0.26	1.78	SANDSTONE
						As above. Bedding contact with coal at 80 degrees to CA and sharp. No fizz.
						NOTE: E-Log and Core footage the same.
				1.52		COAL
						Ground badly into fragments at top of core. Very friable and crumbly. Easily washed and lost during drilling. Shaly in top 2 cm. Slickensided on fracture zones at 40 degrees to CA. Some portions are hard and blocky. Pyrite visible on outside of core and on some fractures. Feathery veins of calcite in evidence also. 1.22 meters of coal washed away and missing.
5	54.80	56.40	1.60	0.91	1.16	MUDSTONE
						Medium grey. Medium hard. 0.2 cm mudstone missing. Fractured with slickensides and polishing at 10 degrees to CA. Carbonaceous and coaly in central 0.1m. Fractured and broken from drilling. Basal .24m of coal or shaly coal is missing.
6	56.40	58.50	2.10	0.30	0.30	COAL
						Possibly partly shaly. #3 seam most of the coal or 1.8m is missing. The seam above may be a repeat of this seam by looking at E- logs. Some shaly coal in this sample. Coal is soft, shiny in thin 1 cm bands with calcite on fractures. Slickensided and powdery.
7	58.50	61.50	3.00	0.30	1.56	COAL

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-03C
CO-ORDINATES : 5484101.0 N. - 363780.7 E.
ELEVATION : 181.7 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 20 degrees above #3 Seam, 40 degrees between Seams, 20 degrees below #1 Seam

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Crushed. Soft. Some mud mixed in. Very friable. Most likely base of main #3 seam going into a mudstone ? Looks like 1.14 meters of mudstone or non coal missing according to E-Log, just below the coal.
				0.33		SANDSTONE
						Hard. Fractures at 50 degrees to CA are greatly slickensided and polished. Medium grey. No fizz.
				0.30		COAL
						On E-Log look like it should be thicker. Top 3 cm is carbonaceous shale. Meets upper sandstone bed at 50 degrees to CA and lower at 75 degrees to CA. Hard. Gets more shaly towards base too.
				0.33		SANDSTONE
						Fine grained. Hard. Medium grey brown.
				0.30		SILTY MUDSTONE
						Soft. Ground up. Some carbonaceous coaly fragments also ground up. .31 missing.
8	61.50	62.50	1.00	0.40	1.00	COAL
						Calcite veining throughout. Hard blocks. Basal bedding contact at 45 degrees to CA.
				0.96		SANDSTONE
						Fine grained. Brown with carbonaceous bands at the top. No fizz.. Medium grey light sandstone core cast type sedimentary features near base. Banded with darker silty varves and small scale x-bedding.
9	62.50	65.40	2.90	1.03	2.90	SILTSTONE
						Medium grey. Hard. Fracturing at 30 degrees to CA. 70 degrees to horizontal brings a medium grained sandstone into the middle of the core on a slickensided fault plane. Slickensides found on other similar planes. Basal contact is with sandstone at 70 degrees to CA.
				1.87		SANDSTONE
						Fine grained. Hard. Fairly massive. Carbonaceous laminae. Banding throughout. Good fizz in basal .40m. None elsewhere. Slickensided fracture planes at 30 degrees to CA. Excellent contact with next run of core.
10	65.40	68.40	3.00	0.42	3.00	SANDSTONE
						As above. Good fizz. Calcite veins.
				0.27		SANDSTONE/SILTSTONE
						Interbeds. Hard. No fizz. Medium grey to brown.
				0.53		SANDSTONE
						Coarse grained. Very good fizz. Very hard. Large calcite veins to 1 cm in base and smaller ones throughout. Medium grey brown.
				1.78		SILTSTONE/SANDSTONE
						Bedding at 50 degrees to CA. Good interbeds from brown to medium grey. Sandstone fine grained. No fizz. Silty mudstone to mudstone in basal 2 cm.
11	68.40	71.40	3.00	0.33	3.03	SILTSTONE/SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-03C
CO-ORDINATES : 5484101.0 N. - 363780.7 E.
ELEVATION : 181.7 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 20 degrees above #3 Seam, 40 degrees between Seams, 20 degrees below #1 Seam

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						As above. Medium grained light sandstone. Vein at CA 1 cm thick and 20 cm long
				1.99		SANDSTONE
						Medium grained. Very hard. Massive. No fizz at top 1.02 but basal 0.87 m has good fizz. Basal 0.87 has many carbonaceous laminae throughout. Some fractures at 40 degrees to CA. Basal contact with siltstone. Sandstone is at 60 degrees to CA.
				0.52		SILTSTONE/SANDSTONE
						Interbedded with carbonaceous laminae. Medium grey. Hard. No fizz
				0.19		SANDSTONE
						Medium grey. Fine to medium grained. Very hard. Joins next run very well
12	71.40	74.40	3.00	3.03	3.03	SANDSTONE
						Layered siltstone laminae. Beds near top 0.5m. Remainder has mudstone and sandstone inclusions in the forms of mudstone rings, carbonaceous mudstone specs and fragments and rings around different grain sized sandstone 1 cm in diameter. Hard. Medium to light grey downwards. Massive. No fizz.
13	74.40	77.40	3.00	2.98	2.98	SANDSTONE
						As above. Light grey. Massive. Hard. No beds, just all the inclusions. No fizz.
14	77.40	80.40	3.00	2.93	2.93	SANDSTONE
						Top 1 cm as above going to a massive plane of sandstone with no inclusions but calcite veins occasionally < 1 cm thick. Bottom plain sandstone has low to moderately good fizz. (Missing in previous runs made up here).
15	80.40	83.40	3.00	3.16	3.16	SANDSTONE
						Very massive. Very hard. Fine to medium grained. Light to medium grey. Some calcite veins. One or two fractures at 30 degrees to CA. Minor carbonaceous inclusions. Fizz - Top 60 cm and bottom 80 very good and middle nil.
16	83.40	86.40	3.00	2.97	2.97	SANDSTONE
						Same as above. Upper .4m has more mudstone layering and laminae. Fizz low to moderate in basal 1.5m. Nil in top half.
17	86.40	89.40	3.00	3.10	3.10	SANDSTONE
						As above. Meets top run perfectly. some 3 cm of mudstone laminae near base. Calcite filled fractures at 30 degrees to CA. Slow 1 cm movement on thin carbonaceous lanellae. Very homogeneous. A little fizz in middle 3 cm.
18	89.40	92.40	3.00	1.28	2.70	SANDSTONE/SILTSTONE
						Some siltstone is muddy. Soft to medium hard. Fairly broken up and Interbedded. Carbonaceous material throughout. Bedding at 50 degrees to CA. Some slickensides along bedding where slip has occurred. Medium grey to brown. Fizz - nil.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

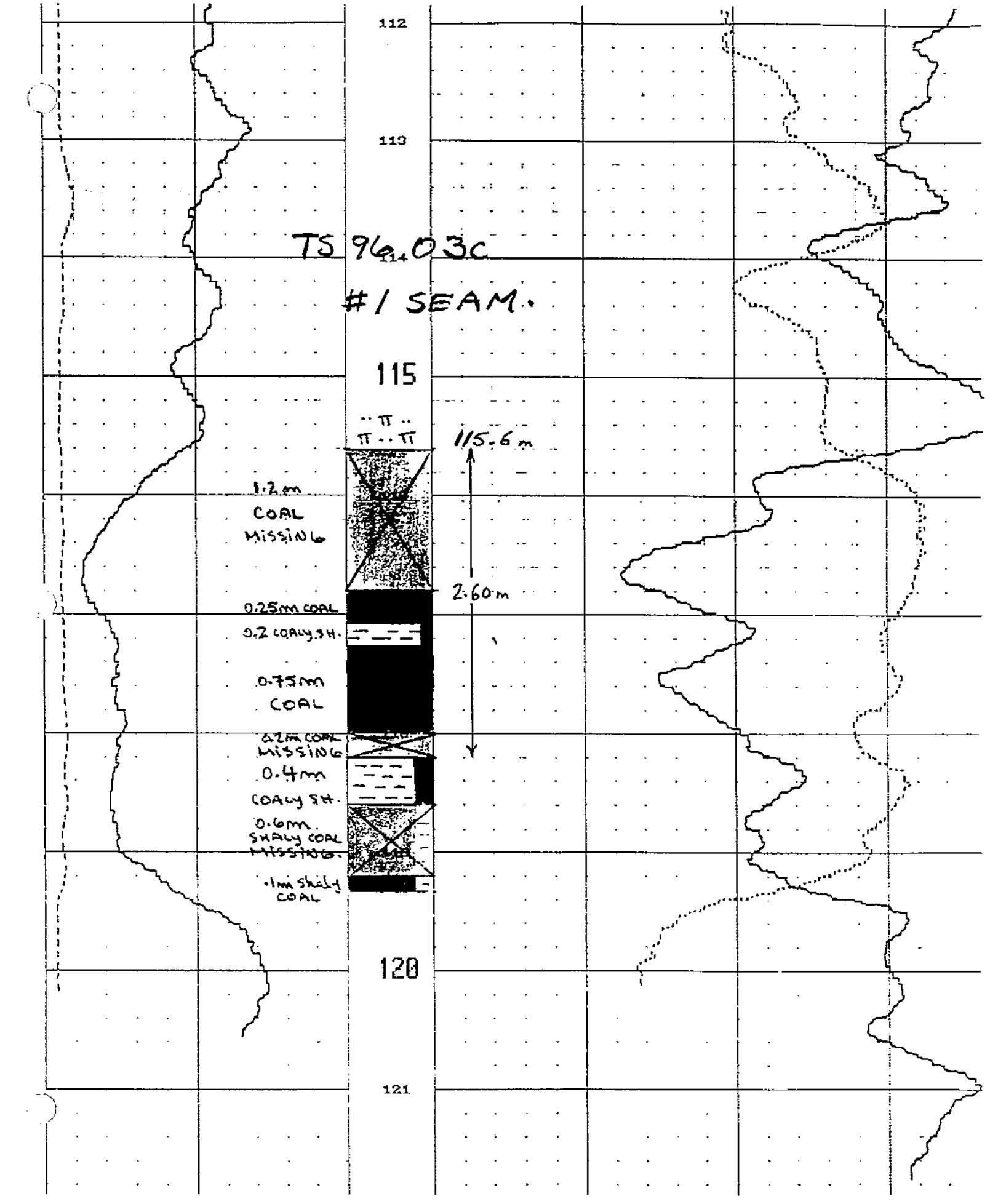
HOLE NUMBER : TS 96-03C
CO-ORDINATES : 5484101.0 N. - 363780.7 E.
ELEVATION : 181.7 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 20 degrees above #3 Seam, 40 degrees between Seams, 20 degrees below #1 Seam

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
			1.42			SANDSTONE
						Fine grained grading to medium downward. Some fizz in basal 6 cm. Non to little in rest. Massive. Medium grey. Homogeneous.
19	92.40	95.40	3.00	3.11	3.11	SANDSTONE
						Massive as above. Many calcite veins throughout. Meets upper & lower core good. Mostly (85%) has excellent fizz.
20	95.40	98.40	3.00	2.90	2.90	SANDSTONE
						Fine grained to silty in top .4m grading down to medium grained ????? sandstone. Siltstone dark grey brown. Sandstone medium grey and very hard. Siltstone bedding at 50 degrees to CA. Carbonaceous mudstone thirty bedded. Minor calcite veins. No fizz. Good contacts with core above and below.
21	98.40	101.40	3.00	3.05	3.05	SANDSTONE
						Medium grained. Massive. Fractures at 60 degrees to CA. Not very common. Light to medium grey. Fizz - Low to moderately good for basal 2m increasing to base. Very hard.
22	101.40	104.40	3.00	1.48	2.46	SANDSTONE
						Medium grained. Medium grey, massive. Very hard.
				0.98		SILTY MUDSTONE
						Fracture plane, slickensided at 85 degrees to CA. Dark grey to black. Broken up and fractured into fragments during drilling. Planes of fragments polished and slickensided too.
23	104.40	106.90	2.50		1.65	SILTY MUDSTONE
						Good fizz 0.4m from top for 0.4m. More silty in top section. More broken in basal meter. Core ground up and some missing 0.85m. Small coal parting from E-log at 106 to 106.3m. Highly fractured/polished/ slickensided at 40/60 & 90 degrees to CA.
24	106.90	108.00	1.10	0.90	0.90	SILTY MUDSTONE
						Polished, slickensided. Broken. Medium hard. Visible pyrite in core. Some minor coaly fragments probably from the small stringer above.
25	108.00	111.00	3.00	2.86	2.86	SILTY MUDSTONE
						Same as above. Possibly more silty and not as broken and fractured. Medium hard. Medium to dark grey. Some small calcite bands.
26	111.00	114.00	3.00		2.20	SILTY MUDSTONE
						Fairly massive in top 1.5m becoming interbedded with carbonaceous mudstone and coaly lenses in basal sections. Fracture planes at 10 degree to CA. Some bedding at 70 degrees to CA. Basal portion broken, polished and slickensided. Some calcite veinlets and on fracture surfaces. No fizz.
27	114.00	116.20	2.20	1.00	1.00	SILTY MUDSTONE
						Broken, slickensided. Probably basal carbonaceous on coaly portion missing. Same as last run. No fizz. 1.20 missing coal.
28	116.20	118.00	1.80	1.20	1.20	COAL

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-03C
CO-ORDINATES : 5484101.0 N. - 363780.7 E.
ELEVATION : 181.7 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 20 degrees above #3 Seam, 40 degrees between Seams, 20 degrees below #1 Seam

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
Sample TS960301						Calcite on fracture planes. Hard. Broken. Partially ground up. Shiny and dark bands at 50 degrees to CA. Some coaly shale in the centre of the interval. Very broken. Unknown exact thickness, perhaps 0.2m from E-log.
29	118.00	120.00	2.00	1.20	1.20	SILTY MUDSTONE
						Top 0.02 coal - may be ground and left from top run. 0.67 missing. Medium to dark black. Medium hard. Missing may be some coaly shale from E-log? (0.4m) Some fractures at 80 degrees to CA.
30	120.00	120.60	0.60	0.60	0.60	MUDSTONE
						Dark grey to black. Medium and hard. Polished and slickensided on fracture planes. Partially ground up. No fizz.
31	120.60	123.60	3.00	2.10	3.00	MUDDY SILTSTONE
						Top is more muddy grading down to a siltstone. Basal contact with coarse sandstone is gradually at 70 degrees to CA. Medium grey. Hard. One small 1 cm carbonaceous lense in the middle. No fizz.
				0.90		SANDSTONE
						Coarse to very coarse grained. Some basal sandstone as in hole 96-01 beneath the #1 seam. Large angular to Subangular white soft feldspathic grains? Medium brown and hard. Fizz low to medium.
32	123.60	126.10	2.50	1.36	2.50	SANDSTONE
						As above. Some carbonaceous beds. Base shows mudstone, sandstone, siltstone interbeds for 10 cm with irregular bedding, fractures and calcite. Beds at 70 degrees to CA. Upper half has high fizz and lower very low fizz.
				0.20		MUDDY SILTSTONE
						Moderately hard. Dark grey.
				0.45		SANDSTONE
						Coarse as above. Carbonaceous laminae beds near base again. No fizz.
				0.40		MUDDY SILTSTONE
						Fractures at 75 degrees to CA and polished and slickensided. Basal contact with sandstone gradational at 55 degrees to CA. No fizz.
				0.09		SANDSTONE
						Same coarse one as above. No fizz..
						END OF CORE AND HOLE


112
113
TS 96.03c
#1 SEAM.
115
115.6m
1.2m
COAL
MISSING
2.60m
0.25m COAL
0.2 COALY SH.
0.75m
COAL
0.2m COAL
MISSING
0.4m
COALY SH.
0.6m.
SHALY COAL
MISSING.
.1m shaly
COAL
120
121

QUINSAM COAL LIMITED

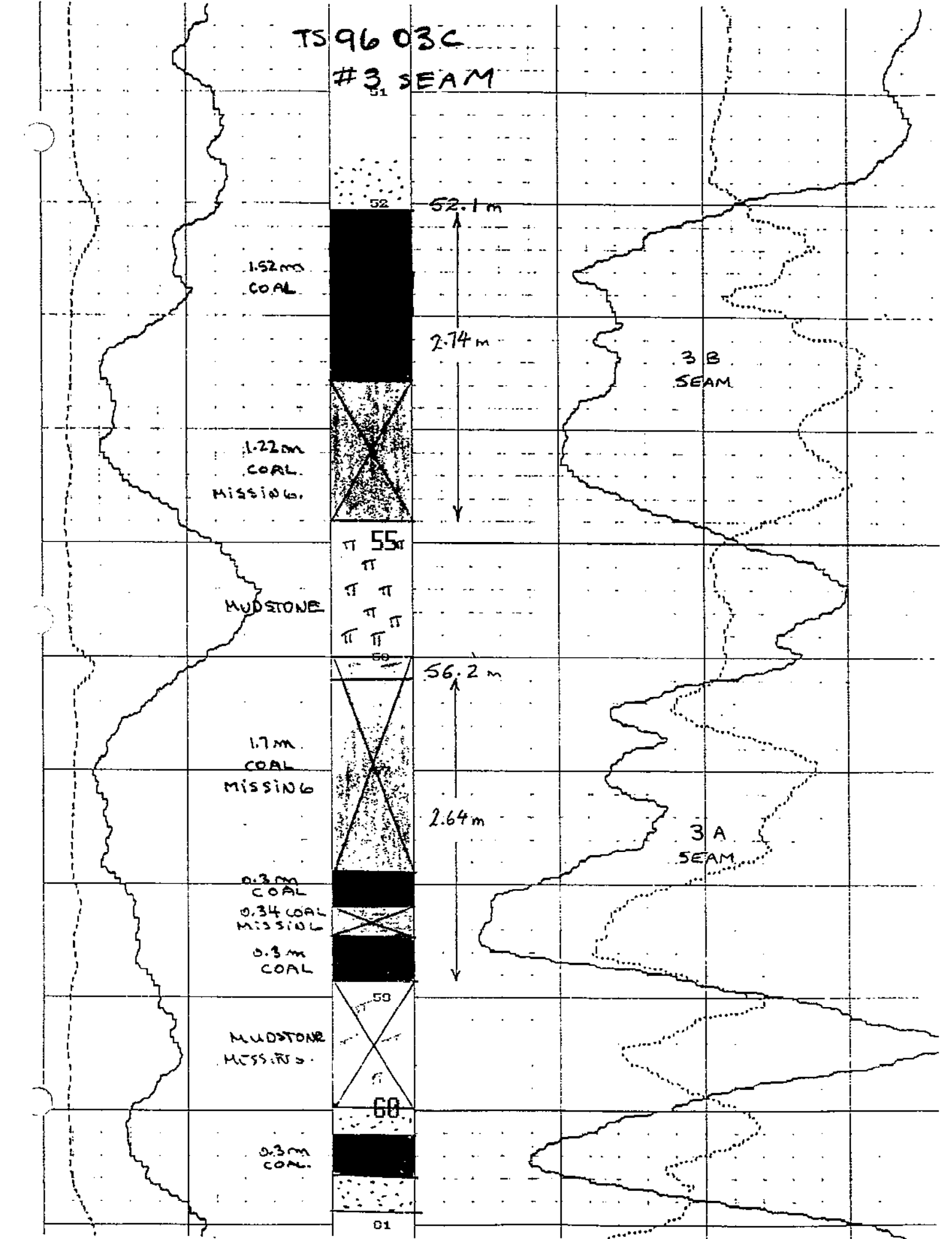
DEPTHS FROM E-LOG

Hole Number: TS 96 03C Pit Number: # 1 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
SILTY MUDSTONE			114			
			115		QUALITY SAMPLE NO.	
		115.60				
[1.2m] COAL MISSING			116			
2.60m					TS960301	
[0.25m] COAL			117			
COALY SHALE		117.05				
		117.25				
3.70m [0.75m] COAL						
0.2m COAL MISSING		118.00	118			
[0.4m] COALY SHALE		118.20				
		118.60				
[0.6]m SHALY COAL			119			
[0.1m] SHALY COAL		119.20				
		119.30				
SILTY MUDSTONE			120			
			121			
		121.30				
MUDDY SILTSTONE			122			


TS 96 03C
#3 SEAM
51
52
52.1 m
1.52 m
COAL
2.74 m
3 B
SEAM
1.22 m
COAL
MISSING
55
MUDSTONE
56
56.2 m
1.7 m
COAL
MISSING
2.64 m
3 A
SEAM
0.3 m
COAL
0.34 COAL
MISSING
0.3 m
COAL
50
MUDSTONE
MISSING
60
0.3 m
COAL
01

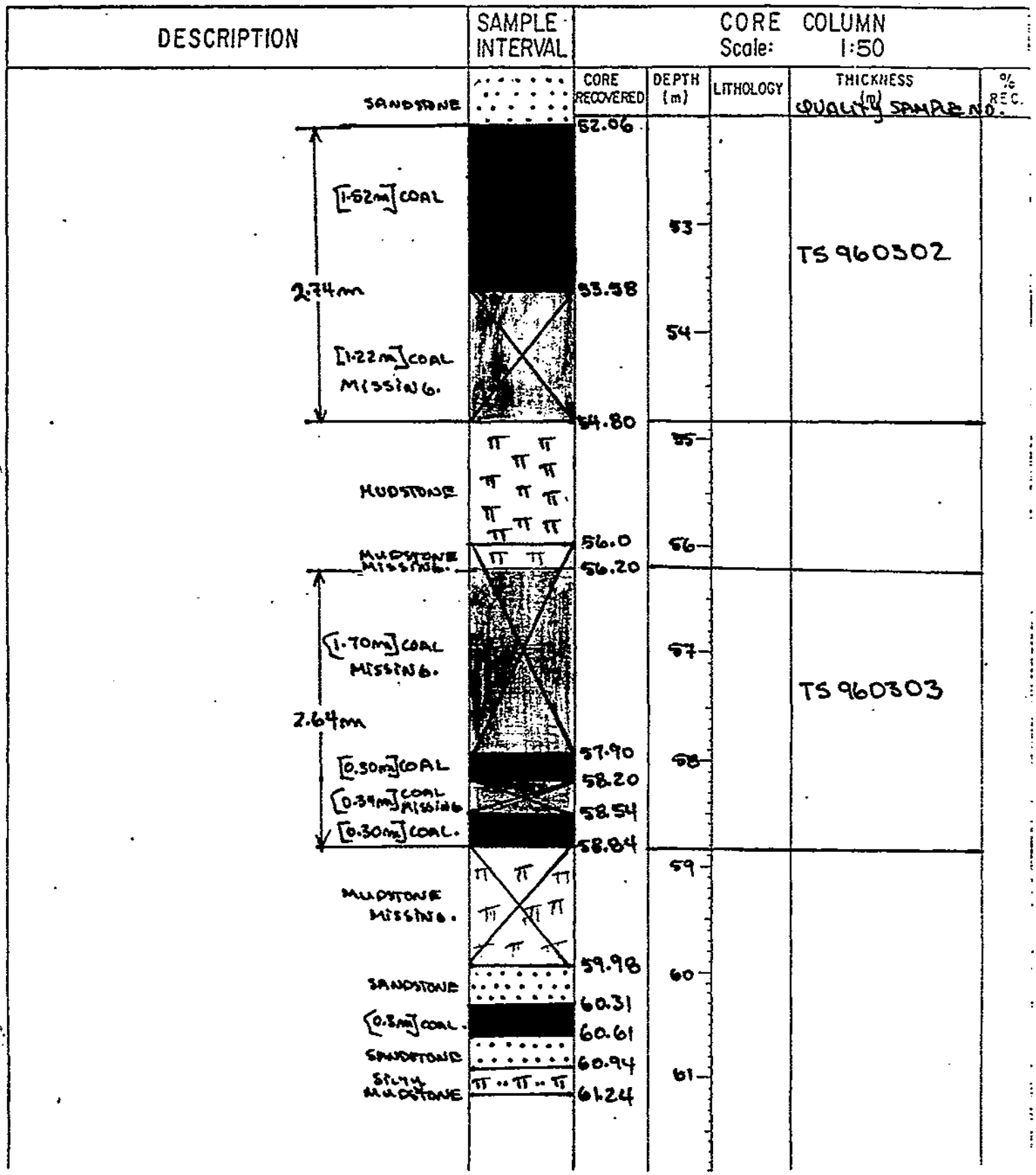
QUINSAM
COAL LIMITED

NOTE: Σ-LOG DEPTHS MATCH CORE LOG DEPTHS.

Hole Number: TS-96-03C Pit Number: #3 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___



TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-04
CO-ORDINATES : 5483348.2 N. - 364261.3 E.
ELEVATION : 207.4 m
DATE DRILLED: July 7, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	60.0	Sand & gravel overburden
60.0	60.4	Sandstone; coarse; white; poorly sorted
		END of HOLE

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-05C
CO-ORDINATES : 5484800.7 N. - 364157.3 E.
ELEVATION : 128.1m
DATE DRILLED: July 6/96 (deepened Oct. 25/96)
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	5.3	Till & weathered bedrock
5.3	57.0	Siltstone; with mudstone interbeds
57.0	76.9	Sandstone; minor mudstone interbeds
76.9	77.1	COAL; No. 5 Seam
77.1	87.0	Sandstone; mudstone interbeds at top
87.0	88.5	Mudstone; medium to dark grey
88.5	91.0	Sandstone; medium grey; hard
91.0	92.0	Mudstone, soft
92.0	93.0	COAL; No. 4 Seam
93.0	96.0	Mudstone; coaly
96.0	125.0	Sandstone; silty at base. Started coring at 117.6m
125.0	126.0	Mudstone; silty
126.0	129.1	COAL; shaly; No. 3 Seam
129.1	130.5	Sandstone; medium grey
130.5	134.0	Mudstone; carbonaceous
134.0	145.0	Sandstone; minor mudstone interbeds
145.0	156.0	Sandstone;siltstone; mudstone; interbedded
156.0	158.0	Mudstone; soft
158.0	160.0	COAL; minor mudstone; No.1 Seam
160.0	161.0	Sandstone; basal unit
161.0	167.5	Mudstone; siltstone interbeds
167.5	168.0	Sandstone; sandstone interbeds
168.0	171.1	Siltstone; sandstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-05C
CO-ORDINATES : 5484800.7 N. - 364157.3 E.
ELEVATION : 128.1m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 15 degrees throughout

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	117.60	120.10	2.50	2.56	2.56	SANDSTONE
						Beds dipping 15 degrees from horizontal. Medium to fine grained. Medium grey. No fracturing. Carbonaceous mudstone laminae interbeds throughout 10%. Hard. Breaks on mudstone. Base of core matches next run. Fizz - moderate in 20 cm of the upper portion . Nil in remainder
2	120.10	123.10	3.00	2.94	2.94	SANDSTONE
						Beds dipping at 17 degrees from horizontal. Same as above but fine grained, lighter grey and grading down to very few carbonaceous mudstone laminae. Base of core matches next run. No fractures. Fizz-medium in middle.1.5m and nil in remainder.
3	123.10	126.10	3.00	0.27	3.00	MUDDY SILTSTONE
						Medium grey. Medium hard. No fizz. Grading down into siltstone/sandstone interbeds.
				1.57		SANDSTONE/SILTSTONE
						Interbedded. Grading downwards into medium grained sandstone. Bedding at 16 degrees to horizontal. One 3 cm stringer of carbonaceous shale at 0.43 m from base of sandstone. Base of section contacts next unit on calcite band. No fizz. Very thin carbonaceous laminae throughout. Medium hard. No fracturing.
				0.80		SILTY MUDSTONE
						Dark grey black. Bedding at 17 degrees to horizontal. Some calcite bands < 1 cm. Base is siltier grading into next sandstone unit. No fizz.
				0.36		SANDSTONE
						Bedding variable but < 15 degrees./ Medium grained. Hard. Medium grey. Carbonaceous laminae throughout 7%. Siltier at top with load casts.
4	126.10	129.10	3.00	1.37	2.58	COAL
TS960501						
Ash	VM	FC	S	MJ/kg	FSI	
34.51	28.67	36.83	2.37	22.20	5.0	
TS960502				0.30		COALY-SHALE
Ash	VM	FC	S	MJ/kg	FSI	
73.87	16.80	9.34	1.33	5.87	0.0	
						Hard. Heavy. Brown streak
TS960503				0.36		COAL
Ash	VM	FC	S	MJ/kg	FSI	
22.72	34.67	42.61	1.87	25.88	6.0	
						As above. Hard. Bright and dull bands less than 1 cm. Pyrite & calcite visible.
TS960504				0.42		SHALY COAL
Ash	VM	FC	S	MJ/kg	FSI	
44.17	25.90	29.93	1.78	18.35	3.0	
						Dark. More shale in lower 1/2. Disseminated pyrite throughout.
TS960504				0.20		COAL

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-05C
CO-ORDINATES : 5484800.7 N. - 364157.3 E.
ELEVATION : 128.1m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 15 degrees throughout

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
Ash	VM	FC	S MJ/kg	FSI		
44.17	25.90	29.93	1.78 18.35	3.0		
						Broken, soft, some maybe missing
5	129.10	132.10	3.00	1.46	3.00	SANDSTONE
						Fine grained. No upper contact with previous core. Top rock crushed and broken. Bedding at 15 degrees to horizontal. Low fizz in top .60 m and nil in remainder. One fracture plane with calcite at 60 degrees to horizontal.
				1.30		SILTY MUDSTONE
						Silty at top and gradational from sandstone above. Base is sharp contact with carbonaceous shale bed at 15 degrees to horizontal. Some calcite veins in basal 1/2 at < 1 cm. Medium hard. Dark grey to black. Fizz moderately good in top 0.26 m and nil in remainder
				0.24		CARBONACEOUS SHALE
						Some broken coaly pieces 2 cm at base. Broken core. Unknown bottom
6	132.10	135.10	3.00	3.00	3.00	SANDSTONE
						Massive. Homogeneous. Fine to medium grained. Medium grey. Small carbonaceous mudstone veins up to .5 cm. Also very thin calcite veins. Total of both,<2%. Beds at 15 degrees to horizontal. Hard. Fizz is good over whole interval.
7	135.10	138.10	3.00	3.09	3.09	SANDSTONE
						Fractures large at 85 degrees to horizontal and one 2.3m long slickenside show horizontal movement. Massive. Hard to very hard. Silty mudstone beds form laminae to ore that is 4 cm thick in middle. Moderate fizz in basal .4m. Bedding at 15 degrees to horizontal.
8	138.10	141.10	3.00		3.00	SANDSTONE
						Beds at 15 degrees to horizontal. Fracture at 75 degrees to horizontal and .33 m in length. Sandstone as above. Silty muddy broken up fragments in basal .14m. Top matches core above. Fizz moderately good throughout.
9	141.10	144.10	3.00	3.05	3.05	SANDSTONE
						Irregular fracture at 90 degrees to horizontal. Slickensided horizontally and .7m in length.. Hard to very hard. Medium grained. Homogeneous unit. No bedding. Moderately good fizz throughout. good contact with bottom of Run 10.
10	144.10	147.10	3.00	3.00	3.00	SANDSTONE
						Fine grained at top to medium grained near base. Middle .38m has 50 degree silty mudstone interbeds. Other carbonaceous mudstone interbeds are 3% and up to 2 cm thick. Sandstone is hard. Medium grey. Bedding at 15 degrees to horizontal. Good top and bottom contacts with other runs. fizz - low to moderately good in sandstone
11	147.10	150.10	3.00	1.64	2.94	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-05C
CO-ORDINATES : 5484800.7 N. - 364157.3 E.
ELEVATION : 128.1m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 15 degrees throughout

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Fracturing at 80 degrees to horizontal. One .1m long and another .4m long. Bedding at 15 degrees to horizontal. Fine grained. Two 3cm beds of mudstone slightly carbonaceous. Fizz - good in basal 2/3, nil in rest. Hard. Medium grey. Grading down to siltstone.
				1.30		SILTSTONE/MUDSTONE
						Finely interbedded. Two mudstone beds - 1 at top and 1 at bottom are crumbly and soft. Medium hard. Medium grey. Basal contact with next core is excellent.
12	150.10	153.10	3.00	3.06	3.06	SANDSTONE/MUDSTONE
						Varved interbedded and slightly crossbedded. Sandstone medium grained and light grey. Mudstone - silty and dark grey. Calcite veining on fracture plane at 30 degrees to horizontal. Bedding variable.
13	153.10	156.10	3.00	2.90	2.90	SANDSTONE/SILTSTONE/MUDSTONE
						Same as last unit but less sandstone and more mudstone interbeds. Calcite veining along bedding planes. Bedding at 5 degrees to 15 degrees from horizontal.
14	156.10	159.00	2.90	1.90	2.78	MUDSTONE
						Carbonaceous at base grading into #1 coal seam
				0.88		COAL
						.12 m missing.
TS960505						Methane #5 Sample 40 cm
Ash	VM	FC	S	MJ/kg	FSI	
23.42	32.35	44.23	3.74	26.91	6.0	
						Calcite veining
						COAL 0.4 lower on E-Log
15	159.00	162.30	3.00	1.10	3.00	**COAL**
						Methane #6 Sample 37 cm
TS960505						Methane #7 Sample 40 cm
Ash	VM	FC	S	MJ/kg	FSI	
23.42	32.35	44.23	3.74	26.91	6.0	
						Not much coal left to look at.
TS960506					0.05	MUDSTONE
Ash 80.56%						Half of sample badly ground and missing
TS960507				0.25		SHALY COAL
Ash 44.91%						Pyrite and calcite
						#1 Seam foot wall coal
				0.88		SANDSTONE
						Basal coarse unit as in hole 96-01 &03 at base of #1 seam. Subangular white grains in medium brown sandstone matrix. Vertical calcite veins at base.
				0.27		MUDSTONE
						Ground up.
						Hole deepened Oct/96
16	162.00	164.00	2.00	0.69	1.65	SILTY MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-05C
CO-ORDINATES : 5484800.7 N. - 364157.3 E.
ELEVATION : 128.1m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 15 degrees throughout

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Fractured and ground up in coring at the top. Probably some is missing. Grades down into coarse sandstone. Polished black slickensided fractures at 60 degrees to horizontal. Medium black to dark. Medium hard. No fizz.
				0.60		SANDSTONE
						Moderately good fizz. Coarse to very coarse. Usually under #1 seam as in Holes 9601 & 9603. Large subangular to subrounded white inclusions. Hard to very hard. No bedding . GRades down into siltstone.
				0.36		SILTSTONE
						Hard. Medium dark. Fractured at 90 degres to horizontal. Slickensides on fracture are horizontally orientated.
17	164.00	166.00	2.00	1.40	1.40	SILTY MUDSTONE
						0.6m missing. Top broken & fractured. Medium grey. Medium hard. Irregular fractures at 75 degrees to horizontal
18	166.00	167.00	1.00	0.13	0.13	SILTY MUDSTONE
						As above. .87 m missing
19	167.00	168.00	1.00	0.50	1.00	SILTSTONE
						Medium grey. Hard. Fractured.
				0.50		SANDSTONE
						Coarse. White calcareous. Lots of fizz.
						END of CORE & HOLE

Quinsam COAL LIMITED

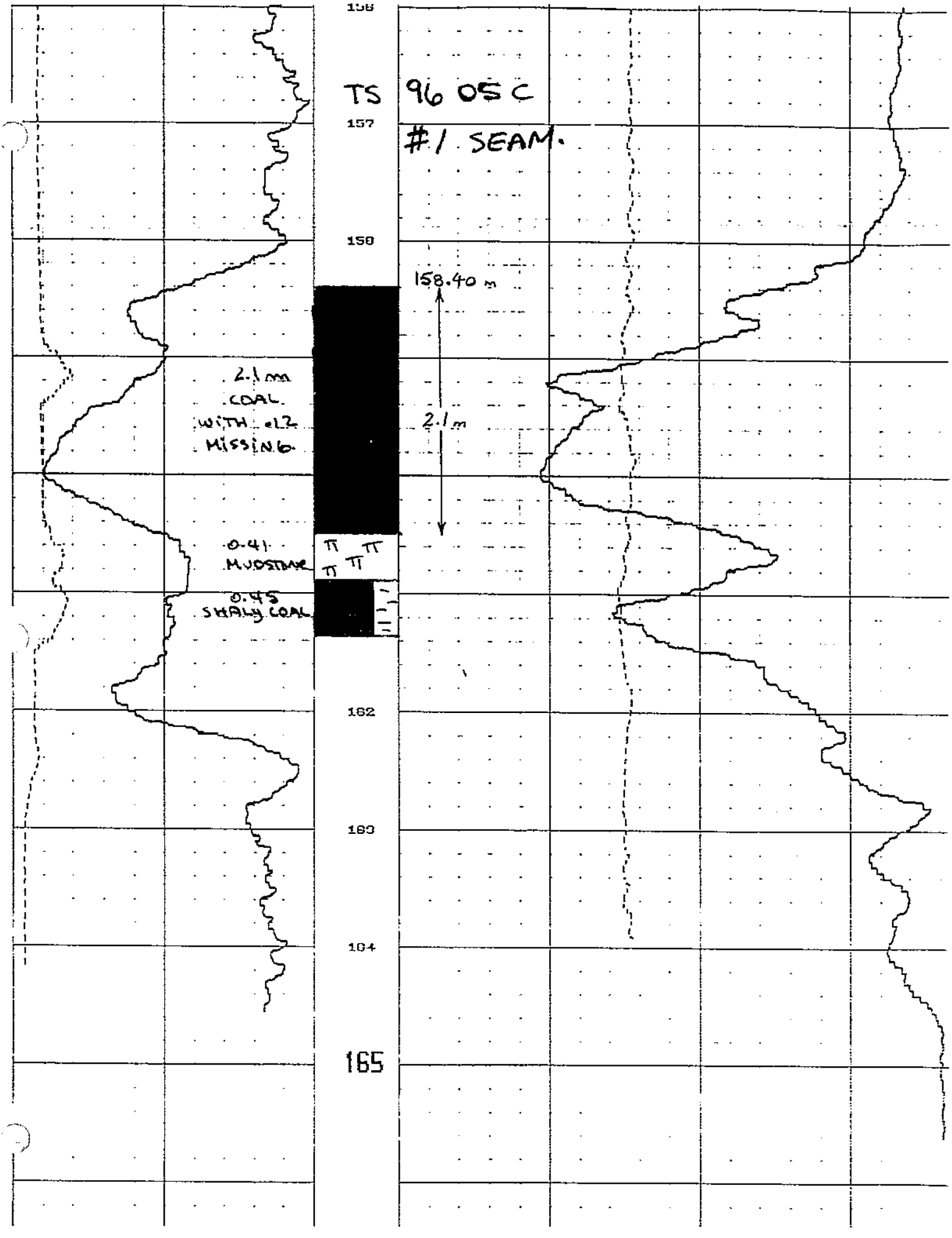
DEPTHS FROM E-LOG

Hole Number: TS 96 05C Pit Number: # 3 SEAM

Location: _____ Elevation: 126

_____ Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)
MUDDY SILTSTONE				METHANE SAMPLE NO.	COAL QUALITY SAMPLE NO.
SANDSTONE SILTSTONE INTERBEDDED			125		
SILTY MUDSTONE			126		
SANDSTONE				Ash %	NOTE: # / METHANE SAMPLE ASH NOT AVAILABLE YET
UPPER SEAM		126.95	127		
[0.42m] COAL MISSING		127.37		LOST CORE	← ESTIMATE 20% ASH BASED ON DENSITY CURVE
[0.93m] COAL				#1	TS960501
2.65m TOTAL			128	34.51	
2.03m		128.32			5%
[0.3m] COALY TONSTEIN		128.62		73.87	TS960502 .33
[0.85m] COAL				22.72	TS960503 .47
2.65m		128.98	129		
[0.40m] SHALY COAL				44.17	TS960504 1.75
[0.20m] COAL		129.40			
MUDSTONE		129.60			
SANDSTONE			130		
			131		
SILTY MUDSTONE			132		
CARBONACEOUS SHALE			133		
SANDSTONE					


TS 96 05 C
#1 SEAM.
156
157
158
158.40 m
2.1 m
COAL
WITH ~12
MISSING
2.1 m
0.41
MUDSTONE
0.45
SHALY COAL
162
163
164
165

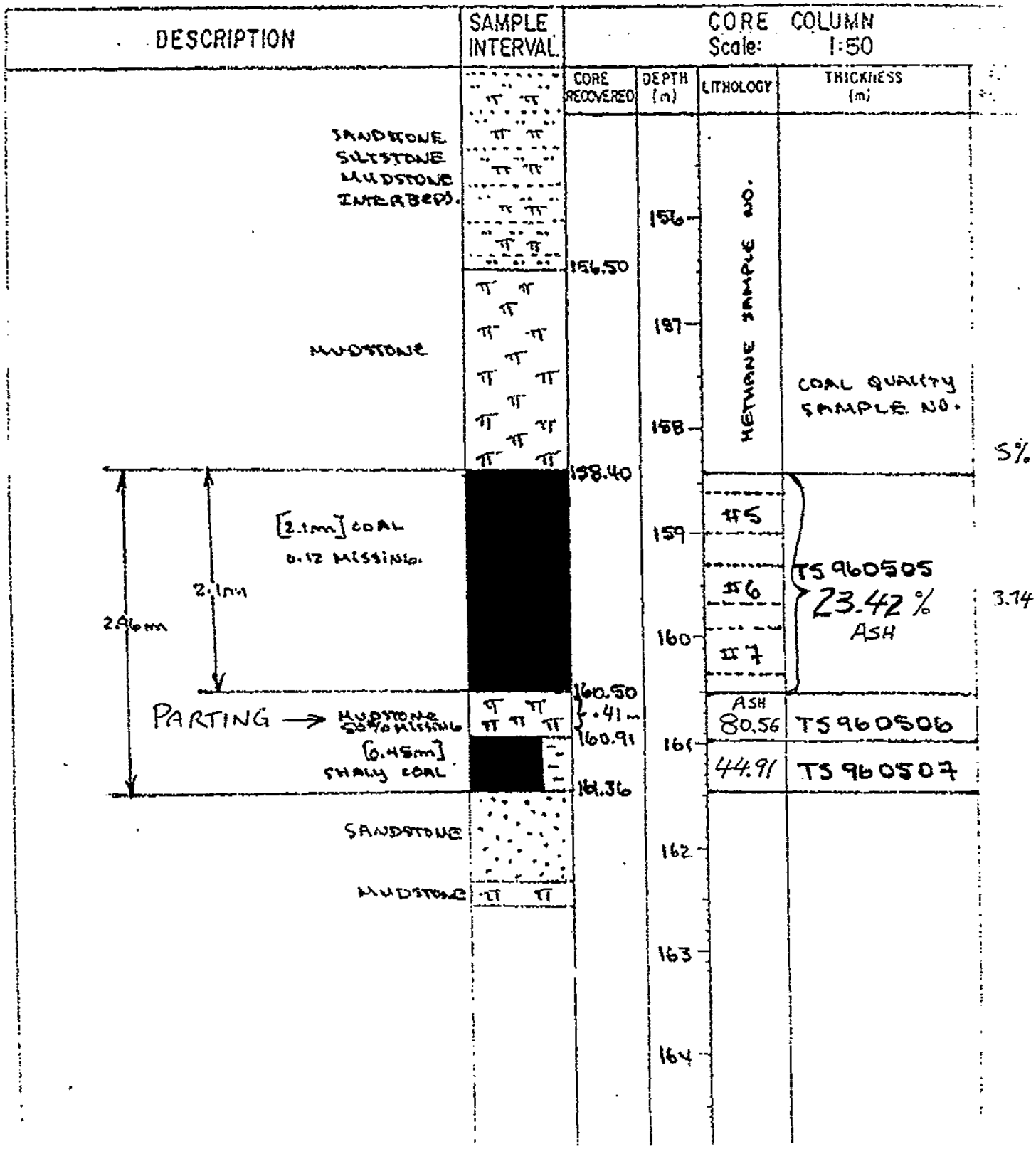
QUINSAM COAL LIMITED

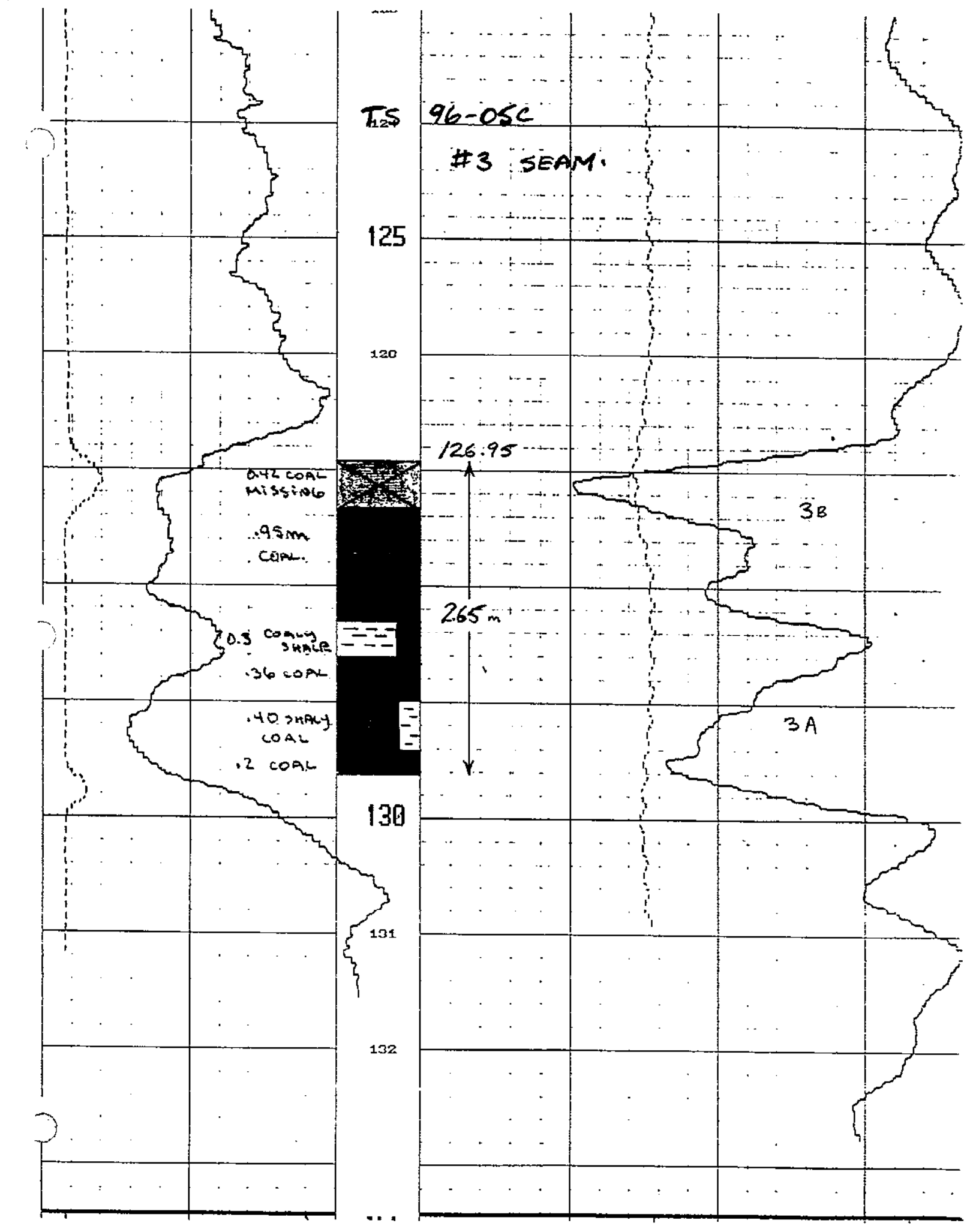
DEPTHS FROM E-LOG

Hole Number: TS 96 05 C Pit Number: # 1 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___




TS
96-05C
#3 SEAM
125
120
126.95
0.42 COAL
MISSING
.95m
COAL
3B
265 m
0.3 COALY
SHALE
.36 COAL
.40 SHALY
COAL
.2 COAL
3A
130
131
132

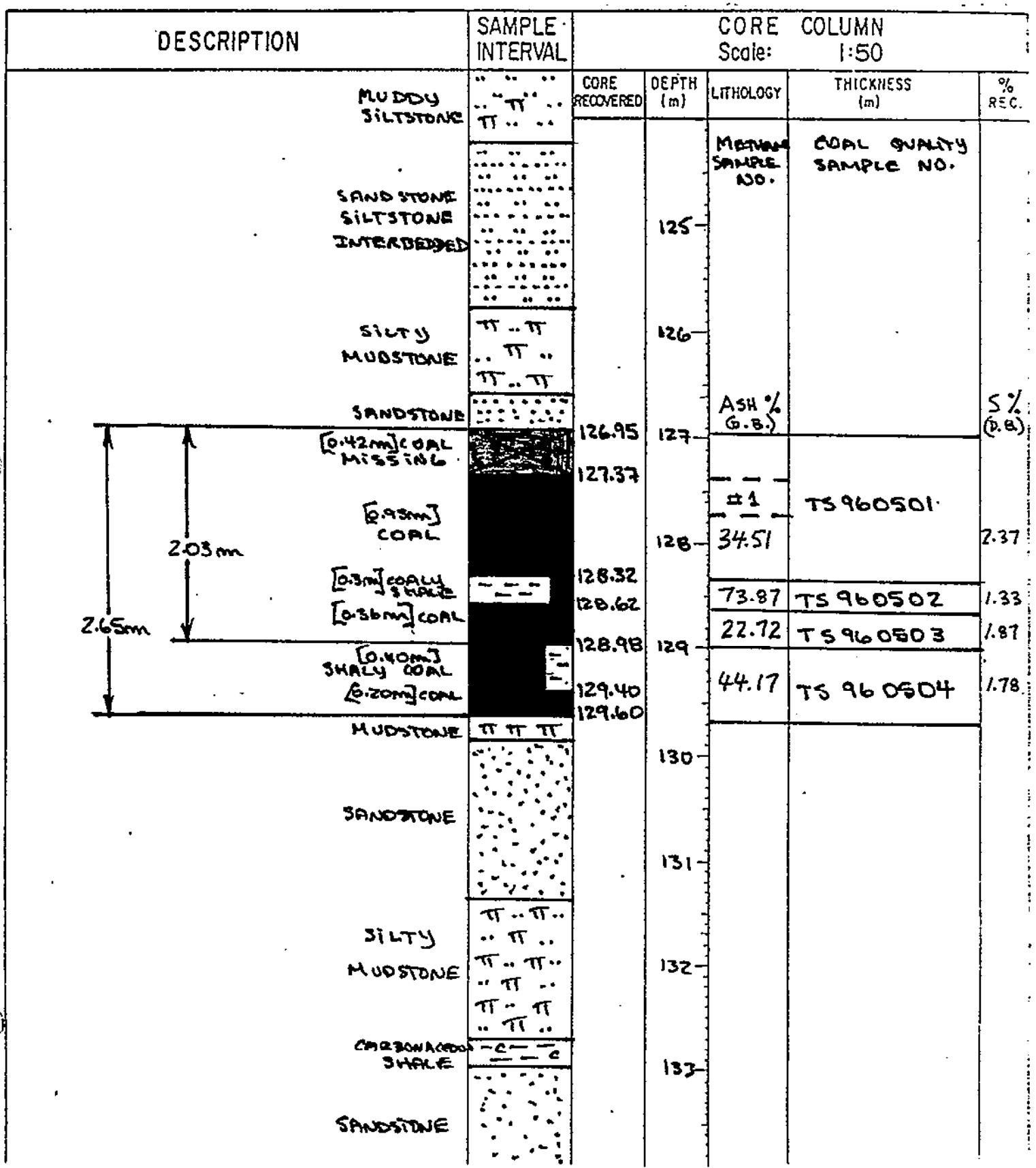
QUINSAM COAL LIMITED

DEPTHS FROM E-LOG

Hole Number: TS 96 05C Pit Number: #3 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___



TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-06C
CO-ORDINATES : 5484920.1 N. - 364378.7 E.
ELEVATION : 112.8 m
DATE DRILLED: July 7, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	3.3	Glacial till
3.3	85.0	Siltstone; medium grey; mudstone interbeds
85.0	100.0	Sandstone, medium grey; hard
100.0	118.0	Siltstone; fine sandy
118.0	142.0	Sandstone; siltstone interbeds
142.0	143.0	Mudstone; carbonaceous
143.0	144.0	COAL, No 5 Seam?
144.0	145.0	Mudstone; sandstone interbeds
145.0	167.0	Sandstone; medium to coarse; hard
167.0	181.0	Sandstone; siltstone/mudstone interbeds
181.0	183.0	COAL; shaly; No. 4 Seam?
183.0	199.0	Siltstone; grading to sandstone. STarted coring 182.9
199.0	201.0	COAL, some shale; No. 3 Seam
201.0	201.5	Shale; soft
201.5	202.0	COAL; No. 3 Seam
202.0	205.5	Mudstone; silty
205.5	222.0	Sandstone; medium grey; hard; massive
222.0	226.0	Mudstone; siltstone interbeds
226.0	227.0	Mudstone; coaly
227.0	230.0	COAL: No. 1 Seam; some shale
230.0	231.3	Mudstone; silty
231.3	237.3	Sandstone; Siltstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-06C
CO-ORDINATES : 5484920.1 N. - 364378.7 E.
ELEVATION : 112.8 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 8 degrees to 12 degrees throughout.

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle. Alteration, Wetness Contamination
1	182.90	185.90	3.00	0.32	2.80	SILTY MUDSTONE
						Medium hard. Dark grey. 0.27 missing at beginning of coring. Grades down into fine grained sandstone. Fracture 40 degrees to horizontal with polished slickensides and calcite on surface/. Low fizz.
				2.48		SANDSTONE
						Medium grey. Fine grained. Massive. Very hard. Matches next runs of core. Some fractures at 65 degrees to horizontal. Calcite and slickenside on planes. Low to moderately good fizz.
2	185.90	186.90	1.00	1.02	1.02	SANDSTONE
						Same as above. Fractures at 55 degrees to horizontal. Pyrite disseminated in fracture with calcite. Moderately good fizz.
3	186.90	189.90	3.00	2.93	2.93	SANDSTONE
						Excellent fizz. Massive sandstone. Medium grey. Calcite infill on fractures. Some vertical irregular fractures and others at 55 degrees to horizontal. Very hard. Fine to medium grained. Light to medium grey.
4	189.90	192.90	3.00	3.00	3.00	SANDSTONE
						Massive. Fracturing irregular vertical variable form 50 degrees to 90 degrees to horizontal. Lots of calcite in fractures up to 1 cm thick. Fine to medium grained. Medium grey. Fizz. Excellent over whole core.
5	192.90	195.90	3.00	2.87	2.87	SANDSTONE
						As above. Minor carbonaceous inclusions. Apparent bedding on small carbonaceous band is 12 degrees to horizontal. Fractures as last core. Fizz excellent.
6	195.90	198.90	3.00	2.97	2.97	SANDSTONE
						As above. More thin carbonaceous bands near base. Top half has many 1 cm bands of calcite in fractures at 70 degrees to horizontal. Bedding at 12 degrees to horizontal. Excellent fizz to good near base.
7	198.90	200.10	1.20	0.73	1.30	SANDSTONE
						Medium grained. Medium grey. Good contact at base. Hard. No fizz.
				0.29		SILTSTONE MUDSTONE
						Medium hard. Dark grey.
				0.28		COALY SHALE SHALY COAL
						Coaly shale 80%. Hard. Crumbly and broken in part.
8	200.10	203.10	3.00	0.33	2.69	COAL
						Coal starts at 199.58 - not at 200.1 or .43 higher in E-log.
						Broken and crushed coal at top. .2m of coal missing and .11 coaly shale above coal is missing. Hard, blocky. Shiny with small dull bands. Calcite on cleavage faces. No visible pyrite. 2 vertical cleavage at 80 degrees to one another.
				0.18		MUDSTONE
						Hard. Medium grey. 5% carbonaceous.
				0.40		SHALY COAL
						90% coal. Hard. Shiny and dull bands. Calcite on cleats. Some visible highly disseminated pyrite.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-06C
CO-ORDINATES : 5484920.1 N. - 364378.7 E.
ELEVATION : 112.8 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 8 degrees to 12 degrees throughout.

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
				0.30		COAL
						Good coal. Hard blocky. Calcite on cleats. Some pyrite. Irregular fractures.
				0.46		SILTY MUDSTONE
						One fracture at 50 degrees to horizontal with calcite on face. Medium grey. Slightly silty.
				0.70		COAL
						As last sample. Calcite.
				0.12		COALY SHALE
						Hard blocky.
				0.20		MUDSTONE
9	203.10	205.80	2.70	1.36		SILTY MUDSTONE
						Dark grey. Medium hard. Core occasionally broken but not fractured and no distinct bedding. Slowly grades down to siltstone. No fizz.
				0.97		SILTSTONE
						Hard. Medium grey. No fractures or bedding. Massive. No fizz.
				0.67		SANDSTONE
						Fine grained. Massive. Medium to good fizz.
10	205.80	208.80	3.00	2.47	2.47	SANDSTONE
						Fine grained grading down to medium. Carbonaceous stringers at 5 degrees to 10 degrees from horizontal. Massive. Medium grey. Low to good in central meter where sandstone is coarsest. Fizz. Some visible calcite on an old fracture plane.
11	208.80	211.20	2.40	2.47	2.47	SANDSTONE
						Good to excellent fizz. Massive. Small carbonaceous mudstone beds at 12 degrees to horizontal. Medium grained to almost coarse at base. Hard. Medium to light grey.
12	211.20	212.90	1.70	1.82	1.82	SANDSTONE
						Broken and ground into fragments at top and base. Massive in between. Coarse grained. Many carbonaceous mudstone interbeds at top caused breaking up? Excellent fizz. Irregular calcite filled fractures at 60 degrees to horizontal. No good bedding surfaces.
13	212.90	215.90	3.00	2.85	2.85	SANDSTONE
						Bedding at 5 degrees to 7 degrees to horizontal. 0.60 meters of section 1.5m from top has numerous beds of carbonaceous mudstone all broken up. Medium grained. Medium grey. No fracture planes visible. Moderately good fizz throughout.
14	215.90	218.90	3.00	3.05	3.05	SANDSTONE
						Light grey. Medium grained. Excellent fizz. Homogeneous. Massive. Very hard.
15	218.90	221.90	3.00	1.40	2.90	SANDSTONE
						As above. Low fizz. Some thin carbonaceous mudstone beds.
				1.50		SANDSTONE/MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-06C
CO-ORDINATES : 5484920.1 N. - 364378.7 E.
ELEVATION : 112.8 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 8 degrees to 12 degrees throughout.

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Interbedded. Sandstone fine grained and light grey. Mudstone dark grey and silty. Some minor thin < 1cm coaly lenses. Bedding 5 - 10 degrees. Variable.
16	221.90	224.90	3.00	2.59	2.59	SILTSTONE/SILTY MUDSTONE
						Thinly laminated. Some coaly lenses and calcite lenses < 1cm. Fracturing - Polished slickensided and calcite at 40-50 degrees to horizontal.. Bedding at 8 degrees to horizontal. Some minor 3cm fine grained sandstone beds. Medium h hard. Dark grey.
17	224.90	227.40	2.50	2.40	3.09	SILTSTONE/SILTY MUDSTONE
						As above. Grades into carbonaceous mudstone and finally coaly shale.
TS960601				0.14		COALY SHALE
Ash 51.90 %						90% shale: 10% coal Coal bright & hard.
TS960602				0.21		SHALY COAL
Ash 29.10%						80% coal: 20% shale Coal bright & hard. Cleavages have calcite
TS960603				0.26		COAL
Ash 18.54%						Good hard coal. Above main seam
18	227.40	230.40	3.00	0.25	1.94	SHALY COAL
TS960604						
Ash	VM	FC	S	MJ/kg	FSI	
51.12	28.99	19.89	2.51	15.29	3.0	
						.26 is missing or 1/2 the sample. Visible disseminated pyrite. Top 4 cm is coal
TS960605					1.69	COAL
Ash	VM	FC	S	MJ/kg	FSI	
16.51	32.85	50.64	0.5	29.12	7.5	
						3 methane samples #3,8,9 taken. Some shale in one of the samples. 0.2 m of coal is missing form the seam bottom. Fractures at 55 degrees to horizontal. Hard blocky. Bright. Calcite veins vertically throughout. Some pyrite visible.
19	230.40	231.30	0.90	0.48	0.48	MUDSTONE
						Slightly silty. Medium grey. .52 missing . Some ground up.
20	231.30	234.30	3.00	1.30	3.03	MUDDY SILTSTONE/SANDSTONE
						Medium grey. More muddy silty at top. Interbedded in rest grading to sandstone at base. Fine grained sandstone. Excellent fizz in basal .3m. Fractures polished & slickensided at 55 degrees to horizontal. Bedding at 10 degrees.
				0.65		SANDSTONE
						#1 Seam coarse basal sandstone. Same as holes 9601.03,05. Subangular to subrounded white grains in a grey brown matrix. Good fizz. Grades down into sandstone/mudstone interbeds.
				0.23		SANDSTONE/MUDSTONE
						3 cm interbeds. Same sandstone as above.
				0.57		MUDSTONE
						Quite muddy. Minor silt.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-06C
CO-ORDINATES : 5484920.1 N. - 364378.7 E.
ELEVATION : 112.8 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding 8 degrees to 12 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
				0.28		SILTSTONE
						Grading to sandstone at base. Very hard. No fizz.
21	234.30	237.30	3.00	1.57	2.76	SANDSTONE
						Same coarse sandstone as above. Silty mudstone beds mixed in in central 0.4m. Good fizz top .5m and bottom .3m and not in rest.
				1.18		SILTY MUDSTONE
						END OF CORE AND HOLE

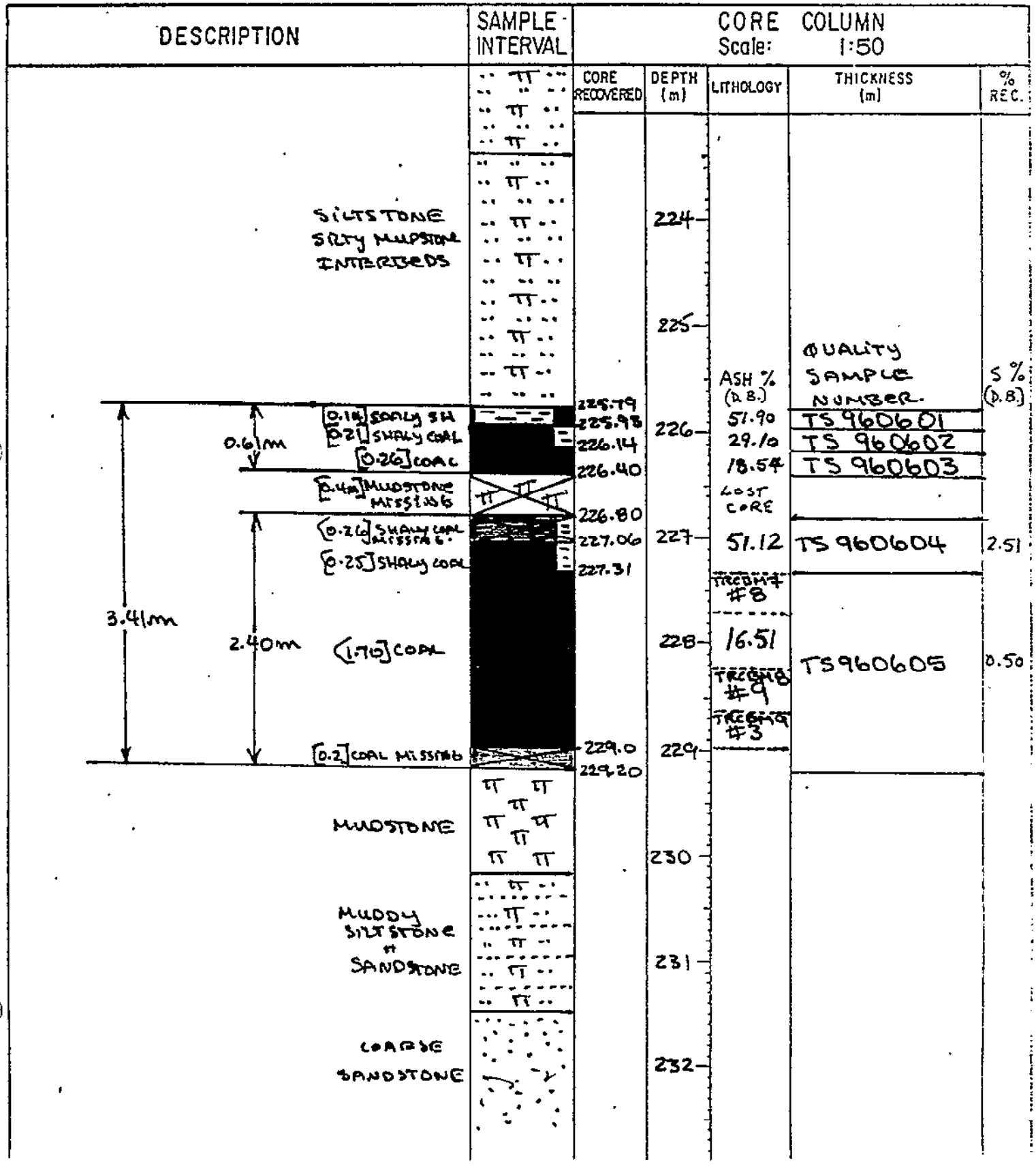
QUINSAM COAL LIMITED

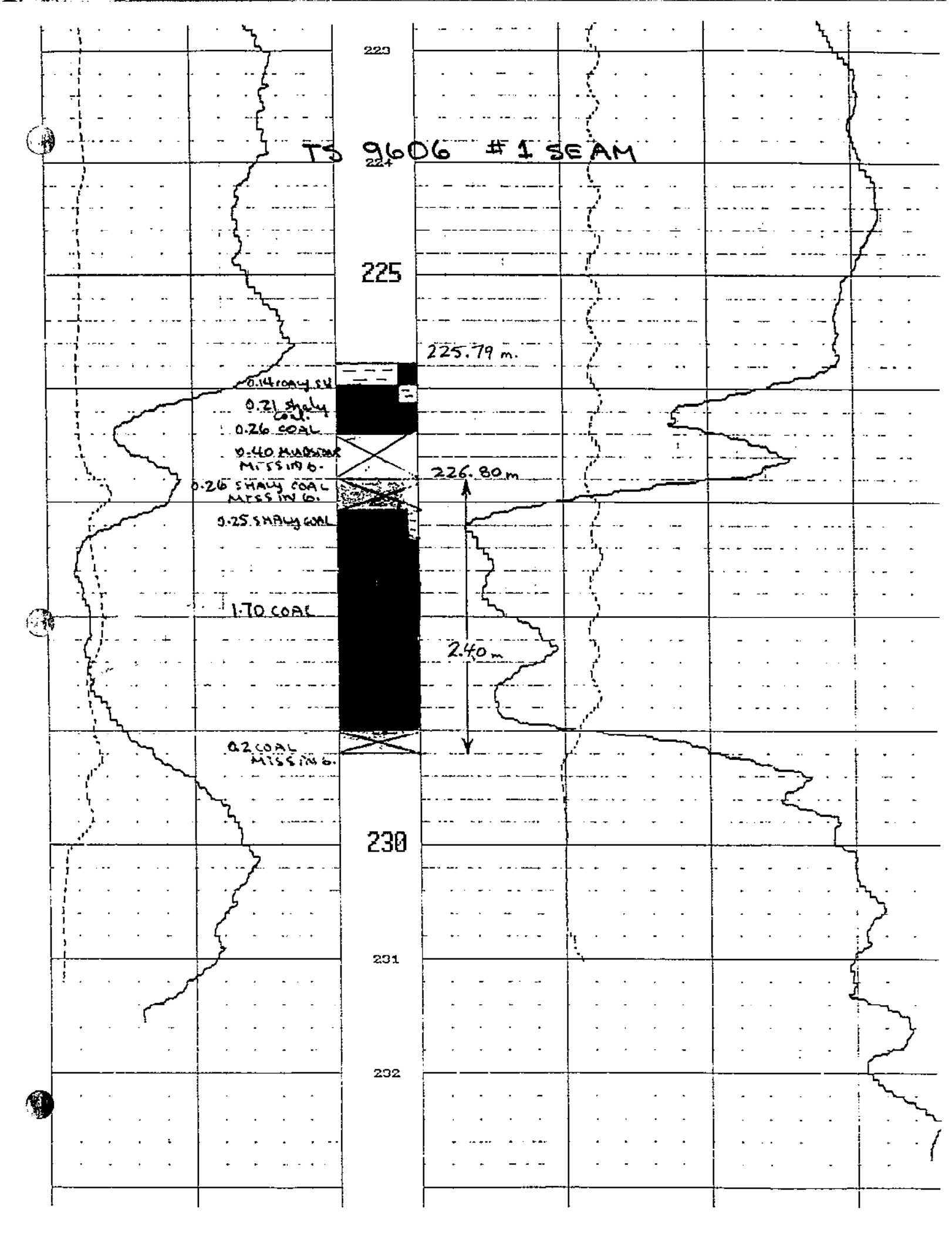
DEPTHS OFF E-LOGS.

Hole Number: TS 96 06C Pit Number: # 1 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___




TS 9606 #1 SEAM
223
224
225
230
231
232
225.79 m.
0.14 roof shale
0.21 Shaly Coal
0.26 COAL
0.40 Mudstone Missing
226.80 m
0.26 SHALY COAL Missing
0.25 SHALY COAL
1.70 COAL
2.40 m
0.2 COAL Missing

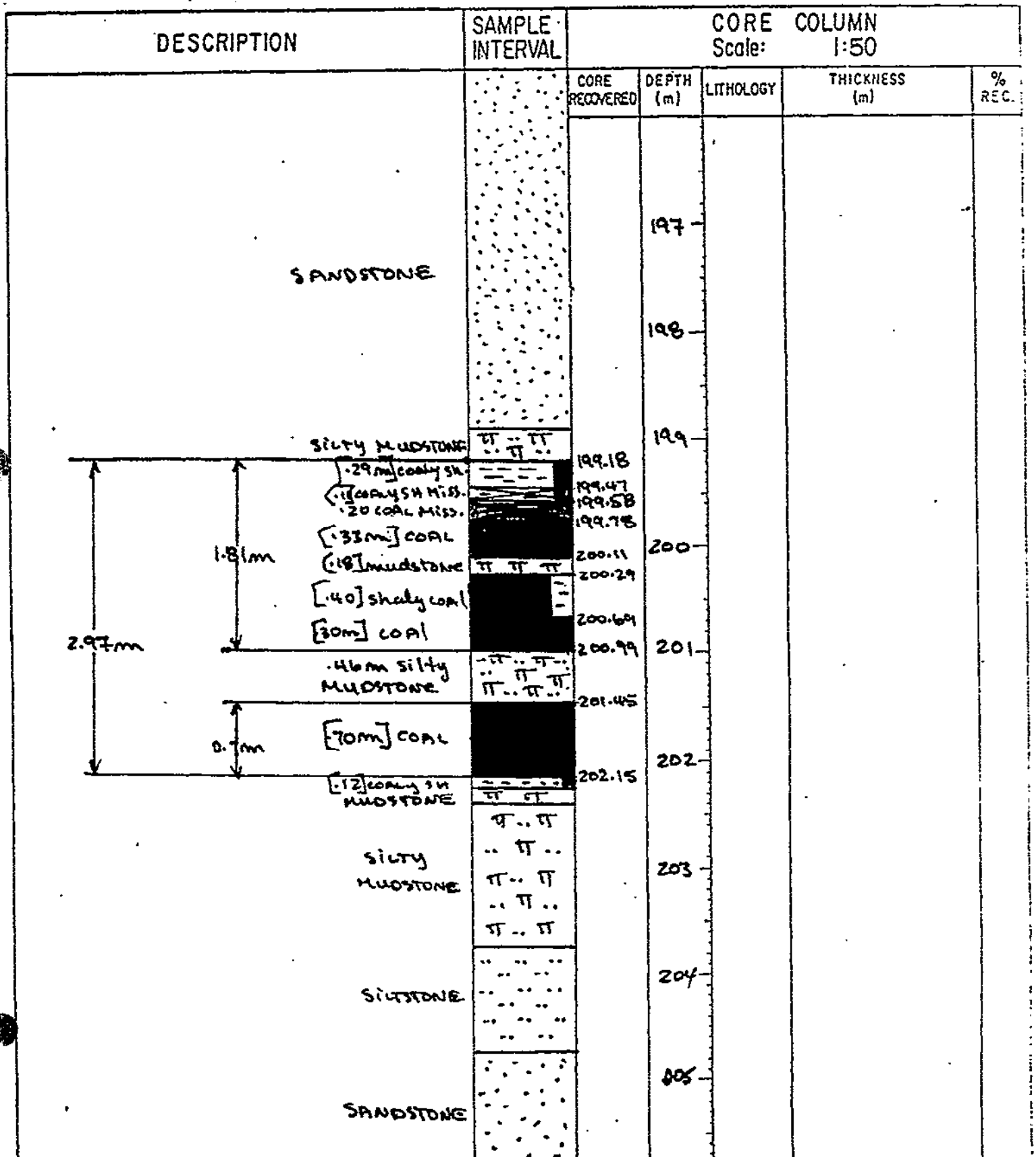
QUINSAM COAL LIMITED

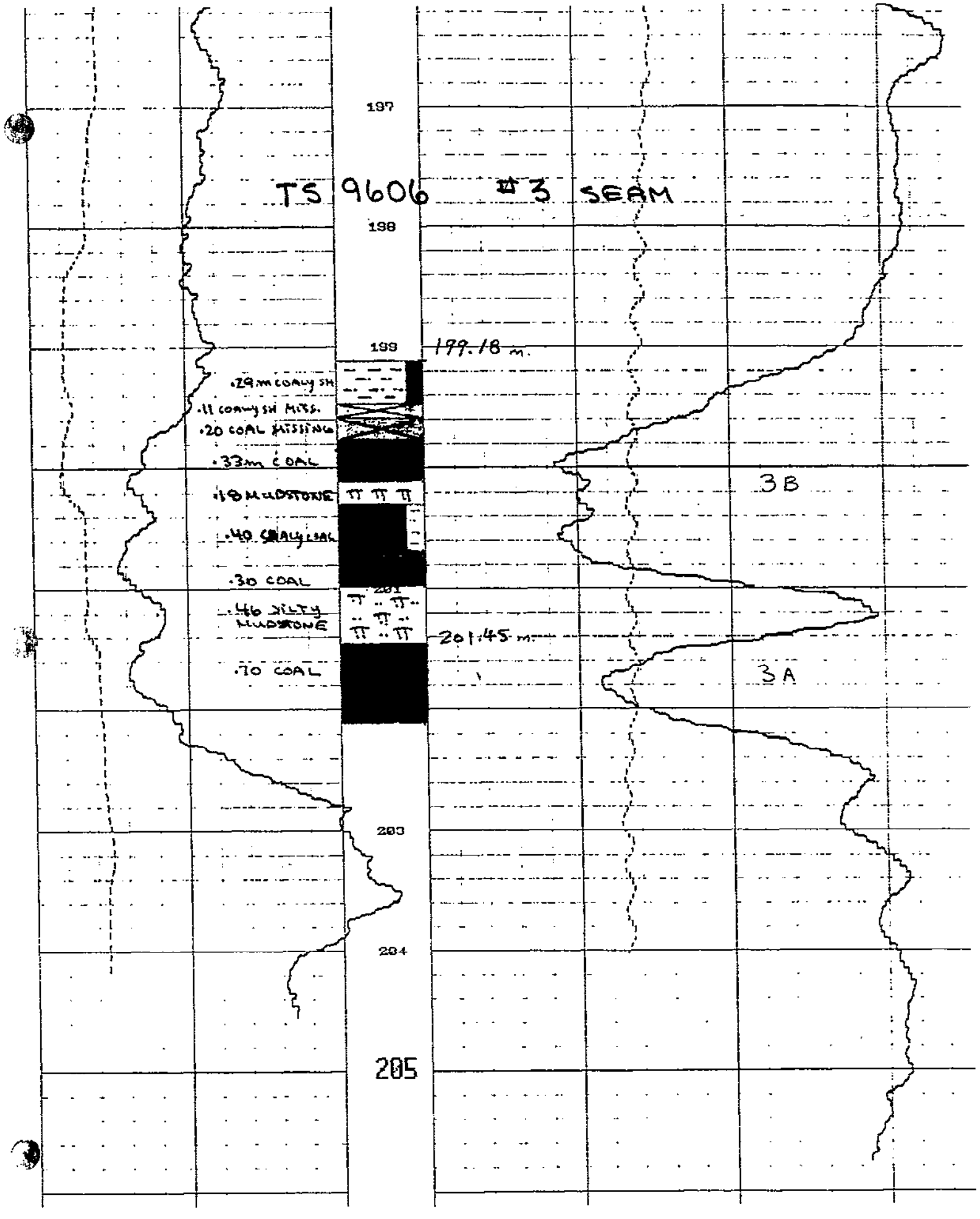
DEPTHS OFF E-LOGS.

Hole Number: TS 96 06 C Pit Number: #3 SEAM.

Location: TSABLE RIVER Elevation:

Page ___ of ___




TS 9606 #3 SEAM
197
198
199
199.18 m.
.29m coaly sh
.11 coaly sh Mtss.
.20 COAL MISSING
.33m COAL
.19 MUDSTONE
.40 SHALY COAL
.30 COAL
201
.46 SILTY MUDSTONE
201.45 m.
.70 COAL
3B
3A
203
204
205

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
DATE DRILLED: July 20, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	18.6	Glacial till overburden
18.6	56.4	Mudstone
56.4	74.7	Sandstone; medium grey; some water
74.7	80.8	Mudstone
80.8	99.1	Sandstone; hard; massive
99.1	111.3	Mudstone
111.3	117.4	Mudstone; sandstone interbeds
117.4	138.0	Sandstone
138.0	140.0	Sandstone; COAL; mudstone mixed
140.0	153.0	Sandstone; mudstone interbeds
153.0	156.0	Sandstone; mudstone and coal interbeds
156.0	174.0	Mudstone; silty
174.0	189.0	Sandstone; water bearing; hard
189.0	191.5	COAL; with mudstone partings
191.5	200.0	Sandstone; medium grey; started coring 195.4
200.0	225.5	Sandstone; light to medium grey
225.5	227.0	COAL; No. 4 Seam
227.0	273.5	Sandstone; massive; soft & hard layers
273.5	276.9	Shale; coaly; soft
276.9	280.6	COAL; with shaly layers; No. 1 Seam?
280.6	284.6	Mudstone; dark grey; silty
284.6	295.9	Sandstone; medium grey brown
295.9	299.4	Mudstone; dark grey brown; silty
299.4	321.9	Sandstone; variable; with mudstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
LOGGED BY: R. A. Swaren
COMMENTS: Avg. dip 10-20 degrees.Note:Hole is most likely deviating 10 degrees top 250m & 15-20 degrees to bottom.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	195.40	198.40	3.00	2.95	2.95	SANDSTONE
						Light to medium grey. Medium grained. Hard. Highly fractured. Fractures at 35/65/70 degrees - mainly the higher angles from horizontal. Older fractures filled with calcite. 2 pyrite bands in centre of core 1 cm and 2 cm thick. No good bedding contacts. Fizz - good in top 0.5m and nil in remainder.
2	198.40	200.70	2.30	1.31	2.40	SANDSTONE
						Core above joins this one. Same as above. Still fractured and broken in some portions. More calcite in old fracture planes. Possible bedding with underlying siltstone at 5-7 degrees. Fizz - nil.
				0.11		SILTSTONE
						Medium brown grey. Hard. Carbonaceous stringers throughout grading into coal downwards. No fizz
				0.25		COAL
						Mixed with siltstone at top. Friable in basal portion grading down into mudstone. Calcite veins throughout coal. Visible pyrite on fracture and cleats.
				0.73		MUDSTONE
						Silty in basal 0.3m and siltstone near base. Joins next core very well. Carbonaceous and pyrite bands 0.1m form top. Coal 5mm thick an pyrite .3mm. Mudstone medium to dark grey. Browner near base. Calcite on fractures at various angles throughout.
3	200.70	203.70	3.00	1.66	2.75	SILTSTONE/SANDSTONE/MUDSTONE
						Thinly laminated. Ratio sandstone 20: siltstone 60: Most 20. More mudstone near base. Mudstone with carbonaceous stringers throughout. Thin calcite veining throughout. Minimal fracturing. Bedding at 5-7 degrees. Medium hard. Moderately competent. No fizz. Sandstone fine grained and light grey. Siltstone medium grown grey, medium dark grey to black.
				1.09		MUDSTONE/SILTSTONE
						Interbedded. Lots of cross-bedding with siltstone wedges. Less competent and partly broken up. Some carbonaceous lenses to 1 cm near base. Broken calcite veins 1mm.
4	203.70	206.60	2.90	0.34	2.95	SILTSTONE/MUDSTONE
						As above. Grades down into siltstone/sandstone interbeds. Fractures at 45 degrees to bedding. No fizz.
				1.32		SANDSTONE/SILTSTONE 50:50
						Interbedded. Sandstone fine grained and light grey, siltstone medium brown grey. Calcite veins on bedding. Large fractures at vertical are irregular. Other fractures at 50 degrees to horizontal. Bedding at 5 degrees to horizontal. Moderately competent. Fairly hard. No fizz.
				1.29		SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
LOGGED BY: R. A. Swaren
COMMENTS: Avg. dip 10-20 degrees.Note:Hole is most likely deviating 10 degrees top 250m & 15-20 degrees to bottom.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Medium grained. Medium grey. Moderately hard to hard. Highly fractured. Irregular vertical fractures and fractures at 65 degrees and 80 degrees to horizontal. Calcite fills older fractures. Thin carbonaceous lanellae throughout 1mm and 2 cm zones of siltstone infrequently.
5	206.60	209.60	3.00	2.92	2.92	SANDSTONE
						Medium grained. Light grey. Carbonaceous lanellae throughout. Medium hard to hard. Moderately competent. Highly fractured. Fractures at 30 and 60 degrees to horizontal. Bedding at 5 to 7 degrees - slickensided and polished from horizontal movement on carbonaceous bands. Minor calcite veining. Fizz - nil throughout.
6	209.60	212.60	3.00	2.95	2.95	SANDSTONE
						Light to medium grey brown. Moderately competent. Medium grained. Fractured at 90/60 degrees. Some parts crumbly and can be broken by hand- incompetent. Thin mudstone and carbonaceous lenses. Calcite veins vertical and horizontal on fractures and bedding. No real good bedding for angles. Fizz - good in bottom 1m
7	212.60	215.60	3.00	2.90	2.90	SANDSTONE
						Medium grained. Poorly consolidated. Highly fractured. Can break pieces up by hand. Small 1m carbonaceous lenses. Large calcite deposits in old fractures. Bedding at 7 degrees to horizontal. Massive. Some brown silty layers. Fractures irregular and vertical. Other fractures at 55 degrees to horizontal. Fizz - excellent in top .8m and nil in rest.
8	215.60	218.60	3.00	1.95	1.95	SANDSTONE
						Same as above. Still fractured and incompetent. Fractures at 30/70 & 80 degrees to horizontal. Lighter grey colour for top 0.7m. Laminae of carbonaceous material. Some slickensides on high angle fractures are horizontal in movement. Also slickensides on a horizontal break possibly close to bedding. No fizz.
9	218.60	220.60	2.00	1.60	1.60	SANDSTONE
						As above but a bit harder and more competent. Ground up sandstone pieces at top of core. Minor carbonaceous inclusions. Fractures at 30 and 100 degrees to horizontal. No visible bedding. Minor calcite on fractures. No fizz.
10	220.60	223.20	2.60	2.75	2.75	SANDSTONE
						As above. Thin carbonaceous and muddy bands. Possible worm burrow tubes replaced by sand with a run of muddy material. Same as found in other cores and called boiturbaceous area. Possible dip of 15 degrees but may be crossbedding. Fracturing at 45 & 60 degrees to horizontal. One 3cm band of mud. Looks bentontic. Light grey and sticky. Fizz- nil
11	223.20	225.20	2.00	1.39	2.21	SANDSTONE
						Fractures at 40-60 degrees. Bedding 20 degres on thin carbonaceous laminae. Same as above. Moderately hard and moderately competent. Slickensides along some fracture planes indicate horizontal movement at 30 degrees to horizontal. Fizz - nil. Light grey.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
LOGGED BY: R. A. Swaren
COMMENTS: Avg. dip 10-20 degrees.Note:Hole is most likely deviating 10 degrees top 250m & 15-20 degrees to bottom.

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Weiness Contamination
12	225.20	228.20	3.00	0.42	2.55	SANDSTONE
						Medium grained. Medium hard. Interbedded with mudstone at base which is irregular with no bedding. No fizz. Some muddy inclusions and laminae <1mm. Medium grey.
				0.38		MUDSTONE
						Sandstone clast near top 1cm X 3 cm long. Dark grey. Medium hard to soft. Thin silty laminations are light grey. Bedding at 10 degrees to horizontal.
TS960701				0.20		MUDSTONE
						Coaly and carbonaceous near bottom half. Pyretic laminae in basal 4cm. Roof sample. Mudstone as above.
TS960702				1.39		COAL
						.23 missing from E-log
						Fractures vertical with slickensides ``showing horizontal movement. Fractures also at 20 degrees. Ground and missing at top and in central portion. Central .3m ground to powder, contaminated with drilling mud or shaly. E-log shows caving. Coal is mainly hard and blocky with 5 degrees visible pyrite on vertical cleats. Calcite on planes of fracture and some on cleats also. Slightly shaly near top 5 %. Quite shiny with small dull bands up to 20%. Top ground and fragmented below roof rock. Most likely 0.12 missing. Base crumbly and ground where it joins a friable shale and mudstone bed. FLOOR
TS960703				0.16		MUDSTONE/SHALE
						Floor sample
						Shale at the top with coaly material just below coal seam. Mudstone below. Ground up quite badly. Soft. Dark grey brown.
13	228.20	230.70	2.50	0.30	2.55	MUDSTONE
						Soft to medium hard. Dark grey to black. Thin silty laminae. Fractured at 30 degrees to horizontal and polished with slickensides. GRades down into siltstone.
				0.31		SILTSTONE
						Fine mudstone bands at the top. Medium grey brown. Grades down into find grained sandstone. Hard - Minor carbonaceous inclusion and lenses. Plarocites (worm tubes) in central portion. Bedding at 20 degree to horizontal.
				1.23		SANDSTONE
						Fine grained grading to medium at base. 2 cm. band of coarse sandstone near the top . Hard. medium grey. Thin mudstone and carbonaceous inclusions <1cm. Basal contact is sharp with coaly mudstone. Fizz - low to moderately good.
				0.17		COALY MUDSTONE
						Coal has pyrite and calcite on cleats. Coal/mudstone 30:80. Mudstone is soft and clayey with sandy parts at top. Basal formation contact is obscure. Top bedding in approx. 15 degrees to horizontal. No fizz.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
LOGGED BY: R. A. Swaren
COMMENTS: Avg. dip 10-20 degrees.Note:Hole is most likely deviating 10 degrees top 250m & 15-20 degrees to bottom.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
				0.54		SANDSTONE
						Incompetent. Medium grained. Broken and muddy at base. No fizz. Soft. Medium grey.
14	230.70	233.70	3.00	3.04	3.04	SANDSTONE
						Softer and incompetent in top .1m. Moderately hard to medium hard over rest except for 0.5m, 1m fro top where it is more incompetent. Medium grained, medium grey. Plarocitics (worm tubes) near top and bioturbation. Fractures at 30 degrees and horizontal. Minor carbonaceous inclusion. Fizz - nil
15	233.70	236.70	3.00	2.85	2.85	SANDSTONE
						Medium grained. Moderately competent to soft and crumbly in much of the core. Fractures at 90 degrees and irregular and at 40 degrees to horizontal. Calcite in older fracture planes. Carbonaceous stringers at 20-25 degrees to horizontal. Thin muddy beds, dark grey and sticky of 3 cm mudstone. Fizz nil.
16	236.70	239.50	2.80	2.65	2.65	SANDSTONE
						.30 dark siltstone bed .02 cm from bottom of core. Medium grained. Broken and fragmented. Incompetent and soft. Fractured with calcite deposits on planes at 35 degrees horizontal. Bedding unknown as contact with siltstone obscure. Minor carbonaceous lenses. Fizz - nil.
17	239.50	242.00	2.50	2.70	2.70	SANDSTONE
						Hard. Competent. Massive. Medium grained. Small worm tubes. Slightly silty in top 0.10 m. No bedding or fractures. Fizz moderately good in top 1/2 and nil in rest.
18	242.00	245.00	3.00	3.12	3.12	SANDSTONE
						As above for top 1.5m. Basal portion less competent, more muddy and carbonaceous laminar beds. Beds dip at 15 degrees to 20 degrees to horizontal. Fizz - nil. Some bioturbation 1 meter down from top.
19	245.00	248.00	3.00	3.02	3.02	SANDSTONE
						As above. Bedding at 20 degrees to horizontal. Fractures at 40 & 60 degrees. Thin clacite infill on fractures. Fizz moderately good in top half and nil in rest.
20	248.00	249.60	1.60	0.83	0.83	SANDSTONE
						Moderately competent. Medium grained. Lighter grey. Carbonaceous lanellae. Fractures at 45 degrees to horizontal. No fizz.
21	249.60	251.90	2.30	1.91	1.91	SANDSTONE
						Top .4m ground & broken from coring. Bottom 1.5m is fine to medium grained down. Light to medium dark grey down. Fractures at 60 degrees to horizontal. Carbonaceous beds (lanellae) at 20 degrees to horizontal. Fizz low at bottom half to nil.
22	251.90	254.40	2.50	2.75	2.75	SANDSTONE
						Moderately incompetent. Highly fractured and broken by coring. Some carbonaceous material. No real beds on fracture planes. Just broken core. Fizz nil.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
LOGGED BY: R. A. Swaren
COMMENTS: Avg. dip 10-20 degrees.Note:Hole is most likely deviating 10 degrees top 250m & 15-20 degrees to bottom.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
23	254.40	255.90	1.50	1.40	1.40	SANDSTONE
						More competent. Less broken. Carbonaceous lamellae bedding. Medium grained. Medium to light grey. Moderately hard. Fizz - nil. Bedding at 20 degrees to horizontal.
24	255.90	257.90	2.00	1.50	2.30	SANDSTONE
						Competent unit grading down into incompetent soft sandstone. Carbonaceous inclusions. Massive. No fractures. No fizz.. Hard.
				0.80		SANDSTONE
						Incompetent. Soft. Broken up. Muddy. Calcite. No visible beds or fracture planes.
25	257.90	258.40	0.50	0.50	0.50	SANDSTONE
						As above.
26	258.40	261.40	3.00	3.00	3.00	SANDSTONE
						Massive. Hard to very hard. Fine to medium grained. Medium grey. 65 degrees & vertical fractures. Calcite on old fracture planes. No bedding. Fizz-low.
27	261.40	263.90	2.50	2.28	2.28	SANDSTONE
						As above. Fractures at 45 degrees to horizontal. Excellent fizz in basal 1m and low through rest.
28	263.90	266.90	3.00	3.00	3.00	SANDSTONE
						Hard. Medium to fine grained. Fractures at 45 degrees and 60 degrees to horizontal. Calcite <1mm on some fracture planes. Minor carbonaceous inclusions throughout. No fizz
29	266.90	268.40	1.50	1.50	1.50	SANDSTONE
						As above. Finer grained. Carbonaceous beds at various angles 5-20 degrees (cross-bedding). Fractures at 65 degrees to horizontal. No fizz. Calcite on fractures.
30	268.40	271.40	3.00	3.00	3.00	SANDSTONE
						Top half hard as last run. Bottom half poorly consolidated-fractured and almost brecciated as in fault. Mud in irregular cracks all through core. Very thin carbonaceous beds in upper half at 20 degrees to horizontal. Fractures at 65 degrees to horizontal and filled with calcite. Basal half soft, ,medium grained and light grey. Crumbly by hand and muddy. Fizz-nil.
31	271.40	274.40	3.00	2.01	2.47	SANDSTONE
						Harder and more competent except for .2m areas where it is as above. No fizz. Grades to darker grey in lower 1/2. Basal 10 cm is a course grained muddy sandstone. Very stick just above shale.
				0.46		SHALE (some coal) in basal .22
						Highly fractured. Friable. Black to dark grey brown. Coaly bits included. Unable to distinguish beds or amount of coal really there.
32	274.40	276.90	2.50		1.50	COAL/COALY SHALE/SHALY COAL
						Ground up powdered, fractured fragments. and contaminated with mud. 1.0m missing, probably coal.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
LOGGED BY: R. A. Swaren
COMMENTS: Avg. dip 10-20 degrees.Note:Hole is most likely deviating 10 degrees top 250m & 15-20 degrees to bottom.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
33	276.90	278.90	2.00	0.25	0.25	COAL/SHALY COAL
						One lump of coal & ground up coal with bits of shale. Possibly 1.75m missing coal.
34	278.90	280.61	1.70	0.16	1.15	COAL
Methane TRCBM10				0.55		COAL - hard and blocky. gone for methane sample. Missing .7
				0.20		COAL/MUD
						Ground up and pulverized.
				0.40		MUDSTONE
						Carbonaceous & silty bands throughout. Broken and fragmented.
				0.39		COAL/MUD
						Ground and pulverized.
35	280.60	281.00	1.00	1.00	1.00	MUDSTONE
						Dark grey black. Medium hard. Broken up. Slightly silty in parts and some carbonaceous laminae. No fizz.
36	281.60	284.60	3.00	0.46	2.78	MUDSTONE
						Grades down into siltstone. Polishing and slickensides along horizontal fractures with horizontal movements. More silty bands towards base.
				1.02		SILTSTONE
						Hard. Medium grey/brown. No bedding. Basal contact with ground mudstone. No fizz.
				0.20		MUDSTONE
						Fractures with calcite. Polished and slickensided at 55 degrees to horizontal. Slickensides show vertical movement.
				1.10		SILTY MUDSTONE
						Grades down to siltstone in basal .1m. Bedding at 18 degrees to horizontal. Medium hard. Dark grey to medium grey. Basal siltier portion browner. No fizz.
37	284.60	287.00	2.40		2.60	SANDSTONE
						Fine grained at top grading down into medium grained with numerous larger unsorted subangular white grains. Starting to look like basal sandstone. Worm tubes and casts present and carbonaceous inclusions. Fracture at 30 degrees to horizontal. Bedding at 20 degrees to horizontal. Basal half lighter grey than top half. Fizz - low in basal 0.5m to nil in rest.
38	287.00	290.00	3.00	2.91	2.91	SANDSTONE
						Fine to very fine grained. Medium in basal 0.3m. Medium hard. Medium consolidated. Medium grey brown. Polished and slickensided fractures at 40 degrees to horizontal. Many thin carbonaceous beds and lanellae. Some fractures over 60 degrees to horizontal. Slickensides show vertical movement. Also irregular vertical fractures. Some calcite deposits on fracture planes. No fine bedding visible. Fizz- excellent in central meter and none in rest.
39	290.00	292.00	2.90		2.95	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
LOGGED BY: R. A. Swaren
COMMENTS: Avg. dip 10-20 degrees.Note:Hole is most likely deviating 10 degrees top 250m & 15-20 degrees to bottom.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Medium to coarse grained. Medium grey brown. One bed of darker fine grained sandstone .3m thick .55 from top. Very hard. Bedding contact with fine grained sharp on top and bottom at 30 degrees to horizontal. Fractures at 50 degres to horizontal have calcite bedding. Bedding on top of fine grained sandstone is polished and slickensided vertically. Sandstone is fairly massive & homogeneous in coarser section. Fizz-nil.
40	292.90	295.90	3.00	2.89	2.89	SANDSTONE
						Medium grained. Medium grey brown. Ground and broken up in basal 0.3m./ Fractured at 30 & 45 degrees to horizontal. Fairly massive. Moderately hard. Pieces can be broken by and. Fizz- nil.
41	295.90	298.00	2.10			MUDSTONE
						Shaly. Broken. Friable. Polished slickensided faces visible. Very broken up. Soft. Dark grey to brown. No fizz.
42	298.00	299.40	1.40	1.20	1.20	MUDSTONE
						Turning silty near base. Medium hard. Dark grey brown. Slickensided polished fractures at 40 degrees to horizontal. Some part friable Shaly crossbedding. No fizz.
43	299.40	302.10	2.70	3.00	3.00	SANDSTONE
						Massive. Homogeneous. Fractures 50 - 60 degrees to horizontal. Calcite up to 2cm thick in fracture zones. Long irregular vertical fractures also. Slickensides & polishing shows vertical movement. Very minor carbonaceous inclusions. No bedding. Fizz-nil.
44	302.10	305.10	3.00	3.00	3.00	SANDSTONE
						Fine to medium grained. Medium grey. Very hard. Thin muddy carbonaceous beds throughout. Beds at 20 degrees to horizontal. Fracturing at 60 degrees to horizontal. Excellent fizz in top 1./5 m and nil in bottom. Very thin calcite veins at all angles.
45	305.10	308.40	3.00	2.76	2.76	SANDSTONE
						Fine grained. Massive. Very hard. Fractures at 40 degrees to horizontal. Some filled with calcite. Medium grey to light grey. Low fizz in central 1/2m. Nil in rest of core.
46	308.10	310.90	2.80	2.83	2.83	Same as above. More medium grained. Low to moderately good fizz throughout. Massive. Fractures at 60 degrees and 45 degrees to horizontal. Minor calcite veining.
47	310.90	313.90	3.00	3.00	3.00	SANDSTONE
						Fine grained. Irregular vertical and 60 degree to bedding fractures. Calcite on fracture planes. Low fizz to good fizz throughout. Mainly good. No visible bedding.
48	313.90	316.90	3.00	0.23	2.76	SANDSTONE
						As above.
				0.73		SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-07 C
CO-ORDINATES : 5484264.9 N. - 365505.4 E.
ELEVATION : 93.3 m
LOGGED BY: R. A. Swaren
COMMENTS: Avg. dip 10-20 degrees.Note:Hole is most likely deviating 10 degrees top 250m & 15-20 degrees to bottom.

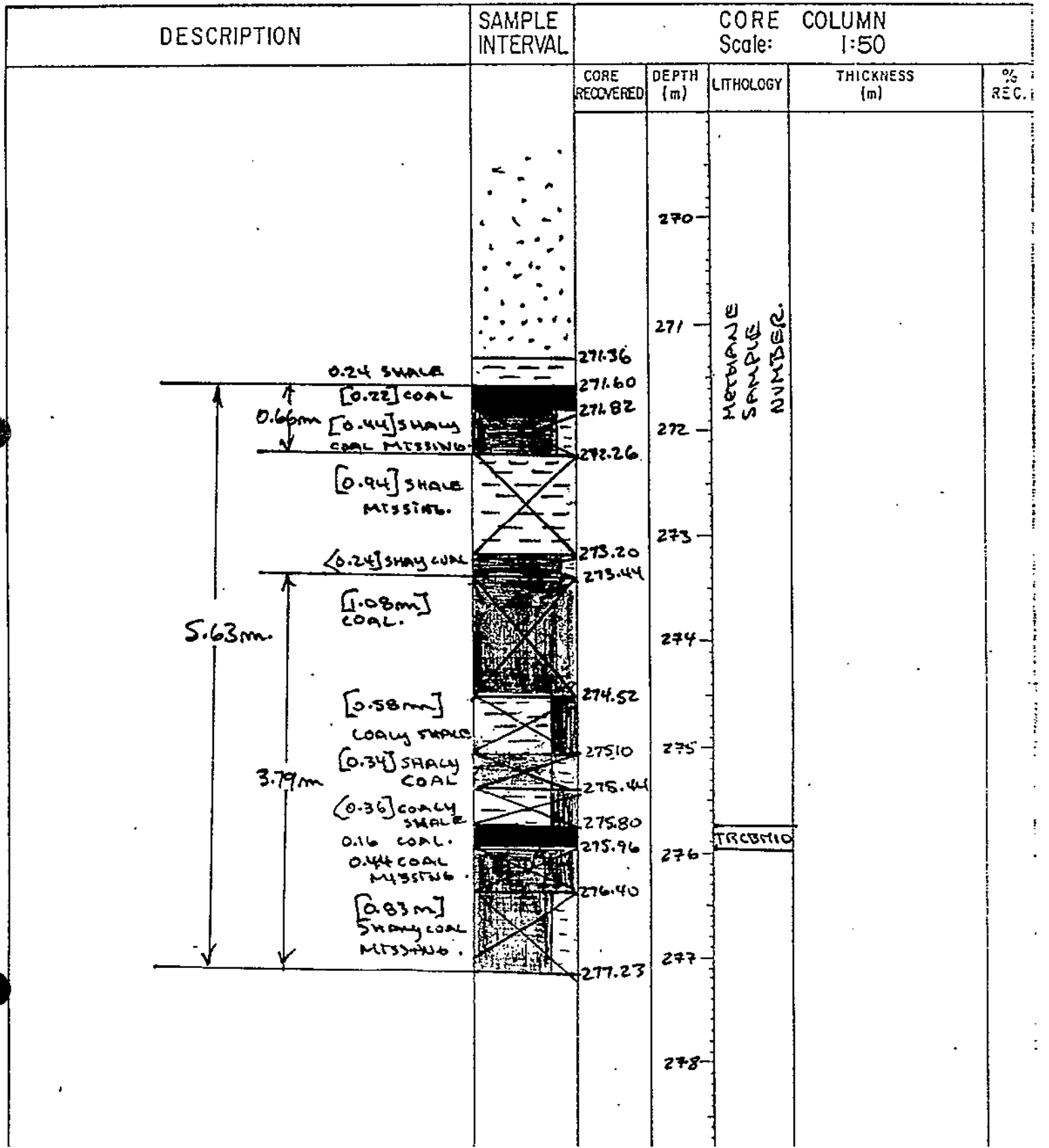
	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size.Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Medium to coarse. Medium brown grey. Subangular white grains and 30% mudstone streaks. Looks like basement sand. Carbonaceous material. Bedding with underlying mudstone is 20 degrees to horizontal and sharp.
				1.25		MUDSTONE
						Dark greyish brown. Medium hard. Vertical polished fractures slickensided vertically also. Thin silty interbeds and carbonaceous inclusions. Some parts very broken up and fragmented. Other fractures at 45 degrees to bedding.
				0.55		SANDSTONE
						White specks throughout as one above. Basement sandstone? Muddy carbonaceous lanellae. Fine grained. No fizz.
49	316.90	319.70	2.80	2.54	2.54	SANDSTONE
						Fine grained. Hard to very hard. Fractures at 45 & 60 degrees to horizontal. Carbonaceous mudstone interbeds up to 2 cm wide. Medium grey. No fizz.
50	319.70	321.90	2.20	2.14	2.14	SANDSTONE
						As above.
						END OF HOLE & CORE

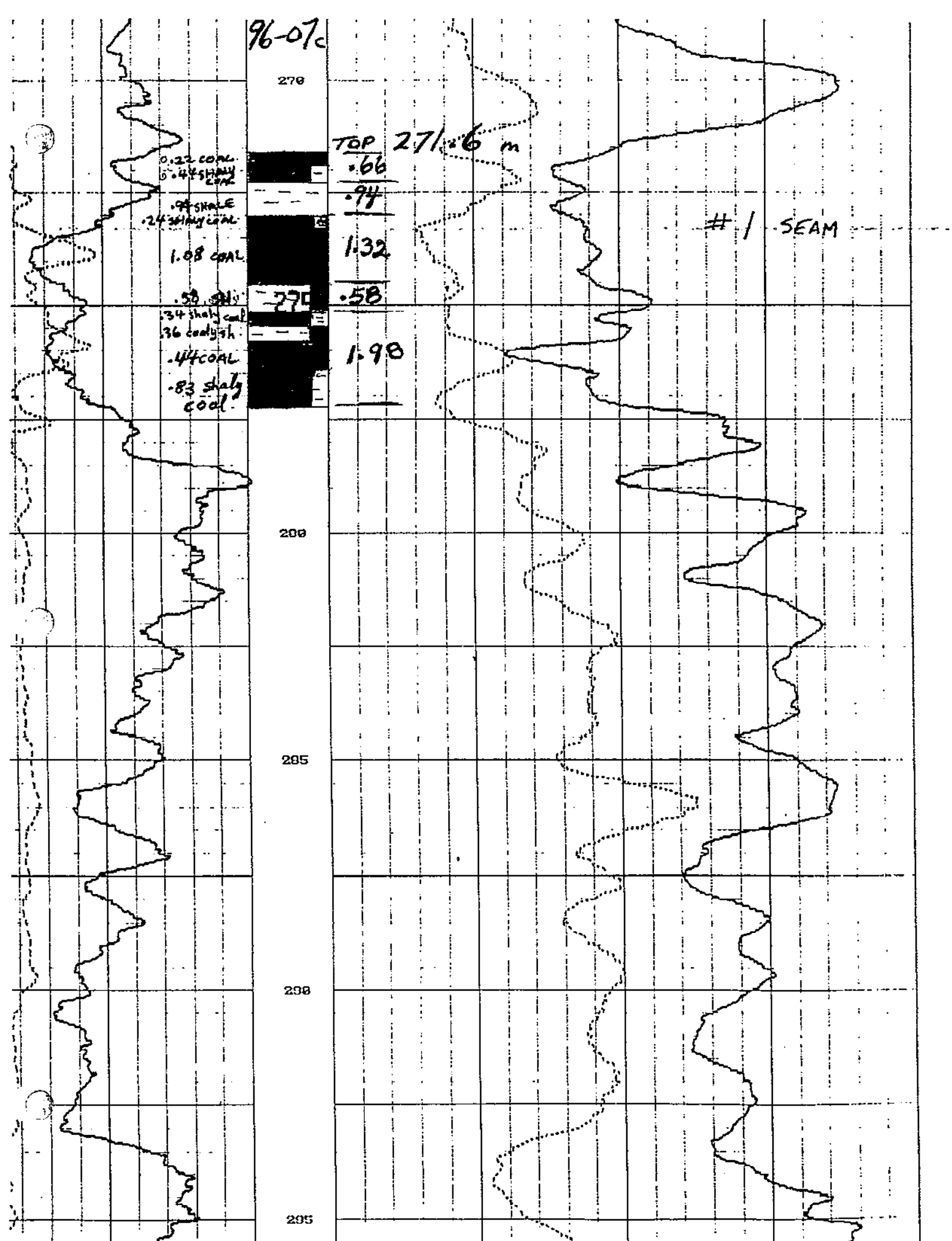
QUINSAM COAL CORPORATION

Hole Number: TS 9607C — #1 SEAM.

Location: TSABLE RIVER — Elevation:

Page ___ of ___



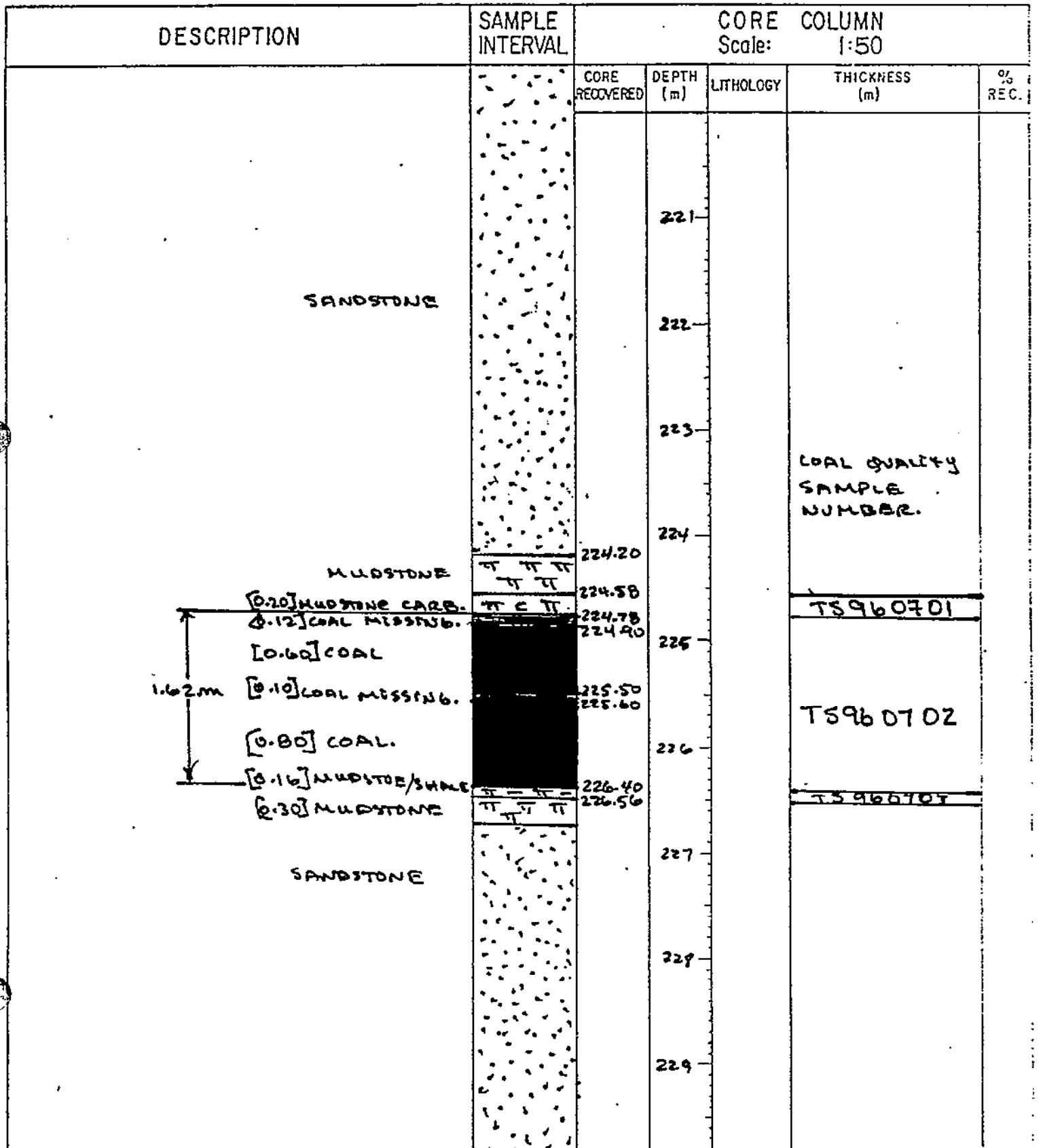

96-07c
270
TOP 271.6 m
0.22 COAL
0.4' SHALY COAL
.9' SHALE
.24 SHALY COAL
1.08 COAL
.58 SH
.34 shaly coal
.36 coaly sh
.44 COAL
.83 shaly coal
.66
.94
1.32
.58
1.98
#1 SEAM
280
290
295
298
295

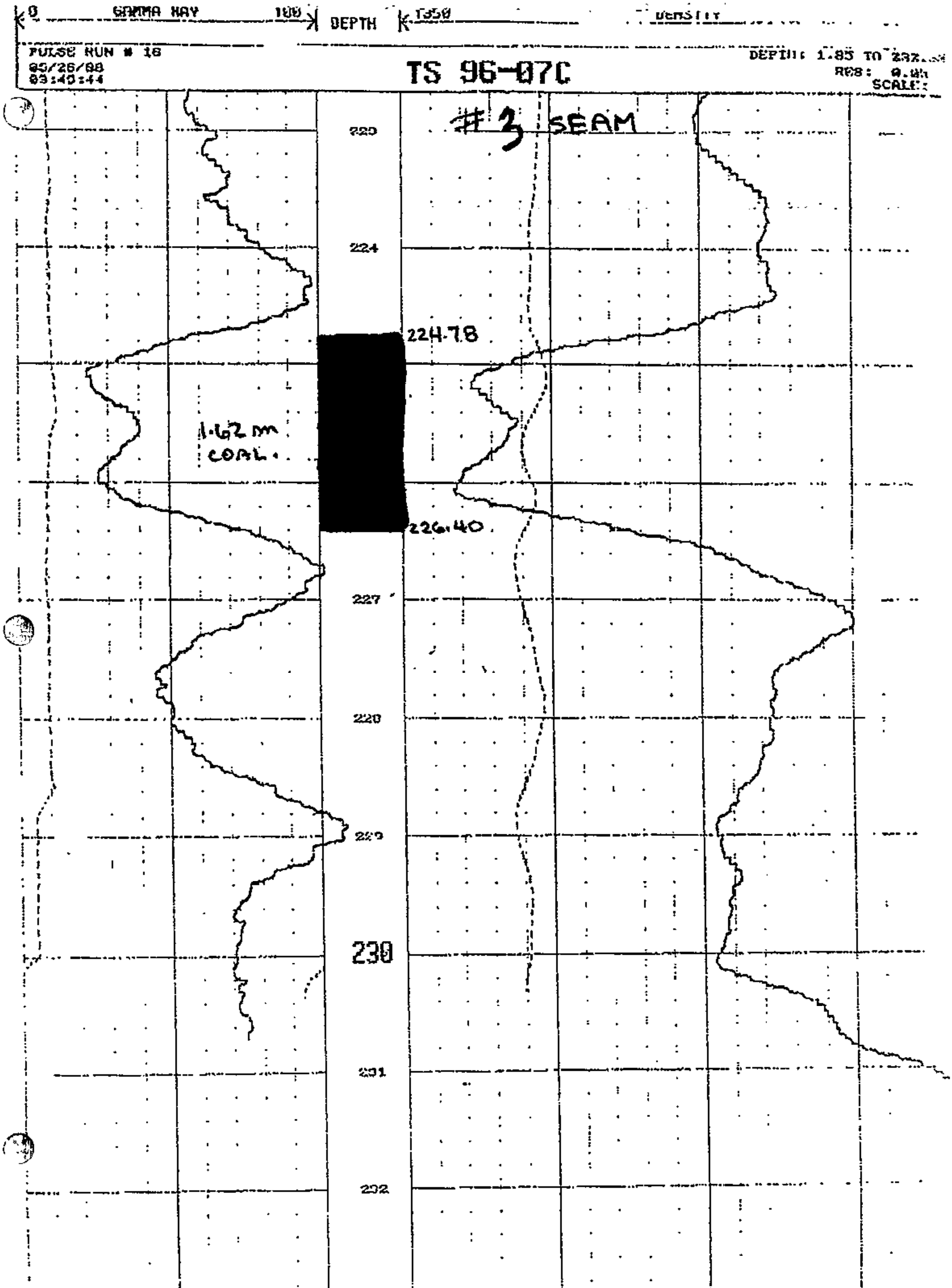
QUINSAM COAL CORPORATION

Hole Number: TS 96-07C — #3 SEAM.

Location: TSABLE RIVER — Elevation:

Page ___ of ___





0 GAMMA RAY 100
DEPTH
1350
DENSITY
PULSE RUN # 16
05/26/98
03:40:44
TS 96-07C
DEPTH: 1.85 TO 232.
RES: 0.0
SCALE:
#3 SEAM
223
224
224.78
1.62 m
COAL.
226.40
227
228
229
230
231
232

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS9608
CO-ORDINATES : 5484038.5 N. - 364403.1 E.
ELEVATION : 169.0 m
DATE DRILLED: July 13, 1996
DRILLER: Hi-Rate Drilliing

DEPTH (m)		DESCRIPTION
From	To	
0.0	48.5	Sand & gravel overburden
48.5	49.0	Medium grained sandstone
		END of HOLE

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-09C
CO-ORDINATES : 5484853.9 N. - 365418.1 E.
ELEVATION : 67.1 m
DATE DRILLED: Aug. 3, 1996 (deepened Sept. 2/96)
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	19.2	Glacial till overburden
19.2	108.0	Siltstone; uniform; mudstone interbeds
108.0	122.0	Sandstone; medium grey
122.0	220.8	Sandstone; siltstone interbeds
220.8	221.5	COAL
221.5	263.8	Sandstone; siltstone interbeds
263.8	264.7	COAL
264.7	303.5	Sandstone; siltstone interbeds
303.5	306.0	COAL, No. 3 Seam
306.0	328.0	Sandstone; siltstone/mudstone interbeds
328.0	329.0	Mudstone & coal mixed
329.0	353.5	Sandstone; with siltstone & mudstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-09C
CO-ORDINATES : 5484853.9 N. - 365418.1 E.
ELEVATION : 67.1 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	290.00	293.00	3.00	2.77	2.77	SANDSTONE
						Massive. Homogeneous. Fine grained. Very hard. No bedding. No fractures. Light grey. Salt & pepper texture. Fizz- very low to nil. Continues to next core run with no loss.
2	293.00	296.00	3.00	3.19	3.19	SANDSTONE
						As above. Fine grained as above. Very thin and minor carbonaceous lanellae < 1%. No real bedding. One calcite filled fracture @ 65 degrees to horizontal.. Fizz very good in top 0.8m and good in rest.
3	296.00	299.00	3.00	2.93	2.93	SANDSTONE
						As above. Carbonaceous plant fragments in irregular layers - stems and leaves < 1%. Possible bedding at 7 degrees to horizontal on carbonaceous laminae. Fizz - good in top 0.5m and low in rest.
4	299.00	302.00	3.00	3.08		SANDSTONE
						As above. More very fine lamellae in basal 0.5m. Up to 3%. Fizz is low to nil.
5	302.00	303.30	1.30	0.99	1.23	SANDSTONE
						Fine grained. No fizz. Very thin and sparse mudstone with calcite laminations. Sharp basal contact at 10 degrees to horizontal with coal. Very hard.
TS960901				0.09		SHALY COAL
						Thin. Hard. 5% pyrite in layer 1.5 cm vein and 1 cm inclusions. Coal is very shaly. Dull bands with 20% bright bands. Some calcite on vertical cleats.
TS960901				0.15		MUDSTONE
						Hard medium grey. Still part of roof.
6	303.30	306.30	3.00	0.70	1.37	COAL
TS960902						Hard. Bright. Mainly homogeneous but some bright bands also. Calcite and visible pyrite on vertical cleats. 1.33 missing. Vertical calcite veins in old fractures. Drilling mud contamination.
TS960903				0.33		SHALY COAL
						More shaly in upper part. 10-20% shale. Hard and blocky and bright when mainly coal. Some duller bands 50% with bright. Calcite on vertical cleats and some visible pyrite.
TS960904				0.24		COALY SHALE (Floor)
						Some good coal with shaly and ground coal. 40$ coal - 30%. Dull. Hard. Muddy in base.
				0.10		MUDSTONE
						Hard. 45 degrees fracture. Medium grey to black. Matches with next core run.
7	306.30	307.30	1.00	0.91	0.91	MUDSTONE
						Same as above. Mudstone dark grey medium. Hard with carbonaceous laminae up to 5mm 2%. Some thin calcite veins approximating bedding but irregular. Slightly silty. No fizz.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-09C
CO-ORDINATES : 5484853.9 N. - 365418.1 E.
ELEVATION : 67.1 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
8	307.30	309.40	2.10		1.74	MUDSTONE
						Calcite on fracture planes. Fractures slickensided and polished running vertical and at 45 degrees. Fractures at 50 degrees and 65 degrees to horizontal. More fractured and broken at base. Bedding at 7 degrees to horizontal.
9	309.40	311.90	2.50	1.40	2.86	SILTSTONE
						Very hard. Massive. Medium grey. Irregular white grains of subangular shape in basal section. Grades down into fine sandstone. Good fizz where sandstone. Comes in basal 0.1m and nil in rest.
				1.46		SANDSTONE
						Fine grained. Massive and competent. Thin mudstone laminae in a 4 cm interval 0.3m from base. Bedding at 7 degrees to horizontal. Very hard. Light to medium grey. Good to very good fizz.
10	311.9	313.6	1.7	0.99	1.77	SANDSTONE
						Fine grained. Bioturbacieous near base with some worm tubes. Very hard. Mudstone inclusions throughout. Medium grey. Bedding appears to be 7 degrees from horizontal but drill hole has some deviation too. Bottom contact sharp with ground up material. Upper 0.79m very good fizz. Rest-nil.
				0.15		MUDSTONE
						Ground up with sand and mudstone layers.. Mudstone ground up and soft. May be washed somewhat. Was just small section of interbedded sandstone and mudstone
				0.63		SANDSTONE
						Medium grained. Hard to medium hard. Medium grey. No fizz.
11	318.00	321.00	3.00	3.00	3.00	SANDSTONE
						As above. Medium to fine grained. Medium grey. Harder near base, medium hard in upper half. Excellent fizz in middle 0.3m and nil in rest. Central 0.3m is lighter in colour. No bedding or fractures.
12	321.00	324.00	3.00	2.16	3.00	SANDSTONE
						As above. Massive. Homogeneous. Fizz low to good. Interbedded with siltstone in basal .36m. Thin carbonaceous beds in siltstone area.
				0.84		MUDSTONE
						Thin siltstone bed near base. Soft. Very broken and crushed. Fragments have polished and slickensided surface. Bedding at upper contact with siltstone is sharp at 7 degrees to horizontal.
13	324.00	327.00	3.00	0.90	2.72	SILTSTONE/MUDSTONE
						Interbedded. 65% siltstone/35% mudstone. Medium hard. Medium to dark grey. Bedding at 5 degrees to horizontal. Some horizontal movement along bedding. Thick black and polished. No fizz. Sharp contact with underlying sandstone.
				1.82		SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-09C
CO-ORDINATES : 5484853.9 N. - 365418.1 E.
ELEVATION : 67.1 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Fractures at 45 degrees and 85 degrees to bedding. Highly broken up. Some calcite on fractures. One 0.08 m section near top with irregular mudstone laminae. Good fizz.
14	327.00	329.80	2.80	0.81	1.59	SANDSTONE
						As above. Highly fractured. Irregular vertical fractures and at 60 degrees. Some calcite on fracture planes. Thin laminae of mudstone 5% . Fine to medium grained.
				0.64		SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded/ Carbonaceous throughout. Irregular bedding with sandstone clasts. Sandstone 40%, Siltstone 40% Mudstone 20%. No fizz.
				0.14		MUDSTONE/COAL
						(1.21m coal missing?). 1.21 m of core is missing. Mudstone and coal at bottom. Core barrel jammed and probably core jammed in fractured sandstone.
15	329.80	332.10	2.30	1.95	1.95	MUDSTONE
						Silty in basal portion. Thin siltstone 1mm beds. Also thin pyrite beds in base of < 1mm. Calcite veins horizontal. Medium hard. Medium grey black. Fractured and ground in upper third. 1 cm pyrite band in centre of core. Irregular vertical fractures.
16	332.10	335.10	3.00	0.20	1.50	COAL
						1.80 washed 0.30 before coring began. 1.5 missing? Coal? Would make seam +1.7m thick? Check E-log. Broken up. Hard. Fractured and polished. Shiny in thin bands. Gas bubbling out. Visible pyrite on cleats.
				1.30		MUDSTONE
						Muddy at top. Irregular vertical calcite filled fracture near top. Other fracture at 45 degrees and 60 degrees to bedding. 6cm coal near base. Bottom crumbly and broken. Poor core. Horizontal movement on bedding. Slickensides and calcite. Silty through central portion and harder.
17	335.10	338.10	3.00	2.39	2.39	MUDSTONE
						Carbonaceous. Gassy. Coal lenses up to 8 cm one near base, one 1 meter down. Other lenses up to 1 cm near top and throughout. Mudstone siltier in middle and harder. Fractures at 30 degrees to horizontal. Polished and slickensided vertically. Gs bubbling form all coaly lenses and possibly from shale. Probably 20-30 degrees coaly material throughout. Visible pyrite in basal 0.2m. Horizontal movement and polishing. Core fairly broken and fragmented.
18	338.10	339.30	1.20	0.25	0.40	MUDSTONE
						As above
				0.15		SANDSTONE
						Fine to medium grained. White subangular specs throughout. Partly muddy. Grading down to coarser sandstone.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

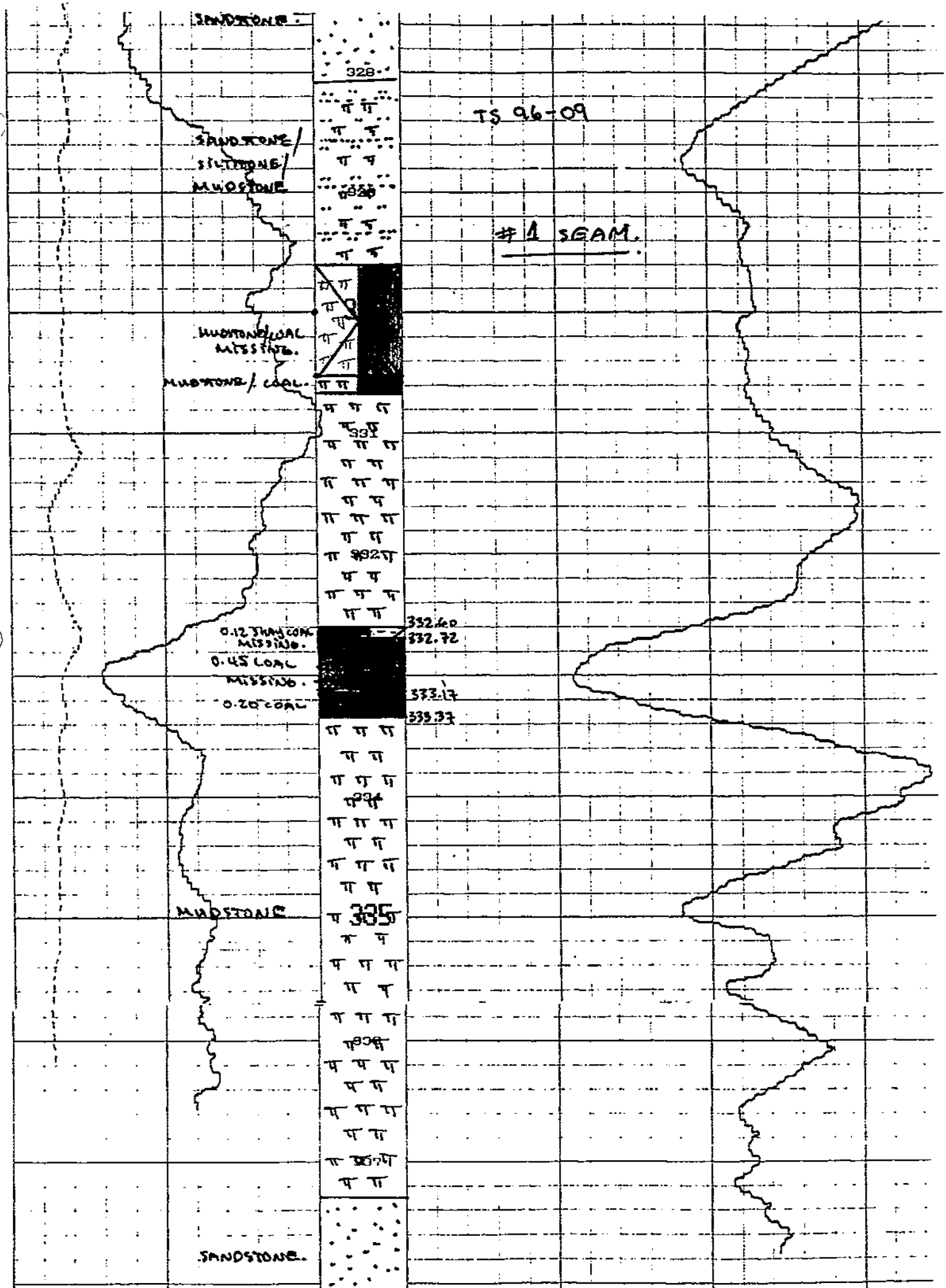
HOLE NUMBER : TS 96-09C
CO-ORDINATES : 5484853.9 N. - 365418.1 E.
ELEVATION : 67.1 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
19	339.30	341.30	2.00	1.42	2.85	SANDSTONE
						Medium grained coarsening downwards. Subangular white grains throughout. Medium brown grey. Minor carbonaceous inclusions. Cherty. Very hard. No bedding or fractures. Good to excellent fizz near base. Basal sandstone.
				1.43		MUDSTONE/SILTSTONE
						Mudstone with silty areas throughout. Moderately hard. Sandstone laminae near base. Small minor carbonaceous inclusions throughout. Polished fracture at 45 degrees to horizontal with vertical movement evidenced in slickensides. No fizz. Upper contact with sandstone at 7% to horizontal.
20	341.30	344.30	3.00	2.30	2.30	MUDSTONE/SILTSTONE
						50:50. Thin carbonaceous inclusions. and laminae. Medium hard. Dark grey. Bedding at 8 degrees to horizontal. Fractured at 30 degrees to horizontal polished and slickensided. Polished bedding with horizontal slickenside evidenced movement.
21	344.30	345.30	1.00	1.72	1.72	MUDSTONE/SILTSTONE
						Basal 0.5m mainly siltstone with minor mudstone stringers. Carbonaceous inclusions throughout but very minor <1%. Two calcite filled fractures in centre at 35 degrees to horizontal. No fizz. Dark to medium grey. Moderately hard to hard. Large irregular vertical fracture in basal section. Excellent fizz in basal silty portion and nil in rest.
22	245.30	248.30	3.00	1.04	2.30	SANDSTONE/SILTSTONE
						Interbedded. Some carbonaceous lamellae. Sandstone 30% /Siltstone 70%. Sandstone is coarse basal sand with subangular white grains. Grains are also randomly found in the siltstone. GRades down into the basal sandstone. Bedding at 7 degrees to horizontal. Calcite surfaced fracture at 35 degrees to horizontal.
				0.80		SANDSTONE
						Coarse basal sand. Subangular white grain up to 2mm. Medium grey brown. Very hard. Cherty. Excellent fizz.
				0.46		SILTSTONE
						Medium to dark grey. Hard. No fizz. Polished fractures at 30 degrees to horizontal.
23	348.30	350.30	2.00	2.57	2.57	SILTSTONE/SANDSTONE
						Silstone 70% /sandstone 30%. Sandstone basal type found in 6 to 8 cm bands in middle of core. Siltstone hard dark grey. Very thin carbonaceous lanellae also present. Bedding at 7 degres to horizontal. Fizz good in sandstone. Nil in rest.
24	350.50	353.50	3.00	3.00	3.00	SILTSTONE
						Thin basal sandstone bed 0.08 m in middle and 2 thin 0.04m muddy carbonaceous beds. Silstone medium hard to hard. Fractures at 80 degrees and 35 degrees to horizontal. Bedding at 7 degrees. No fizz.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-09C
CO-ORDINATES : 5484853.9 N. - 365418.1 E.
ELEVATION : 67.1 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						END OF CORE AND HOLE


SANDSTONE
328
TS 96-09
SANDSTONE/
SILTSTONE/
MUDSTONE
#1 SEAM.
MUDSTONE/COAL
MISSING.
MUDSTONE/COAL
331
0.12 SHALY COAL
MISSING.
332.60
332.72
0.45 COAL
MISSING.
333.17
0.20 COAL
335.37
MUDSTONE
335
SANDSTONE.

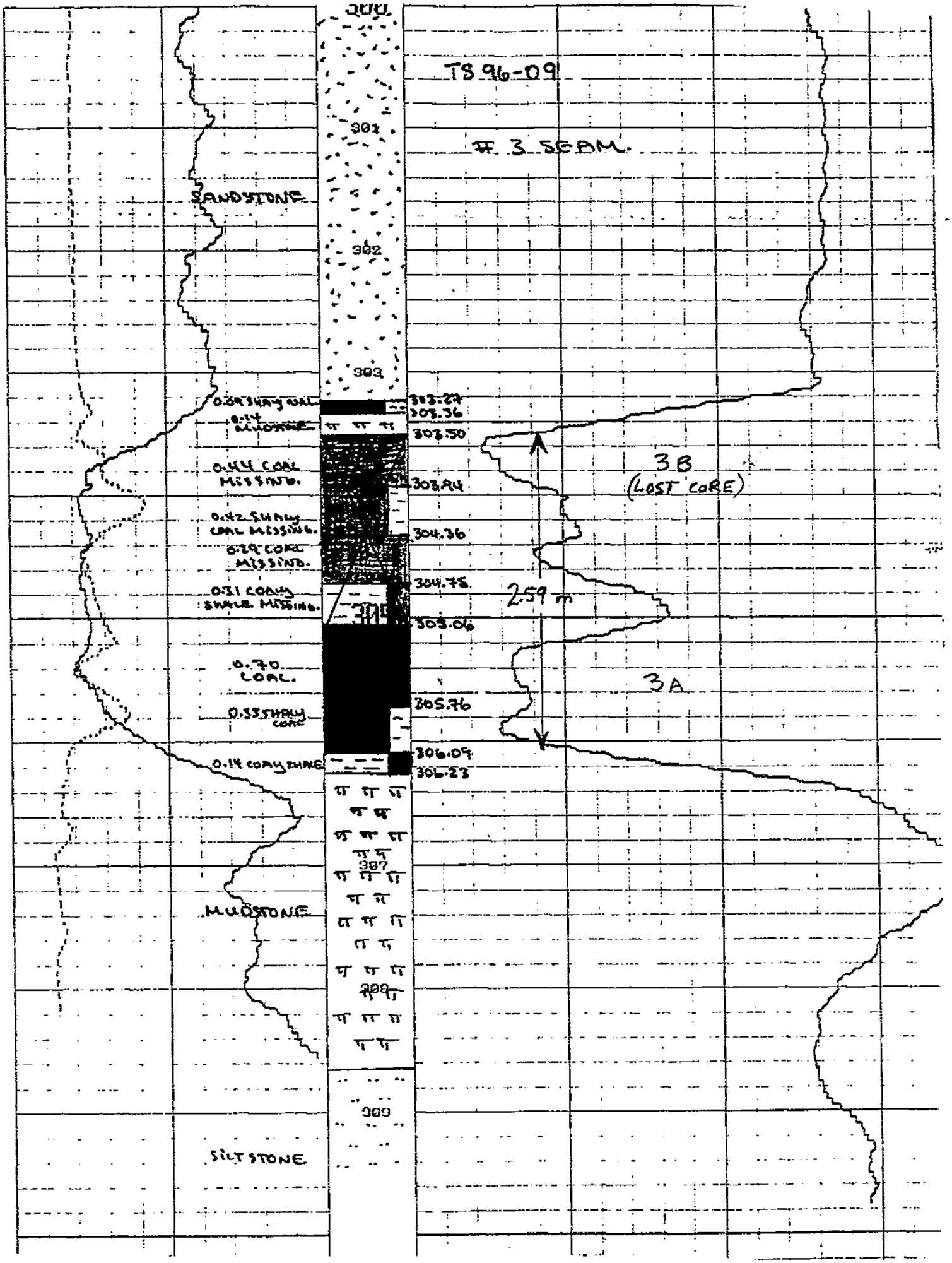
QUINSAM COAL CORPORATION

Hole Number: TS 96-09C — #1 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
			328			
SILTSTONE						
SANDSTONE / SILTSTONE / MUDSTONE			329			
MUDSTONE / COAL MISSING.			330			
MUDSTONE/COAL						
			331			
MUDSTONE.						
			332			
0.12 SEAM COAL MISSING.		332.60				
0.45 COAL MISSING.		332.92				
0.77m			333			
0.20 COAL		333.17				
		333.37				
			334			
			335			
MUDSTONE						
			336			


TS 96-09
3 SEAM.
SANDSTONE
300
301
302
303
0.09 SHALY COAL
0.14 SILTSTONE
0.44 COAL MISSING.
0.42 SHALY COAL MISSING.
0.29 COAL MISSING.
0.31 COALY SHALE MISSING.
0.70 COAL.
0.55 SHALY COAL
0.14 COALY SHALE
303.22
303.36
303.50
303.94
304.36
304.78
305.06
305.76
306.09
306.23
3B
(LOST CORE)
2.59 m
3A
307
MUDSTONE
309
SILTSTONE

QUINSAM COAL CORPORATION

Hole Number: TS96-09C — #3 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE COLUMN Scale: 1:50				
		CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
			300			
			301			
			302		COAL SAMPLE NUMBER.	
			303			
303.50					TS960901	
0.09 SHALY COAL		303.27				
0.14 MUDSTONE		303.36				
		303.50				
0.44 COAL MISSING			304			
0.42 SHALY COAL MISSING		303.84				
0.29 COAL MISSING		304.36				
2.59m		304.75				
0.31 COALY SH MISSING		305.06				
0.70 COAL			305		TS960902	
		305.76				
306.09					TS960903	
0.33 SHALY COAL		306.09	306			
0.14 COALY SHALE		306.23			TS960904	
			307			
MUDSTONE						
			308			
SILTSTONE						

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-10C
CO-ORDINATES : 5484791.4 N. - 364842.4 E.
ELEVATION : 91.7 m
DATE DRILLED: July 26/96
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	5.0	Glacial till overburden
5.0	134.0	Siltstone; medium grey; uniform
134.0	154.0	Sandstone; with siltstone interbeds
154.0	176.0	Siltstone; muddy
176.0	238.0	Sandstone; siltstone & mudstone interbeds; coring started 217.7m
238.0	244.5	Mudstone, coaly
244.5	247.5	COAL; No. 4 Seam
247.5	286.6	Sandstone; light grey; some silty interbeds
286.6	287.6	COAL; No. 3 Seam
287.6	289.0	Sandstone; fine grained; hard
289.0	303.2	Sandstone;; interbedded siltstone & mudstone
303.2	306.8	COAL; No. 1 Seam
306.8	309.5	Mudstone; coaly
309.5	317.0	Sandstone; interbedded siltstone & mudstone
317.0	318.5	Sandstone; basal unit
		END of HOLE

Note: Pipe tally incorrect - not in agreement with geophysical log

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-10C
CO-ORDINATES : 5484791.4 N. - 364842.4 E.
ELEVATION : 91.7 m
LOGGED BY: L. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	217.70	220.70	3.00	2.86	2.86	SANDSTONE
						Medium grained. Massive. Very hard. Thin carbonaceous laminae <10%. Fracture planes @ 70 degrees to horizontal. No bedding for dips. Medium grey. Fizz-very low to nil.
2	220.70	223.60	2.90	2.13	2.87	SANDSTONE
						Silty bands in centre 0.4m. Hard. irregular vertical fractures. Low to good fizz. Massive. No bedding. Medium grey. Medium grained.
				0.28		SILTSTONE
						Sharp upper contact at 12 degrees to horizontal. Dark grey hard. Calcite veins on bedding. Gradational lower contact.
				0.46		SANDSTONE
						As above in same run.
3	223.60	226.20	2.60	2.18		SANDSTONE
						Carbonaceous stringers < 1%. Sharp basal irregular contact with coal. Fizz excellent. Hard, massive, medium grey. No fractures. No bedding.
				0.21		COAL
						Shaly. Coal:shale 80:20. Hard. Blocky. Calcite on fractures. Shiny with dull lenses 10%. Sandstone inclusions in upper 5 cm. 0.10 in next core & 0.11 missing
4	223.60	226.20		0.10	3.10	COAL
						As above.
				1.36		MUDSTONE
						Sandy and silty inclusions & stringers. Calcite veins on bedding. Sandy wedges and silty near base. Grades down into siltstone
				1.64		SILTSTONE
						Bidturbaceous throughout thin mudstone laminae in basal half. More sandy in upper half. Excellent fizz in upper half and more in bottom. Possible bedding at 20 degress to horizontal.
5	229.00	232.30	3.00	3.00	3.00	SANDSTONE
						Thin siltstone and carbonaceous mudstone laminae. Also carbonaceous inclusions. Hard. Irregular vertical fractures Fine to medium grained. Medium grey to brown. Crossbedding. No true bedding. Fizz excellent in top meter and low in rest.
6	232.00	234.50	2.50	0.04	2.40	CARBONACEOUS SHALE
						Probably lost .10 of this coaly band. Shiny slip faces are almost horizontal. Bedding with underlying lithology is sharp at 17 % to horizontal.
				2.36		SILTSTONE/SANDSTONE
						Siltstone/sandstone and mudstone interbedded thinly in top .36m going to a fine grained sandstone and siltstone which shows turbid environment. No fizz. Worm tube casts of sandstone.
7	234.50	237.50	3.00	3.02	3.02	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-10C
CO-ORDINATES : 5484791.4 N. - 364842.4 E.
ELEVATION : 91.7 m
LOGGED BY: L. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Medium grained. Massive. Very hard. Medium grey. Some bioturbation and worm tubes. No fractures. No bedding. Centre 1.5m excellent fizz and low in top and bottom.
8	237.50	240.50	3.00	2.71	3.03	SANDSTONE
						Fine grained grading down to medium grained. Fractures at 70 degres with calcite infill. Very hard/competent. Massive. Basal contact with coal is irregular. Fizz low in top 1.0m and good in rest.
				0.32		SHALY COAL
						Dull banded with 40-50% shale. Small calcite veinlets horizontal. More shale near top and base. Sandstone cast n top part. Horizontal polishing along slip planes.
9	240.50	242.00	1.50	1.40		MUDSTONE
						Top contact with coal is sharp. Medium hard. Dark grey. Calcite veinlets throughout 1%. Fractures at 50 degrees to horizontal.
10	242.00	245.00	3.00	2.29	2.64	MUDSTONE
						As above. Contact with coal is shaly.
TS961004				0.35		COAL
						0.36 missing. Hard blocky bright. Calcite on vertical cleavage. No visible pyrite. Partly contaminated by drilling mud.
Ash	VM	FC	S MJ/kg	FSI		
17.66	32.51	49.83	.48 28.89	7.0		
11	245.00	247.50	2.50	0.14	2.05	COAL
TS961004						0.41 missing. As above.
Ash	VM	FC	S MJ/kg	FSI		
17.66	32.51	49.83	.48 28.89	7.0		
				1.91		SANDSTONE
						Silty and almost muddy in central 0.5m. Hard. Bioturbation through most of it. Siltstone is a darker grey than the sandstone. Fine grained. Fizz-none.
12	247.50	250.00	2.50	2.48	2.48	SANDSTONE
						As above for 1st 0.5m grading into massive fine grained sandstone. Hard to very hard. Competent. No fractures. No bedding. Fizz good in bottom. 0.8m and nil in rest.
13	250.00	253.00	3.00	2.98	2.98	SANDSTONE
						As above. Minor carbonaceous inclusions <1%. Fizz excellent throughout. Long irregularly vertical fracture at bottom extends down into the next core. Filled with calcite.
14	253.00	255.00	2.00	1.97	1.97	SANDSTONE
						Carbonaceous mudstone band at 15 degrees to horizontal. Fractures at 50 degrees to horizontal. Sandstone as above but more medium grained down. Fizz excellent in top 0.6m, low in rest. Irregular vertical calcite filled fractures at top 0.6m long.
15	255.00	257.00	2.00	2.02	2.02	SANDSTONE
						As above. Low to no fizz.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-10C
CO-ORDINATES : 5484791.4 N. - 364842.4 E.
ELEVATION : 91.7 m
LOGGED BY: L. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
16	257.00	260.00	3.00	2.93	2.93	SANDSTONE
						Very hard. Fine to medium grained. Thin carbonaceous and mudstone inclusions. No fractures. Thin 1cm coaly band near centre. Nil to low fizz.
17	260.00	262.30	2.30	2.39	2.39	SANDSTONE
						As above. Massive. No bedding. Fizz-nil.
18	262.30	265.30	3.00	2.93	2.93	SANDSTONE
						As above. Thin siltstone beds in top 0.5m (1mm thick). Small carbonaceous band in centre 5mm thick. Basal 0.8m changes to light grey from medium. Fizz good.
19	265.30	268.10	2.80	3.00	3.00	SANDSTONE
						Very massive. Light grey - very hard. Fizz is low.
20	268.10	271.10	3.00		2.87	SANDSTONE
						Hard. Massive. Medium grained. Medium grey. Homogeneous. Very thin siltstone bands at 25 degrees to horizontal. Low to good fizz.
21	271.10	274.10	3.00	2.65	2.65	SANDSTONE
						Thin < 1 cm silstone bands at 25 degrees to horizontal. Polishing on some bedding planes. Fractures at 50 degrees to horizontal. Hard. Massive. Fine to medium grained. Fizz - excellent in top 0.8m and low in rest.
22	274.10	277.00	2.90	3.22	3.22	SANDSTONE
						Massive. As above. Fizz - low.
23	277.00	278.90	1.90	1.10	1.10	SANDSTONE
						As above. Fizz-low.
24	278.90	281.10	2.20	2.54	2.54	SANDSTONE
						Massive. Very hard. Competent and homogeneous. Medium grey. Fine to medium grained. Very thin carbonaceous lanellae bedded at 22 degrees to horizontal. Fizz- excellent.
25	281.10	283.60	2.50	2.88	2.88	SANDSTONE
						As above. Coarser grained. Carbonaceous and coaly lanellae bedded at 17 degress to horizontal. Low to good fizz.
26	283.60	286.60	3.00	0.78	2.20	SANDSTONE
						As above. Sharp bottom contact with ground up coal
TS961001				0.40		COAL #3 SEAM
Ash	VM	FC	S MJ/kg	FSI		
29.51	30.16	40.33	1.28 24.36	6.5		
						Broken. Contaminated with drilling mud. Shaly parting at base. Dull. Banded with some shiny bands. Pyritic and dirty near top too.
				0.32		MUDSTONE
TS961002 Ash 83.67						Medium hard. Medium grey to dark grey. Fractures at 60 degrees to horizontal. Ground up top contact. Sharp basal contact at 19 degrees.
TS961003				0.37		COAL
Ash	VM	FC	S MJ/kg	FSI		
30.42	28.76	40.82	.83 23.88	4.0		

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

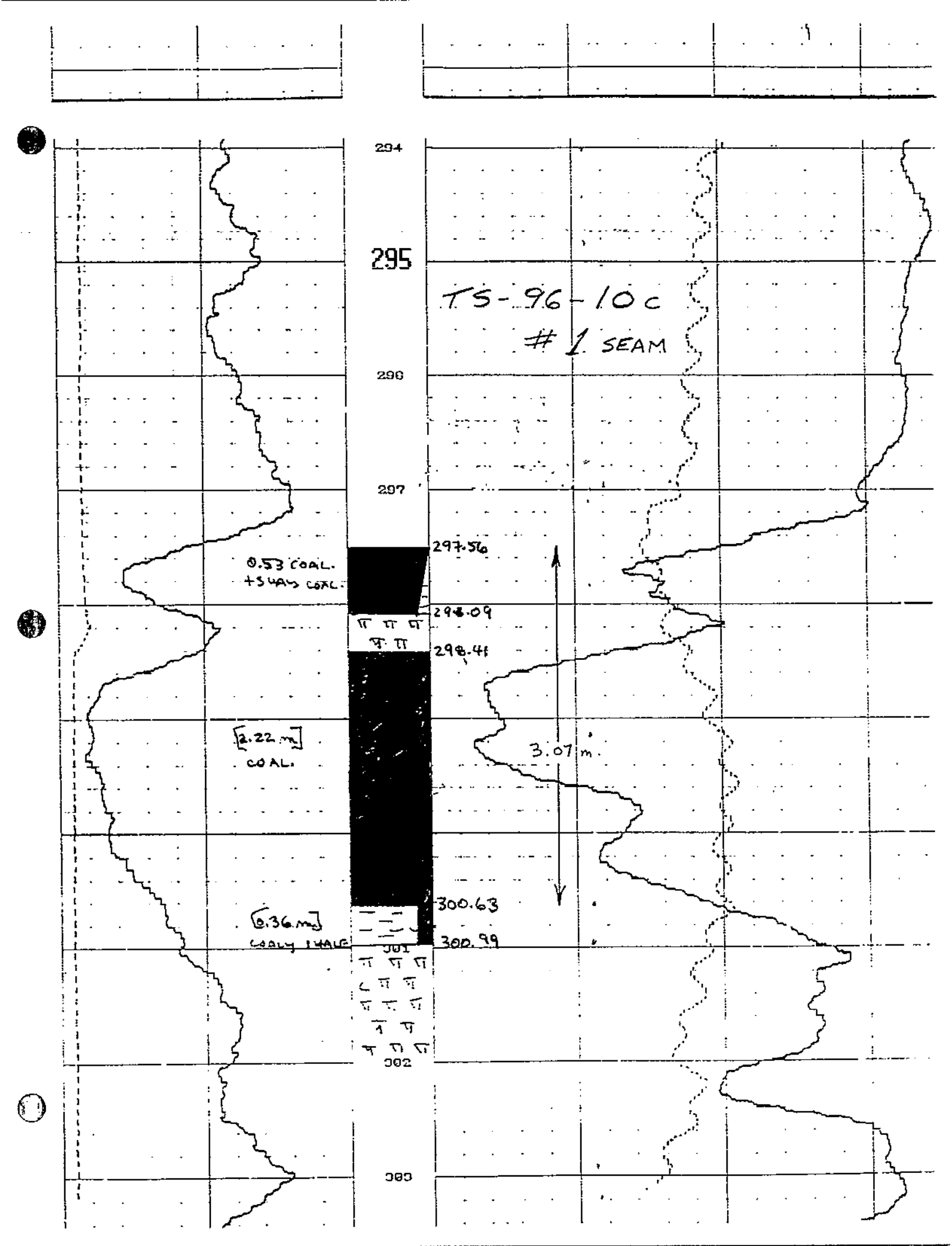
HOLE NUMBER : TS 96-10C
CO-ORDINATES : 5484791.4 N. - 364842.4 E.
ELEVATION : 91.7 m
LOGGED BY: L. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						0.2 missing. Hard. Partly ground up and shaly at the base. Disseminated pyrite in thin bands. Calcite on vertical cleats. Dull, bright bands only about 15%.
				0.42		SANDSTONE
						Fine grained. Muddy top contact with coal. Hard. Fracture with vertical slickensides at 75% to horizontal. Good fizz.
27	286.60	288.80	2.20	2.15	2.15	SANDSTONE
						Fine grained. Very hard. Medium grey. Thin muddy bed .14 m form top and 0.6 m thick although some 0.05 may be missing. Fractures at 55 degrees to horizontal. Fizz - low to good.
28	288.80	290.90	2.10	0.85	2.10	SANDSTONE
						As above. Fizz good. Bottom bedding contact at 19 degres to horizontal
				1.26		SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded. Bed thickness varies up to .1m from 1mm. Ratio 70% sandstone, 10% Mudstone, 20% siltstone. Beds at 18 degrees to horizontal. No fizz. Fracture at 65 degrees to horizontal.
29	290.90	293.40	2.50	2.33	2.33	SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded. Thinner beds 3cm thickest except for top .2m sandstone. Ration sandstone 30%, siltstone 40%, mudstone 30%. Beds at 19 degrees to horizontal. No fizz.
30	293.40	296.20	2.80	2.80	2.80	SANDSTONE/SILTSTONE/MUDSTONE
						Interbeds. Sandstone 10%, siltstone 40%, mudstone 50%. Bedding at 18 degrees to horizontal.
31	296.20	299.20	3.00	3.05	3.05	SANDSTONE/SILTSTONE/MUDSTONE
						More muddy down. 5% sandstone, 30% siltstone, 65% mudstone. Minor calcite veins on bedding planes. Bedding at 18 degres to horizontal. Many small carbonaceous fragments
32	299.20	302.20	3.00	3.05	3.05	SILTSTONE/MUDSTONE
						Interbedded. Minor sandstone. Calcite on some bedding planes. Medium hard. Dark grey. Siltstone 30%, mudstone 70%
33	302.20	305.20	3.00	1.04	2.67	MUDSTONE
						Broken bottom contact with coal. 60 degree fractures with calcite. Bedding at 15 degrees to horizontal. Two large sandstone lenses near the top.
TS961005				0.53		COAL/SHALY COAL
Ash	VM	FC	S MJ/kg	FSI		
27.04	31.53	41.44	8.15 25.44	4.0		
						One 1 cm thick pyrite band in centre. Coal is black and shiny. Shale 10-20%. Some missing probably.
TS961006				0.32		MUDSTONE
Ash	VM	FC	S MJ/kg	FSI		
65.12	27.21	7.67	2.18 8.80	1.0		
						Silty at top. coal band 5 cm wide in middle. Mudstone & shale at base
TS961007				0.68		COAL

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-10C
CO-ORDINATES : 5484791.4 N. - 364842.4 E.
ELEVATION : 91.7 m
LOGGED BY: L. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
Ash	VM	FC	S MJ/kg	FSI		
21.92	31.91	46.18	.62 26.9	7.0		
						Main seam #1. Hard blocky. Bright. Calcite on vertical cleats. Cleats at 60 degrees to one another. No visible sulfur. Calcite white and brownish.
34	305.20	308.20	3.00	1.54	3.06	COAL
TS961007						As above. More shaly towards base. Bright blocky hard. Calcite on cleats. No visible pyrite.
TS961008				0.36		COALY SHALE
						Floor. Brightly polished fractures. Coal 20%: shale 80%
				0.76		MUDSTONE
						Carbonaceous. Medium hard. Dark grey to black. Coaly stringers and lenses.
35	308.20	309.50	1.30	0.30	1.26	MUDSTONE
						As above
TS961009				0.30		SHALY COAL
						Dirty coal in small seam. Visible pyrite along bedding and fractures. Dull and bright bands.
				0.66		MUDSTONE
						Grades to siltstone near bottom. Hard. Medium grey. Partly carbonaceous. Coal and mudstone have sharp contact on bedding at 18 degrees to horizontal.
36	309.50	312.50	3.00	1.55	2.97	SANDSTONE
						Coarse. Basal sandstone. White subangular grains throughout. Hard. Calcite veins on old 65 degrees to horizontal fractures. Medium brown grey. Very good fizz.
			1.42			SILTSTONE
						Partly muddy in centre. Some coarse sand beds. White subangular grains throughout the basal half. Dark grey. No fizz.
37	'312.50	315.50	3.00	1.54	2.97	SILTSTONE
						Hard. Massive. Dark grey. 2 1cm coaly bands. No fractures. Bedding at 18 degrees to horizontal.
				1.45		MUDSTONE
						Silty in part. Medium grey. Moderately hard.
38	315.50	318.50	3.00	2.46	2.94	MUDSTONE
						As above
				0.48		SANDSTONE
						Coarser basal unit. Bedding at top formation. Contact is 18 degrees to horizontal. Medium brown to whitish. Very good fizz.

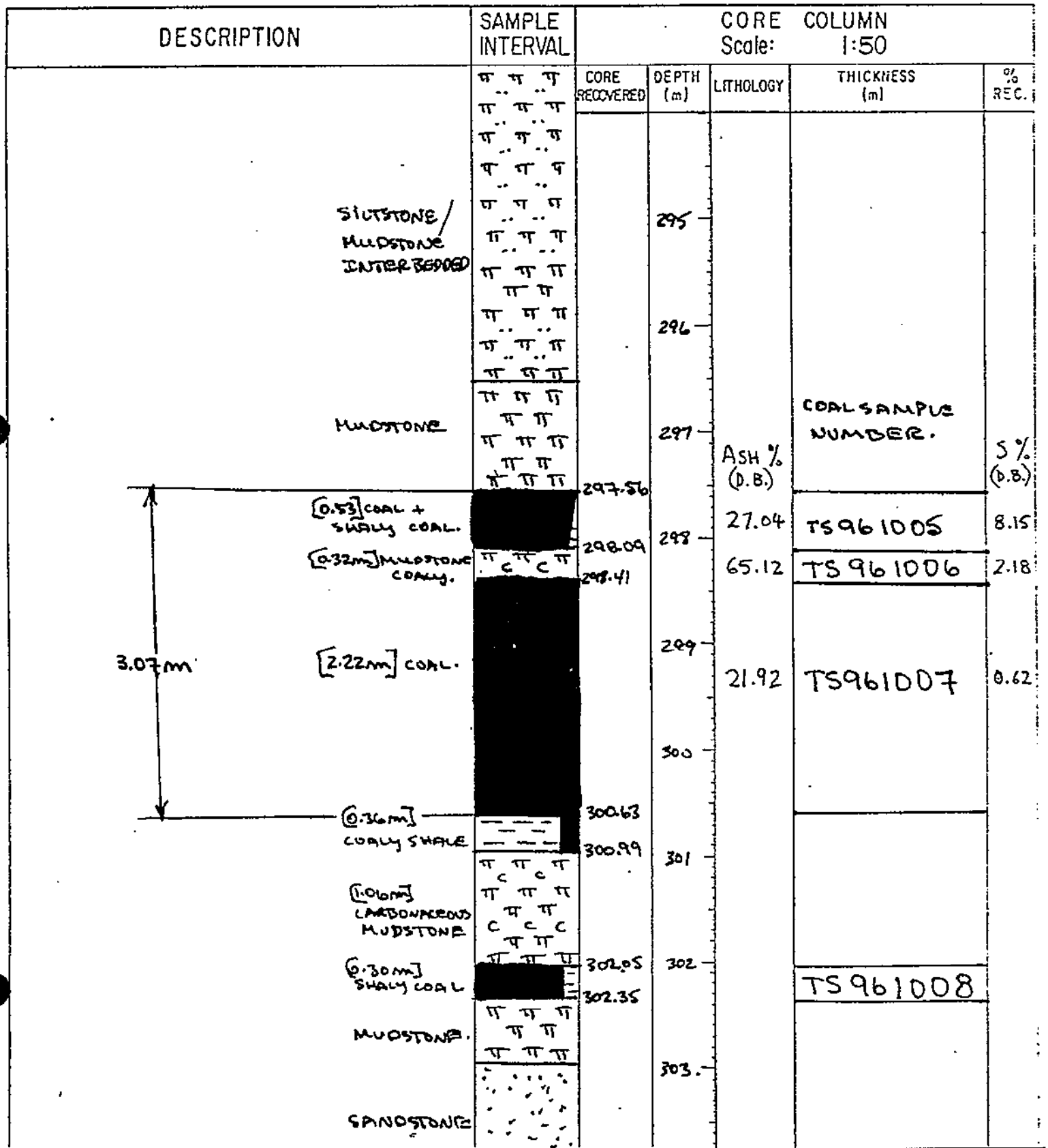

294
295
296
297
TS-96-10c
#1 SEAM
0.53 COAL.
+SHALY COAL.
297.56
298.09
298.41
[2.22 m]
COAL.
3.07 m.
300.63
[0.36 m]
COALY SHALE
300.99
301
302
303

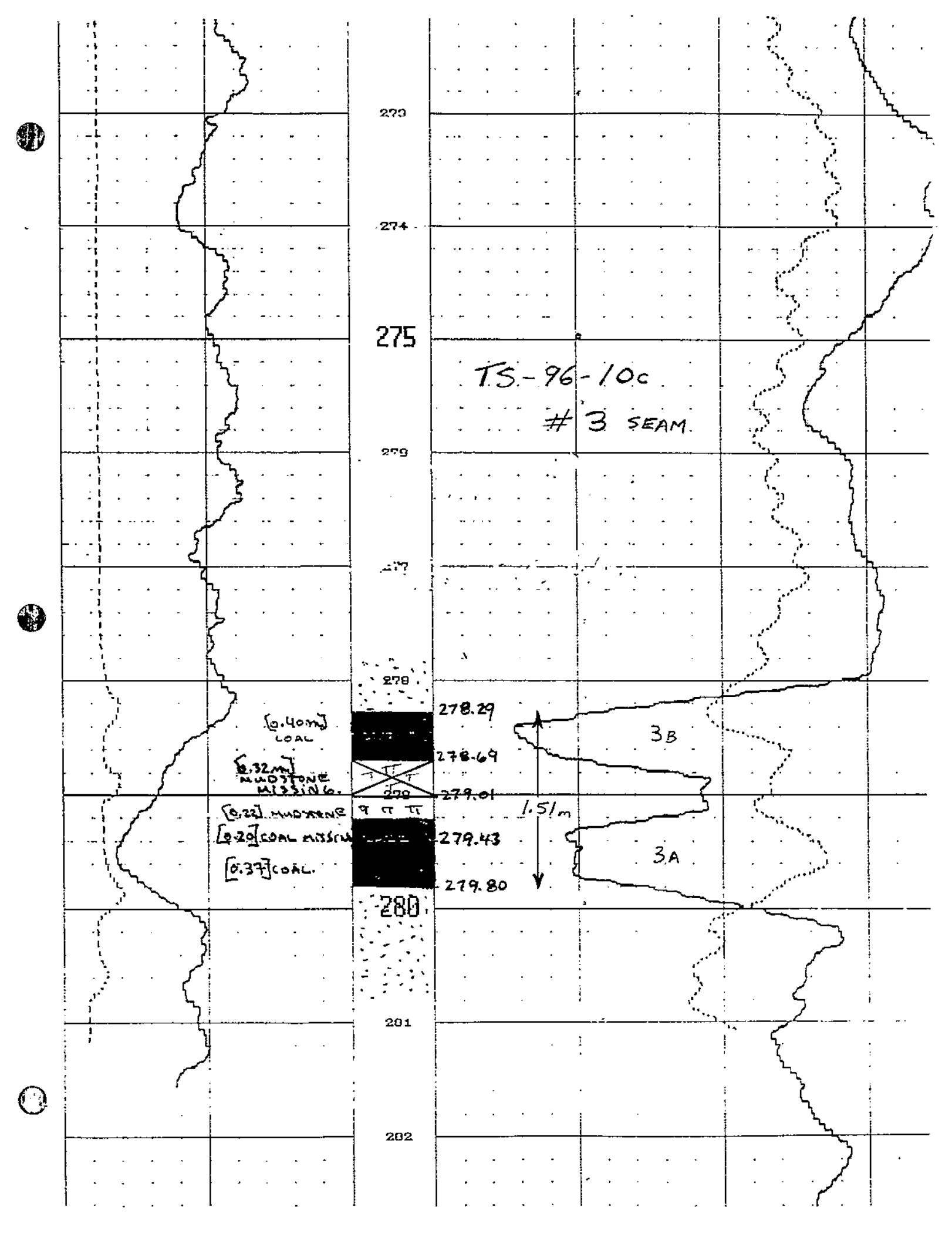
QUINSAM COAL CORPORATION

Hole Number: TS 96 10 C — #1 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___



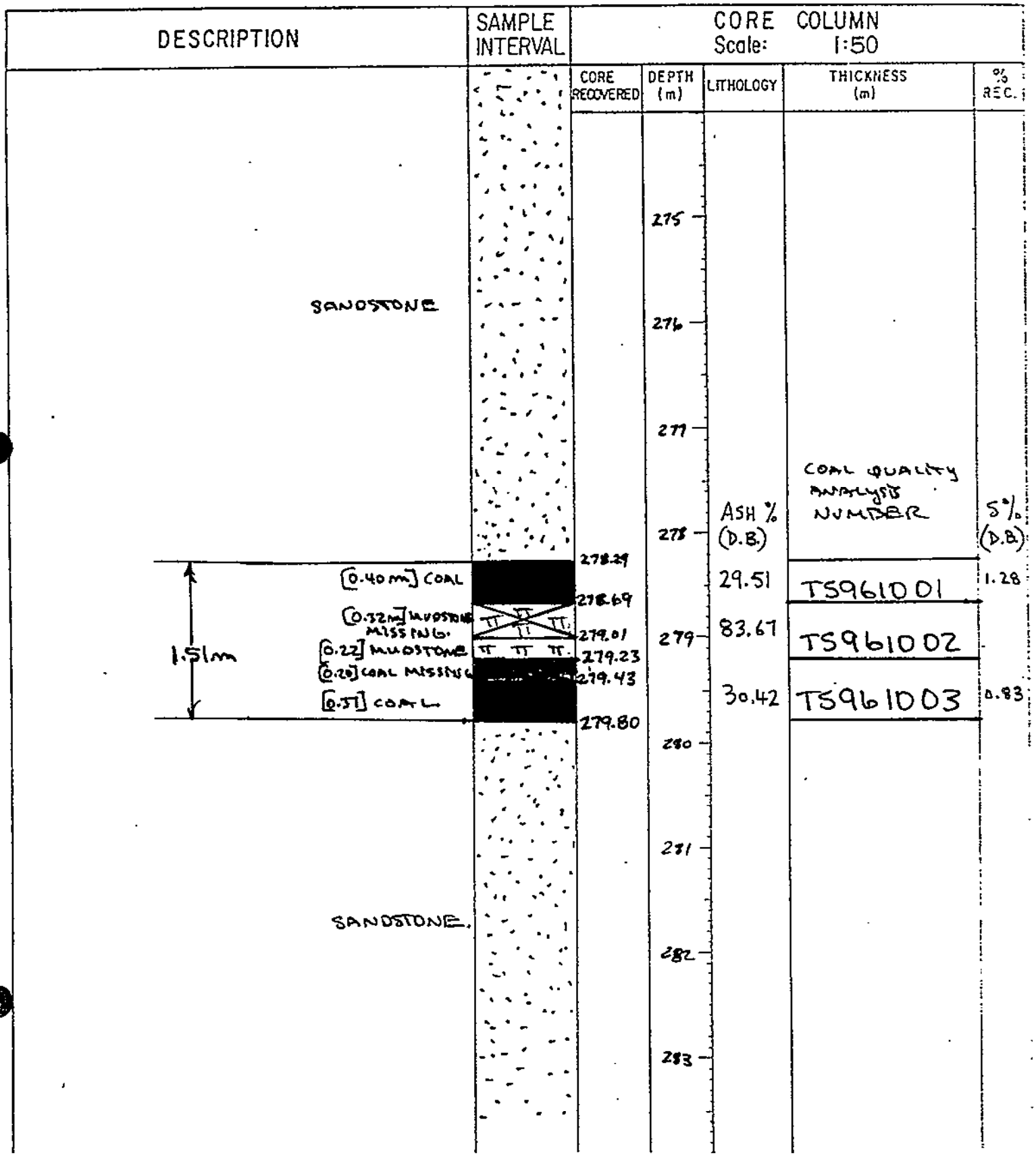

273
274
275
276
277
278
279
280
281
282
TS-96-10c
#3 SEAM
278.29
278.69
279.01
279.43
279.80
[0.40m] COAL
[0.32m] MUDSTONE MISSING
[0.22] MUDSTONE
[0.20] COAL MISSING
[0.37] COAL
1.51m
3B
3A

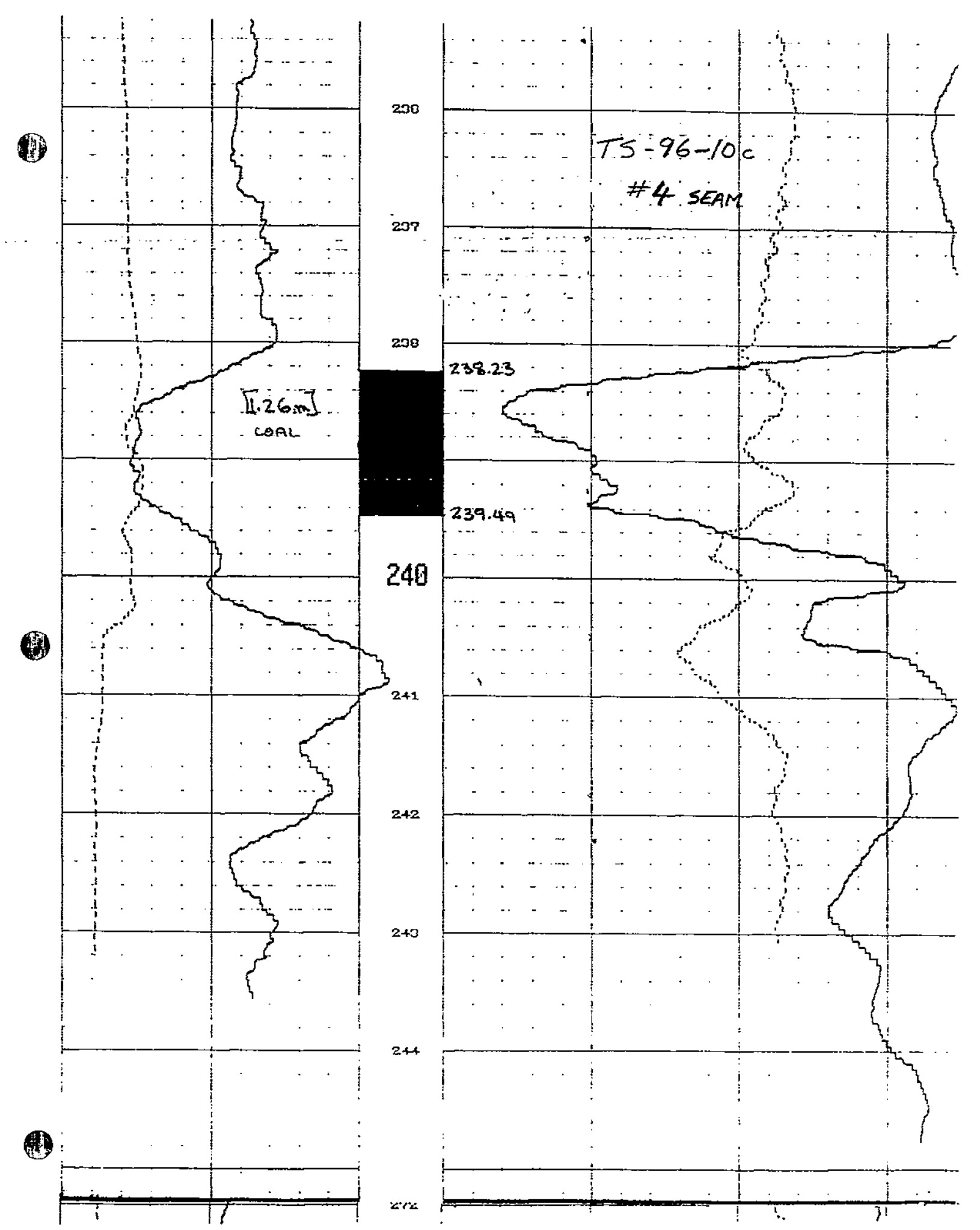
QUINSAM COAL CORPORATION

Hole Number: TS9610 C — #3 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___




TS-96-10c
#4 SEAM
236
237
238
238.23
1.26m
COAL
239.49
240
241
242
243
244

Quinsam COAL CORPORATION

Hole Number: TS96-10C #4 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
					CORE COLUMN Scale: 1:50	
SANDSTONE						
[0.32m] SHALY COAL						
			235			
			236			
MUDSTONE						
			237		COAL SAMPLE NUMBER	
				ASH % (D.B.)		5% (D.B.)
			238			
[0.35m] COAL		238.23				
[0.49m] COAL MISSING		238.58		17.66	T5961004	0.48
1.26m			239			
[0.14] COAL		239.35 239.49				
			240			
			241			
SANDSTONE						
			242			
			243			

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-11C
CO-ORDINATES : 5484068.5 N. - 365018.3 E.
ELEVATION : 135.8 m
DATE DRILLED: July 27, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	25.0	Sand & gravel
25.0	67.8	Siltstone, shaly, muddy
67.8	92.2	Sandstone; medium grey; hard
92.2	104.4	Mudstone, thin coal
104.4	116.6	Mudstone
116.6	141.0	Sandstone, coal at base
141.0	159.3	Sandstone, mudstone & coal at base
159.3	176.6	Sandstone, interbedded siltstone & mudstone
176.6	180.0	Mudstone, coal beds, No. 4 Seam
180.0	182.7	Mudstone
182.7	217.0	Sandstone,; minor mudstone, started coring at 188.8
217.0	220.0	COAL with shale; No. 3 Seam
220.0	241.0	Sandstone; minor mudstone
241.0	244.0	Mudstone
244.0	247.1	COAL; No. 1 Seam
247.1	251.5	Mudstone
251.5	257.1	Sandstone; hard; white sections
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-11C
CO-ORDINATES : 5484068.5 N. - 365018.3 E.
ELEVATION : 135.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	188.80	191.80	3.00	3.00	3.00	SANDSTONE
						Fractures horizontal & 10 degrees to horizontal. No bedding. Minor carbonaceous inclusion. Medium grained. Competent. Very hard. Light to medium grey. Fizz-nil
2	191.80	194.80	3.00	2.96	2.96	SANDSTONE
						Minor mudstone and carbonaceous mudstone stringers and inclusions. Sandstone as above. No fractures. Massive and very hard. Fizz-nil
3	194.80	197.80	3.00	3.03	3.03	SANDSTONE
						More mudstone and carbonaceous lanellae. Bedding on mudstone is 18 degrees to horizontal. No carbonaceous material in bottom half. Massive. Very hard. Medium grey. No fizz.
4	197.80	200.80	3.00	3.03	3.03	SANDSTONE
						As above. Minor carbonaceous inclusions. irregular vertical fractures with calcite infilling. Fine to medium grained. Excellent fizz for 1.0m, 0.5 m from top where sandstone is a light grey.
5	200.80	203.80	3.00	3.00	3.00	SANDSTONE
						Minor carbonaceous laminations. Light to medium grey. Very hard. Massive. Bedding unknown. Fizz - excellent in basal 0.6m and nil in rest.
6	203.80	206.80	3.00	3.02	3.02	SANDSTONE
						Same as above. Lens inclusions. Massive. Very hard. Fizz- excellent in top 1.6m and nil in rest.
7	206.80	209.80	3.00	3.01	3.01	SANDSTONE
						Possible bedding on carbonaceous mudstone bed at 16 degrees to horizontal. Very small <1mm carbonaceous inclusions throughout. No fractures. Fizz - low to moderate in basal 1.5m . Nil in rest. Massive. Very hard. Fine to medium grained.
8	209.80	212.80	3.00	3.03	3.03	SANDSTONE
						As above. More incompetent, softer and darker with more carbonaceous beds in basal 0.20 m. Upper core is massive. Hard. Minor carbonaceous inclusions. No fractures. Bedding in basal section is 17 degrees to horizontal. Fizz - excellent in centre 1.5m and nil in rest.
9	212.80	215.80	3.00	1.25	1.25	SANDSTONE
						Bedding 20 degrees to horizontal on this mudstone bands. Hard. Fine grained. Carbonaceous & mudstone inclusion 1%. Medium to light grey. Fizz - nil
10	215.80	216.70	0.90	2.62	2.62	SANDSTONE
						Carbonaceous lamination <1%. Darker colour near basal 1m. No fracturing or bedding. Hard, massive competent. Fizz - nil
11	216.70	219.70	3.00	0.46	3.09	SANDSTONE
						Medium grey. Fine grained. Fine grained pyrite bands 1cm thick near base. Grades into coal erratically. Carbonaceous inclusions 1%. Very hard. No fizz.
TS961101				0.36		COAL

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-11C
CO-ORDINATES : 5484068.5 N. - 365018.3 E.
ELEVATION : 135.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Hard. Blocky. Sandstone casts and pyrite lenses to 1 cm thick in to 5 cm. Irregular vertical calcite filled fractures. Calcite veining throughout. Bright with dull thin bands.
TS961101				0.07		COALY SHALE
						Thin bed. Brownish grey medium. Hard. 20% coal 80% shale.
TS961101				0.38		COAL
Ash	VM	FC	S MJ/kg	FSI		
28.82	30.08	41.11	1.56 24.91	6.0		
						Vertical fractures polished with vertical slickensides. Calcite on fractures. No visible pyrite. Thin shale beds 1cm and 3 cm thick in basal .1m. Intermixes downwards into mudstone.
				0.35		COALY SHALE
						Medium grey brown. Medium hard. 20% coal
TS961102				0.29		COAL
Ash	VM	FC	S MJ/kg	FSI		
12.99	35.05	51.96	1.04 30.67	8.0		
						Hard. Shiny. Calcite on vertical fractures. Some pyrite visible < 1%. 20% dull bands.
				0.63		COALY MUDSTONE
						10% coal 90% mudstone. Medium hard. Gradual upper contact and sharp lower one. Dark grey. More coaly in top 1/3.
TS961103				0.55		COAL
Ash	VM	FC	S MJ/kg	FSI		
16.35	33.55	50.10	1.13 29.40	8.0		
						Hard. Blocky. Bright. Slickensides vertical as are fractures. 2 cm shaly band in middle.
12	219.70	222.70	3.00	0.20	2.75	COAL (TS 961103)
						As above. Some missing.
				0.25		COALY SHALE
						Hard. One 3 cm band all coal. 40% coal 60% shale. hard. Broken. Dark grey to black. Vertical calcite veins in coal
					0.90	MUDSTONE
						Carbonaceous at top. Hard to medium hard. Medium grey. Thin silty laminae grades down into very fine grained sandstone.
				1.35		SANDSTONE
						Light grey. Carbonaceous laminae <1%. Some calcite veining. Medium hard. No fizz.
13	222.70	225.50	2.80		2.75	SANDSTONE
						Fine grained top half grading down to medium. Thin mudstone lamellae and inclusions 2-3%. Bedding at 17 degrees to horizontal. No fizz too 0.5m and excellent for remainder. Hard. No fractures.
14	225.50	228.20	2.70	0.75	2.70	SANDSTONE
						AS above. Good fizz.
				0.52		SILTSTONE/MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-11C
CO-ORDINATES : 5484068.5 N. - 365018.3 E.
ELEVATION : 135.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Interbedded laminae. Siltstone 60%/Mudstone 40%. Bedding at 10 degrees to horizontal. Moderately hard to hard.
				1.43		SANDSTONE
						Hard. Massive. Light grey. Fine grained. Good fizz.
15	228.20	230.20	2.00	2.35	2.35	SANDSTONE
						Fine grained. Very hard. Light grey. Uniform, massive, homogeneous. No fractures. No bedding. Fizz - low to fair.
16	230.20	232.70	2.50	1.32	2.55	SANDSTONE
						Fine grained as above. Carbonaceous inclusions throughout. Sharp contact with underlying mudstone at 10 degrees to horizontal. Fizz-nil
				1.23		MUDSTONE/SILTSTONE/SANDSTONE
						Interbedded. Irregular bedding with sandstone cast near the top. Some carbonaceous layers and inclusions < 1%. Sandstone 15%, Siltstone 40%. Mudstone 45%. Bedding at 10 degrees to horizontal. Fizz - nil.
17	232.70	234.90	2.20	0.31	2.00	MUDSTONE/SILTSTONE/SANDSTONE
						As above. Ground up and broken. Grades down into sandstone.
				1.69		SANDSTONE
						Fine grained. Thin carbonaceous beds and fragments. Hard at top and moderately hard in bottom 0.4m. Basal portion fractured and broken. Fractures at 80 degrees to horizontal and irregular. Bedding at 10 degrees to horizontal. Fizz very good. Light to medium grey.
18	234.90	237.40	2.50	2.30	2.30	SANDSTONE
						As above. Highly broken and fractured. Fractures at 60 degrees and 80 degrees to horizontal and some are filled with thin calcite. Minor thin carbonaceous beds. Fizz- nil
19	237.40	239.90	2.50	2.30	2.30	SANDSTONE
						As above. Fine grained. Light grey. 60 degree fractures. Partly ground and broken. Moderately hard to hard. Fizz - good in bottom meter and nil in rest
20	239.90	241.00	1.10	0.96	0.96	SANDSTONE
						As above. Harder. 60 degree fractures with calcite on planes. Thin 1 cm mudstone beds. No fizz.
21	241.00	234.40	2.40	0.23	2.10	SANDSTONE
						As above. Sharp contact with underlying mudstone.
				1.87		MUDSTONE
						Medium hard. Thin calcite veining throughout. Bedding 7 degrees to horizontal. Fractures at 80 degrees to bedding. Dark grey to black. Basal 0.4 lost could be coal.
22	243.40	245.90	2.50	0.47	1.48	MUDSTONE
						As above. Gradual change to coaly shale and finally coal at base.
TS961104				0.20		COALY SHALE
Ash 73.84%						Hard. Ground up. Roof of #1 seam. Coaly inclusions about 10%. Calcite on fractures. No visible pyrite.
TS961105				0.60		COAL

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-11C
CO-ORDINATES : 5484068.5 N. - 365018.3 E.
ELEVATION : 135.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
Ash	VM	FC	S MJ/kg	FSI		
27.52	30.98	41.50	1.77 24.81	6.0		
						Bright banded with 20% thin dull bands. Pyrite visible on vertical cleat faces. Calcite also present on most vertical cleat faces. Some drilling mud contamination. Thin shaly bands present in middle of this seam.
TS961106				0.07		SHALE
Ash 58.08%						Thin shale band before main #1 seam
TS961107				0.14		COAL
Ash	VM	FC	S MJ/kg	FSI		
21.96	28.88	49.15	.62 27.10	5.0		
						Partly shaly. Pyrite on bedding. Calcite on vertical cleats. Dull and bright bands 50/50. Hard.
23	245.90	247.10	1.20	0.88	1.25	COAL
TS961108						
Ash	VM	FC	S MJ/kg	FSI		
8.46	34.30	57.24	1.04 32.49	8.0		
						.33 missing between this and the last coal run 23. Good coal - clean hard. Bright with 30% dull bands. Pyrite and calcite on vertical cleats. Main #1 seam
				0.37		MUDSTONE
TS961109						FLOOR
						Some carbonaceous matter. Moderately hard. Grades to siltstone.Mudstone interbeds in next run.
24	247.10	250.10	3.00	0.72	2.05	SILTSTONE/MUDSTONE/SANDSTONE
						Interbeds. 20% sandstone/40% siltstone.40% mudstone. Beds irregular but some are 5 to 7 degrees to horizontal.
TS961110				0.58		COALY SHALE
						Hard blocks. Some portions at top and bottom are mainly coal. Polished fracture on bedding planes at 30 degrees to horizontal.. GRades down into mudstone.
				0.75		MUDSTONE
						Moderately hard. Broken up. Brownish dark grey. Thin vertical calcite veins near base.
25	250.10	252.10	2.00	1.25	1.40	MUDSTONE
						As above. Some silty section. Core ground and broken badly. Thin coaly section 5 cm near base with pyrite on fracture planes. GRades down into siltstone over bottom .1m
				0.15		SANDSTONE
						Basal coarse with subangular white grains. Medium brown grey. Hard. Excellent fizz.
26	252.10	253.10	1.00	0.86	0.86	SANDSTONE
						Some coarse sandstone. Large 1 cm thick calcite filled vertical fractures and many smaller ones. Medium grey brown., Excellent fizz
27	253.10	256.10	3.00		2.91	SANDSTONE/SILTSTONE/MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-11C
CO-ORDINATES : 5484068.5 N. - 365018.3 E.
ELEVATION : 135.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

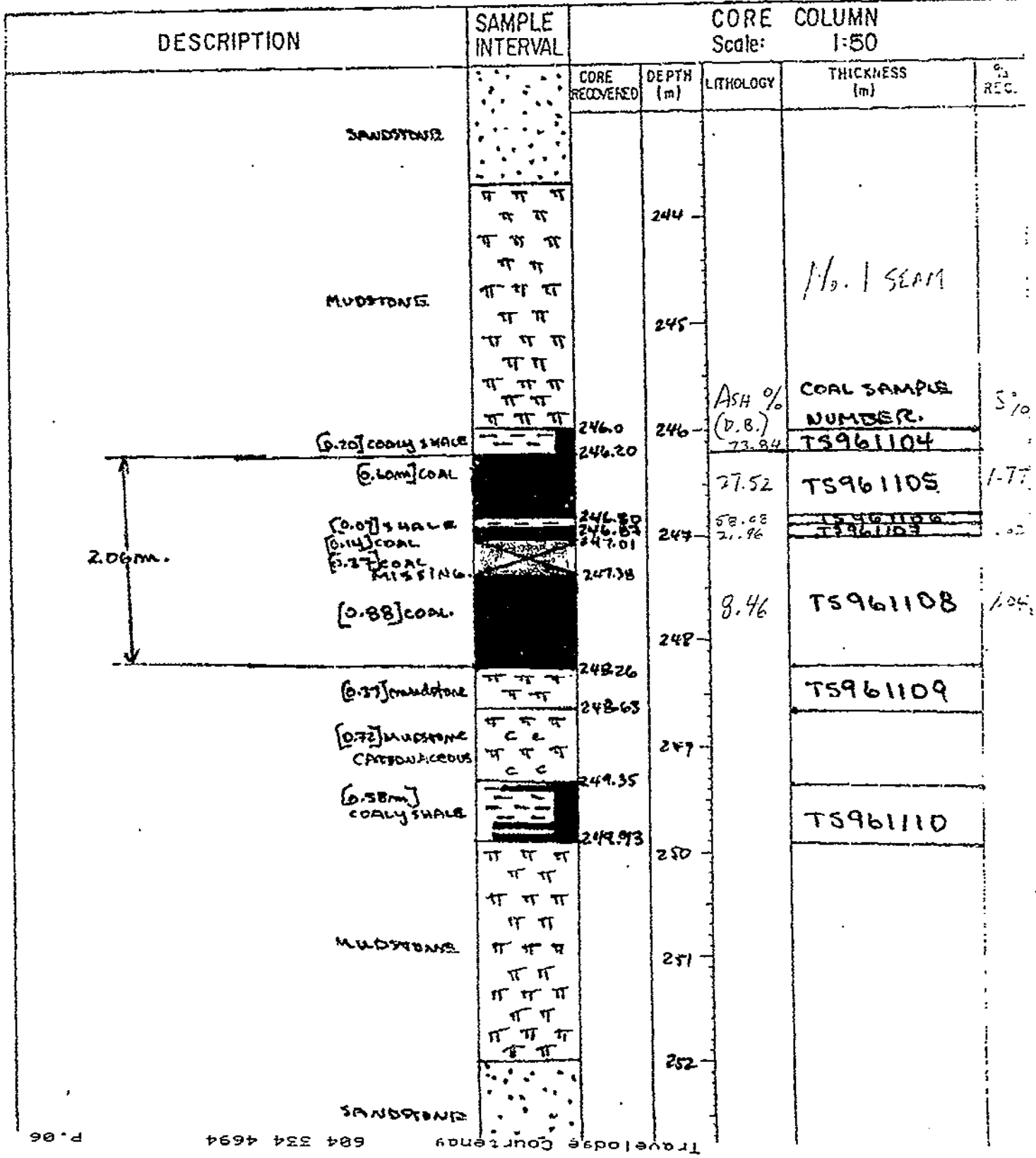
	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle. Alteration, Wetness, Contamination
						Interbedded. Vertical fractures. Mudstone 30%/Sandstone 20%/ Siltstone 50%. Mudstone softer and eroded in core. Siltstone hard and dark grey and sandstone is coarse medium grey brown. Bedding at 10 degrees to horizontal. No fizz.
28	256.10	257.10	1.00	0.60	0.60	SANDSTONE/SILTSTONE/MUDSTONE
						As above.

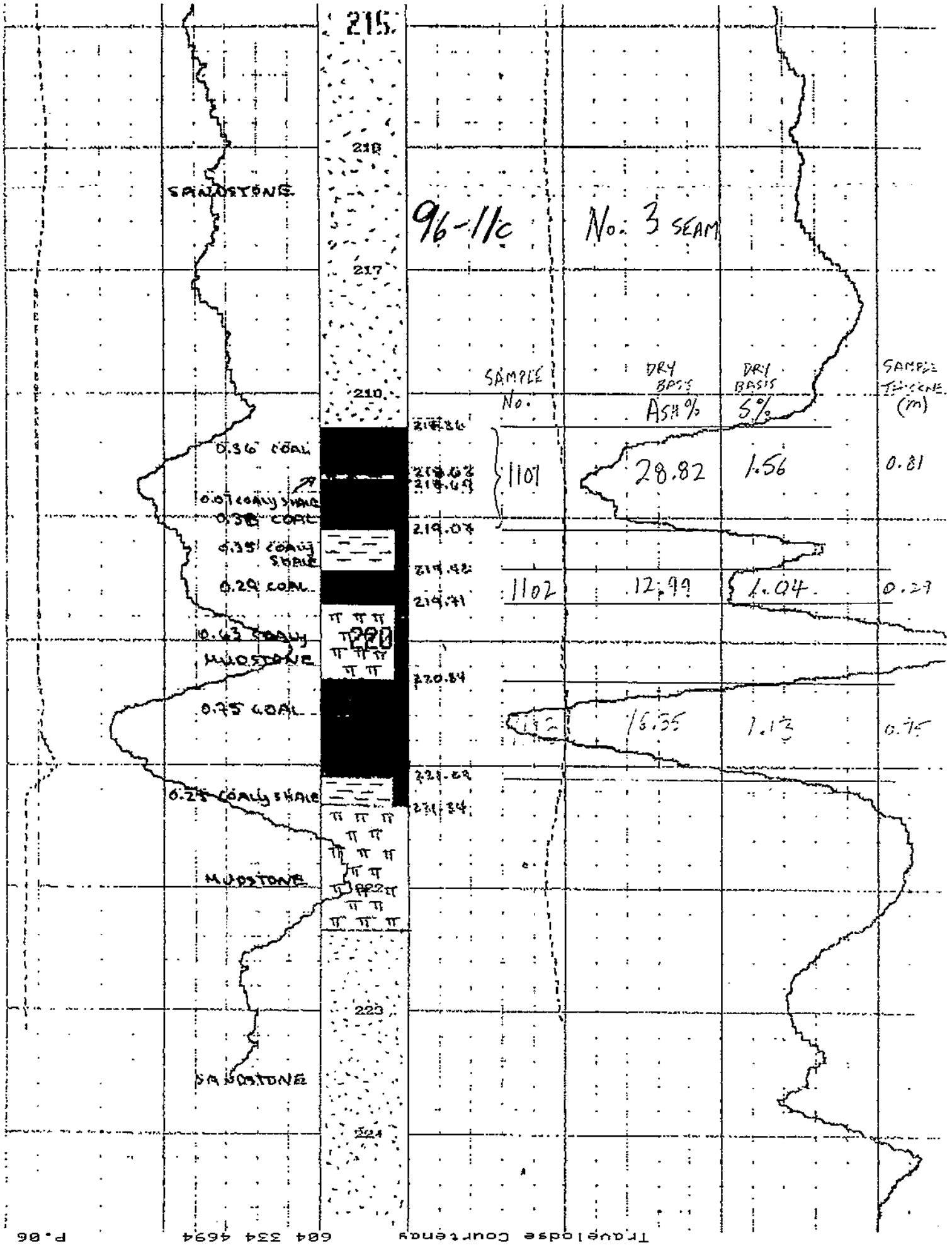
QUINSAM COAL CORPORATION

Hole Number: TS 96 11C — #1 SEAM.

Location: _____ Elevation: _____

Page ___ of ___




215
218
SANDSTONE
217
96-11c
No. 3 SEAM
210
SAMPLE No.
DRY BASIS Ash %
DRY BASIS S%
SAMPLE THICKNESS (m)
219.36
0.36 COAL
1101
28.82
1.56
0.81
0.07 COALY SHALE
0.38 COAL
219.07
0.35 COALY SHALE
219.42
0.29 COAL
219.71
1102
12.99
1.04
0.29
0.43 COALY MUDSTONE
220
220.84
0.75 COAL
16.35
1.13
0.75
221.59
0.25 COALY SHALE
221.84
MUDSTONE
222
223
SANDSTONE
224

QUINSAM COAL CORPORATION

Hole Number: TS 96-11C #1.3? SEAM

Location: Elevation:

Page ___ of ___

DESCRIPTION | SAMPLE INTERVAL | CORE COLUMN Scale: 1:50

CORE RECOVERED | DEPTH (m) | LITHOLOGY | THICKNESS (m)

SANDSTONE

SEAM Top 218.26 METRES

218.26

[0.36m] COAL

218.62

[0.07] COALY SHALE

218.69

[0.28m] COAL

219.07

[0.35] COALY SHALE

219.42

[0.29m] COAL

219.71

2.83m

[0.63] COALY MUDSTONE

220.34

[0.75] COAL

221.09

0.25m COALY SHALE

221.34

MUDSTONE

SANDSTONE

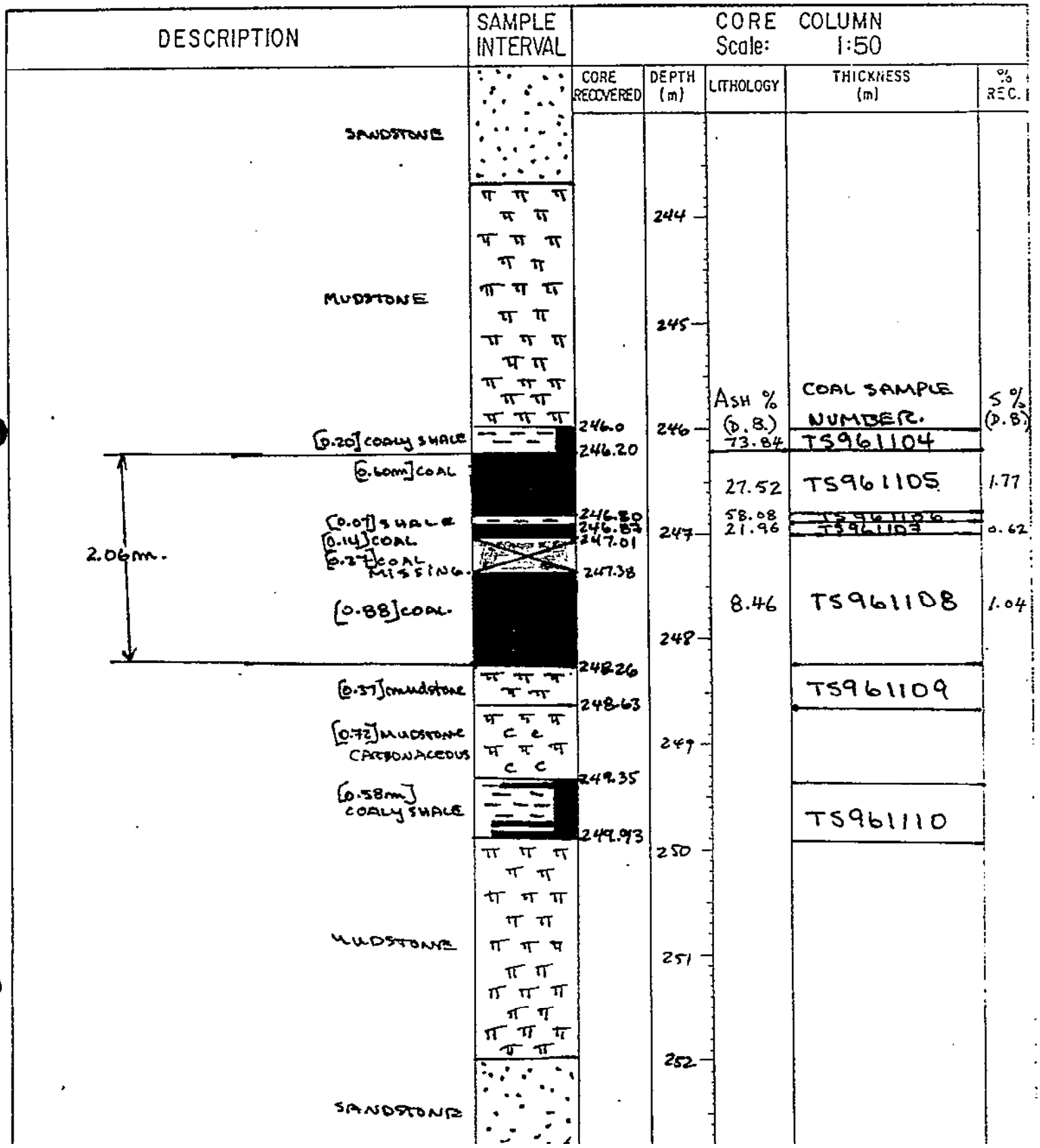
216 217 218 219 220 221 222 223 224

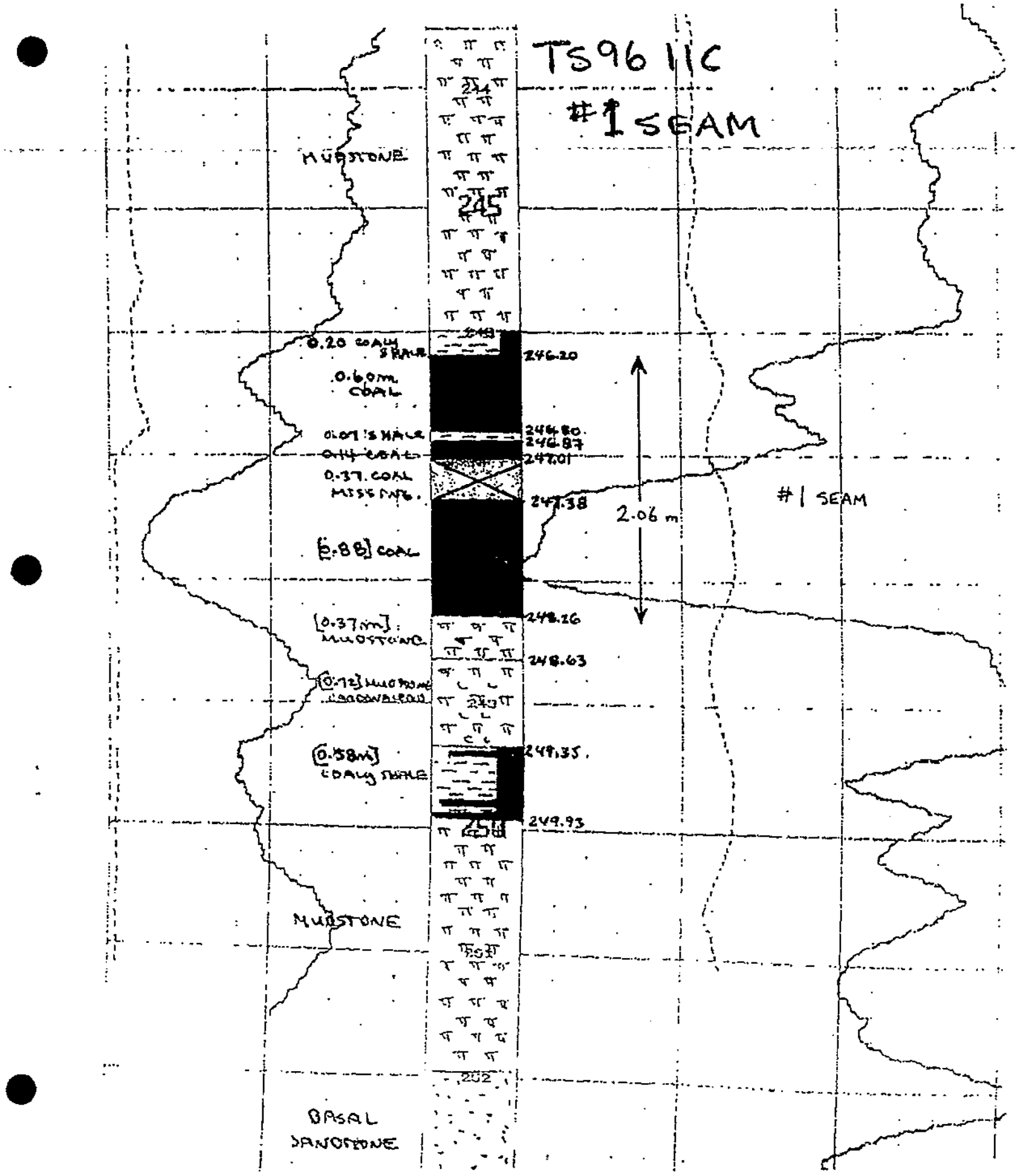
QUINSAM COAL CORPORATION

Hole Number: TS 96 11 C — #1 SEAM.

Location: TSABLE RIVER — Elevation:

Page ___ of ___



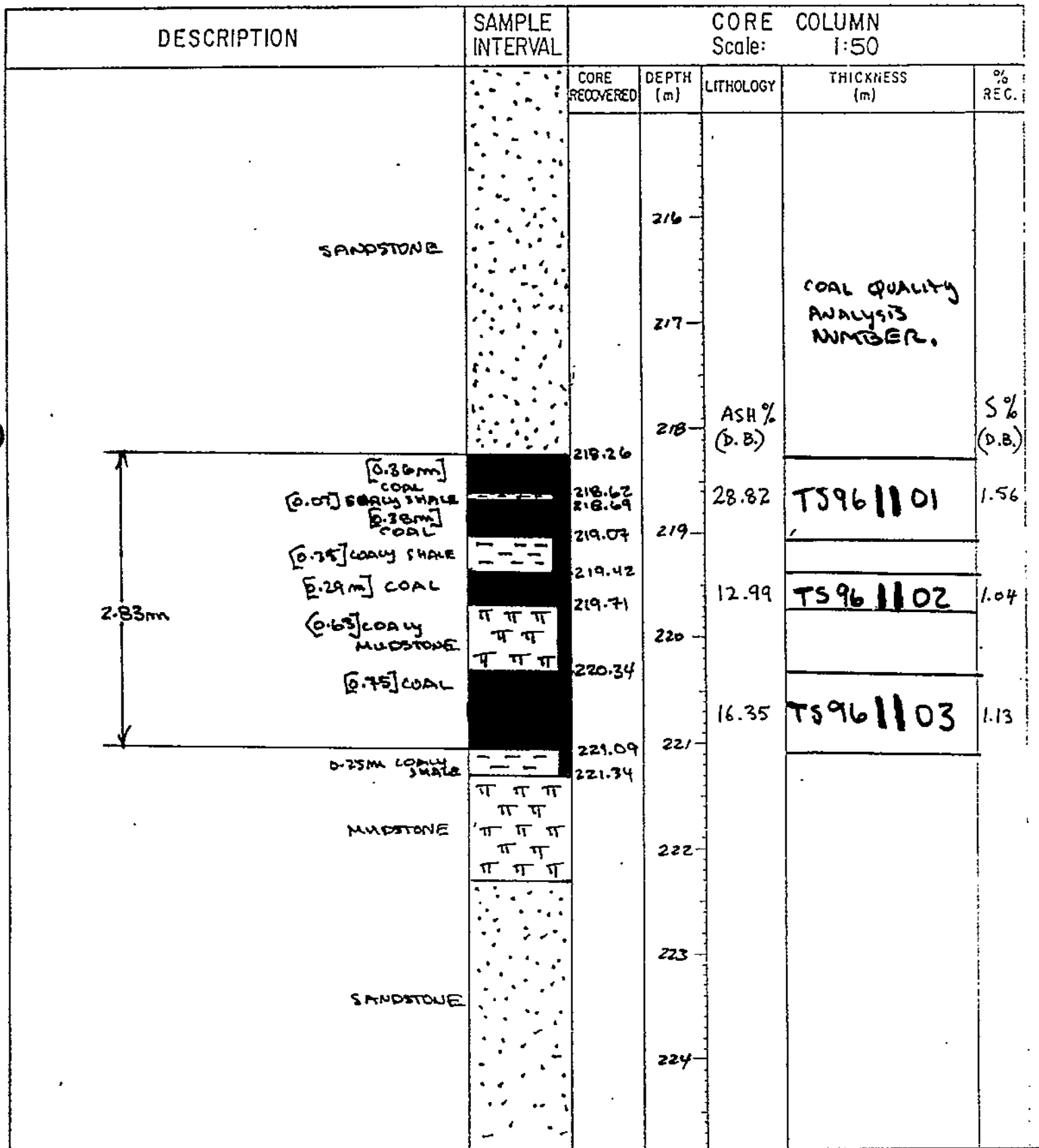

TS96 11C
#1 SEAM
MUDSTONE
245
0.20 COAL SHALE
246.20
0.60m COAL
246.80
0.07 SHALE
246.87
COAL
247.01
0.37 COAL
MISSING
247.38
2.06 m
#1 SEAM
[0.88] COAL
[0.37m] MUDSTONE
248.26
248.63
[0.12] MUDSTONE LAMINATED
[0.58m] COAL & SHALE
249.35
249.93
MUDSTONE
BASAL SANDSTONE

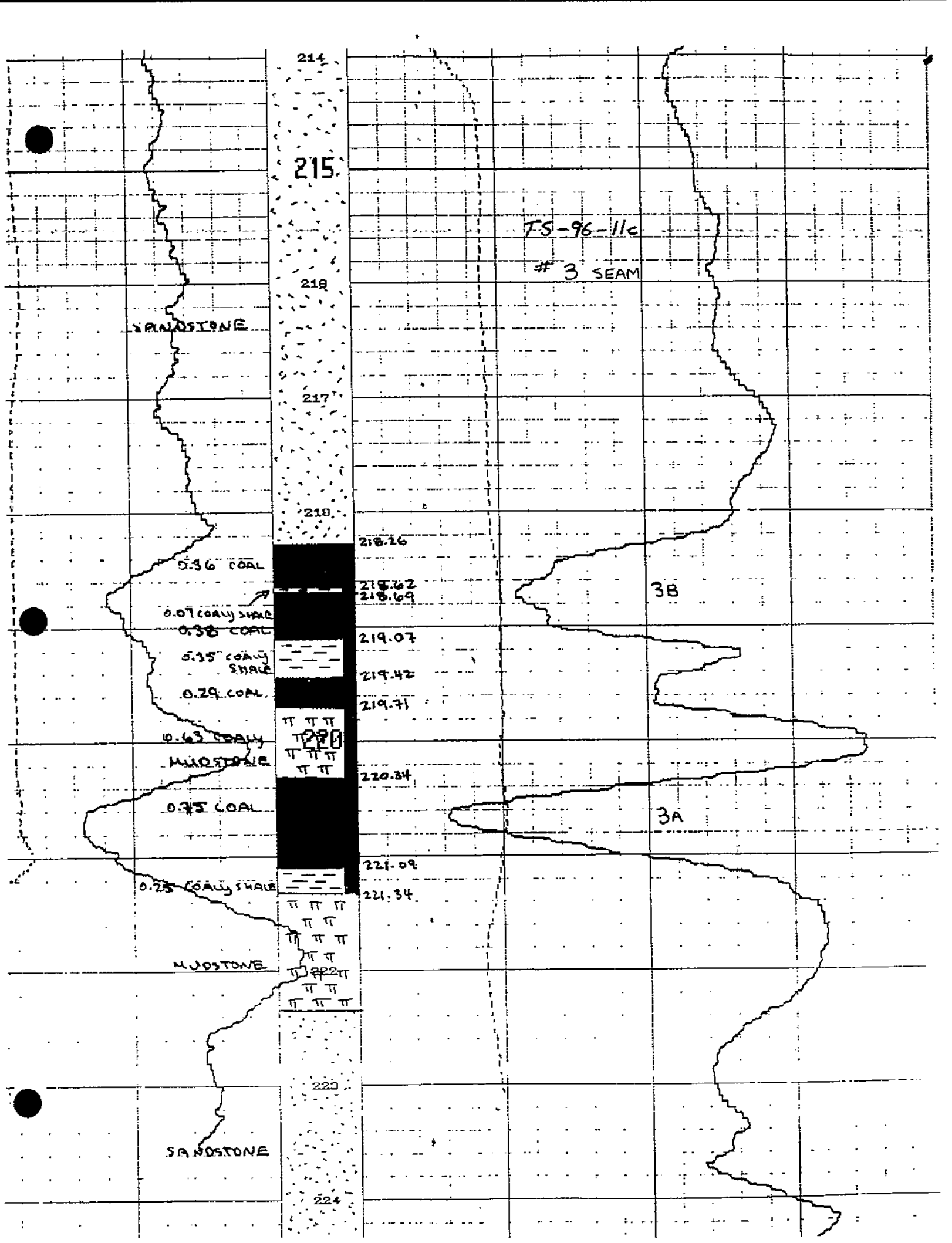
QUINSAM COAL CORPORATION

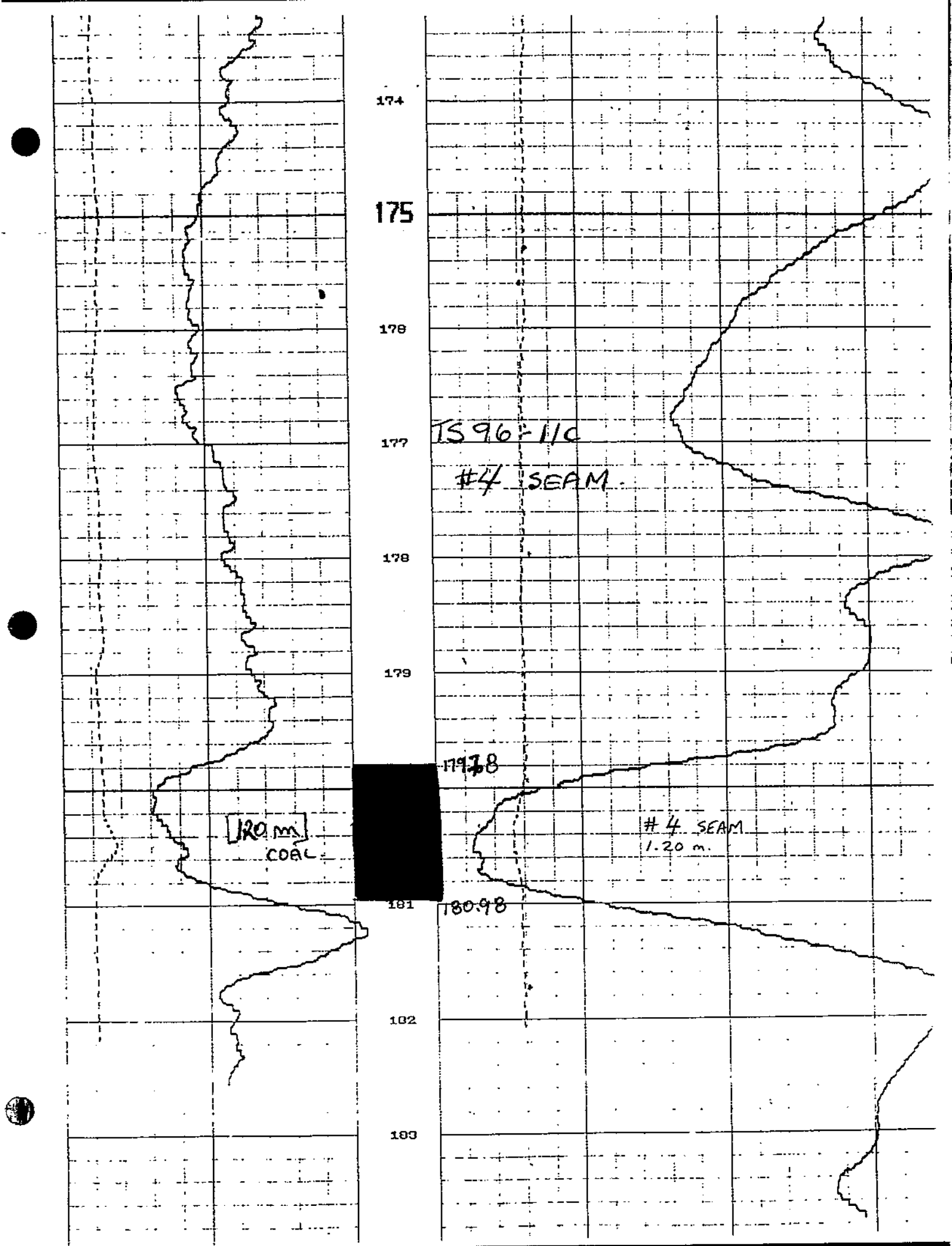
Hole Number: TS 96-11C — #3 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___




214
215
218
217
216
TS-96-11c
3 SEAM
SANDSTONE
218.26
0.56 COAL
218.62
218.69
0.07 COALY SHALE
0.38 COAL
219.07
0.35 COALY SHALE
219.42
0.29 COAL
219.71
0.63 COALY MUDSTONE
220
220.34
0.75 COAL
3B
3A
221.09
0.25 COALY SHALE
221.34
MUDSTONE
220
SANDSTONE
224


174
175
178
177
178
179
180
181
182
183
TS96-11c
#4 SEAM.
179.78
#4 SEAM
1.20 m.
180.98
1.20 m.
COAL

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-12C
CO-ORDINATES : 5483541.1 N. - 364615.1 E.
ELEVATION : 191.5 m
DATE DRILLED: July 13, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	53.3	Sand & Gravel overburden
53.3	81.2	Sandstone
81.2	82.0	COAL, No. 4 Seam
82.0	87.3	Sandstone, water bearing
87.3	124.0	Sandstone
124.0	125.0	COAL, No. 3 Seam
125.0	148.3	Sandstone, thin coal at base
148.3	154.0	Sandstone, started coring at 150
154.0	160.3	Mudstone; some coaly sections
160.3	163.4	COAL; No. 1 Seam
163.4	168.0	Mudstone, silty
168.0	177.1	Sandstone, basal
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-12C
CO-ORDINATES : 5483541.1 N. - 364615.1 E.
ELEVATION : 191.5 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 15 degrees from horizontal

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	150.00	153.00	3.00	3.00	3.00	SANDSTONE
						Fine grained. Light to medium grey. Fractured in basal 0.8m. Fractures at 85 degrees and 60 degrees to horizontal. More silty with some silty bands 2m from top. Calcite in fractures and fracture planes. Bedding at 15 degrees to horizontal. Very competent in upper 2 meters and less so for basal meter. Very low fizz visible.
2	153.00	156.00	3.00	0.98	2.78	SANDSTONE
						Fine to medium grained. Hard. Calcite filled fractures at 65 & 80 degrees to horizontal. Good contact with upper and lower cores. Good fizz in top half and low to nil in bottom half. Medium grey. Pyrite casts in basal portion up to 2 cm. Thick and 4 cm long.
				1.80		MUDSTONE
						Bedding at 15 degrees. Quite coaly at 153.2 meters depth for .17 meters and at 154.92 meter for .13 meters with some coaly lenses up to 2 cm throughout the basal meter. Mudstone is medium hard and the coaly areas are broken up.
3	156.00	157.00	1.00	0.92	0.92	MUDSTONE
						As above. Fewer and thinner 1 cm coaly bands and lenses. Calcite on bedding planes. Polished slip faces on bedding planes. Bedding at 15 degrees fro horizontal. Dark grey.
4	157.00	159.50	2.50	2.08	2.08	MUDSTONE
						As above. Fractures at 55 & 80 degrees to horizontal. Bedding at 15-20 degrees to horizontal. Thin calcite veins throughout. May be coal missing., although next core has +.68 so they recovered part of the .92m
5	159.50	161.50	2.00	1.78	2.68	MUDSTONE
						Fracture 45 degrees. Calcite on fracture planes. Fairly hard. Dark grey.
TS961201				0.30		COALY SHALE
						Coal bands. Slickensides and polishing on 15 degree bedding planes. 10 degrees coaly to 60 degrees near base. Roof o#1 seam.
Ash 59.87 %						
TS961202				0.60		COAL
Ash	VM	FC	S MJ/kg	FSI		
21.71	32.44	45.86	.73 27.04	7.0		
						#1 Seam. Clean and hard. Shiny with few dull bands. No visible pyrite. Calcite on cleats. More calcite towards base.
6	161.50	163.10	1.60	0.40	1.55	COAL
						As above
TS961203				0.29		COALY SHALE
Ash 60.62%						More coaly at top and bottom and mudstone in middle.
TS961204				0.86		COAL
Ash	VM	FC	S MJ/kg	FSI		
1.01	28.25	40.74	1.05 23.44	5.0		
						Visible pyrite. Hard blocky and bright. Some may be missing. Shaly near base.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-12C
CO-ORDINATES : 5483541.1 N. - 364615.1 E.
ELEVATION : 191.5 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 15 degrees from horizontal

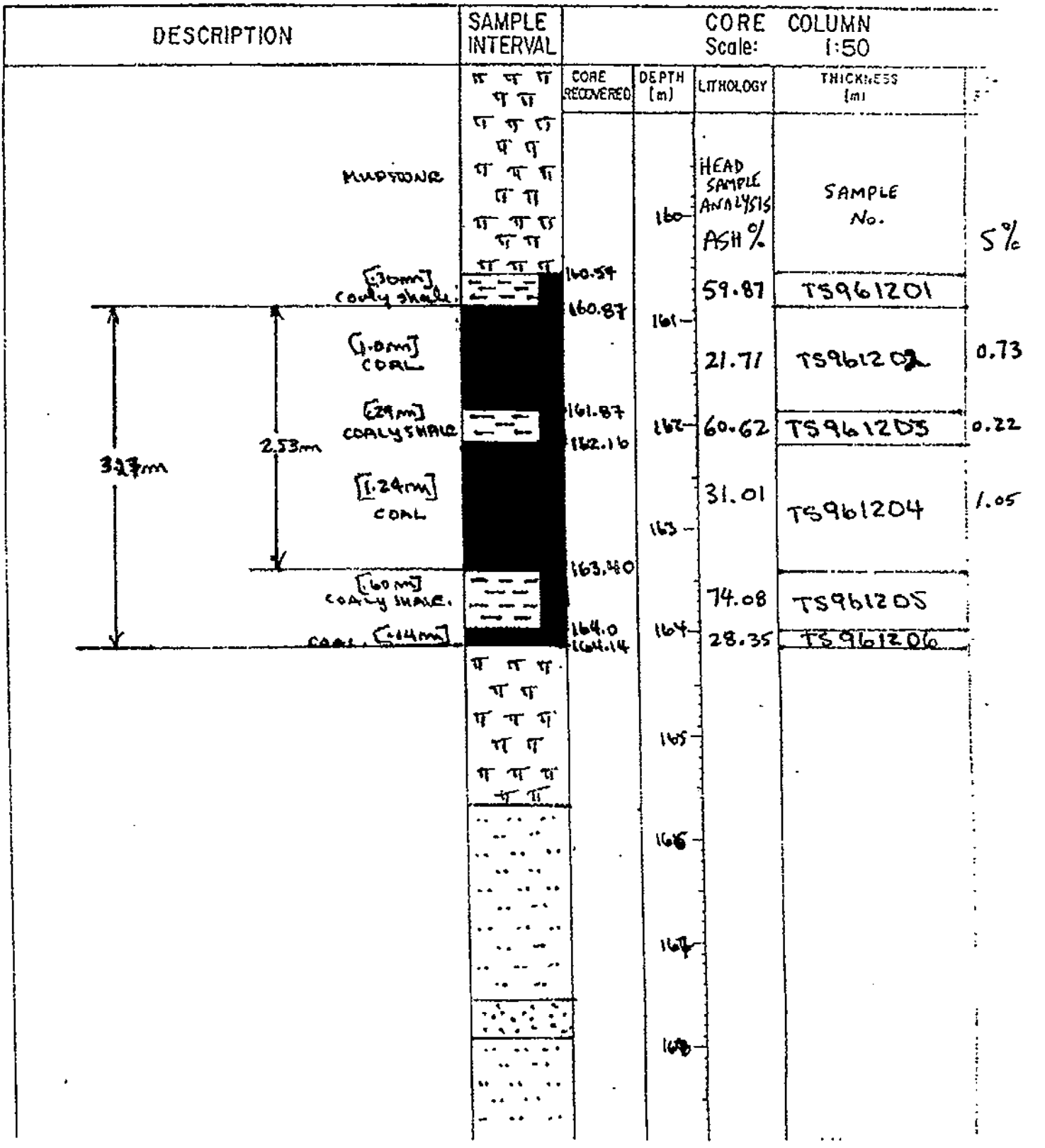
	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
7	163.10	166.10	3.00	0.34	2.50	COAL
TS961204						As above
TS961205				0.60		COALY SHALE
Ash 74.08%						More coaly at top and bottom. Footwall
TS961206				0.24		COAL
Ash 28.35%						Thin stringer. Footwall. Calcite on fractures
				1.31		MUDSTONE
						Bedding at 15 degrees from horizontal. Thin calcite and carbonaceous banding near base.
8	166.10	168.60	2.50	1.91	2.68	SILTSTONE
						Top of core is polished/slickensided fracture at 40 degrees to horizontal. One 3 cm shaly coal band at .76 meters form the top. Siltstone is had, medium grey with a gradual basal contact grading into the coarse grained sandstone found below the #1 seam. No fizz.
				0.29		SANDSTONE
						Basal sandstone. Coarse grained. Subrounded white grains. Green chert in matrix. No fizz. Medium brown grey colour. No fizz.
				0.48		SILTSTONE
						Same as bed above. Thinly banded carbonaceous materials in top 10 cm. Hard. No fizz.
9	168.60	171.10	2.50	0.78	2.59	SILTSTONE
						As above. Thick coaly fragments as inclusions. Bedding at 14 degrees to horizontal. GRades down into coarse grained sandstone.
				0.61		SANDSTONE
						Coarse grained. White subangular to subrounded grains. Same basal sandstone. Medium brown grey. Chert present. Carbonaceous at bottom contact which is sharp.
				1.20		SILTSTONE
						Muddy in top 0.4m. Hard through silty section. Bedding at 15 degrees to horizontal. Grades down into coarse sandstone again.
10	171.10	174.10	3.00	0.27	3.02	SILTSTONE
						As above
				2.75		SANDSTONE
						Coarse basal unit. Finer grained in top .3m, some .1m silty sections. Bits of carbonaceous fragments throughout. Low to moderate fizz.
11	174.10	177.10	3.00	0.45	3.02	SANDSTONE
						As above
				0.48		SILTSTONE
						As above. No fizz
						SANDSTONE
				2.09		Same basal unit. Good to excellent fizz
						END OF CORE AND HOLE

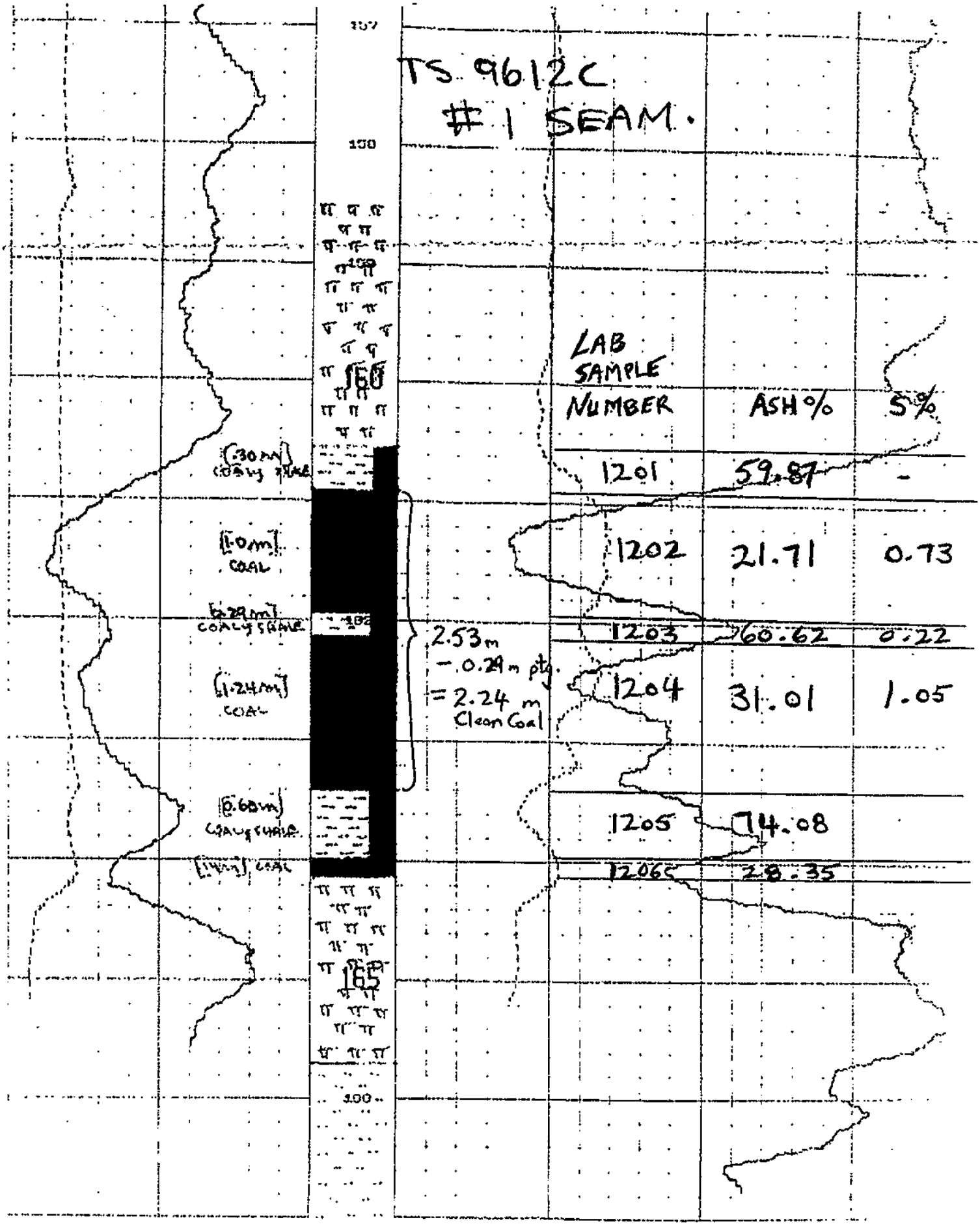
QUINSAM COAL CORPORATION

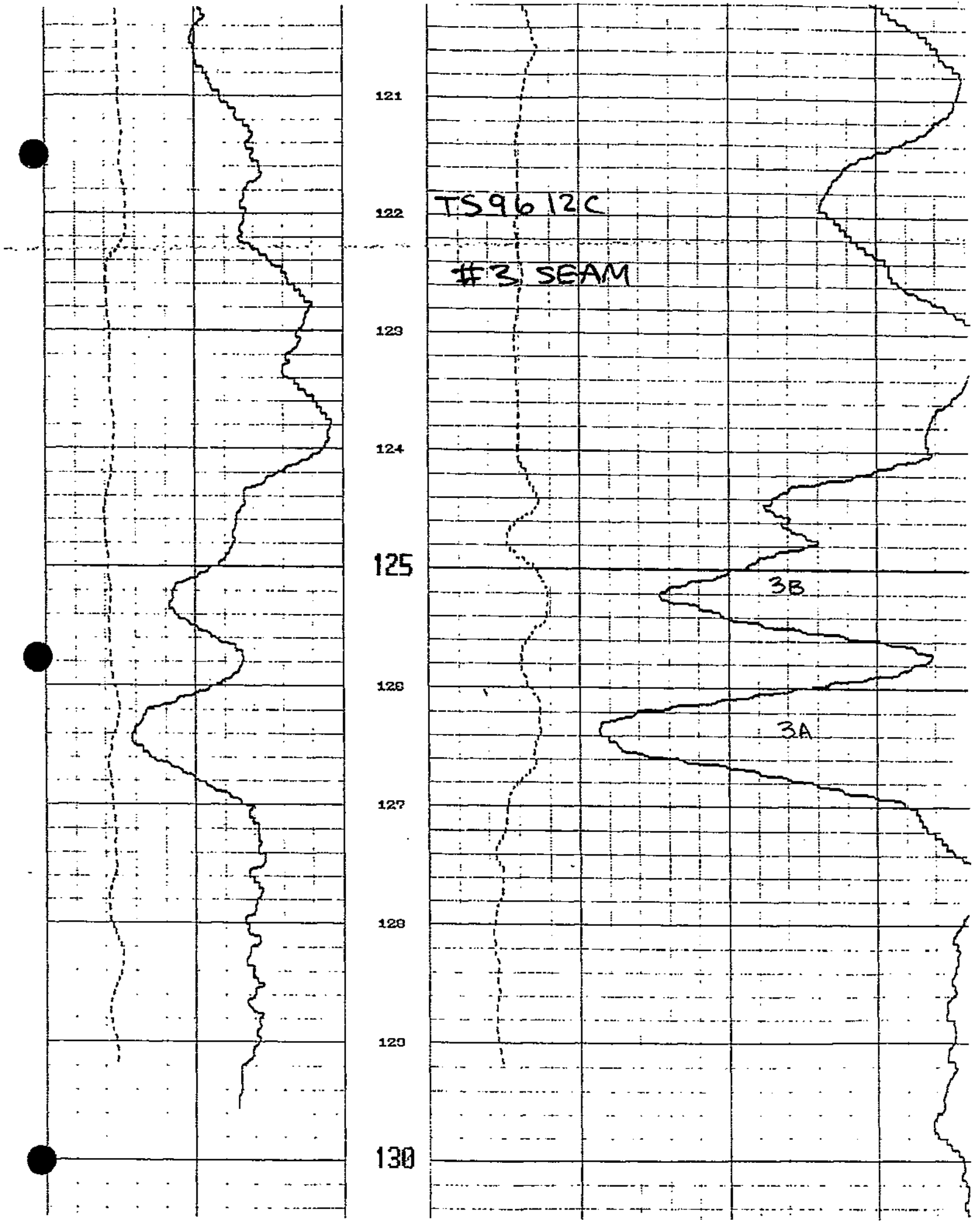
Hole Number: TS9612C #1 seam

Location: TSABLE RIVER Elevation:

Page ___ of ___




TS 9612C
#1 SEAM.
160
165
(.30m) COALY SHALE
(1.0m) COAL
(.29m) COALY SHALE
(1.24m) COAL
(.60m) COALY SHALE
(1.1m) COAL
2.53m
- 0.29m ptg.
= 2.24m Clean Coal
LAB SAMPLE NUMBER
ASH %
S%
1201 59.87 -
1202 21.71 0.73
1203 60.62 0.22
1204 31.01 1.05
1205 74.08
1206 28.35


121
122
123
124
125
126
127
128
129
130
TS96 12C
#3 SEAM
3B
3A

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-13C
CO-ORDINATES : 5485684.0 N. - 363785.0 E.
ELEVATION : 112.7 m
DATE DRILLED: October 6, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	5.5	Glacial till overburden
5.5	112.0	Mudstone
112.0	124.0	Sandstone
124.0	148.6	Mudstone
148.6	163.0	Sandstone
163.0	163.5	COAL
163.5	187.0	Sandstone, thin coal at base
187.0	208.0	Sandstone, thin coal at base
208.0	215.7	Mudstone
215.7	228.0	Sandstone, started coring at 224
228.0	230.7	COAL, No. 3 Seam
230.7	233.3	Mudstone, with coal bands
233.3	238.8	Mudstone, with thin coal
238.8	254.1	Sandstone; medium grey; hard
254.1	256.6	Sandstone/Mudstone interbeds
256.6	261.0	Mudstone
261.0	263.5	COAL, No. 1 Seam
263.5	264.5	Mudstone
264.5	269.0	Sandstone, white, basal
269.0	271.1	Mudstone
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-13C
CO-ORDINATES : 5485684.0 N. - 363785.0 E.
ELEVATION : 112.7 m
LOGGED BY: S. GARDNER
COMMENTS: Depth not corrected. No E-Log

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
1	224.00	227.00	3.00	2.92	2.92	SANDSTONE
						Medium grey. Medium grained. Lithic. Poorly cemented. Most sections weak to moderate effervescence (HCl). Highly broken. No discernible bedding. Numerous slickensided fractures at 55 degrees and 45 degrees to horizontal. Faulted section
2	227.00	229.70	2.70		1.95	
Lost core top of run				0.97		SANDSTONE
						Medium grey. Medium grained. Harder and more well cemented than previous. Thin carbonaceous wisps near base (bedding on these indicated at 22 degrees to horizontal; one 1 break on this section at prominent carbonaceous lenses - minor slippage on this break. (bedding plane slippage). No fizz.
				0.95		SANDSTONE
						As above by numerous high angle fractures (slickensided). Abundant high angle slump features - carby mudstone fracture fill on these (coaly); bottom section extremely broken and mixed in box. No fizz.
				0.03		COAL
						#3B Seam Top. Lost core. Highly broken and mixed. Slickensided pieces.
3	229.70	230.70	1.00		0.40	Lost core at top - Coal Section
				0.40		COAL
						Broken. Bright with minor dull sections (especially in upper part). Bedding indicated at 26 degrees to horizontal. Abundant slickensided bedding plane fracture.
4	230.70	233.30	2.60		1.40	Some lost core at top - also at top of coal
				0.75		MUDSTONE
						Medium grey brown. Prominent bedding plane fractures (slickensides) throughout on intervals of a few cm. One high angle fault plane with minor calcite in-fill (slickensided). Bottom contact with coal highly slickensided. Thin fine sandstone interbeds in upper part of section.
				0.19		COAL
						#3A Seam - lost core at top. Clean and bright but some minor dull sections. Broken and fractured but complete in box. Visible pyrite.
				0.16		COAL
						Wet. Crushed. Dull with bright blocky sections. Muddy at top (thin mudstone 1 cm). Lost core? (minor)
				0.22		COAL
						Harder (only 1 break) Bright. Blocky. Clean. Minor slippage on break.
				0.05		COAL
						Lost core. Completely crushed and broken in box. Slickensided surfaces.
				0.03		MUDSTONE
						Medium brown. Soft. Carbonaceous.
5	233.30	234.80	1.50		1.02	Lost core at top and bottom

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-13C
CO-ORDINATES : 5485684.0 N. - 363785.0 E.
ELEVATION : 112.7 m
LOGGED BY: S. GARDNER
COMMENTS: Depth not corrected. No E-Log

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
				0.04		COAL
						Completely broken and disturbed. (Lost core)
				0.98		MUDSTONE
						Medium brown. Silty in middle. Highly broken and fractured (slickensided) fractures throughout. Carbonaceous and coaly at base. Thin coal laminae throughout (occasional)
6	234.80	235.80	1.00		0.75	
				0.43		MUDSTONE
						Medium to dark brown. Carbonaceous. Highly broken. Abundant slicks
				0.11		SILTSTONE
						Buff. Moderate fizz.
				0.21		MUDSTONE
						Carbonaceous. Highly broken and slickensided. Prominent slip plane at 30 degrees to horizontal
7	235.80	238.80	3.00		2.31	Lost core at top; and base of coal
				0.61		MUDSTONE
						Dark grey to black. Highly carbonaceous. Highly fractured and broken. Abundant minor slippage throughout.
				0.12		COAL
						Bright and dull banded. Abundant bedding plane slippage. Bottom contacted is minor fault plane at 30 degrees to horizontal (slickensided)
				0.20		COALY MUDSTONE
						Black. Streaks brown. Badly broken and fractured.
				1.38		MUDSTONE
						Brown to grey; no fizz. Minor buff calcareous inclusion near base
						(good fizz), Coarsening downward. Fairly hard and competent. Numerous thin muddy interbeds exhibiting cross bedding. Generally bedding appears to be approx. 10 degrees to horizontal. Numerous calcite stringers (fracture fills) showing minor horizontal and high angle minor slippage.
8	238.80	241.80	3.00		2.64	SANDSTONE
						Medium grey.fine to medium grained (coarsening downward). Fairly hard and competent. Numerous thin muddy interbeds exhibiting cross bedding. Generally bedding appears to be approx. 10 degrees to horizontal. Numerous calcite stringers (fracture fills) showing minor horizontal and high angle minor slippage.
				2.64		
9	241.30	244.30	3.00		3.02	
				3.02		SANDSTONE
						Medium grey. Medium to coarse grained (coarsening downward). Hard. Competent. Abundant thin coaly-carbonaceous streaks and laminae. Bedding at 10 degrees to horizontal. Mild fizz. Occasional near vertical calcite fracture fills (very thin). Sparse calcite bedding plane fracture fills.
10	244.30	247.30	3.00		2.20	Lost core at top - thin coal?
				2.20		TOP CONTACT SLICKENSIDED COALY SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-13C
CO-ORDINATES : 5485684.0 N. - 363785.0 E.
ELEVATION : 112.7 m
LOGGED BY: S. GARDNER
COMMENTS: Depth not corrected. No E-Log

Core No.	CORE FOOTAGE'S DRILLED From	To	Total	RECOVERED Section	Total	GEOLOGICAL DESCRIPTION Lithology, Colour,Size,Texture. Hardness, Shearing, Contacts, Bedding Angle. Alteration. Wetness ,Contamination
						Same as above (med-coarse). Hard. Competent. Three prominent fracture planes at 15-22 degrees to horizontal indicating minor slippage.
11	247.30	249.50	2.20		3.02	
				3.02		SANDSTONE.
						Same as above. Bedding at 8 degrees to horizontal. Highly broken near base.
12	249.50	252.50	3.00	2.33	2.33	SANDSTONE
						Same as above, but abundant mudstone interbeds in lower portion. Bedding altitude is 5 degrees to horizontal on these. Some steeper crossbedding evident.
13	252.50	254.10	1.60	2.20	2.20	SANDSTONE
						Same as above. Hard. Uniform last 12 cm interspersed with thin mudstone nearly horizontal interbeds.
14	254.10	257.10	3.00		3.00	
				1.31		SANDSTONE & MUDSTONE INTERBEDS
						0-20 degrees to horizontal crossbedding. Broken sections. Mudstone carbonaceous in places. Bedding becomes steeper (20 degrees) at base. Some slickensides (bedding plane slippage)
				1.27		MUDSTONE/SILTSTONE INTERBEDS
						Finely laminated. Minor sandstone laminae. Large pyretic lense (3 cm) at base
				0.42		MUDSTONE
						Medium grey to black. Highly carbonaceous at top. Pyritic. Thin silty laminae throughout. Bedding at 20 degrees to horizontal.
15	257.10	260.10	3.00		3.00	
				0.46		MUDSTONE
						fizz.
				0.30		CARBONACEOUS MUDSTONE
						Black. Coaly sections. Sandy interbeds. Mild fizz.
				0.67		MUDSTONE
						Medium brown. Harder. Silty. More uniform but some thin sandy sections.
				1.00		SILTSTONE
						Medium brownish grey. Sandy sections fairly hard. Calcite fracture fill on 1 bedding plane fracture (minor). Minor slippage indicate on random low angle joint planes - bottom contact is slip face at 15 degrees to horizontal (slickensided)
				0.57		MUDSTONE
						Medium brown streak. Silty. fairly competent but one prominent high angle slip face (70 degrees to horizontal) with slickensided surface. **Note: Lost core top of seam contact**
16	260.10	263.10	3.00		2.43	Logged within 15 minutes of core retrieval
				0.93		MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-13C
CO-ORDINATES : 5485684.0 N. - 363785.0 E.
ELEVATION : 112.7 m
LOGGED BY: S. GARDNER
COMMENTS: Depth not corrected. No E-Log

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						Dark brown. Gassy. Numerous slickensided fracture planes, both vertical and horizontal. occasional thin calcite stringers. Thin coaly lenses. Calcite sheeting on slickensided fracture planes. Dominant slickensided fracture between 20 and 30 degres to horizontal. Bottom contact with coal slickensided and irregular
TS961301				0.25		COAL: #1 SEAM: Lost core at top.
						Dominantly bright and clean. Gassy. Abundant pyrite on bedding. Bedding at 20 degrees to horizontal. Thin calcite stringer (high angle). Dull section near base.
TS961301				0.03		COAL
						Softer. Dull black. Powdery.
TS961301				0.38		COAL
						Note: All this seam gassy
Ash	VM	FC	S MJ/kg	FSI		
24.10	31.21	44.69	.85 26.00	7.5		
						Clean and bright. Bedding angle same as above. Thin dull laminae throughout. Abundant pyrite. At base a 3 cm pyrite lense (very prominent). One slickensided fracture at 5 degrees to horizontal (much shallower than indicated bedding).
TS961301				0.42		COAL
						Clean bright with thin dull laminae throughout. Hard and unbroken abundant pyrite.
TS961301				0.01		COAL
						Soft. Powdery. Muddy
TS961301				0.22		COAL
						Bright and dull banded but still fairly clean. Softer. Broken at base
TS961301				0.03		MUDSTONE
						Medium brown. Carbonaceous. Soft. Approx. 70% ash
TS961301				0.10		COAL
						Dirty. Thin clean bands interspersed with mudstone
TS961301				0.06		MUDSTONE
						Medium brown. Soft. Carbonaceous. Approx. 70% ash. Coal lenses at bottom contact
17	263.10	266.10	3.00		2.20	**NOTE: Lost core at top**
TS961301				0.09		COAL
End of Sample 1301						Clean, unbroken. Top and bottom contacts both slickensided and on bedding at 20 degrees to horizontal. Sharp contact with mudstone floor
				0.74		MUDSTONE
						Streaks medium brown. Highly disturbed and broken with prominent high angle slickensided fracture in middle. Rubbly at base.
				0.29		MUDSTONE
						Medium grey. Silty. One slickensided fracture in middle. faulted contact at base (rubbly)
				1.08		SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-13C
CO-ORDINATES : 5485684.0 N. - 363785.0 E.
ELEVATION : 112.7 m
LOGGED BY: S. GARDNER
COMMENTS: Depth not corrected. No E-Log

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						Medium grey. medium grained. Variable bedding. Abundant dark grey mudsonte laminae and coaly lenses. Upper contact is prominent high angle fault plane.
18	266.10	268.30	2.20		1.98	
				1.07		SANDSTONE
						White. Gritty. Basal sandstone. Very hard.
				0.91		MUDSTONE
						Dark grey. Highly fractured. Abundant slicks
19	268.30	271.10	2.80	0.47	2.80	SANDSTONE: Becoming mudstone at base
				2.33		MUDSTONE
						Prominent variable angle slickensided fractures

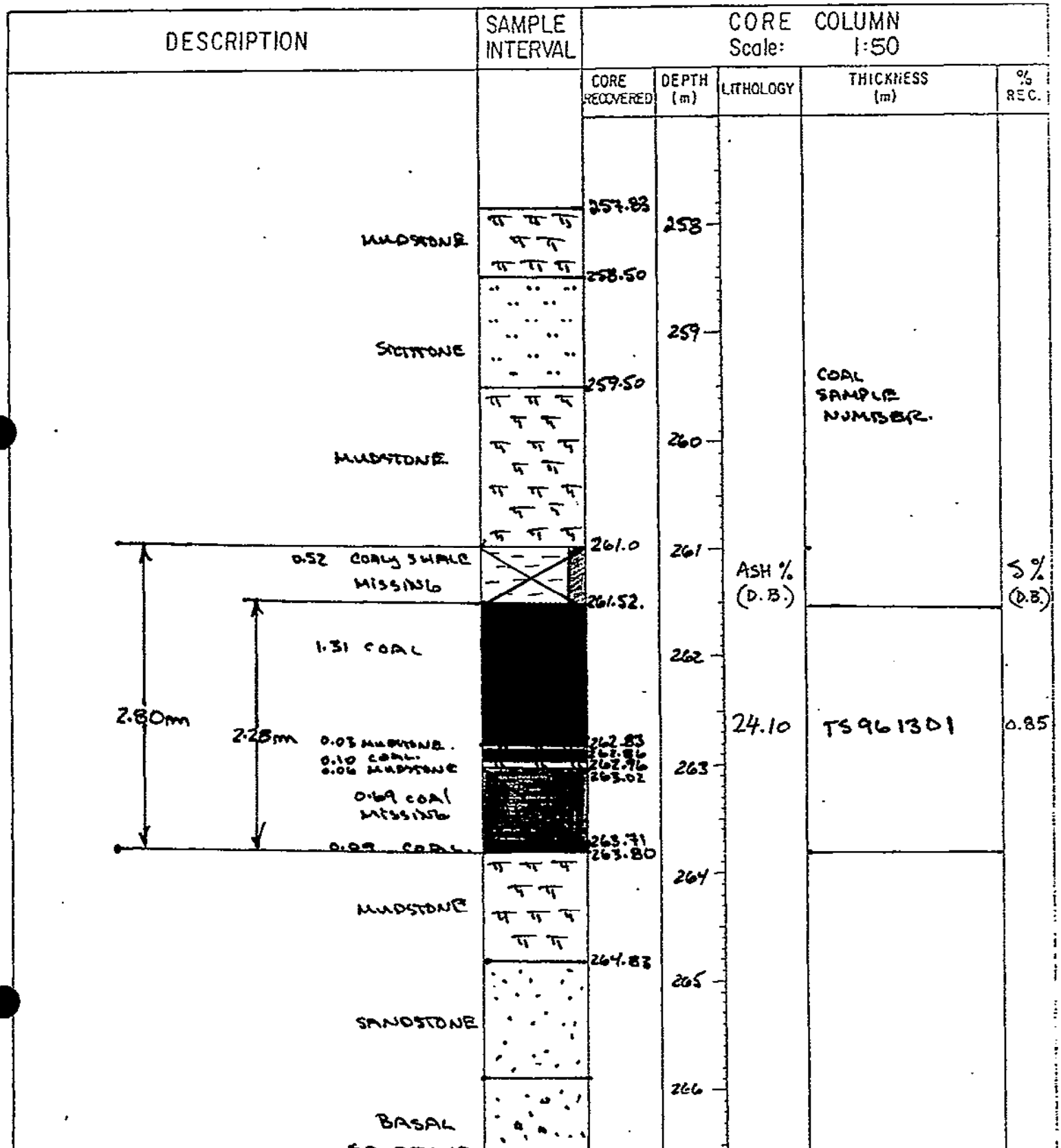
: DEPTHS FROM E-LOG.

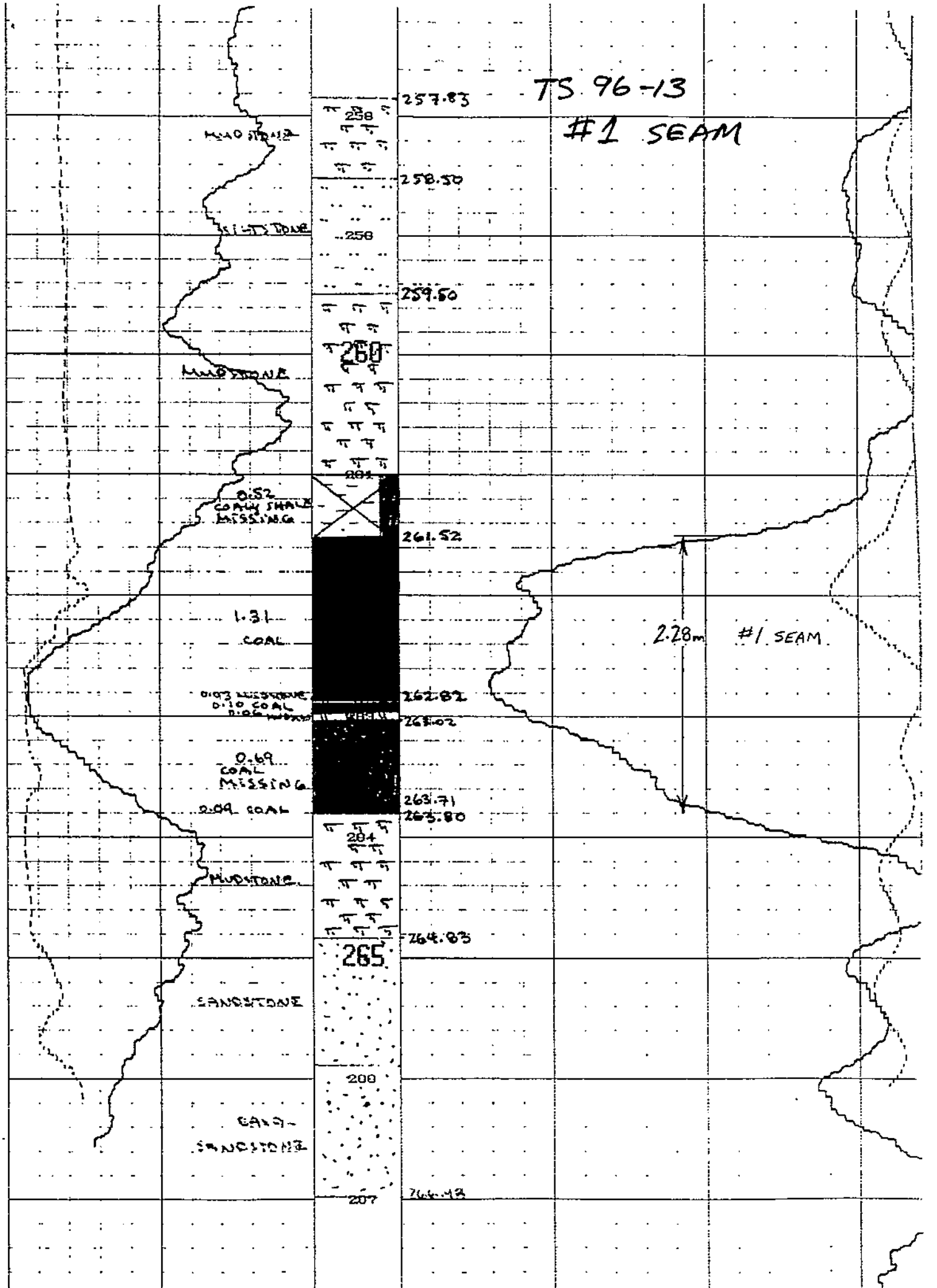
QUINSAM COAL CORPORATION

Hole Number: TS 96 13C — #1 SEAM.

Location: TSABLE RIVER — Elevation:

Page ___ of ___




TS 96-13
#1 SEAM
257.83
258
258.50
258
259.50
260
MUDSTONE
264
0.52
COAL SHALE
MISSING
261.52
1.31
COAL
2.28m
#1 SEAM
0.03 MUDSTONE
0.10 COAL
262.82
263.02
0.69
COAL
MISSING
0.09 COAL
263.71
263.80
264
MUDSTONE
264.83
265
SANDSTONE
200
SAND-
STONE
207
266.43

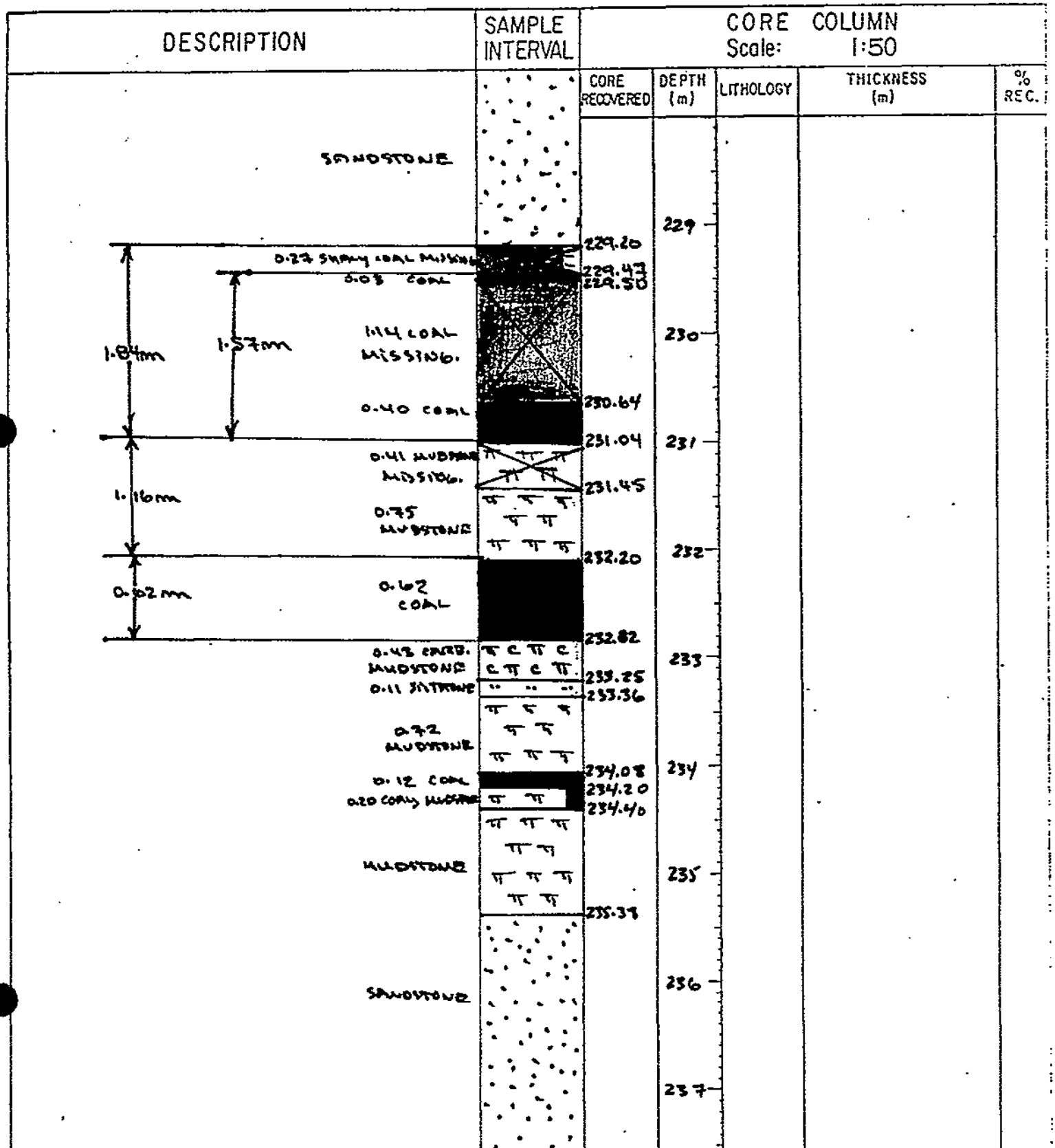
: DEPTHS FROM G-LOG

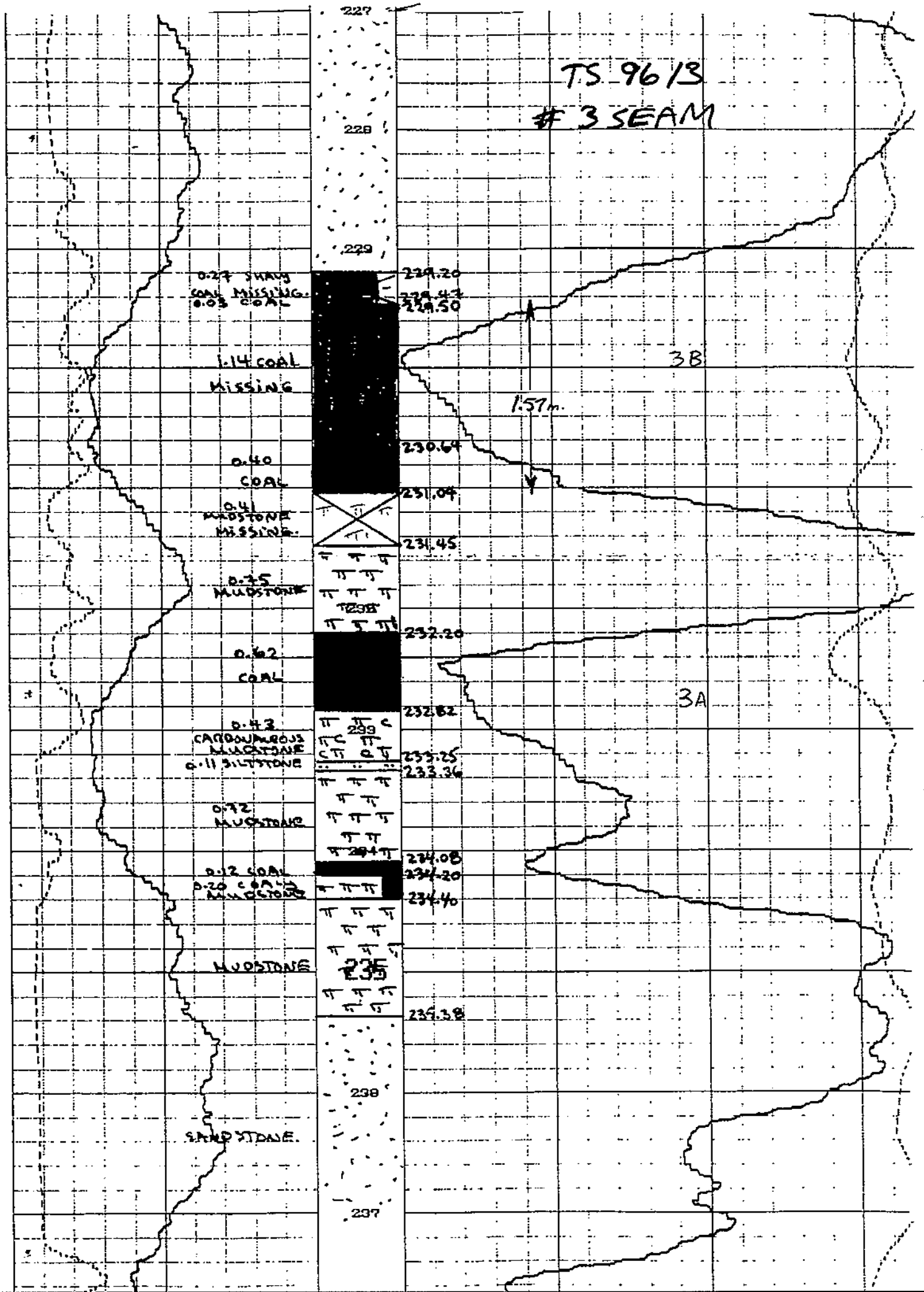
QUINSAM COAL CORPORATION

Hole Number: TS 96 13C #3 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___




TS 9613
#3 SEAM
227
228
229
0.27 SHALY COAL MISSING.
0.03 COAL
239.20
239.47
239.50
1.14 COAL
MISSING
3B
1.57m.
230.64
0.40
COAL
231.04
0.41
MUDSTONE
MISSING.
231.45
0.35
MUDSTONE
232.20
0.62
COAL
3A
232.82
0.43
CARBONACEOUS
MUDSTONE
0.11 SILTSTONE
233.25
233.36
0.72
MUDSTONE
234.08
0.12 COAL
234.20
0.20 COALY
MUDSTONE
234.40
MUDSTONE
235
239.38
238
SANDSTONE.
237

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-14C
CO-ORDINATES : 5485763.4 N. - 365335.5 E.
ELEVATION : 70.3 m
DATE DRILLED: August 11, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	26.0	Glacial till & weathered bedrock
26.0	238.0	Mudstone; silty, thin coal at 123.6
238.0	327.5	Sandstone
327.5	328.0	COAL, No. 5 Seam
328.0	350.0	Sandstone; siltstone interbeds. Started coring at 346.3
350.0	364.0	Sandstone
364.0	364.9	Mudstone
364.9	365.8	COAL, No. 4 Seam
365.8	403.0	Sandstone
403.0	406.0	COAL/Mudstone mixed No. 3 Seam
406.0	424.0	Sandstone, Siltstone interbeds
424.0	430.4	Mudstone
430.4	432.0	COAL, No. 1 Seam
432.0	434.4	Mudstone
434.4	437.2	Sandstone, white base, mudstone at base
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-14C
CO-ORDINATES : 5485763.4 N. - 365335.5 E.
ELEVATION : 70.3 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
1	346.30	348.30	2.00		2.00	SANDSTONE/SILTSTONE
						Very fine grained sandstone to siltstone. Siltstone with muddy and carbonaceous laminations - very thin. Depositional turbidity in evidence with sandstone clasts and very irregular and wavy bedding. Hard. No actual bedding but would be quite shallow. No fractures. Fizz excellent in basal 0.3m and middle 0.5m and nil in rest.
2	348.30	350.20	1.90	0.92	1.50	SANDSTONE/SILTSTONE
						As above. Broken and fractured in basal 0.2m. Grades down into sandstone. Bedding at 7-8 degrees from horizontal. Small carbonaceous inclusions very minor. Fizz - low to good. One fracture near base at 65 degrees to horizontal.
				0.58		SANDSTONE
						Fine grained and hard. Very good fizz. Medium grey. Minor carbonaceous muddy laminae layers. Bedding at 7 degrees to horizontal. Massive.
3	350.20	352.80	2.60		2.81	SANDSTONE
						Very hard. Massive. Medium grained to fine grained. Carbonaceous and muddy inclusions and very thin laminae < 1%. Bedding at 6 degrees to horizontal. No fractures. Fizz - excellent.
4	352.80	355.60	2.80	2.70	2.70	SANDSTONE
						As above. Hard massive thin mudstone laminae. Fizz - good to very good. Bedding at 6 degrees to horizontal. No fracturing
5 and 6	355.60	357.90	2.30	2.30	2.30	SANDSTONE
						Medium grained. Hard. Massive. Medium grey. Bedding at 5 degrees to horizontal. Very minor thin mudstone laminae and inclusions. Some are carbonaceous. Excellent fizz.
7	357.90	360.60	2.70		2.85	SANDSTONE
						Medium to dark brown grey. Fine to medium grained. Very hard and massive. Bedding at 10 degrees to horizontal. Thin mudstone laminae and inclusions < 1%. Fizz - excellent. Some steeper 40 degree bedding which does not look normal. No fractures.
8	360.60	362.60	2.00	1.90	1.90	SANDSTONE
						As above. Some finely disseminated pyrite with mudstone laminae. Turbidity in evidence and bedding isn't true. Some good bedding at 5 degrees to horizontal. Fizz good. Medium grey.
9	362.60	365.60	3.00	1.43	2.68	SANDSTONE
						Basal 0.1m is siltstone with sharp contact on underlying mudstone. Sandstone grades from medium to fine grained to siltstone downwards. Thin carbonaceous laminae and inclusions Bedding at 50 degrees to horizontal. Good to very good fizz.
				0.86		MUDSTONE
						Soft with harder silty bands near the top. Carbonaceous in basal 2cm and in middle 0.1m.. Dark grey to black with lighter silty areas. Bedding irregular with silty clasts. Sharp basal contact with coal

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-14C
CO-ORDINATES : 5485763.4 N. - 365335.5 E.
ELEVATION : 70.3 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
				0.39		COAL (0.32 may be missing)
						Thin 3 cm band of mudstone 3 cm from the top. Coal is bright, shiny and homogeneous. Calcite on vertical cleats. No visible pyrite.
10	365.60	368.30	2.70	0.20	2.54	COAL (0.16 may be missing)
						Hard. Bright. Black. Broken up in coring. Sharp contact with underlying mudstone. Calcite on vertical fractures. No visible pyrite.
				0.25		MUDSTONE
						Fractured at 35 degrees to horizontal. Muddy and soft. Light grey brown and darker and more carbonaceous in basal half. Gradational contact with underlying sandstone. Bedding at 5 degrees to horizontal.
				2.09		SANDSTONE
						Fine grained. Hard and massive. Carbonaceous inclusions up to 1 cm thick. Fracture at 35 degrees to horizontal. Medium grey. Silty near top grading down. Fizz - good to excellent.
11	368.30	371.30	3.00	3.00	3.00	SANDSTONE
						Fine to medium grained. Very hard and massive. Slightly silty with turbid bedding in middle. Medium grey. No bedding or fractures. Fizz good to excellent.
12	371.30	374.30	3.00	3.00	3.00	SANDSTONE
						As above. Very massive. No bedding or fractures. Fizz- good to very good.
13	374.30	377.30	3.00	2.92	2.92	SANDSTONE
						Massive. Homogeneous. Very hard. No inclusions. Fine grained. One fracture at 60 degrees to horizontal. One bedding on one thin mudstone laminae at 5 degrees to horizontal. Fizz low to moderately good.
14	377.30	380.30	3.00	3.10	3.10	SANDSTONE
						As above. Excellent fizz. No bedding or fractures.
15	380.30	383.30	3.00	2.95	2.95	SANDSTONE
						Medium grained. One worm tube in middle. Massive. Homogeneous. Fine grained in basal 0.5m. Medium grey. Good fizz.
16	383.30	386.30	3.00	2.96	2.96	SANDSTONE
						Fine grained in top half grading to medium in basal half. Very minor carbonaceous inclusions. Massive. Very hard. homogeneous. No bedding or fractures. Fizz excellent.
17	386.30	389.30	3.00	3.07	3.07	SANDSTONE
						One thin mudstone band near top is 8 degrees to horizontal. Massive. Hard. Medium grained. Medium grey. Homogeneous. No fractures. Fizz is low to moderately good.
18	389.30	392.30	3.00	1.50	1.50	SANDSTONE
						Trouble catching core barrel.
						As above but broken up and ground during recovery due to troubles catching the core. Fizz - low. Fine grained towards bottom.
19	392.30	393.00	0.70	0.78	0.78	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-14C
CO-ORDINATES : 5485763.4 N. - 365335.5 E.
ELEVATION : 70.3 m
LOGGLOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						Very fine grained. Hard to very hard. Homogeneous and massive. Minor < 1% carbonaceous and lamellae at 7 degrees to horizontal. Medium to dark grey. Fizz - low to nil
20	393.00	395.50	2.50	1.55	1.55	SANDSTONE
						Very fine grained. Minor carbonaceous lanellae. As above. Fizz - low.
21	395.50	397.50	2.00	2.88	2.88	SANDSTONE
						GRades down to fine grained. Very hard, massive, homogeneous. Minor muddy and carbonaceous lamellae < 1%. Bedding at 12 degrees from horizontal. Fizz low in top 0.6m and excellent in rest.
22	397.50	399.10	1.60	1.50	1.50	SANDSTONE
						Fine to very fine grained. Very hard and massive. Homogeneous with very minor thin mudstone calcite laminae < 1%. Light grey. Fizz low to moderately good.
23	399.10	402.00	2.90	2.58	2.58	SANDSTONE
						As above. Slightly ground. More medium grey. Very thin minor mudstone and carbonaceous laminae. Fizz - good in bottom half and low in top half.
24	402.00	403.00	1.00	1.04	1.04	SANDSTONE
						Stopped in coal to do a new run but no coal was recovered. Same sandstone as above. Bedding 0-5 degrees from horizontal. Hard. Low fizz.
25	403.00	405.50	2.50	0.30	0.43	COAL (2.01 missing/lost?)
						Ground up coal and some coaly shale. Most pieces 1-4 cm. Contaminated with drilling mud. Coal is brightly banded in larger pieces. Calcite on cleats.
				0.13		MUDSTONE
						Slightly silty. Moderately hard. Broken from coring. Dark grey. Sharp contact with coal
26	405.50	408.50	3.00	0.66	3.08	MUDSTONE
						Possibly some missing. Soft. Broken and ground up. Fractures at 50 degrees to horizontal. Minor carbonaceous laminae. Medium to dark grey. Sharp contact with underlying siltstone.
				0.16		SILTSTONE
						Hard. Fractured at 50 degrees to horizontal. Low fizz/ Contact with coal at 0-5 degrees from horizontal. Grades down into sandstone
				2.26		SANDSTONE
						Fine to medium grained. Coarsening down. light grey. Hard. Minor irregular carbonaceous laminae near bottom.. Fizz - low to moderately good.
27	408.30	411.30	2.80	2.65	2.65	SANDSTONE
						Very massive and homogeneous. Very hard. Light to medium grey. Fine grained. No inclusions. No fractures. No bedding. Fizz excellent in top 2m and low in rest.
28	411.30	412.00		0.71	0.70	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-14C
CO-ORDINATES : 5485763.4 N. - 365335.5 E.
ELEVATION : 70.3 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						As above. Fizz moderately good.
						Drill 2-3m
29	415.20	417.70	2.50	1.80	1.80	SANDSTONE
						Fine grained. Medium grey. Hard. No fractures. Bedding at 6 degrees to horizontal. Very thin carbonaceous and calcite layers near base. Grades to almost medium grained downwards. Fizz - nil.
30	417.70	420.00	2.30	2.88	2.88	SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded. 60% sandstone, 20% siltstone, 20 % mudstone. Turbidaceous environment throughout most of it. Mudstone and siltstone partly carbonaceous with very thin laminae. Sandstone is fine to medium grained, medium grey and hard. MUDSTONE dark grey brown and soft to moderately hard. Siltstone dark grey and hard. Bedding at 5-7 degrees to horizontal. Fizz - nil. No fractures.
31	420.00	423.00	3.00	1.86	2.64	SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded. Fracture at 35 degrees to horizontal. Polished and slickensided horizontally. Turbid environment with uneven bedding, sandstone clasts. Sandstone 45%, Siltstone 20%, Mudsotne 35%. Mudstone black and soft to moderately hard. Sharp basal contact with sandstone at 10 degrees to horizontal. Other bedding averages 7 degrees to horizontal. No fizz.. Very small calcite veins.
				0.78		SANDSTONE
						Fractures large at 85 degrees. Medium grained. Low to good fizz. Hard. Medium grey. Massive and homogeneous. No inclusions or beds
32	423.00	424.80	2.80	2.00	2.00	SANDSTONE
						Medium to fine grained. Homogeneous and massive. Medium to dark grey with white flecks. One fracture at 85 degrees to horizontal. Hard. No fizz.
33	424.80	427.30	3.00	0.30	3.03	MUDSTONE
						Sharp contact with sandstone above and below. Basal contact at bedding of 4 degrees from horizontal. Carbonaceous 30% in basal 0.1meter. Hard. Dark grey brown to black.
					2.19	SANDSTONE
						As sandstone above. Two mudstone interbeds of 6 cm in middle of unit.. Mudsotne hard and carbonaceous. Bedding at 3 degrees from horizontal. Sandstone very hard, medium grained. Fizz - excellent in top 0.3m and nil in rest.
				0.54		MUDSTONE
						Medium hard to hard. Dark grey brown to black. Mudsotne more fizzile and shaly in character. Small 5mm carbonaceous bands near the top. Slightly silty in basal 0.1m. Sharp upper contact with sandstone at 3 degrees form horizontal.
34 S961401	427.80	430.80	3.00	0.83	2.75	MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-14C
CO-ORDINATES : 5485763.4 N. - 365335.5 E.
ELEVATION : 70.3 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						As above. Medium hard. Some coaly inclusions and bands. One fracture at 30 degrees to horizontal. Coal/mudstone at 0 degrees on horizontal bedding and sharp contact.
Ash 74.17						
TS961402				0.43		COAL
Ash	VM	FC	S MJ/kg	FSI		
20.08	32.95	46.96	3.17 28.61	7.5		
						Hard and bright. Visible pyrite on vertical cleats. Shaly in top 1/3.
TS961403				0.27		COALY SHALE
Ash	VM	FC	S MJ/kg	FSI		
81.89	11.54	6.57	0.61 3.87	0.0		
						Hard. Muddy. 10-20% coal mainly near bottom. Thin pyrite vein near top.
TS961404				0.10		SHALY/COAL
Ash	VM	FC	S MJ/kg	FSI		
47.88	22.89	29.23	0.51 16.55	4.0		
						Base of coaly shale grades down into this unit. Hard. Possibly 50% coal
TS961405				1.22		COAL (0.15 missing)
Ash	VM	FC	S MJ/kg	FSI		
26.82	29.62	43.56	0.60 25.02	6.5		
						Hard. Blocky. Shiny bands. Pyrite on vertical cleats. Somewhat shaly in some spots but mostly good coal. 0.25 missing from bottom.
35	430.80	433.50	2.70	0.26	2.30	SHALY COAL (+0.20 coal missing above)
TS961406						
Ash	VM	FC	S MJ/kg	FSI		
53.91	34.00	12.09	0.23 10.71	1.0		
						More coaly near top and shaly near base. Polished and slickensided fracture at 45 degrees to horizontal. Slickensides show up/down movement.
TS961407				0.46		COAL
Ash	VM	FC	S MJ/kg	FSI		
36.86	27.14	35.99	0.60 21.12	4.0		
						Pyrite and minor calcite on vertical cleats. Bright bands and some areas of dull bands with more shale. Bedding horizontal. Shaly coal in basal 0.04m.
TS961408				1.58		MUDSTONE
Ash 76.82%						Floor. Hard. Carbonaceous near top. More silty near base. Bedding 0 degrees to horizontal. Dark grey to black
36	433.50	435.50	2.00	0.85	2.20	MUDSTONE/SILTSTONE
						As above for 0.1m grading down into siltstone mudstone. Hard dark grey black to medium grey siltstone. Grades down into sandstone
				1.35		SANDSTONE
						Coarse grained. Subangular whit grains throughout. Cherty. Thin carbonaceous and muddy layers. Basal sandstone. Excellent fizz
37	435.50	437.20	1.70	1.25	1.53	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-14C
CO-ORDINATES : 5485763.4 N. - 365335.5 E.
ELEVATION : 70.3 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						As above. Excellent fizz. Basal sand. Medium brown grey.
				0.28		MUDSTONE
						Black. Carbonaceous. Hard. Horizontal contact with upper sandstone.
						END OF CORE AND HOLE

QUINSAM COAL CORPORATION

-DEPTHS FROM E-LOG

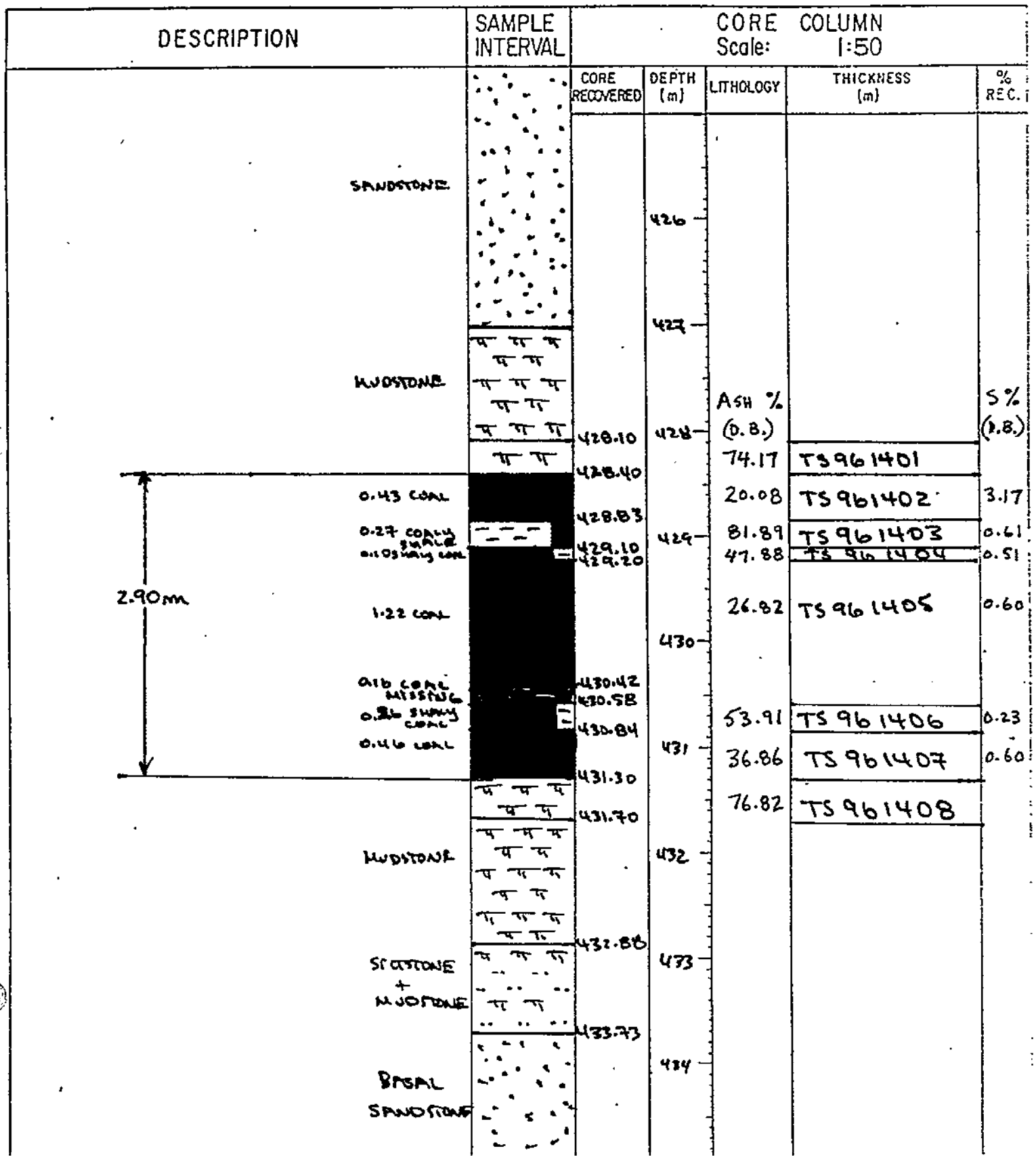
Hole Number: TS 96 14C

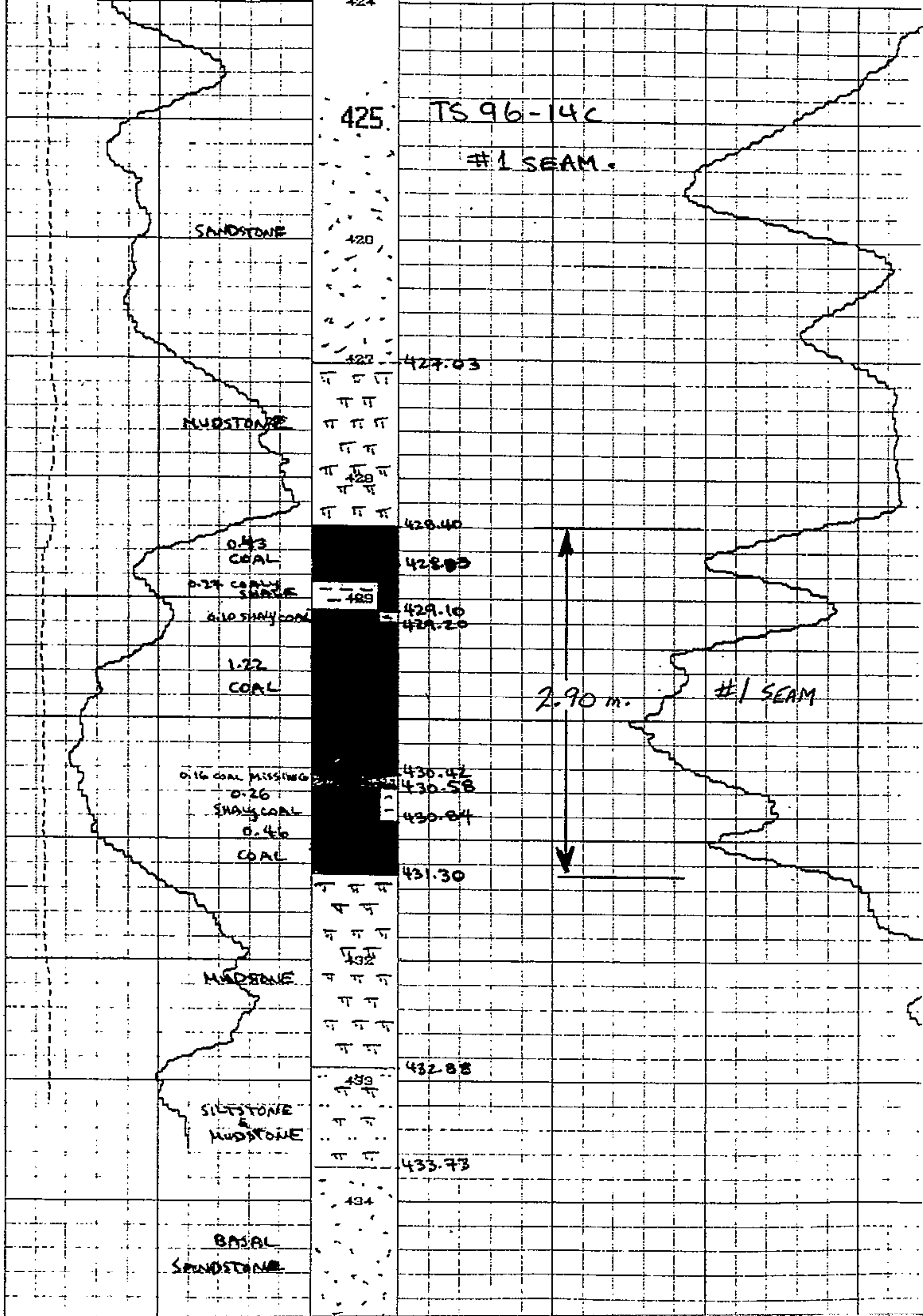
#1 SEAM

Location: TSABLE RIVER

Elevation:

Page ___ of ___





425
TS 96-14c
#1 SEAM.
SANDSTONE
427.03
MUDSTONE
428.40
0.43 COAL
428.83
0.27 COALY SHALE
0.10 SHALY COAL
429.10
429.20
1.22 COAL
2.90 m.
#1 SEAM
0.16 COAL MISSING
430.42
430.58
0.26 SHALY COAL
430.84
0.46 COAL
431.30
MUDSTONE
432.88
SILTSTONE & MUDSTONE
433.73
BASAL SANDSTONE

- DEPTHS TAKEN FROM E-LOG.

QUINSAM COAL CORPORATION

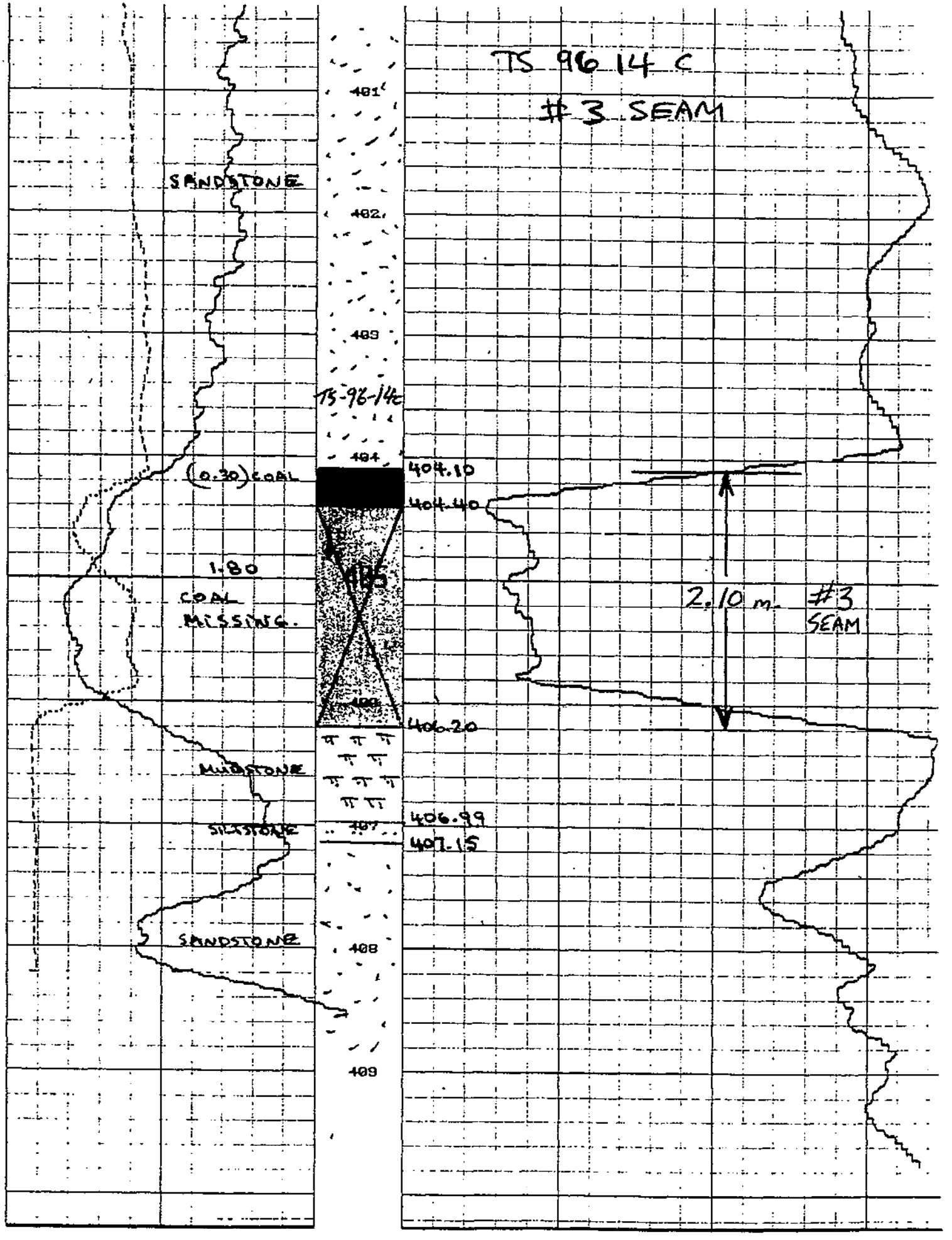
Hole Number: TS96-14C — #3 SEAM.

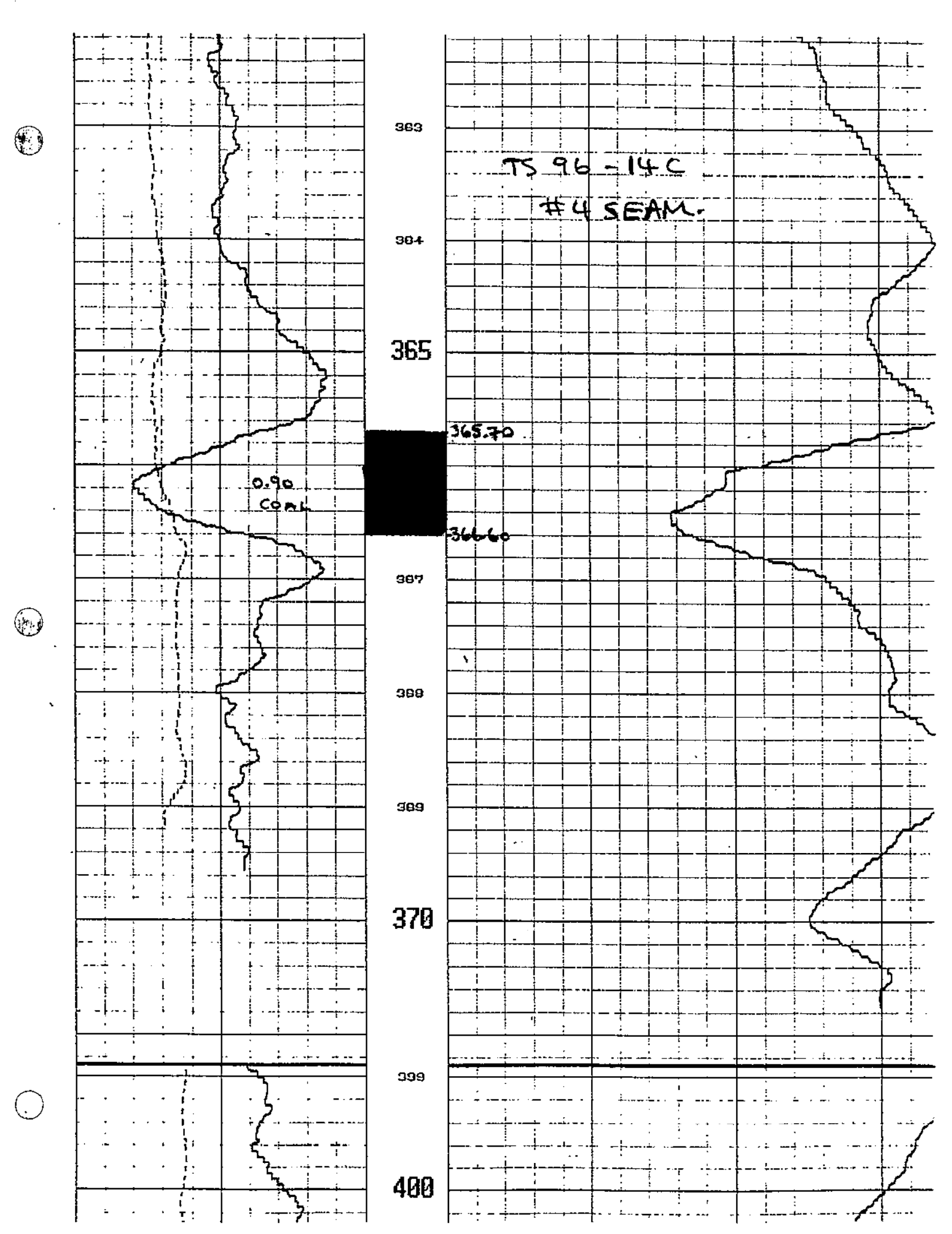
Location: TSABLE RIVER — Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
			401			
SANDSTONE.			402			
			403			
			404			
(0.30) COAL		404.10				
		404.40				
(1.80) COAL			405			
2.10m MISSING.						
			406			
		406.20				
MUDSTONE						
SILTSTONE		406.94	407			
		407.15				
			408			
SANDSTONE						
			409			

CORE COLUMN Scale: 1:50


TS 96 14 c
#3 SEAM
SANDSTONE
401
402
403
TS-96-14c
404
(0.30) COAL
1.80
COAL
MISSING.
405
406
MUDSTONE
SILTSTONE
407
SANDSTONE
408
409
404.10
404.40
406.20
406.99
407.15
2.10 m.
#3
SEAM


TS 96-14C
#4 SEAM.
363
364
365
365.70
0.90
COAL
366.60
367
368
369
370
399
400

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-15C
CO-ORDINATES : 5485403.7 N. - 364835.1 E.
ELEVATION : 77.0 m
DATE DRILLED: July 14, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	7.7	Glacial Till
7.7	38.3	Mudstone
38.3	44.4	Sandstone
44.4	154.2	Mudstone, silty
154.2	172.5	Sandstone
172.5	209.1	Mudstone, silty; .3m coal at base
209.1	221.3	Sandstone/Mudstone interbeds, coal?
221.3	233.5	Sandstone, 1.5m coal?
233.5	262.0	Sandstone
262.0	264.0	COAL, No. 4 Seam
264.0	293.0	Sandstone
293.0	295.0	Sandstone/Siltstone interbeds
295.0	297.0	Sandstone
297.0	303.0	COAL, interbedded with sandstone, No. 3 Seam
303.0	320.0	Sandstone
320.0	323.0	COAL, with mudstone bands, No. 1 Seam
323.0	338.2	Sandstone; siltstone/mudstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-15C
CO-ORDINATES : 5485403.7 N. - 364835.1 E.
ELEVATION : 77.0 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	270.30	272.70	2.40	2.40	2.40	SANDSTONE
						Fractured at 80 degrees to horizontal. Small < 1mm carbonaceous lanellae < .05%. Medium grey. Medium grained. Very hard and uniform. Excellent fizz.
2	272.70	275.70	3.00	2.50	2.50	SANDSTONE
						As above. Considerably more fracturing. Calcite infill on old planes. Some very thin silty beds of darker grains at 10% to horizontal. Wet sand - could be making water. No fizz.
3	275.70	278.20	2.50	3.10	3.10	SANDSTONE
						Medium grained. Light grey. Hard.competent. Massive. No beds of other lithologies. Fracture at top where it meets previous run at 80 degrees to horizontal. Low fizz.
4	278.20	281.20	3.00	3.01	3.01	SANDSTONE
						Massive. One small < 1 cm coaly band in the middle of this interval. Light to medium grey. Fractures at 80 & 70 degrees to horizontal. Fizz - very good in bottom 1m, moderate through middle and low in upper 0.6m.
5	281.20	284.20	3.00	1.10	1.10	SANDSTONE
						Missing from this run picked up in Run 6. Crossbedded mudstone stringers < 1cm thick. Calcite veining appears in top. Some coaly material with mudstone. Bedding appears to be 6 degrees from horizontal. Fizz - moderately good. Hard/medium grained.. Medium grey.
6	284.20	284.90	0.70	2.40	2.40	SANDSTONE
						No more mudstone beds. Homogeneous. Massive. No fractures or bedding. Fizz - low to nil.
7	284.90	287.40	2.50	2.94	2.94	SANDSTONE
						Thin mudstone crossbeds throughout, sometimes carbonaceous. Hard and massive with no fracture on true bedding planes. Fizz excellent in central. 1 meter and low below and above.
8	287.40	290.40	3.00	2.97	2.97	SANDSTONE
						Fractures at 75 degrees to horizontal. As above with thin muddy indistinct crossbeds. Massive. Hard. Light grey. Medium grained. Partly broken up near the base. Fizz - low to moderate
9	290.40	291.00	0.60	0.20	0.60	SILTSTONE
						Siltstone. Somewhat muddy. Completely ground up. Coaly fragments compose 5% of fragments. May be from up the hole from cave ins
				0.10		SILTY MUDSTONE
						Medium to dark grey. brownish at top. Ground up a bit.
				0.30		SANDSTONE
						Covered in mud with a small muddy band of 4 cm. (Bentonitic possibly). Very sticky and holds water. A muddy band of similar composition was encountered in hole 16 at 221.4m. This one may just be from all the grinding at the bit face.
10	291.00	292.40	1.40	1.40	1.40	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-15C
CO-ORDINATES : 5485403.7 N. - 364835.1 E.
ELEVATION : 77.0 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Very good fizz in top half and low in bottom half. Sandstone medium grained. Light to medium grey. Some dark cross-bedding of silty to muddy composition. No good bedding. Hard.
11	292.40	292.80	0.40	0.30	0.30	SANDSTONE
						As above. Ground & rounded during coring. Medium grey. Moderate fizz.
12	292.80	294.80	2.00	0.05	0.05	SILTSTONE/SANDSTONE
						Very little recovery. Only fragments of siltstone and sandstone. Some silty mudstone also in the sample
13	294.80	295.00	0.20	1.25	1.25	SILTSTONE/MUDSTONE/SANDSTONE
						Ground into small 2-4 cm pieces wit powdered and crushed material throughout. 0.6cm of sandstone at bottom of the core. Lithologies are mixed up and core from the prvious core run. Some coaly fragments are present and there may have been coal in this run or last
14	295.00	295.40	0.40	0.04	0.17	SILTSTONE
				0.13		SANDSTONE
						Ground poor core. No fizz
15	295.40	295.70	0.30	0.07	0.07	SANDSTONE
						Thin carbonaceous bands. Ground and rounded.
						Hole stopped until better coring method found. Making too much salt water from fractured sandstone. Depth correction when re-coring
16	293.20	294.60	1.40	1.42	1.42	SANDSTONE
						Light grey. Fine to medium grained. Hard. Massive. Thin carbonaceous and muddy laminae 2%. Bedding dips at 10 degrees to horizontal. Low to good fizz.
17	294.60	296.80	2.20		2.40	SANDSTONE
						As above. Darker grey fro bottom 1.8m . Larger vertical fracture at 80 degrees to horizontal. Many carbonaceous inclusions and laminations in bottom third. Hard to very hard. Top .8m excellent fizz. Remainder is low fizz. Lamination at 5-7 degrees dip from horizontal.
18	296.80	299.80	3.00	0.35	1.34	SANDSTONE
						Dark grey. Fine grained. Muddy bands and laminae. Hard. Sharp contact at base with coal. No fizz.
TRCBM11				0.37		COAL
						Bedding at top 5-7 degrees from horizontal. Hard. Blocky. Taken fro methane test.
				0.53		MUDSTONE
						Parting. Carbonaceous in central 2 - 3 cm. Medium hard. Fractures at 30 & 45 degres to horizontal. Dark grey.
				0.08		COAL
						Hard. Blocky. Calcite veining. May be from her at top of main part of seam. Dull bands 80% of sample. Calcite on joints. Visible pyrite.
19	299.80	301.10	1.30	0.10	0.50	COAL

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-15C
CO-ORDINATES : 5485403.7 N. - 364835.1 E.
ELEVATION : 77.0 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
TRCBM12						Gone for methane test. Good coal.
				0.40		MUDSTONE
						Medium hard. Dark. Silty at base with some coarse sandstone 0.04. Polished fracture planes at 40 degrees to horizontal. Broken and again much core missing.
20	301.10	304.10	3.00	1.34	2.32	SANDSTONE
						Excellent fizz. Hard. Irregular vertical fractures. Calcite infill in old fracture planes. Medium grained. Medium to light grey. Silty band 0.08 in middle of section.
				0.15		COAL
						Some missing from E-log as well as coaly shale and shaly coal above. Coal is powdery and ground up very fine. Hard to tell much about it.
				0.83		MUDSTONE
						CArbonaceous at base. Fractured & Broken. Slip faces polished. Moderately hard to soft. Sandy in basal 0.06m. May be more coaly material below?
21	304.10	306.60	2.50	2.45	2.45	SANDSTONE
						Medium grained. Moderately hard. Ca be broken with fingers in some places. Harder at basal 0.5m. Irregular vertical fracture and others at 40 degrees to horizontal. Calcite veins and fracture fill throughout. Light grey. Small coaly shale bed 3 cm thick 0.8m from top. Fizz excellent.
22	306.60	309.20	2.60	2.54	2.54	SANDSTONE
						As above. Irregular 80 degree calcite filled fractures and others at 40 degrees to horizontal. Hard. Some ground and fragmented Fizz - low to good. Few carbonaceous inclusions. < 1%. No bedding.
23	309.00	311.00	2.00	2.02	2.02	SANDSTONE
						Light to medium grey. Hard to moderately hard near base. Fine to medium grained. Highly fractured in bottom half and less so in upper half. Fractures at 55 degrees to horizontal. Polished and slickensided in a vertical direction. Also vertical calcite filled irregular fractures. Low to moderate fizz.
24	311.00	314.00	3.00	2.95	2.95	SANDSTONE
						Medium grained in upper half to fine in lower. Moderately hard in upper to hard in lower. Upper half more broken. Fractures throughout vertical to 50 degrees to horizontal. Upper calcite filled. Minor carbonaceous laminae < 1%. Low fizz to good in basal 0.8m
25	314.00	317.00	3.00	3.05	3.05	SANDSTONE
						Fine grained. Very hard. Medium grey. Fracures at 70 degrees to horizontal (deviation @ 12 degrees) and irregular at vertical. Some filled with calcite. VEry thin muddy lamellae. throughout < 1%. Carbonaceous muddy material also infills some of the fractures. Fizz - nil.
26	317.00	320.00	3.00	1.75	1.74	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-15C
CO-ORDINATES : 5485403.7 N. - 364835.1 E.
ELEVATION : 77.0 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						As above. Many fractures. More carbonaceous muddy laminae and fracture infilling. 1.26 missing may be coal? In lower basal portion. Bedding at 30 degrees to horizontal with 12 degrees + deviation.
				0.05		COAL
						1.21 missing?? Small crushed coaly fragments .03 cm large. Coal bright shiny moderately hard.
27	320.00	322.00	2.00	0.10	1.87	COAL
						Fragments from 1.21 coal missing in last run?
TS961501				0.15		MUDSTONE
Ash	VM	FC	S MJ/kg	FSI		
81.66	-	-	- -	-		
						Hard. Medium to dark grey. Fracture at 32 degrees to horizontal
TS961502				0.34		COAL
Ash	VM	FC	S MJ/kg	FSI		
58.22	21.42	20.36	.62 12.23	1.5		
						Very friable in top portion. Broken crushed possibly a little is missing. Vertical polished fractures. No visible pyrite or calcite. Shiny and light. Very fractured.
TS961503				0.25		COALY SHALE
Ash	VM	FC	S MJ/kg	FSI		
58.04	21.60	20.36	.38 12.49	1.0		
						Fractured. Polished movement along bedding. Top and bottom beds with coal at 45 degres to horizontal with 12 degree + hole deviation. Coal is in a fault zone. Highly crushed. Steeper dips than formation above and below.
TS961504				0.42		COAL
Ash	VM	FC	S MJ/kg	FSI		
21.99	32.34	45.67	.59 26.99	6.5		
						Brighter in bottom and more shaly at top. Some visible pyrite. Sharp basal contact with Mudstone at 45 degrees to horizontal. Vertical polished fractures. Coal friable and broken. Soft and greasy. Some calcite on cleavage and minor pyrite visible.
TS961505				0.27		MUDSTONE
Ash	VM	FC	S MJ/kg	FSI		
77.13	17.37	5.49	2.07 4.60	0.0		
						(0.27m sample)Floor. More carbonaceous in top 4cm but carbonaceous laminae and inclusion at 45 degrees to horizontal. Vertical polished fractures very large with up and down slickensided movement. Thin calcite veins on bedding. Medium hard to hard.
28	322.00	324.50	2.50	0.27	2.51	MUDSTONE
						As above. Meets coal below at 45 degres. Sharp contact.
TS961506				0.94		COAL
Ash	VM	FC	S MJ/kg	FSI		
17.49	31.83	50.68	.79 29.06	7.5		

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-15C
CO-ORDINATES : 5485403.7 N. - 364835.1 E.
ELEVATION : 77.0 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Hard. Bright blocky. Some pyrite visible on cleats as well as calcite. Fractures 75 degrees & vertical. Basal .26m has thin shaly bands up to 2 cm thick and is partly ground up. Polished and slickensided.
				1.30		MUDSTONE
						Hard. Calcite laminae. Carbonaceous inclusions. Dark grey.
29	324.50	327.00	2.50	1.04	2.64	SILTSTONE/MUDSTONE
						Interbedded. Fine mudstone interbeds. Siltstone 70% Mudstone 30%. Bedding at 16 degrees from horizontal with 12 degrees + hole deviation. Minor calcite on bedding planes. Hard. Grades down into fine grained sandstone. Fizz. Nil.
				1.60		SANDSTONE
						Fine to very fine grained. Minor carbonaceous inclusions. Fine muddy laminae. Dark grey. Silty. One thin calcite laminae. Fizz nil.
30	327.00	330.00	3.00	0.89	2.92	SANDSTONE
						Medium grained. Small white subangular grains throughout. Possibly basal unit? Carbonaceous and muddy laminae at 10 - 18 degres to horizontal. Hard. Fizz - low to nil
			1.80			SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded thinly. Sandstone 30%, siltstone 35%, mudstone 35%. Bedding at 10-18 degrees to horizontal (12 degree + deviation of hole). Hard. Some calcite on bedding. Sandstone medium grained to fine grained. Low fizz.
			0.23			SANDSTONE
						Bedding 12 degrees where it meets above lithologies. Fine to medium grained. Hard. Very hard. Cherty. Looks similar to basal sands in top portion. Fizz - low.
31	330.00	333.00	3.00	3.00	3.00	SANDSTONE
						Fizz - low to good. Massive. Homogeneous. Very hard. Fine to medium grained. No bedding. No fractures.
32	333.00	336.00	3.00	1.99	2.96	SANDSTONE
						As above. Minor muddy inclusions. Medium grained. Irregular muddy laminae at basal contact. Low fizz.
				0.97		MUDSTONE/SILTSTONE/SANDSTONE
						Thinly interbedded. Some carbonaceous inclusions. Sandstone 20%. Siltstone 40% Mudsotne 40%. No fizz.
33	336.00	338.20	2.20	2.14	2.14	SANDSTONE/SILTSTONE/MUDSTONE
						As above but more sandstone. Medium grained in basal 0.5m. Bedding at 20-15 degrees from horizontal. Deviation 12 degrees +. Sandstone 35%. Siltstone 30%. Mudstone 35%. Some carbonaceous laminae and inclusions. No fizz.
						END OF CORE & HOLE

QUINSAM COAL CORPORATION

NOTE- DEPTHS FROM E-LOG.

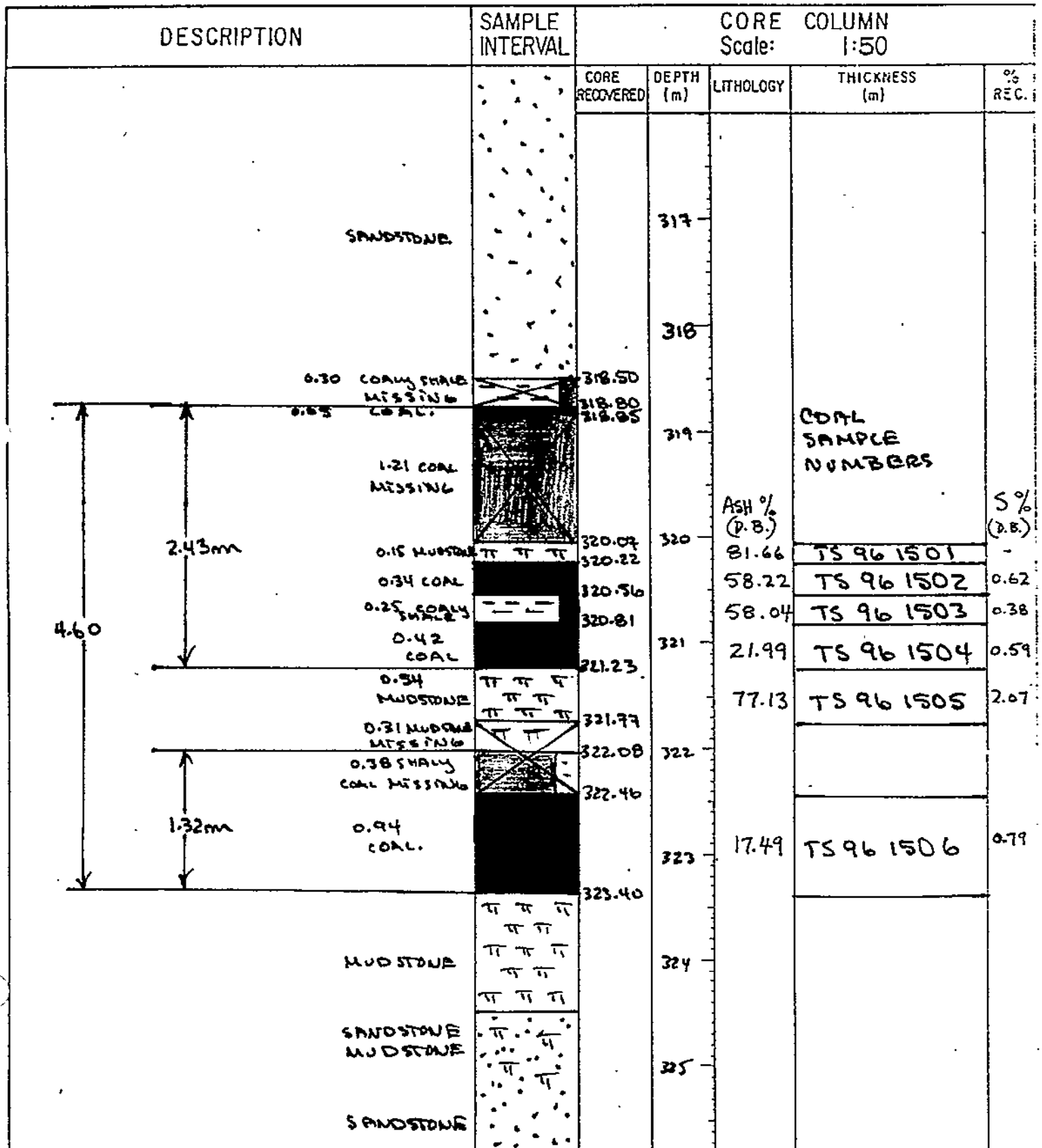
Hole Number: 96-15C

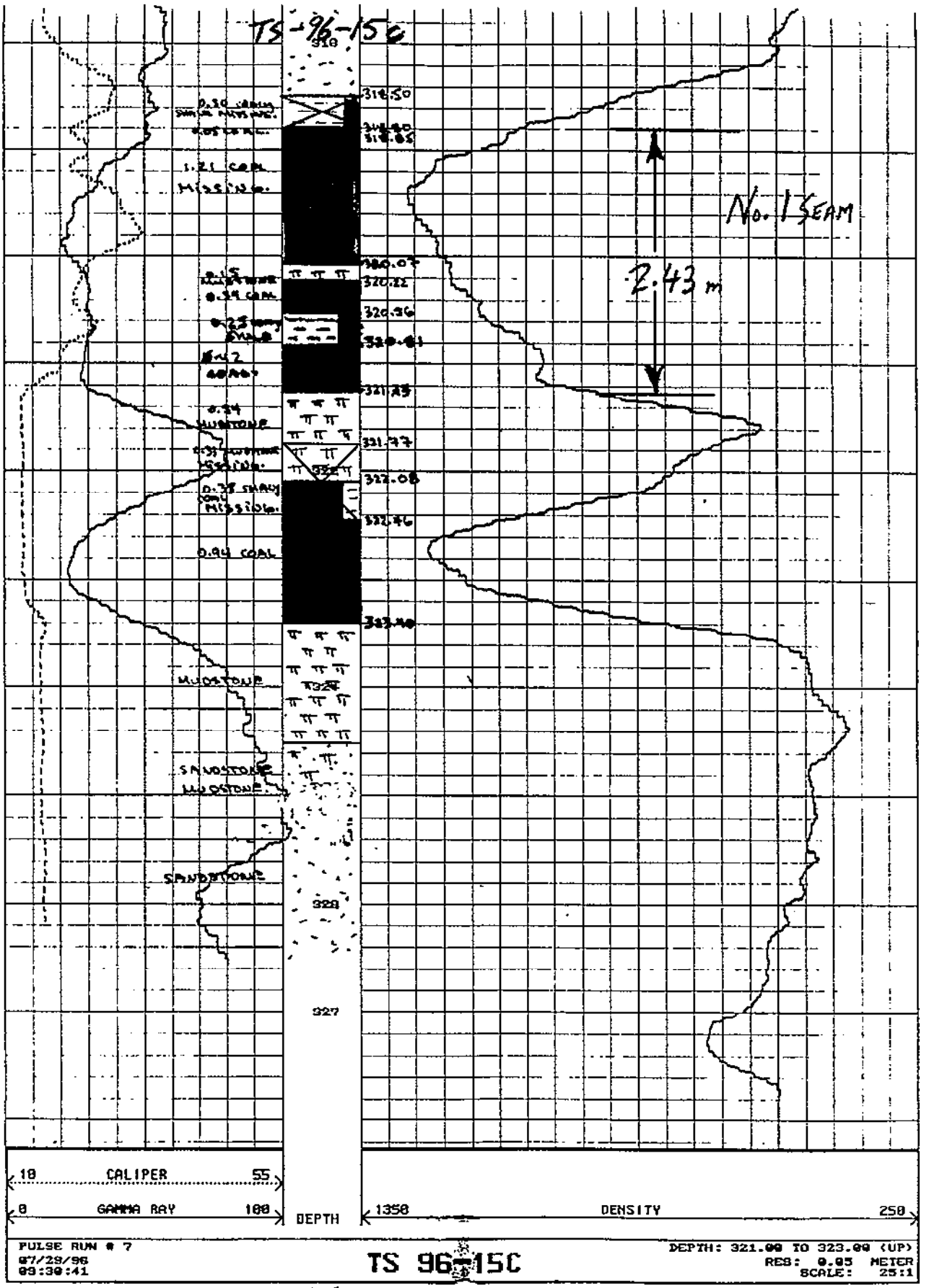
#1 SEAM

Location: TSABLE RIVER

Elevation:

Page ___ of ___




TS-96-15C
No. 1 SEAM
2.43 m
CALIPER
GAMMA RAY
DEPTH
DENSITY
PULSE RUN # 7
07/29/96
09:30:41
TS 96-15C
DEPTH: 321.00 TO 323.00 (UP)
RES: 0.05 METER
SCALE: 25:1

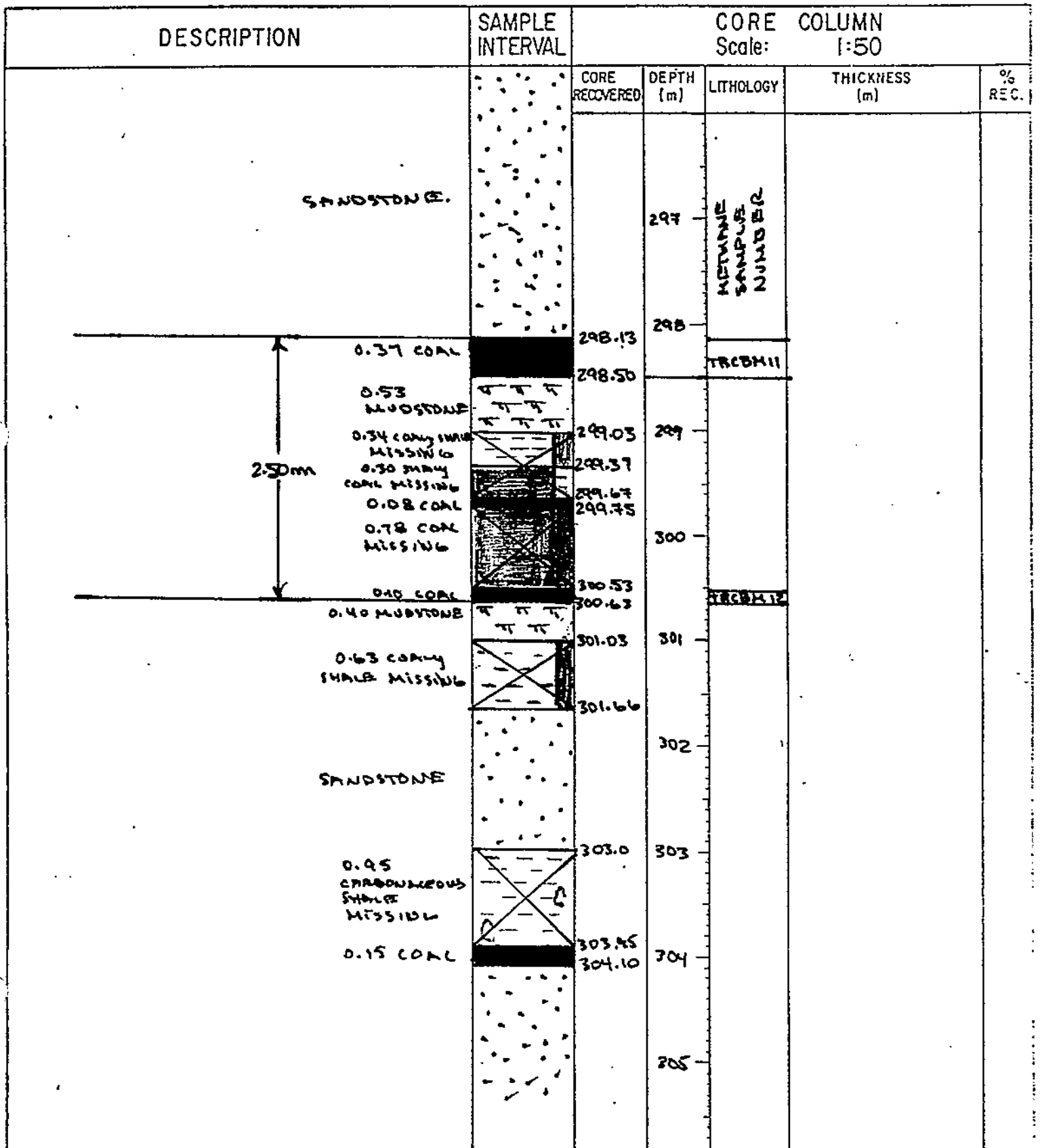
QUINSAM COAL CORPORATION

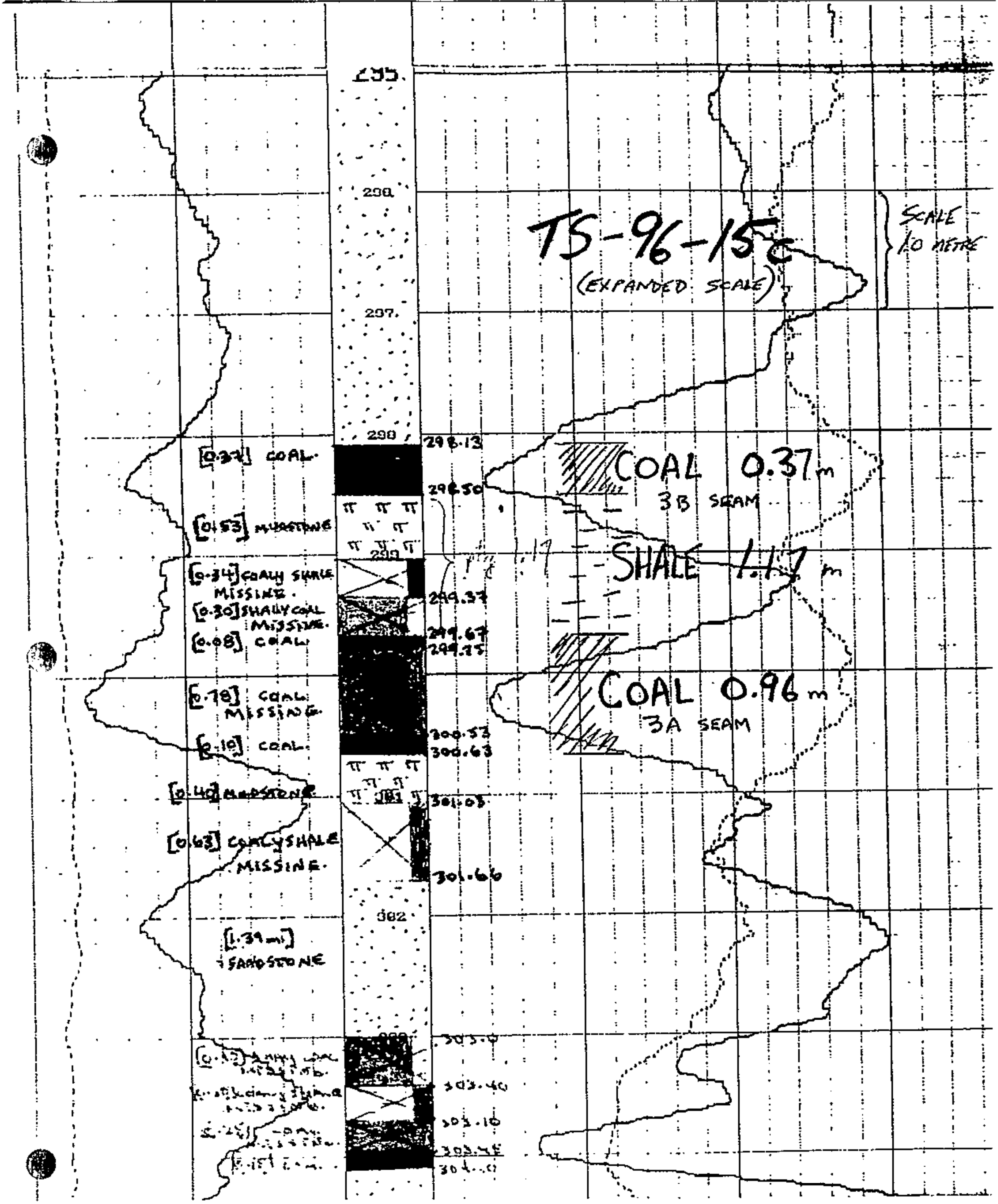
- DEPTHS FROM E-LOG.

Hole Number: TS 96-15C — # 3 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___





TS-96-15C
(EXPANDED SCALE)
SCALE 1.0 METRE
295.
296
297.
298
298.13
298.50
299
299.37
299.67
299.75
300.53
300.63
301.03
301.66
302
303.40
303.10
303.45
[0.37] COAL
[0.53] MUDSTONE
[0.34] COALY SHALE MISSING.
[0.30] SHALY COAL MISSING.
[0.08] COAL
[0.78] COAL MISSING
[0.10] COAL
[0.40] MUDSTONE
[0.63] COALY SHALE MISSING.
[1.39 m] SANDSTONE
COAL 0.37m
3B SEAM
SHALE 1.17 m
COAL 0.96 m
3A SEAM

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-16C
CO-ORDINATES : 5485468.6 N. - 364209.0 E.
ELEVATION : 99.2 m
DATE DRILLED: July 12, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	11.5	Glacial Till
11.5	129.7	Siltstone; Shaly
129.7	148.0	Sandstone; siltstone interbeds
148.0	171.0	Siltstone
171.0	194.3	Sandstone; coal at 194.3
194.3	215.0	Mudstone
215.0	219.7	Sandstone, hard; start coring 215.1m
219.7	220.3	Mudstone; coaly
220.3	235.0	Sandstone
235.0	239.0	Mudstone & COAL, No. 4 Seam
239.0	274.0	Sandstone
274.0	276.0	Mudstone & COAL, No. 3 Seam
276.0	278.5	Sandstone
278.5	280.5	Siltstone/Mudstone Interbeds
280.5	299.0	Sandstone
299.0	302.9	Siltstone/sandstone interbeds
302.9	306.0	Mudstone
306.0	309.9	COAL; No. 1 Seam
309.9	312.6	Mudstone
312.6	318.3	Sandstone; interbedded mudstone
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-16C
CO-ORDINATES : 5485468.6 N. - 364209.0 E.
ELEVATION : 99.2 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 5 degrees to 7 degrees .

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	215.10	217.60	2.50	2.50	2.50	SANDSTONE
						Fine grained. Very hard. Homogeneous. Very small amounts of carbonaceous streaks < .01%. No bedding. No fractures. Moderate fizz to low.
2	217.60	220.30	2.70	2.10	2.70	SANDSTONE
						Fine grained as above. Grading down to medium grained for bottom 1.8 meters. Fizz excellent in bottom 1.8m and good in top 0.3m. Large coaly bands in basal 6 cm about 1 cm thick. Sharp basal contact with coal. Top of core matches to previous run. Light to medium grey.
				0.08		COAL
						Bright and dull bands. Fractured. Friable. Calcite on cleats.
				0.09		COAL/MUD
						Powdery coal and mud. More coal at top getting finely powdered and muddy at base. Wet and sticky
				0.10		MUD/CLAY
						More of a clay. Dark brown to black at top going down to a mudstone at the base. Powdery but sticky. Very soft.
				0.33		MUDSTONE
						Light grey. Medium hard. Broken up a bit. Coaly stringers and fine inclusions. No visible bedding
3	220.30	223.00	2.70	2.70	2.70	SANDSTONE
						Fine grained. Massive. Bioturbated mudstone. Laminae. Some surrounding sandstone clasts. Bedding 0 - 5 degrees. Medium grey to light grey. Low to good fizz. Good in lighter sandstone. Good contact with runs above and below
4	223.00	226.00	3.00	3.05	3.05	SANDSTONE
						Same as above. More bioturbation of mudstone with more carbonaceous matter. Looks like the inter-seam sandstones at hole 9603. One fracture with calcite at 70 degrees to horizontal. Other calcite infill on vertical irregular fractures. Bedding at 0-5 degrees. Good contacts with core runs above and below. Fizz - good & excellent in bottom 1.0 meter.
5	226.00	229.00	3.00	3.08	3.08	SANDSTONE
						Dips of bedding 10 degrees to horizontal. Fine grained in top 1.5m and medium in middle meter. Medium grey. Hard. Massive. Thin carbonaceous mudstone lenses and laminae throughout. Low fizz in fine grained and excellent in medium.
6	229.00	232.00	3.00	2.98	2.98	SANDSTONE
						Bedding 12-15 degrees. Fine grained in top 1.5 m and medium in bottom. Fizz good throughout. Bedding dips from thin mudstone stringers. One fracture at 70 degrees to horizontal.
7	232.00	235.00	3.00	2.92	2.92	SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-16C
CO-ORDINATES : 5485468.6 N. - 364209.0 E.
ELEVATION : 99.2 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 5 degrees to 7 degrees .

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Bedding at 8 degrees to horizontal. Fine & medium grained. Mudstone laminae. Fizz good to very good. Hard. Massive. Medium grey. Carbonaceous inclusions.
8	235.00	238.00	3.00	2.66	3.02	MUDSTONE
						Dark grey. Fracture at 40 degrees to horizontal. Calcite on fracture planes. Minor carbonaceous material < 1%. Very homogeneous. Sharp contact with underlying coal, but rock broken and no bedding.
					0.28	COAL
						Hard. Underlying contact with mudstone at 6 degrees to horizontal. Bright shiny with small duller bands. More shaly in top 7 cm. Vertical fracture with calcite and visible pyrite. Not well defined cleating.
				0.08		MUDSTONE
						Same as one above the coal
9	238.00	241.00	3.00	0.04	2.79	MUDSTONE
						Broken in coring. Unknown amount missing. As above.
				0.52		COAL
						May be some coal missing with the mudstone although it is quite hard and competent. Coal is broken at base in contact with sandstone. Calcite fractures. More shaly in top .1m. Bright and shiny with very thin dull bands 5%. Pyrite visible but < 5%.
				2.23		SANDSTONE
						fine to medium grained. Hard. Medium grey. Mudstone bioturbation marks near top with mud around sandstone clasts. Silstone interbedded in middle 0.6m with 2 cm carbonaceous wedges just below. Coaly inclusions throughout. Low fizz in lighter sandstone beds. (About half the section). Bedding at 7 degrees to horizontal
10	241.00	242.00	1.00	0.95	0.95	SANDSTONE
						Carbonaceous bands up to 1 cm thick. Variably sized angular mudstone clasts in bottom .1m (up to 5cm). Medium grained. Medium grey. Fizz - nil - Bedding 7 degrees from horizontal
11	242.00	245.00	3.00	3.05	3.05	SANDSTONE
						.26 mudstone and clay seam .20 from the top of the core. Clay is very sticky almost bentonitic and was extremely hard to core. Sandstone silty below muddy layer for .5m with mudstone layer fro .5m with mudstone around sandstone clasts of 2cm. Like sandstone above otherwise. Fizz good in bottom meter and low in top .2m; nil in rest
12	245.00	248.00	3.00	3.03	3.03	SANDSTONE
						Bioturbation with mudstone around sandstone clasts again in central .6m. Contacts core runs above and below. Hard, massive. Medium grey. Medium grained. Bedding at 8 degrees to horizontal. No fractures. Low fizz throughout.
13	248.00	251.00	3.00	2.98	2.98	SANDSTONE
						As above. Mudstone interbeds in top .4 meters with vertical calcite veining. Fizz good in bottom 1.6m and nil in rest. Bedding at 7 degrees.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-16C
CO-ORDINATES : 5485468.6 N. - 364209.0 E.
ELEVATION : 99.2 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 5 degrees to 7 degrees .

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
14	251.00	254.00	3.00	3.08	3.08	SANDSTONE
						Massive as above. Minor siltstone beds and carbonaceous stringers < 2%. Fizz - excellent in basal meter and nil in rest. Good upper and lower contact with other runs.
15	254.00	257.00	3.00	3.05	3.05	SANDSTONE
						Fine grained. Massive. Bedding at 3-8 degrees to horizontal. Medium grey. Very hard. No fractures. Fizz - nil. Very thin siltstone && mudstone beds. Minimal carbonaceous irregular bands and wedges/inclusions < 1 cm.
16	257.00	260.00	3.00	2.97	2.97	SANDSTONE
						As above but medium grained. Calcite filled fracture at 80 degrees to horizontal also pyrite infilling. Fizz - nil. Darker grey than above.
17	260.00	263.00	3.00	2.95	2.95	SANDSTONE
						As above. Bottom 0.5m good fizz. Rest is nil. Bedding at 7 degrees to horizontal
18	263.00	265.50	2.50	2.54	2.54	SANDSTONE
						As above. Lighter colour. Fizz -excellent in top meter and low in rest.
19	265.50	268.50	3.00	2.95	2.95	SANDSTONE
						Good fizz in top 1.5m and nil in rest. As above. Top is lighter grey and bottom half medium grey. Very homogeneous and virtually no inclusions.
20	268.50	271.50	3.00	2.23	2.23	SANDSTONE
						As above. Good fizz.
21	271.50	272.70	1.20	2.09	2.09	SANDSTONE
						This run made back loss from last tun. Same as above but a couple thin carbonaceous mudstone beds are present. Bedding at 9 degrees to horizontal.
22	272.70	275.70	3.00	1.32	2.86	SANDSTONE
						Medium grained. Dark grey. Many irregular coaly and coaly mudstone laminae up to 1 cm in basal .3m. Fizz - nil,
				0.27		MUDSTONE
						Ground and broken. Some missing in this interval. Medium grey to dark grey. Fractured, slickensided and polished.
				0.14		COAL
						Hard. Blocky. Calcite on joints - vertical. Banded bright and dull coal near base and all bright above. No visible pyrite
				0.13		COALY SHALE
						85% shale - 15% coal
				0.23		COAL
						As above but up to 5% visible pyrite. Bright. Shale near base and next contact formation
				0.23		SHALE
						Some 2 cm band of coal near bottom. Shale with < 1% carbonaceous material. Dark grey.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-16C
CO-ORDINATES : 5485468.6 N. - 364209.0 E.
ELEVATION : 99.2 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 5 degrees to 7 degrees .

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
				0.54		MUDSTONE
						One coal band 2-3 cm thick and .15m form top. Fracture at 65 degrees to horizontal. Carbonaceous stringers near base.
23	275.70	278.50	2.80	0.46	2.82	MUDSTONE
						Sharp basal contact at 5 degrees to horizontal
				0.55		SANDSTONE
						Coarse grained. Medium grey. Sharp basal contact with fine grained sandstone. Many carbonaceous stringers. Basal bedding at 7 degrees to horizontal. Fizz - low to medium.
				1.81		SANDSTONE
						Fine grained. Many darker siltstone bands less than 1 cm thick. Fizz - low to medium. Bedding at 7-9 degrees.
24	278.50	281.50	3.00	1.95	1.95	SILTSTONE/MUDSTONE
						Interbedded. Bottom 1.5m has many coaly bands 1m-2m as well as some of calcite. One coal band of 2cm with calcite on fractures. Core partly ground up on a third missing.
25	281.50	283.50	2.00	2.41	2.41	SANDSTONE
						Very fine grained grading down to fine grained, Many bioturbaceous mudstone laminae and mudstone surrounding sandstone casts. Fizz - good in one .1m zone near base the rest nil. Ground mudstone at top from last run missing portion.
26	283.50	284.90	1.00	1.55	1.55	SANDSTONE
						As above. No fizz
27	284.90	287.90	3.00	3.03	3.03	SANDSTONE
						Medium grained. Light grey. Hard and massive. Few muddy carbonaceous bands < 2mm wide. Bedding at 5 degrees to horizontal. Fizz low to nil. Very thin calcite veins irregularly vertical.
28	287.90	290.90	3.00	3.03	3.03	SANDSTONE
						Fine grained. Very massive. Homogeneous. No beds/bedding or fractures. Fizz - excellent in top 0.8m and bottom 0.2m - Rest is low.
29	290.90	293.90	3.00	3.00	3.00	SANDSTONE
						As above. Mudstone laminations are again present. Grades to medium grained at base. Beds at 7 degrees to horizontal. Good fizz above and below middle 1 meter which is nil.
30	293.90	296.90	3.00	3.00	3.00	SANDSTONE
						Massive. Fine grained. Muddy siltstone laminations in top 0.3m. Some carbonaceous inclusions. Fizz is excellent. Very hard.
31	296.90	299.90	3.00	1.99	3.00	SANDSTONE
						As above. Excellent fizz
				1.01		SILTSTONE/SANDSTONE/MUDSTONE
						INTERBEDS. Sandstone 15%, Mudstone 35% siltstone 50%. Hard. Bedding at 7 degrees to horizontal
32	299.90	302.90	3.00	3.05	3.05	SILTSTONE/SANDSTONE.MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-16C
CO-ORDINATES : 5485468.6 N. - 364209.0 E.
ELEVATION : 99.2 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 5 degrees to 7 degrees .

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						45% sandstone. 25% mudstone. 30% siltstone. Bedding at 7 degrees to horizontal. Sandstone has low to good fizz.
33	302.90	305.90	3.00	2.90	2.90	MUDSTONE
						Middle fracture at 60 degrees to horizontal. Some 2cm sandstone interbeds in top .3m. One 2 cm coaly bed just below fracture. Thin calcite bands on bedding and fractures.
34	305.90	308.90	3.00	0.28		MUDSTONE
TS961601						
Ash	VM	FC	S MJ/kg	FSI		
70.18	-	-	- -	-		
						Carbonaceous towards base. Dark grey. Fracture at 55 degrees to horizontal
TS961602				0.53		COAL
Ash	VM	FC	S MJ/kg	FSI		
21.72	-	-	- -	-		
						Very bright. Blocky. Pyrite o cleats. Calcite on cleats. Contaminated with mudstone cuttings on outside of core. Cleating vertical to bedding. Hard.
TS961603				0.50		MUDSTONE
Ash	VM	FC	S MJ/kg	FSI		
70.66	-	-	- -	-		
						Coal in basal 8 cm. Thin calcite veins < 1m along bedding planes. Medium hard and partially ground up.
TS961604				1.46		COAL
Ash	VM	FC	S MJ/kg	FSI		
21.67	32.66	45.67	0.80 27.50	6.5		
						Hard to very hard. Blocky. No visible pyrite. Calcite on cleats. More banding near base but coal very bright.. Some missing in recovery of smaple? .23 coal missing.
35	308.90	309.80	0.90	0.80	0.87	COAL
TS961604						
Ash	VM	FC	S MJ/kg	FSI		
21.67	32.66	45.67	0.80 27.50	6.5		
						Same as above - more dull bands near basal 0.15 m. Coal crushed at top and broken from coring. Coal hard. Calcite on cleats. No pyrite visible.
TS961605				0.07		COALY SHALE FLOOR
Ash	VM	FC	S MJ/kg	FSI		
52.99	-	-	- -	-		
						Hard. Partly broken
36	309.80	312.80	3.00	0.10	2.90	COALY SHALE
TS961605						Same as above
Ash	VM	FC	S MJ/kg	FSI		
52.99	-	-	- -	-		
				2.70		MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-16C
CO-ORDINATES : 5485468.6 N. - 364209.0 E.
ELEVATION : 99.2 m
LOGG LOGGED BY: R. A. Swaren
COMMENTS: Bedding averages 5 degrees to 7 degrees .

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Medium hard. Dark grey. Bedding at 7 degrees to horizontal. Carbonaceous and coaly bed up to 10 cm thick in central portion and smaller .3cm beds lower down. GRades down into the coarse marker basal sandstone
				0.10		SANDSTONE
						Coarse. White subangular to angular grain. Hard to drill due to cherty content of matrix. Colour is medium brown grey. Basal unit always under the #1 seam in this area.,
37	312.80	315.30	2.50	1.35	2.44	SANDSTONE
						As above. Interbedded with siltier units at base. Fizz excellent in bottom half of core.
				0.99		MUDSTONE
						Silty and sandy at top and bottom. Bottom grades in the coarse sandstone unit again. Small coaly bands 1cm-2cm in central area. Dark grey. Medium hard. Bedding 5-7 degrees to horizontal
				0.10		SANDSTONE
						As basal unit above.
38	315.30	318.30	3.00	0.23	2.98	SANDSTONE
						As above. Coarse basal unit. Moderate fizz.
				1.28		MUDSTONE
						Dark grey. Slightly silty
				0.90		SANDSTONE
						Coarse basal unit. Good to no fizz
				0.34		SILTSTONE
						No fizz. Hard medium grey.
				0.23		SANDSTONE
						Coarse basal unit. Excellent fizz.
						END OF HOLE & CORE

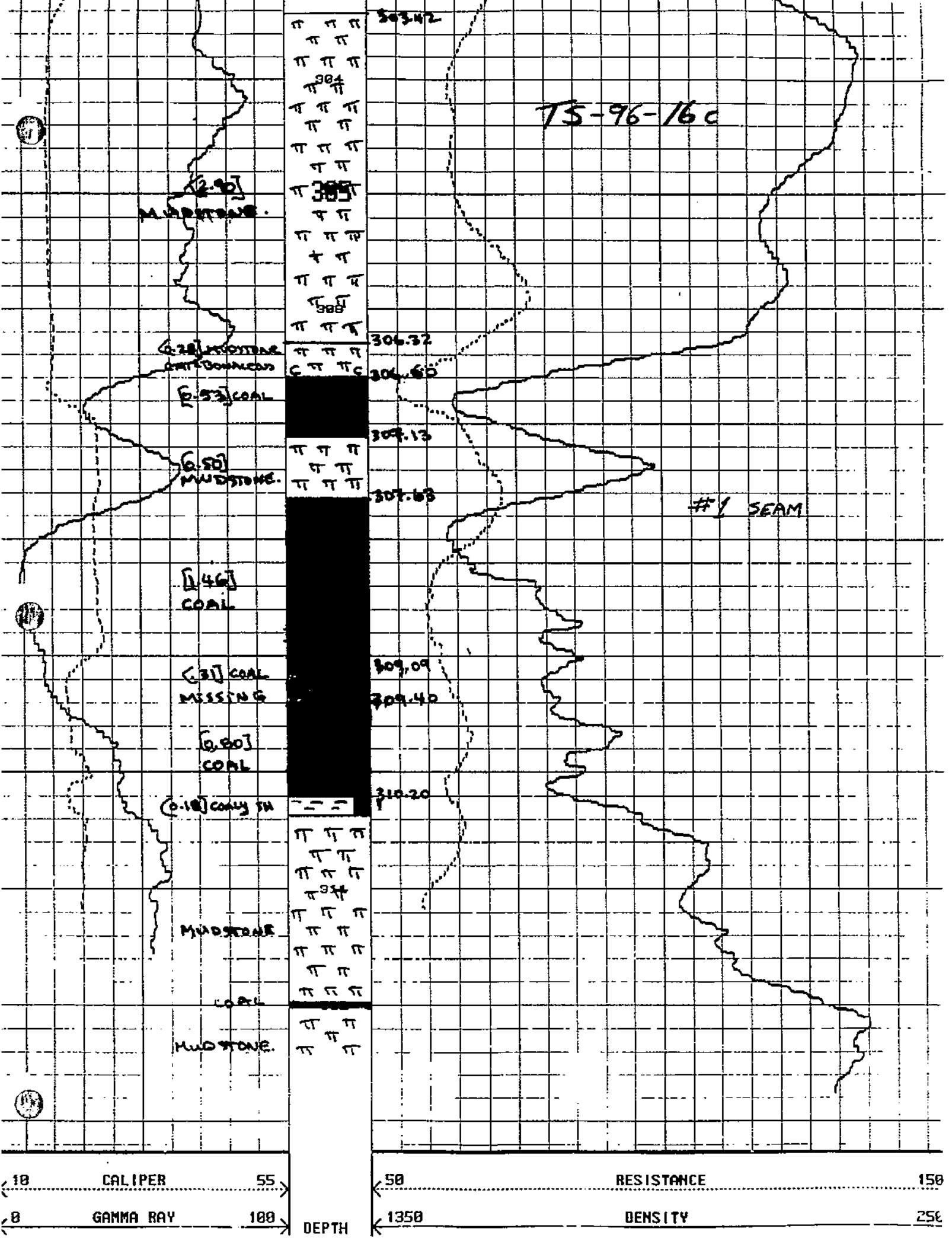
QUINSAM COAL CORPORATION

Hole Number: TS 96-16C — # 1 SEAM.

Location: TSABLE RIVER — Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
			304			
[2.90] MUDSTONE.			305			
			306	Ash % (D.B.)	QUALITY SAMPLE NUMBER	% (D.B.)
[0.28] MUDSTONE CARBONACEOUS.		306.32		70.18	TS961601	-
[0.53] COAL.		306.60	307	21.72	TS961602	-
[0.50] MUDSTONE.		307.13		70.66	TS961603	-
[1.46] COAL		307.63	308			
3.6 m				21.67	TS961604	0.80
[0.31] COAL MISSING.		309.09	309			
[0.80] COAL		309.40				
[.18] COALY SHALE		310.20 / 310.38	310	52.99	TS961605	-
			311			
COAL.			312			


TS-96-16c
303.42
304
305
306
307
308
306.32
306.60
307.13
307.63
309.09
309.40
310.20
[2.90] MUDSTONE.
[0.28] MUDSTONE CARBONACEOUS
[0.53] COAL
[0.50] MUDSTONE.
[1.46] COAL
[0.31] COAL
MISSING
[0.80] COAL
[0.18] COALY SH
MUDSTONE
COAL
MUDSTONE.
#1 SEAM
10 CALIPER 55
0 GAMMA RAY 100
DEPTH
50 RESISTANCE 150
1350 DENSITY 250

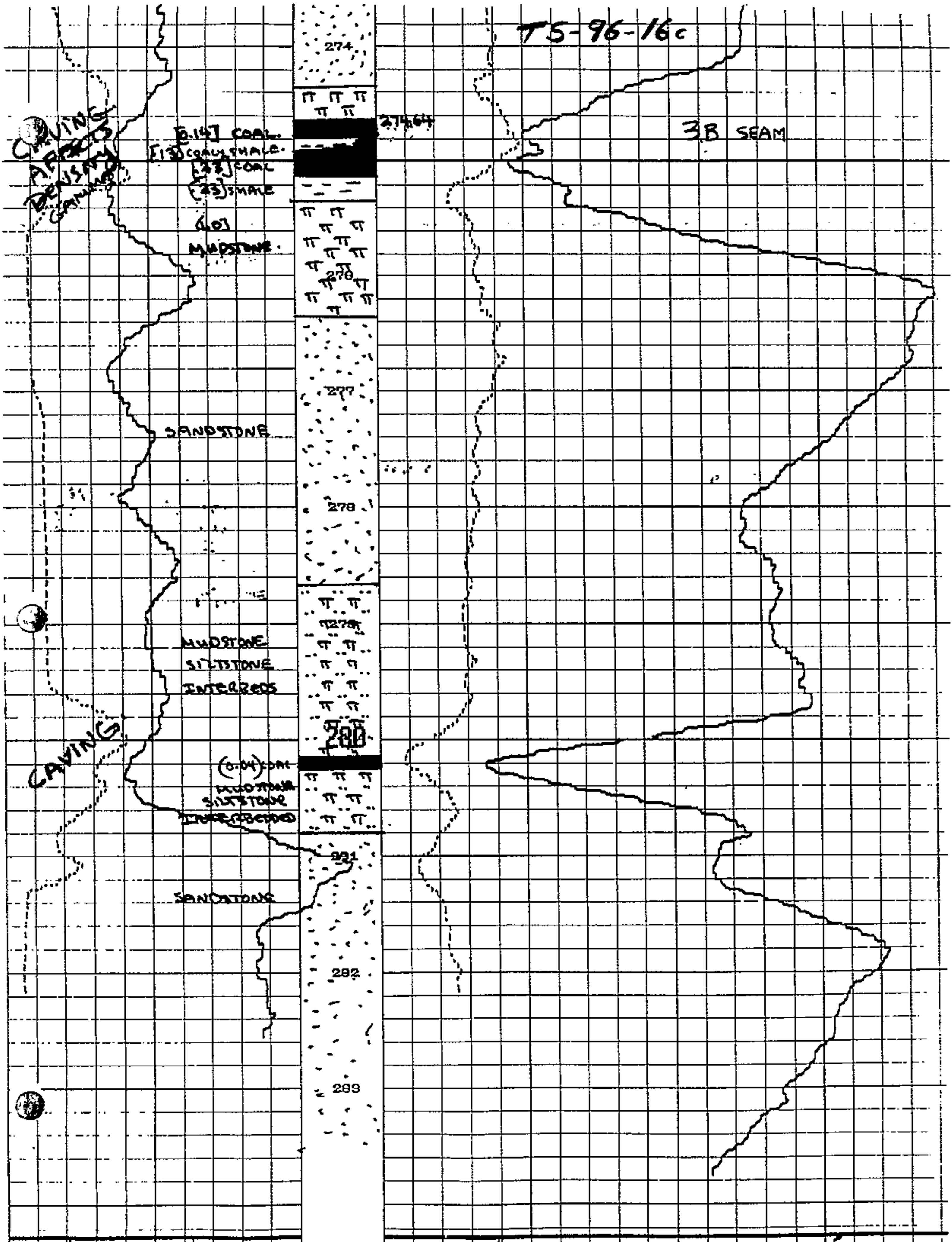
QUINSAM COAL CORPORATION

Hole Number: TS 96-116C SEAM F 3

Location: TSABLE RIVER Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
			CORE COLUMN Scale: 1:50			
SANDSTONE.			274			
(.27) MUDSTONE		274.37				
(.14) COAL		274.64				
(.13) CARB SHALE		274.78				
(.23) COAL		274.91	275			
(.23) SHALE.		275.14				
(1.03) MUDSTONE		275.37	276			
		276.37				
SANDSTONE.			277			
			278			
MUDSTONE SILTSTONE INTERBEDS			279			
(.04) COAL.			280			
MUDSTONE SILTSTONE INTERBEDS			281			
SANDSTONE			282			



TS-96-16c
3B SEAM
CAVING AFFECTS DENSITY
GAMMA
[0.14] COAL
[.15] COAL/SHALE
[.43] COAL
[.23] SHALE
(6.0)
MUDSTONE
SANDSTONE
MUDSTONE
SILTSTONE
INTERBEDS
CAVING
(0.04) COAL
MUDSTONE
SILTSTONE
INTERBEDDED
SANDSTONE
274
274.64
276
277
278
279
280
281
282
283

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-18
CO-ORDINATES : 5486890.2 N. - 363994.7 E.
ELEVATION : 92.9 m
DATE DRILLED: Aug. 17/96 - abandoned hole, lost core pipe, T.D. 400.6 m.
Aug. 22/96 - completed new hole to 425 m.
DRILLER: Hi-Rate Drilling

DEPTH (m) From	DEPTH (m) To	DESCRIPTION
0.0	41.0	Sand & gravel overburden
41.0	74.8	Mudstone, silty
74.8	99.2	Mudstone; sandstone interbeds
99.2	209.0	Mudstone; silty
209.0	233.4	Sandstone; Coal at 221.2
233.4	245.6	Mudstone; silty
245.6	299.9	Sandstone; medium grey
299.9	312.0	Mudstone; thin coal at 300 & 316
312.0	373.0	Sandstone, uniform, hard, started coring at 353
373.0	377.0	Mudstone; thin coal bands
377.0	382.0	Interbedded sandstone, siltstone, mudstone
382.0	385.6	Sandstone, fine to medium grained
385.6	386.0	COAL (dirty) No. 3 Seam
386.0	392.0	Sandstone, fine to medium grained
392.0	400.0	Sandstone, interbeds of siltstone/mudstone. Hole skidded , (new hole)
400.0	415.5	Sandstone; interbeds of siltstone/mudstone
415.5	416.6	Mudstone; coaly at base
416.6	419.0	COAL, No. 1 Seam
419.0	420.2	Mudstone
420.2	425.0	Sandstone (basal)
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-18
CO-ORDINATES : 5486890.2 N. - 363994.7 E.
ELEVATION : 92.9 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	353.00	356.00	3.00	2.89	2.89	SANDSTONE
						Fine grained grading to medium grained in bottom 2 meters. Light to medium grey. Hard to very hard. Massive. Minor thin carbonaceous laminae and inclusions. Bedding at 8 degrees to horizontal. One thin calcite infill on an irregularly vertical fracture. Fizz excellent in top meter and nil in bottom 2 meters
2	356.00	359.00	3.00	3.08	3.08	SANDSTONE
						Medium grained. Massive and homogeneous. Minor < 1% mudstone and carbonaceous laminae and inclusions. Medium grey. No fractures. Bedding at 7 degrees to horizontal. No fizz. Very hard.
3	359.00	362.00	3.00	3.00	3.00	SANDSTONE
						As above. No fizz. Some laminae near base at 20 degres to horizontal. May not be true bedding. Massive. Hard. No fractures.
4	362.00	365.00	3.00	3.04	3.04	SANDSTONE
						Medium grained. As above. < 1% thin mudstone laminae. Hard to medium hard. Pieces can be broken by hand. No fractures. Bedding 5 degrees to horizontal. Light to medium grey brown. Fizz - nil.
5	365.00	368.00	3.00	3.00	3.00	SANDSTONE
						As above. Medium grained. Moderately hard. Massive. Homogeneous. Medium grey with brownish flecks. Bedding 5 degrees to horizontal. < 1% carbonaceous mudstone. Fizz - moderately good in central 0.5m and nil in rest.
6	368.00	371.00	3.00	3.08	3.08	SANDSTONE
						As above. Massive. Homogeneous. No fracturing. Medium grey brown. < 1% carbonaceous mudstone. Harder. Fizz - nil. Bedding 5 degrees to horizontal from thin laminae. No fractures
7	371.00	374.00	3.00	1.78	2.58	SANDSTONE
						As above. Medium grained. Medium grey. Hard. Very minor muddy carbonaceous inclusions. Basal contact fractured at 35 degrees to horizontal. Pyrite inclusions near base. Basal contact is with mudstone. Fizz nil.
				0.80		MUDSTONE
						Fractured and very broken and squeezed near top. 0.08 is very muddy and almost bentonitic. Coaly fragments and zones throughout. Fractures at 35 degrees and 75 degrees with polished slickensides showing movement at 45 degree and vertically. Minor thin calcite veining in basal half which is harder Considerable movement has taken place in this soft fractured zone and the overlying sandstones have remained unfractured due to this zone taking up the stress. Other fractures at 45 degrees show slickensides, vertical movement and calcite on planes.
8	374.00	376.60	2.60	2.04	2.20	MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-18
CO-ORDINATES : 5486890.2 N. - 363994.7 E.
ELEVATION : 92.9 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Moderately hard. Dark grey brown. Many fractures at 35 degrees to horizontal. Calcite deposition in fracture planes. Polished and slickensided in up down vertical direction. Bedding at 5 degrees to horizontal with some slippage and calcite on old bedding slip planes. Thin carbonaceous 1mm laminae and stringers throughout. Basal contact with coal is crushed and broken.
				0.05		COAL (Missing 0.4m here or at base)
						Crushed and broken. Moderately hard, Shiny and many dull bands. 25% shale. Crushed and powdered.
				0.05		MUDSTONE
						Partly carbonaceous. Hard. Dark grey brown
				0.06		COAL (May be 0.4 missing)
						Broken. Shiny and blocky. No visible pyrite. Vertical cleating. No visible calcite.
9	376.60	379.60	3.00	0.10	2.70	COAL (0.30 missing?)
						Partly shaly. Hard. Basal contact is a 35 degree fracture plane polished and slickensided vertically.
				0.12		MUDSTONE
						Hard to moderately hard. Medium grey brown. Basal contact with coal sharp at 0-5 degrees to horizontal.
				0.32		COAL
TRCBM 13 - Methane Sample						Hard. Blocky. All gone for methane. No visible pyrite. Sharp basal contact at 5 degrees to horizontal
				2.16		SILTSTONE/MUDSTONE
						Thinly interbedded. More mudstone and coaly material near the top. Bedding at 3-5 degrees to horizontal. Many 75 degrees to vertical fractures with calcite on planes. Some sandstone layers very thin. Siltstone 60%. Mudstone 35%. Sandstone 5%. No fizz.
10	379.60	382.60	3.00	2.51	3.00	SILTSTONE/SANDSTONE/MUDSTONE
						Interbedded. Sandstone medium to fine grained and hard. Thinly interbedded with siltstone and mudstone. Sandstone 35%, Siltstone 50%. Mudstone 15%. Bedding at 5 degrees to horizontal. Grades down into sandstone at base. Fizz - excellent in sandstone. Nil in rest.
				0.49		SANDSTONE
						No fizz. Fine grained. Medium grey. Hard. Irregular muddy and silty inclusions near top. Thin mudstone band 5mm near base at 5 degrees to horizontal.
11	382.60	385.60	3.00	2.80	2.90	SANDSTONE
						Medium grained to fine grained. Medium grey brown. Thin < 1cm silty and muddy bands near top at 5 degrees to horizontal. Irregular vertical fractures with calcite on planes, polished and slickensided which show horizontal movement. Other fractures at 75 degrees to horizontal. Hard. Sharp basal contact with mudstone. Fizz - good.
12	385.60	388.60	3.00	0.32	2.45	COAL/SHALY COAL/COALY SHALE (0.55 missing + 0.10 above)

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-18
CO-ORDINATES : 5486890.2 N. - 363994.7 E.
ELEVATION : 92.9 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Interbedded. Broken into pieces 5 cm in size. Ground up and most lost.
				2.13		SANDSTONE
						Fine to medium grained. More silty bands near base and in centre 15%. Carbonaceous inclusions. Fractured at 40 degrees and 65 degrees to horizontal. Bedding at 5 degrees to horizontal. Fizz - nil
13	388.60	391.60	3.00	3.00	3.00	SANDSTONE
						Fine to medium grained. Medium grey with brown fleck. Fractures at 60 degrees polished and slickensided at 60 degrees across fault plane. Large area of fault gouge up to 0.2m thick in middle of core. Calcite infill in gouge up to 2 cm thick.. Mudstone, calcite & many high angle fractures in broken gouge area. Bedding at 5 degrees on small < 1% mudstone laminae. Hard to very hard. Low fizz.
14	391.60	394.60	3.00	0.33	3.00	SANDSTONE
						As above. Sharp basal contact at 5 degrees to horizontal.
				2.67		SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded. Sandstone 25%. Siltstone 45%. Mudstone 30%. Highly fractured. Fractures irregularly vertical at 60 degrees and 45 degrees. Some calcite infilling. All the fractures suggests possibly just above a large coal seam. Some carbonaceous material in mudstone layer. Beds vary from 0.1m to < 1cm in thickness. Hard. Fizz good in sandstone
15	394.60	397.60	3.00	2.80	2.80	SANDSTONE/SILTSTONE/MUDSTONE
						Sandstone fine to medium grained , hard and 60%. Siltstone dark grey.Hard thinly bedded up to 8 cm and 20%. Mudstone soft to moderately hard. Broken 20%. Fractures at 60 degrees vertical 75 and 40 degrees. Very highly fractured with calcite infilling. Fizz - low to good in sandstone
16	397.60	400.60	3.00		2.60	SANDSTONE/MUDSTONE/SILTSTONE
						Interbedded with more sandstone near base. Very fractured and broken. Sandstone 35%. Mudstone 35% siltstone 30%. Sandstone fine grained and hard. Mudstone broken. Fractures at 40 degrees to vertical throughout. Slickenside show up/down movement. Calcite on old fracture planes. Sandstone has good fizz. The rest is nil
						END of HOLE - LOST CORE STRING. SKIDDED TO TC96018CA

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-18CA
CO-ORDINATES : 5486890.2 N. - 363994.7 E.
ELEVATION : 92.9 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	395.30	397.80	2.50	2.43	2.43	SILTSTONE
						Highly fractured at 30 - 40 degrees to horizontal with calcite on fracture planes. Some older fractures are at 75-85 degrees. Fractures polished and slickensided in a vertical direction. Siltstone is moderately hard, broken and partly muddy. Good fizz near bottom for 0.3m. The remainder is no. Dark grey colour.
2	397.80	400.40	2.60	0.83	2.22	SILTSTONE/MUDSTONE
						Thinly interbedded. One zone of muddy material plastic and sticky of 0.04m thick. Siltstone.mudstone highly fractured and broken. Fractures at 35-70 degrees from horizontal. Polished and slickensided in a vertical direction. Moderately hard and dark grey. No fizz. Calcite on fracture planes.
				1.39		SANDSTONE
						Hard. Fine to medium grained. Medium grey. Fractures at 45 & 65 degrees to horizontal. Minor muddy to carbonaceous laminae. No calcite Fizz low to moderately good. No bedding.
3	400.40	402.90	2.50	0.33	1.00	COAL (1.5 missing?)
						Shale at top broken and crushed. Probably 3-4 cm. Coal is hard. Blocky. Bright and partly banded with bright bands. Some pyrite visible in upper thin shaly band. Coal is 20% shaly. Polished and slickensides show horizontal movement. Calcite on bedding. Bedding 0 degrees on horizontal. Bedding with underlying mudstone at 3 degrees to horizontal. Pyrite on vertical cleats.
				0.67		MUDSTONE
						Siltstone in basal 5 cm. Mudstone grades down. Medium hard. Dark grey. Calcite on bedding planes at 0 degrees. Minor carbonaceous stringers throughout.
4	402.90	404.40	1.50	1.57	1.57	SANDSTONE
						Hard. Thin carbonaceous laminae < 1% and some inclusions to 1 cm. High angle fractures near top at 65-75 % from horizontal. Fine to medium grained. Medium grey - brown. Fizz - nil. No bedding.
5	404.40	406.70	2.30	2.36	0.36	SANDSTONE
						Hard. Minor fracture on bedding with calcite at almost horizontal. Light to medium grey. Massive. Homogeneous. Fair fizz in top 0.5m and excellent in rest.
6	406.70	409.70	3.00	3.15	3.15	SANDSTONE
						As above. Fine to medium gained. Massive and very hard. Fractures at 75, 30 and 50 degress with calcite on some surfaces. Very, very minor carbonaceous inclusions. Homogeneous. Fizz - low to very good. 60% low - 40% very good.
7	409.70	412.50	2.80	2.70	2.70	SANDSTONE
						As above. Fine grained. Fizz. Low to good near bottom. Fractures with calcite at 30 degrees. GRades down into sandstone/mudstone. Very minor thin carbonaceous laminae. Massive. Homogeneous.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-18CA
CO-ORDINATES : 5486890.2 N. - 363994.7 E.
ELEVATION : 92.9 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
				0.30		SANDSTONE/MUDSTONE
						Interbedded. 25% mudstone. 75% sandstone. Bedding 0-7 degrees from horizontal. Carbonaceous inclusions throughout. Mudstone beds 2-5 cm. No fizz.
8	412.50	415.50	3.00	2.88	3.00	MUDSTONE/SANDSTONE/SILTSTONE
						Interbedded. Mudstone 30%. Sandstone 15%. Siltstone 55%. Mudstone increases down. Some carbonaceous material. Bedding irregular and turbid in part. Bedding 0- 5 degrees. Calcite in old fractures at 45, 55 and 65 degrees. Hard. Good fizz in sandstone and nil in rest.
9	415.50	418.50	3.00	1.13	1.80	MUDSTONE
TS9618A01						
						Medium hard. Fractures at 30,45 and 55 degrees. Calcite on fracture planes. Basal contact with coal is sharp and horizontal. Minor carbonaceous inclusions.
TS9618A02				0.67		COAL (1.2 missing?)
						Good coal. Visible pyrite < 1% on vertical cleat faces. Calcite also on cleats and bedding. Bright and blocky with some bright banding. Small 2 cm shaly zone 0.2m from base with 1mm pyrite band.
10	418.50	420.60	2.10	0.40		SHALY COAL (.25 missing)
TS9618A03						
						20-30% shale. Bedding polished from slip. Pyrite on bedding. Banded with many dull bands. Fractured and friable
TS9618A04				1.06		MUDSTONE
						Friable. Highly broken and fractured. 10% coaly. Incompetent. Some areas soft muddy up to 4 cm. Coaly stringers throughout. Basal contact with siltstone at 5 degrees to horizontal. Thin calcite veins vertically and horizontally. Completely fractured but more competent near bottom. No fizz.
				0.37		SILTSTONE
						Hard. Fractured at 35 & 45 degrees and vertical calcite fractures. Flat contact with basal sandstone. Partly broken up. Medium grey.
				0.07		SANDSTONE
						Looks like basal sandstone. Hard. Medium grained. Medium grey brown with small subangular white grains throughout. Good fizz.
11	420.60	423.00	3.00	3.06	3.06	SANDSTONE
						Low to moderately good. Medium grained. Medium grey brown. Basal sandstone. Very hard. Massive. Very little fracturing.
12	423.60	425.10	1.50	1.46	1.46	SANDSTONE
						Basal. As above. Coarse grained. 30 degrees with vertical fractures. Bedding on thin mudstone laminae at 0-5 degrees from horizontal. Calcite in vertical fractures.
						END of HOLE

DEPTHS FROM E-LOG.

QUINSAM COAL CORPORATION

Hole Number: TS96-18CA #1 SEAM

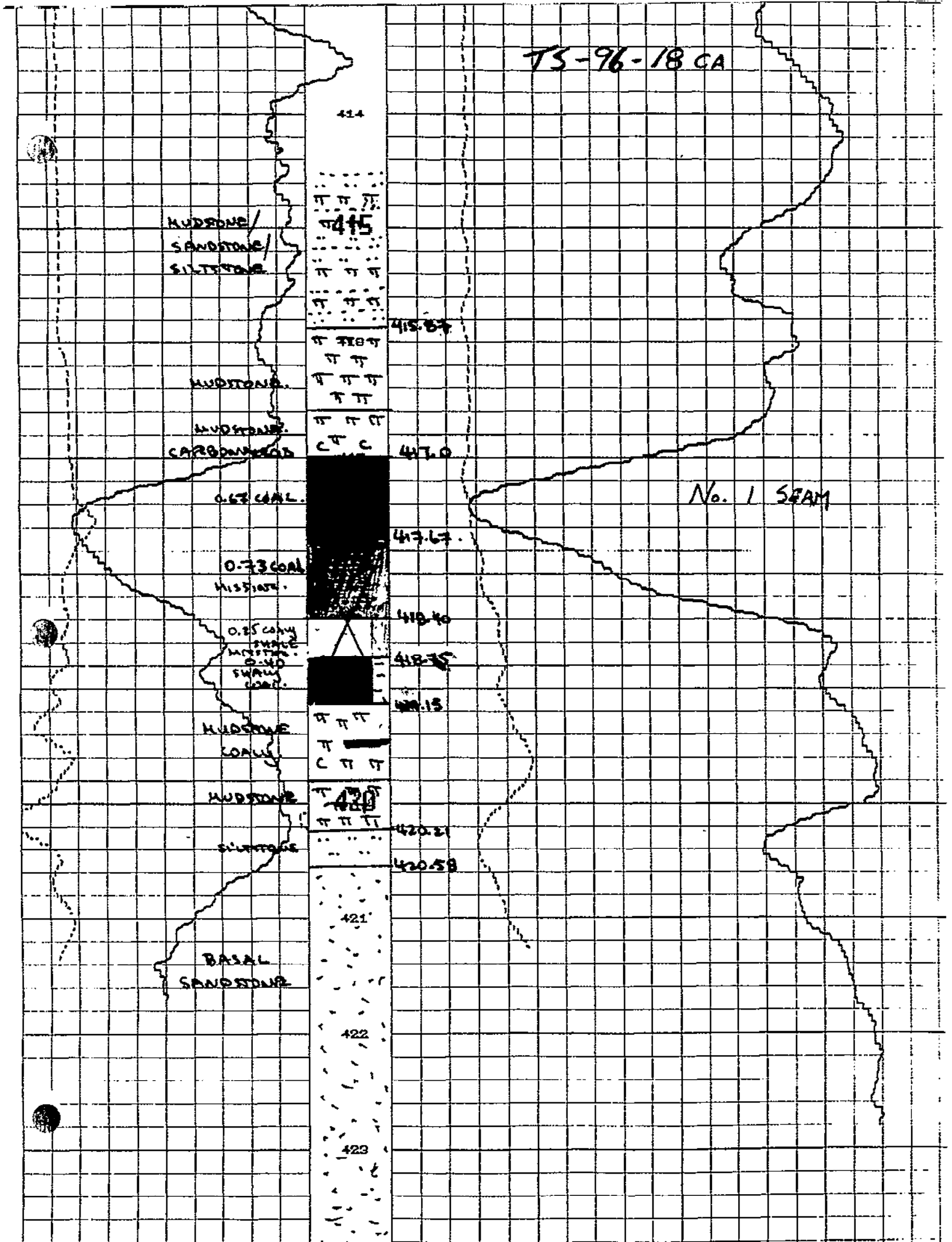
Location: TSABLE RIVER Elevation:

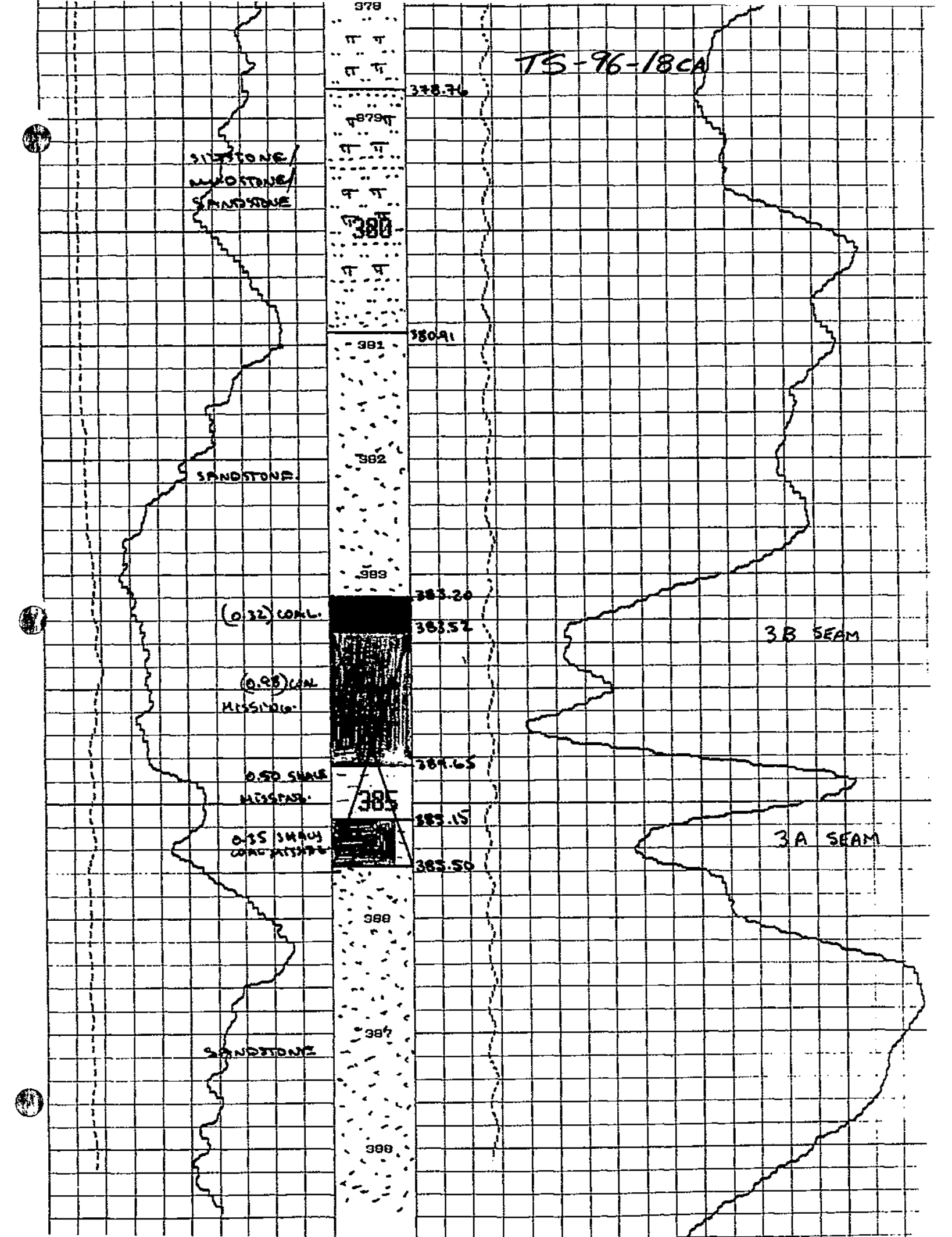
Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
MUDSTONE/ SANDSTONE/ SILTSTONE						
		415.87	416			
MUDSTONE						
					TS9618A01	
		417.0	417			
(0.67) COAL.					TS9618A02	
		417.67				
(0.73) COAL MISSING.			418			
		418.40				
(0.35) COALY SHALE MISSING		418.75				
(0.40) COALY COAL		419.15	419		TS9618A03	
MUDSTONE (COALY)					TS9618A04	
MUDSTONE			420			
		420.21				
SILTSTONE		420.58				
			421			
			422			
BASAL SANDSTONE.						
			423			
			424			

2.15m

TS-96-18 CA


414
415
HUDSONE/ SANDSTONE/ SILTSTONE
415.67
HUDSTONE.
HUDSTONE. CARBONACEOUS
417.0
0.67 COAL.
No. 1 SEAM
417.67
0.73 COAL
MUDSTONE.
418.40
0.25 COAL SHALE MUDSTONE 0.40 SWAMP COAL.
418.35
418.15
HUDSTONE COAL
HUDSTONE
420
420.21
SILTSTONE
420.58
421
BASAL SANDSTONE
422
423


TS-96-18CA
378
378.76
379
SILTSTONE/
MUDSTONE/
SANDSTONE
380
380.91
381
382
SANDSTONE
383
383.20
(0.32) COAL
383.52
3B SEAM
(0.98) COAL
MISSING
384.65
0.50 SHALE
MISSING
385
385.15
0.35 SHALY
COAL MISSING
385.50
3A SEAM
386
387
SANDSTONE
388
389

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-17C
CO-ORDINATES : 5484749.6 N. - 363120.3 E.
ELEVATION : 219.4 m
DATE DRILLED: October 7, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	2.0	Glacial till overburden
2.0	49.0	Sandstone
49.0	52.0	COAL & mudstone, No. 3 Seam
52.0	57.4	Mudstone, sandstone interbeds
57.4	65.0	Sandstone
65.0	65.3	COAL, thin
65.3	78.0	Sandstone, hard
78.0	83.6	Siltstone, hard
83.6	84.2	Mudstone, soft
84.2	87.6	COAL; No. 1 Seam, mudstone partings near base
87.6	89.0	Mudstone; soft
89.0	91.5	Siltstone; muddy
91.5	94.6	Sandstone; white
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-17C
CO-ORDINATES : 5484749.6 N. - 363120.3 E.
ELEVATION : 219.4 m
LOGGED BY: S. Gardner
COMMENTS: Depths not corrected - No E-Log

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	69.60	71.60	2.00		1.94	
				0.77		SILTSTONE
						Medium to light grey; sandy; hard; competent; variable bedding
				1.17		SANDSTONE
						Medium grey. Fine grained. Lithic. Well cemented. Numerous thin mudstone interbeds. Bedding at 20 degrees to horizontal
2	71.60	74.60	3.00		3.04	
				3.04		SANDSTONE
						Same as above. Coarsening downward. Muddy laminae throughout. Variable bedding (some crossbedding). Beds dipping 10-20 degrees to horizontal
3	74.60	77.60	3.00	3.02	3.02	SANDSTONE
						Medium grey with dark grey laminae. Medium grained with coarser grained sections. Hard. Very well cemented. Subangular grains. Lithic but abundant quartz. occasional leaf imprints.
4	77.60	80.60	3.00		3.03	
				0.75		SANDSTONE
						Medium to dark grey. Medium to fine grained. Variable bedding. Muddy sections. Crossbedding evident (10-25 degrees).
				1.24		SILTSTONE
						Medium brownish grey. Competent. Relatively unbroken. Open fracture at base with large crystals of calcite as fracture fill. No displacement. High angle
				1.04		SILTSTONE
						As above. Minor muddy section of softer material with pyritic lenses.
5	80.60	83.60	3.00	3.00	3.00	SILTSTONE
						Medium brownish grey. Uniform. 2 prominent high angle joint planes with calcite infill.
6	83.60	86.60	3.00		2.31	**Note: Lost core: Top of coal; end of run**
				0.07		SILTSTONE
						Medium brown. Very hard. Coaly impregnations
				0.21		MUDSTONE
						Medium brown. Softer. broken. Finer calcite veining prominent. Thin coaly laminae. Carbonaceous at base
TS961701				0.36		MUDSTONE
Ash	VM	FC	S	MJ/kg	FSI	
31.20	29.72	39.08	1.61	22.63	6.0	
						Dark brown to black becoming very coaly at base (gradational contact) 50-60% ash. Pyrite visible.
TS961701				0.14		COAL
Ash	VM	FC	S	MJ/kg	FSI	
31.20	29.72	39.08	1.61	22.63	6.0	

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-17C
CO-ORDINATES : 5484749.6 N. - 363120.3 E.
ELEVATION : 219.4 m
LOGGED BY: S. Gardner
COMMENTS: Depths not corrected - No E-Log

Core No.	CORE FOOTAGE'S DRILLED From	To	Total	RECOVERED Section	Total	GEOLOGICAL DESCRIPTION Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding Angle, Alteration, Wetness, Contamination
						Clean. Bright. Blocky. Light in weight. Abundant pyrite. Fairly hard. Pyrite is both finely disseminated and as veinlets and sheeting on bedding. Bedding is nearly horizontal
TS961701				0.16		COAL
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		
						Clean but some dull fissile sections easily broken. Horizontal slippage on bedding (slickensided ; greasy
TS961701				0.39		COAL
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		
						Clean. Bright. Blocky. Hard. Abundant large pyrite on cleats & bedding. Bedding variable from 5 to 20 degrees to horizontal
TS961701				0.22		COAL
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		
						A bit softer but still clean and bright. Less pyrite in this section
TS961701				0.12		COAL
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		
						Soft. Fissile. Wet. Partially crushed in box but still complete.
TS961701				0.08		MUDSTONE
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		
						Carbonaceous. Brown streak becoming coaly at base (gradational contact)
TS961701				0.56		COAL
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		
						Clean. Hard. Bright. Blocky. Bottom 4 cm broken (Lost core?). Abundant calcite veining on cleats and bedding (as stockwork). Some pyrite
7	86.60	89.00	2.40		2.28	
TS961701				0.21		COAL
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		
						Same as above. Hard. Clean and bright. Some pyrite.
TS961701				0.07		MUDSTONE
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		
						Dark brown. Carbonaceous thin calcite laminae. Coaly. Lensoid. No definite bedding. Flow structure.
TS961701				0.60		COAL
Ash	VM	FC	S MJ/kg	FSI		
31.20	29.72	39.08	1.61 22.63	6.0		

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-17C
CO-ORDINATES : 5484749.6 N. - 363120.3 E.
ELEVATION : 219.4 m
LOGGED BY: S. Gardner
COMMENTS: Depths not corrected - No E-Log

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Clean and bright but some dull sections. Visible pyrite. Variable bedding 0-15 degrees with slickensided bedding planes throughout. Bottom contact with soft mudstone floor at sharp irregular angle (slump fracture?) . Floor has abundant pyrite veining. Note: Entire seam section including rood and floor relatively undisturbed
				0.50		MUDSTONE
						Medium brown. Soft. Broken with minor slickensides. Pyritic sheeting on slickensides
				0.90		MUDSTONE
						Medium grey. Silty. 3 prominent joints at 25 degrees to horizontal showing minor slippage with calcite and secondary pyrite sheeting.
8	89.00	91.80	2.80		2.61	
				2.45		SILTSTONE
						Medium grey. Fairly hard but muddy sections. Highly broken in box. No discernible major deformation but some minor slickensided zones.
				0.16		SANDSTONE
						Medium grey. Medium to coarse grained. White. Basal.
9	91.80	94.60	2.80	0.96	3.00	SANDSTONE
						As above
				2.04		SANDSTONE
						Fine to very fine (silty) Hard. Light grey
						END OF HOLE

QUINSAM COAL CORPORATION

* DEPTHS FROM E-LOG

Hole Number: TS 96 17c

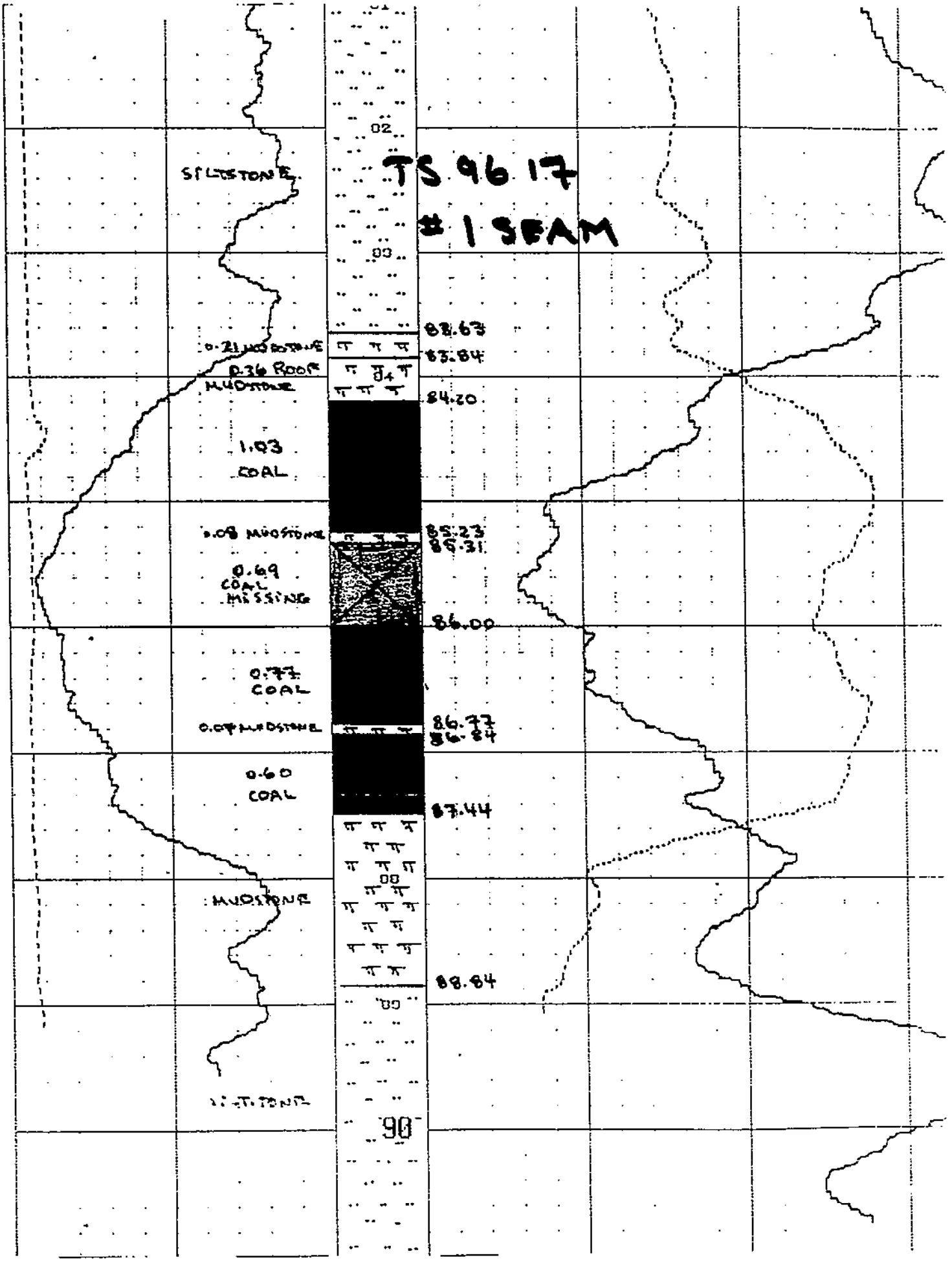
1 SEAM

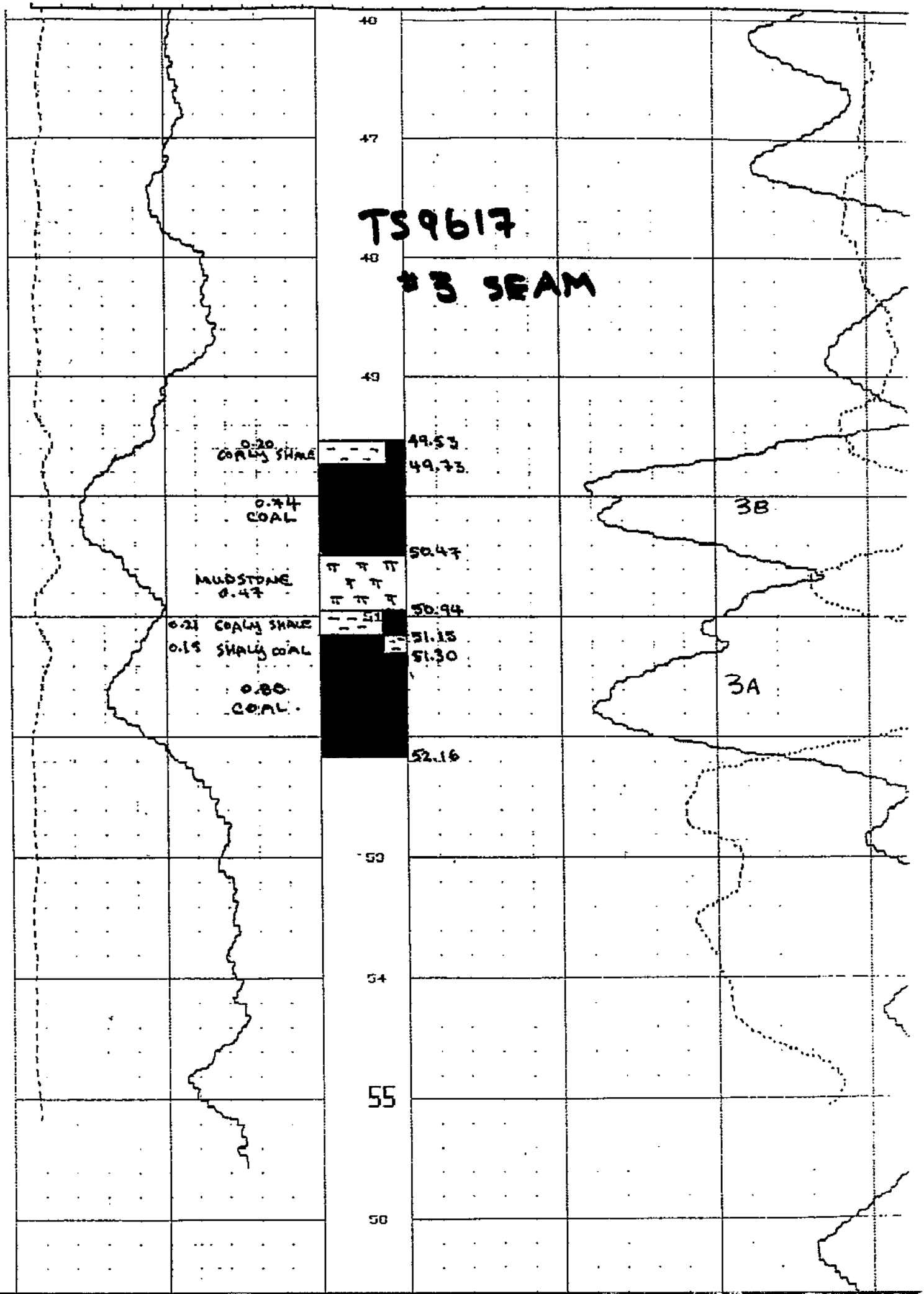
Location: TSABLE RIVER

Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
			82		COAL SAMPLE NUMBER	
SILTSTONE			82			
0.21 MUDSTONE		83.63		Ash % (D.B.)		5% (D.B.)
0.36 MUDSTONE		83.84				
ROOF		84.20	84			
1.03m COAL			85	31.20		1.61
0.08 MUDSTONE		85.23				
0.69m COAL MISSING		85.31			TS 961701	
3.24m		86.00	86			
0.77 COAL						
0.05 MUDSTONE		86.77				
0.60 COAL		86.84	87			
		87.44				
MUDSTONE			88			
			89			
SILTSTONE			90			


TS 96 17
#1 SEAM
SILTSTONE
0.21 MUDSTONE
0.36 ROOF MUDSTONE
1.03 COAL
0.08 MUDSTONE
0.69 COAL MISSING
0.77 COAL
0.04 MUDSTONE
0.60 COAL
MUDSTONE
SILTSTONE
83.63
83.84
84.20
85.23
85.31
86.00
86.77
86.84
87.44
88.84
90


TS9617
#3 SEAM
0.20
COALY SHALE
0.74
COAL
MUDSTONE
0.47
0.21 COALY SHALE
0.15 SHALY COAL
0.80
COAL
49.53
49.73
50.47
50.94
51.15
51.30
52.16
3B
3A
48
47
46
49
50
54
55
56

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-19C
CO-ORDINATES : 5487408.9 N. - 363820.4 E.
ELEVATION : 100.9 m
DATE DRILLED: Sept. 1/96
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	59.0	Glacial Till
59.0	293.0	Mudstone, silty
293.0	307.2	Sandstone; mudstone interbeds
307.2	336.2	Mudstone, silty
336.2	458.0	Sandstone, thin coal at 362. Started coring at 452.4
458.0	461.7	COAL. No. 1 Seam; some shale near base
461.7	462.3	Mudstone
462.3	470.1	Sandstone; some siltstone/mudstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-19C
CO-ORDINATES : 5487408.9 N. - 363820.4 E.
ELEVATION : 100.9 m
LOGGED BY: R. A. Swaren
COMMENTS:

Core No.	CORE FOOTAGE'S DRILLED From	To	Total	RECOVERED Section	Total	GEOLOGICAL DESCRIPTION Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding Angle, Alteration, Wetness Contamination
1	452.40	454.40	2.00	1.39	1.39	SANDSTONE
						Medium grained. Medium grey. Very hard. Massive & homogeneous. Thin mudstone streaks & laminae < 1%. Bedding at 7 degrees to horizontal. No fizz
2	454.40	455.60	1.20	1.50	1.50	SANDSTONE
						As above
3	455.60	458.60	3.00	0.43	1.14	SANDSTONE ROOF
						Fine grained, fractured at vertical. Thin laminae of mudstone. Sandstone irregularity overlies of coal. Bedding at 0-10 degrees to horizontal. Medium grey. Hard.
TS961901				0.71		COAL (could be 1.86 missing)
Ash	VM	FC	S MJ/kg	FSI		
35.68	27.92	36.40	1.14 21.38	5.5		
						Very soft, friable and ground up in coring. Some is in powder and some ground into 1cm slippery polished fragments. Top .23 is muddy with another muddy lense of 3 cm near the bottom. One or two hard core pieces . One fractured at 40 degrees to horizontal. Calcite veins and calcite on fractures is visible. Overall the coal is quite dirty.
4	458.60	460.60	2.00	0.20	0.74	COAL (1.26 missing)
TS961902						
Ash	VM	FC	S MJ/kg	FSI		
43.67	26.06	30.27	1.63 17.87	4.0		
						Soft and hard ground pieces at top. Good coal. Visible pyrite on fractures as well as calcite. Some pieces slick and polished.
TS961903				0.18		MUDSTONE
Ash	VM	FC	S MJ/kg	FSI		
85.08	11.25	3.67	1.42 2.35	0.0		
						Moderately hard. Medium brown. Fractured vertically at 75 degrees to horizontal. Calcite on fracture planes.
TS961904				0.36		COAL
Ash	VM	FC	S MJ/kg	FSI		
25.03	28.60	46.36	1.97 25.63	3.5		
						Basal portion is hard, the remainder powdery and slick. 1 cm pieces with some harder fragments up to core diameter. Good coal. Calcite on fracture and cleavage planes. Fractures at 45 degrees to horizontal
5	460.60	461.70	1.10	0.50	0.79	COAL (0.31 missing)
TS961905						
Ash	VM	FC	S MJ/kg	FSI		
87.95	-	-	-	-		
						Hard. Blocky. Bright. Pyrite on vertical cleats. Coal fractured at 45 degrees to horizontal. Bedding with underlying mudstone at 17 degrees. Minor calcite. Coal ground up in top.
TS961906				0.29		MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-19C
CO-ORDINATES : 5487408.9 N. - 363820.4 E.
ELEVATION : 100.9 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Moderately hard. Brown. Fractured at 40 degrees. Calcite on fracture planes.
6	461.70	464.10	2.40	0.65	2.40	MUDSTONE
						Soft and muddy. Light to medium grey. Friable. Washed and fractured. Calcite on fracture planes. Fractures at 35 & 70 degrees. Sharp contact with underlying formations.
				1.75		SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded. Sandstone 25%/ Siltstone 40%/ Mudstone 35%. Medium hard. Highly fractured at 60 & 30 degrees. Vertical with calcite on fracture planes and slickensides showing vertical and horizontal movement directions. Interbeds are thins and irregular. thin carbonaceous lenses and inclusions throughout. Core is highly broken up. No good bedding. Fizz - low to good in sandstone and nil in rest.
7	464.10	467.10	3.00	0.16	3.00	SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded as above.
				2.84		SANDSTONE
						Fine grained. Hard. Medium grey brown. Upper bedding contact sharp and 10 degrees from horizontal. Many thin interbeds of mudstone and carbonaceous material. Highly fractured at 85, 45 and 30 degrees. Fractures calcited, polished and slickensided at 60 degrees to horizontal in vertical direction. Sandstone is quite broken up. Fizz - excellent in upper meter and low in rest.
8	467.10	470.10	3.00	0.11	2.80	SANDSTONE
						As above.
				0.50		MUDSTONE
						Soft. Highly fractured and ground. Fractures at 45 and 60 degrees vertical with calcite on planes. Medium brown grey. No fizz.
				2.19		SANDSTONE
						Hard. Look somewhat like basal unit in 0.3m section 0.3 meters form bottom where it is medium to coarse grained with thin crossbedding and carbonaceous stringers. Fractures have calcite on planes and are many at 60 degrees, vertical 30 degrees etc. Many thin calcite veinlets throughout. Polished slickensides show vertical movement.
						Fizz - nil to low.
						END of CORE and HOLE

DEPTHS FROM E-LOG.

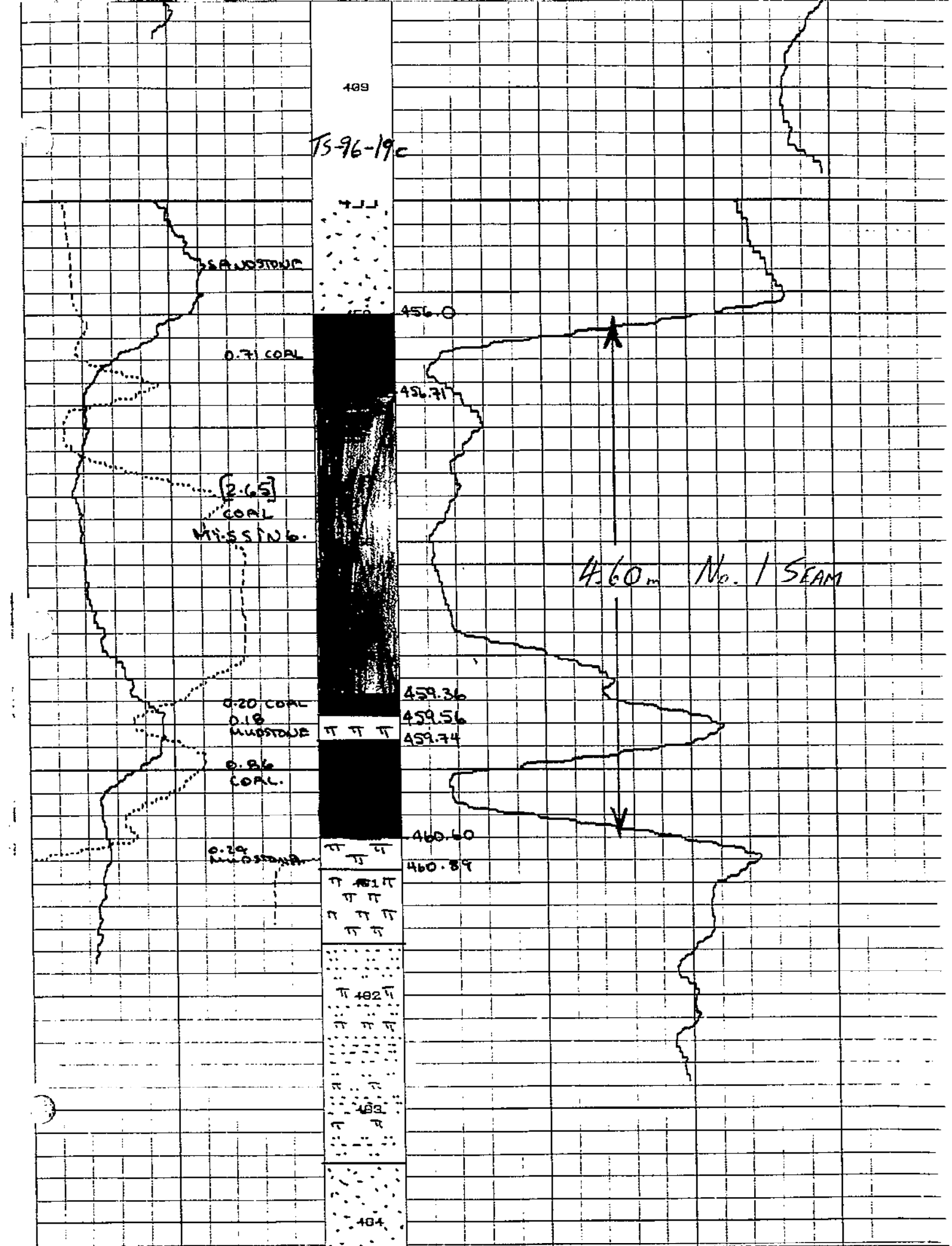
QUINSAM COAL CORPORATION

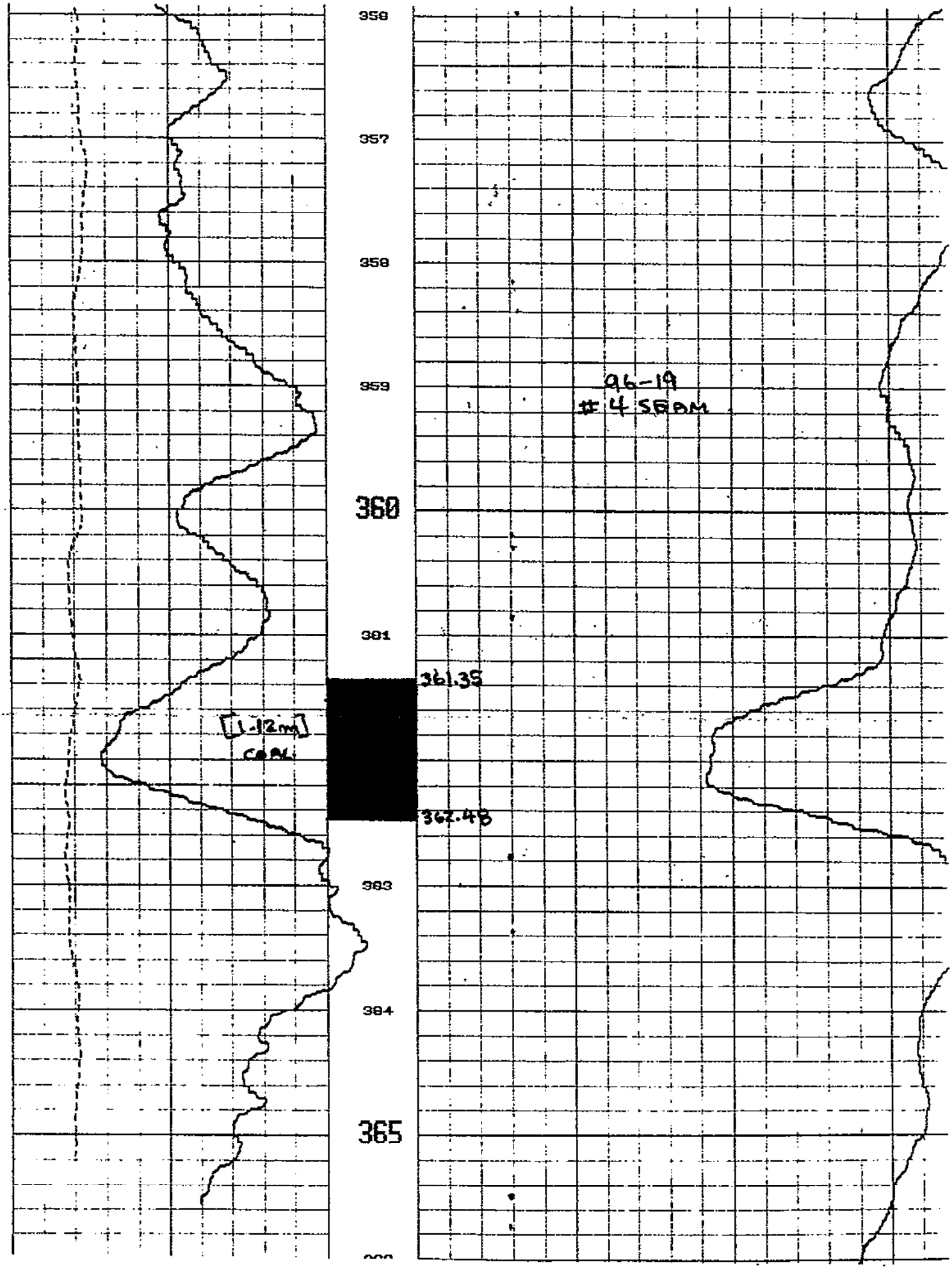
Hole Number: TS 96-19C — # 1 SEAM

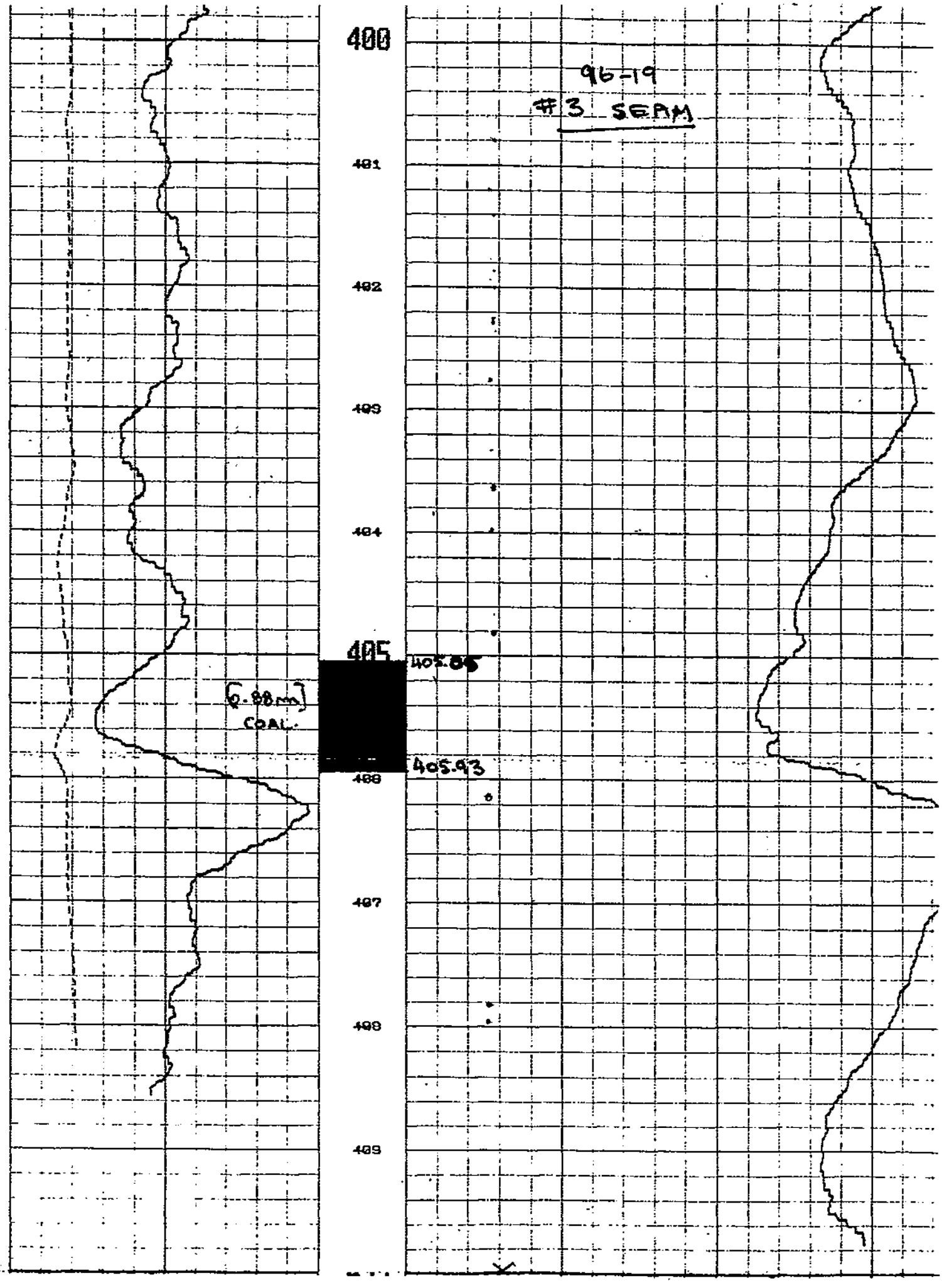
Location: TSABLE RIVER — Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
			454			
SANDSTONE.			455		COAL SAMPLE NUMBERS.	
				ASH % (D.B.)		5 % (D.B.)
		456.0	456			
0.71 COAL		456.71		35.68	TS 96 1901	1.14
[2.65] COAL MISSING.			457			
			458			
4.60m.			459			
		459.36		43.67	TS 96 1902	1.63
0.20 COAL		459.56		85.08	TS 96 1903	1.42
0.18 MUDSTONE		459.74				
0.86 COAL			460	25.03	TS 96 1904	1.97
		460.60		87.95	TS 96 1905	
0.29 MUDSTONE		460.89				
MUDSTONE			461			
MUDSTONE/ SILTSTONE/ SANDSTONE			462			


409
TS-96-19c
SANDSTONE
456.0
0.71 COAL
456.71
[2.65]
COAL
MISSING
4.60m No. 1 SEAM
459.36
0.20 COAL
459.56
0.18
MUDSTONE
459.74
0.86
COAL.
460.60
0.29
MUDSTONE
460.89
401
402
403
404

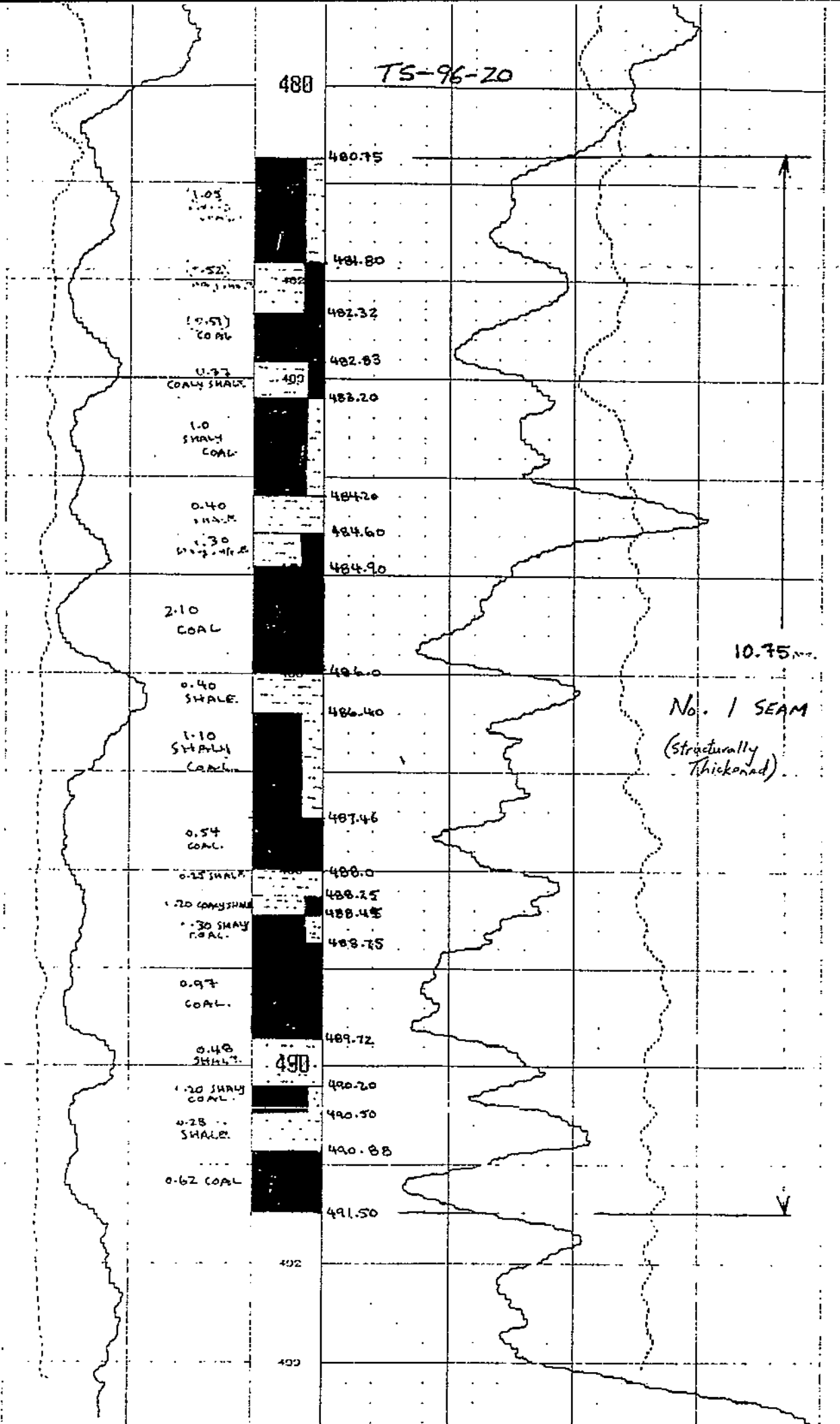

358
357
358
359
360
361
361.39
[1.12m]
COAL
362.48
363
364
365
96-19
#4 SEAM


400
401
402
403
404
405
406
407
408
409
96-19
#3 SEAM
405.80
[0.80m]
COAL
405.93

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-20
CO-ORDINATES : 5488336.0 N. - 363652.0 E.
ELEVATION : 109.2 m
DATE DRILLED: August 28, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	42.4	Glacial till
42.4	294.7	Mudstone, dark grey; silty
294.7	338.0	Sandstone; medium grey
338.0	338.3	COAL, thin
338.3	363.5	Sandstone, medium grey
363.5	364.0	COAL, No. 4 Seam
364.0	447.0	Sandstone, medium grey
447.0	448.0	COAL, No. 3 Seam
448.0	480.0	Sandstone, siltstone, mudstone interbeds
480.0	488.4	COAL, No. 1 Seam
488.4	507.0	Siltstone, sandstone, mudstone interbeds
		END of HOLE


TS-96-20
480
480.75
1.05
481.80
0.52
482.32
0.51
COAL
482.83
0.37
COALY SHALE
483.20
1.0
SHALY
COAL
484.20
0.40
SHALE
484.60
0.30
484.90
2.10
COAL
486.0
0.40
SHALE
486.40
1.10
SHALY
COAL
487.46
0.54
COAL
488.0
0.25 SHALE
488.25
0.20 COALY SHALE
488.45
0.30 SHALY
COAL
488.75
0.97
COAL
489.72
0.48
SHALE
490
490.20
1.20 SHALY
COAL
490.50
0.28
SHALE
490.88
0.62 COAL
491.50
492
493
10.75
No. 1 SEAM
(Structurally Thickened)

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-21
CO-ORDINATES : 5484589.9 N. - 362898.1 E.
ELEVATION : 199.8 m
DATE DRILLED: October 8, 1996
DRILLER: Hi-Rate Drilliing

DEPTH (m)		DESCRIPTION
From	To	
0.0	29.0	Glacial till overburden
29.0	30.0	Basal conglomerate
		END of HOLE

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-22C
CO-ORDINATES : 5484938.8 N. - 362908.6 E.
ELEVATION : 226.7 m
DATE DRILLED: October 9, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	5.5	Glacial till
5.5	54.0	Sandstone; thin coal at 13 and 17m
54.0	56.0	COAL, No. 3 Seam
56.0	87.0	Sandstone, fine grained, hard; started coring at 81.6
87.0	91.6	Siltstone/Mudstone interbeds, carbonaceous zones
91.6	93.2	Mudstone; hard
93.2	94.5	COAL, No. 1 Seam
94.5	95.0	Mudstone,; carbonaceous, coaly
95.0	102.6	Mudstone; minor siltstone & sandstone
102.6	108.1	Siltstone/sandstone Interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-22C
CO-ORDINATES : 5484938.8 N. - 362908.6 E.
ELEVATION : 226.7 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 0 degrees to 10 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	81.60	83.60	2.00	1.50	1.50	SANDSTONE
						Fine grained medium grey to brown. Very hard, finely disseminated pyrite visible. One vertical fracture at 85 degrees with calcite on fracture planes as well as finely disseminated pyrite. Competent homogeneous massive. Very thin mudstone crossbeds near top at 5-25 degrees to horizontal - No true bedding. Fizz - good.
2	83.60	86.10	2.50	3.00	3.00	SANDSTONE
						Fine grained, medium grey brown. Very hard and competent. Basal 1.5 meter has many thin mudstone and carbonaceous laminae < 1cm which make up 30% of litholoigy. mudstone beds are irregular but average 0-7 degrees dip. 2 fractures in top of basal portion are at 80 & 50 degrees. Minor calcite veins also present. Top 1.5 meters is as above in run 1 grading down into mudstone & carbonaceous laminae. Fizz-nil to low.
3	86.10	89.10	3.00	0.93	2.46	SANDSTONE
						As above with 40% mudstone and more siltstone near base. Mudstone shows bioturbation and slumping. Bedding is variable at 0-10 degrees . One fracture at 80 degrees with calcite on fracture plane. Minor carbonaceous material in inclusions and lenses. Fizz - low to good.
				1.11		SILTSTONE/MUDSTONE
						Becoming more muddy near base. 50% mudstone at top. Many very fine calcite veinlets on bedding and thin lenses. Coaly lenses to 5 mm at base where grades to mudstone and carbonaceous mudstone. No prominent fractures but core has broken along calcite in bedding. Hard and competent with leafy impression throughout. Low fizz.
				0.35		CARBONACEOUS MUDSTONE
						20% coaly material some in inclusions and lenses and some finely disseminated throughout. Mudstone is dark grey to black and medium hard but competent. GRades down into shaly coal. Thin calcite veining persists and finely disseminated pyrite is visible.. Some polished and slickensided bedding planes show horizontal movement bedding on calcite veins at 0-15 degrees. Fizz-nil
				0.07		SHALY COAL (may be 0.54 missing)
						Thin bright layers of coal with 40% dull layers. Visible pyrite and calcite. Polishing and slickensiding in the horizontal
4	89.10	91.60	2.50	0.51	2.51	MUDSTONE
						Medium brown black. Hard. Silty. Visible pyrite. Carbonaceous beds < 3mm, lenses and inclusion (20%) Thin calcite veinlets irregular and on bedding 5-10 degrees. Minor polished slickensides on bedding showing horizontal movement. No fizz. Visible pyrite on bedding. Grades down into siltstone
				0.45		SILTSTONE
						Medium brown, Very hard. Fractured & polished at 40 and 30 degrees to horizontal. Calcite veining on fractures. Core is broken up on these planes. Visible finely disseminated pyrite. No visible bedding.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-22C
CO-ORDINATES : 5484938.8 N. - 362908.6 E.
ELEVATION : 226.7 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 0 degrees to 10 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
				1.20		MUDSTONE
						Medium grey to black, browner near bottom. Medium hard, many fractures at 20-45 degrees to horizontal, polished and slickensided with calcite accreted to half of them. One zone of fault gouge 2 cm thick. Calcite veinlets in vertical part. Carbonaceous coaly inclusions and lenses up to 5mm thick. Core broken and fragmented at base.
				0.09		SILTSTONE
						Dark grey brown. Hard.
				0.10		MUD
						Soft, plastic, medium grey to black.
				0.18		SILTSTONE
						Medium grey brown. Partly muddy. Hard with visible pyrite.
				0.03		COAL
						Good, hard coal at top
5	91.60	94.60	3.00	2.09	2.60	MUDSTONE
						Hard. Fairly competent black to dark brown. Considerably carbonaceous matter in lenses, inclusions & laminae with one irregular zone 3 cm thick near the middle. Movement evidenced on bedding planes by polishing and slickensides with calcite & pyrite deposits on the old planes. Visible disseminated pyrite in lenses & many calcite veinlets throughout. Core is broken at top & is in sharp contact with coal at base.
				0.48		COAL (.40 missing?)
TS962201						
						Banded with friable coal at top and bottom. Some blocky coal in central section. Bright good coal but high amounts of visible sulphur in pyrite. Visible calcite along polished slip planes in horizontal direction. Vertical cleating in blocky portions. Coal shows plastic movement.
						NOTE: Seam may be thinner here due to plastic flow and thickening elsewhere.
				0.77		COAL
TS962202						
						Moderately hard. Quite friable, polished into small flakes at bottom 0.20 m and 0.2mm in centre. Remainder is fairly hard and blocky with some shale at top. Large amounts of visible pyrite. Sharp basal contact with mudstone at a 45 degree fracture plane.
				0.52		MUDSTONE
						Medium hard. Dark grey to black near base with more carbonaceous contact. Fractures at 45 degrees slickensided and polished. Calcite veins throughout and visible pyrite
				0.10		COALY MUD
						Soft, crumbly ground muddy coal. Black to dark brown with polished slickensided flakes.
				1.38		MUDSTONE/SILTSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-22C
CO-ORDINATES : 5484938.8 N. - 362908.6 E.
ELEVATION : 226.7 m
LOGGED BY: R. A. Swaren
COMMENTS: Bedding varies from 0 degrees to 10 degrees throughout.

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						Two siltstone beds of 0.10 m and the remainder mudstone. Some silty. Medium grey brown. Hard with one 3cm coaly seam .48m from top. Bedding on coal is 5 degrees visible pyrite at coal contact. Fractures throughout at 30-40 degrees. Coaly lenses and inclusions near base up to 2 cm. Minor thin calcite veinlets in bottom 0.1m.
7	97.60	100.40	2.80	2.12	2.12	MUDSTONE
						Moderately hard dark brown grey. Carbonaceous lenses inclusions and plant impression throughout. Some silty sections, especially the bottom 0.20m. Thin calcite veins on possible 5 degree bedding planes. Carbonaceous bed at some. Fractures at 35 & 45 degrees especially in upper sections. Missing core may be from portion ground into pieces 0.4m from base.
8	100.40	102.60	2.20		1.25	MUDSTONE
						Interbedded. Coarse sandstone with white subangular grains of 0.05m, broken and ground. All core is broken, badly ground and one third missing. Sandstone 5%, siltstone 10%, mudstone 85%. Mudstone moderately hard, dark grey brown. Irregular vertical fracture near base is polished and slickensided in vertical direction with calcite on plane.
9	102.60	105.10	2.50	0.79	2.83	SILTSTONE
						Muddy at top grading down to sandy near bottom. Large white flecks in basal 0.1m of siltstone. Some carbonaceous lenses and mudstone bands. Slumping and turbid environment evidenced at base. Hard. Medium grey brown. No fizz. No real bedding.
				0.12		SANDSTONE (basal)
						Coarse. Medium grey brown with large 1mm subangular white specks. Moderately good fizz. Irregular basal contact with siltstone with large 4 cm sandstone slump features into siltstone.
				0.26		SILTSTONE
						Dark brown. Hard. Grades down into mudstone. No bedding or fractures.
				1.66		MUDSTONE
						Partly silty. Medium grey. Homogeneous and massive. No fractures or bedding.
10	105.10	108.10	3.00	0.49	3.00	SANDSTONE (Coarse basal sandstone)
						Medium brown grey at top half and more grey in bottom half. 1mm coarse subangular grains poorly sorted throughout. Hard with no bedding or fractures.
				2.51		SILTSTONE
						Medium grey and hard. Muddy. Minor calcite veins at 5-10 degrees. Minor carbonaceous inclusions. Fractures at base polished and slickensided at 30 degrees.
						END OF CORE AND HOLE

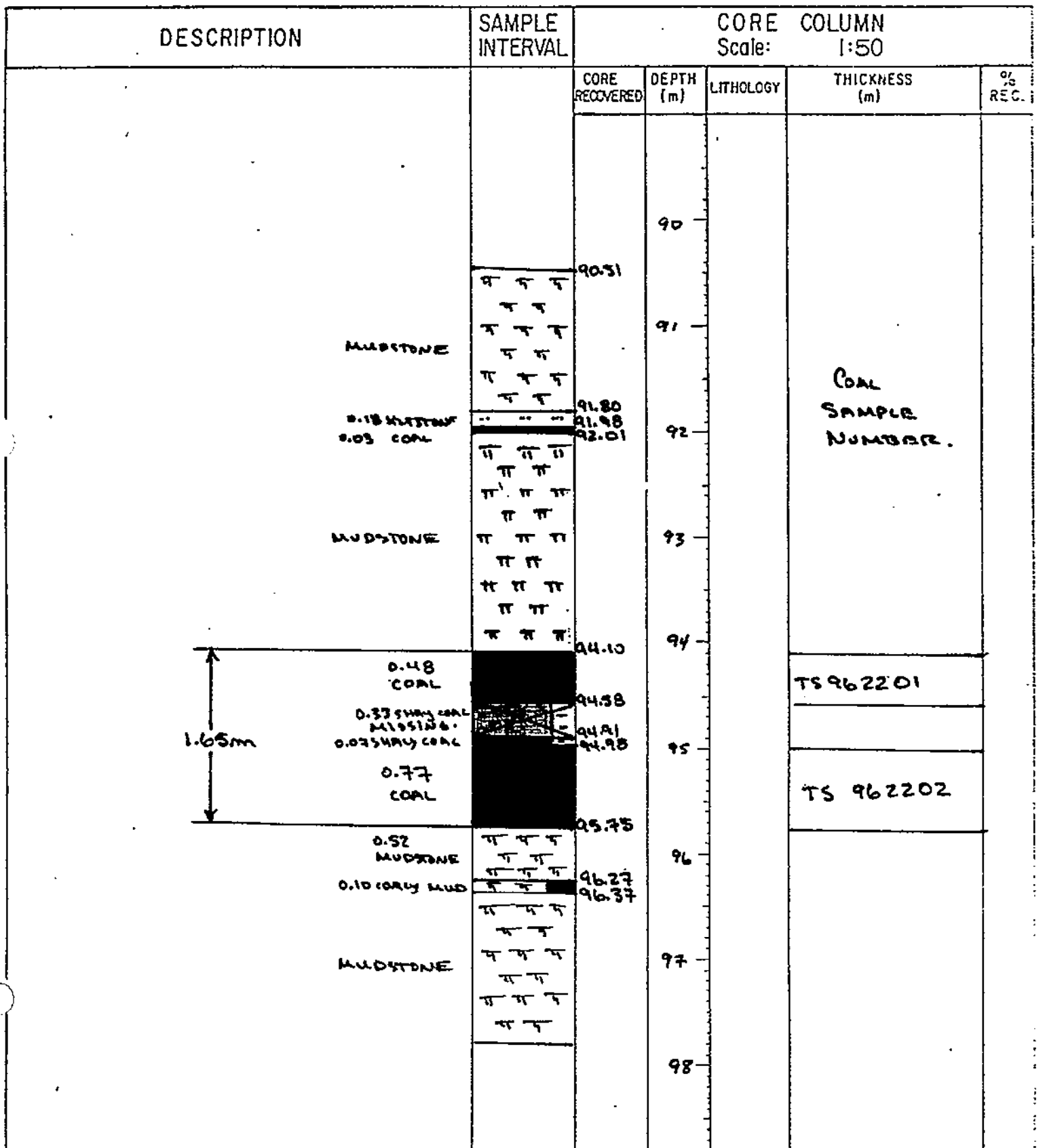
QUINSAM COAL CORPORATION

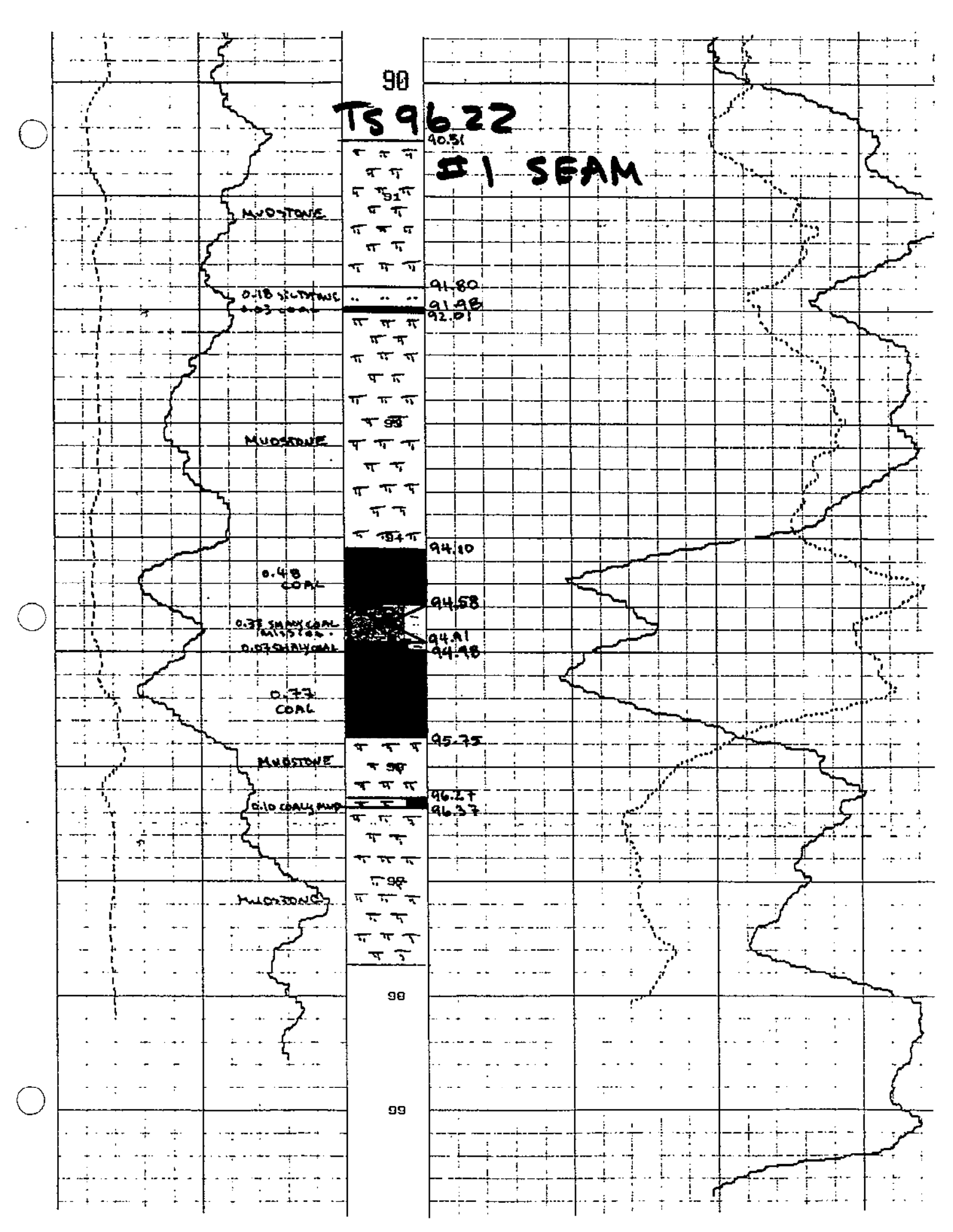
: DEPTHS FROM E-LOG

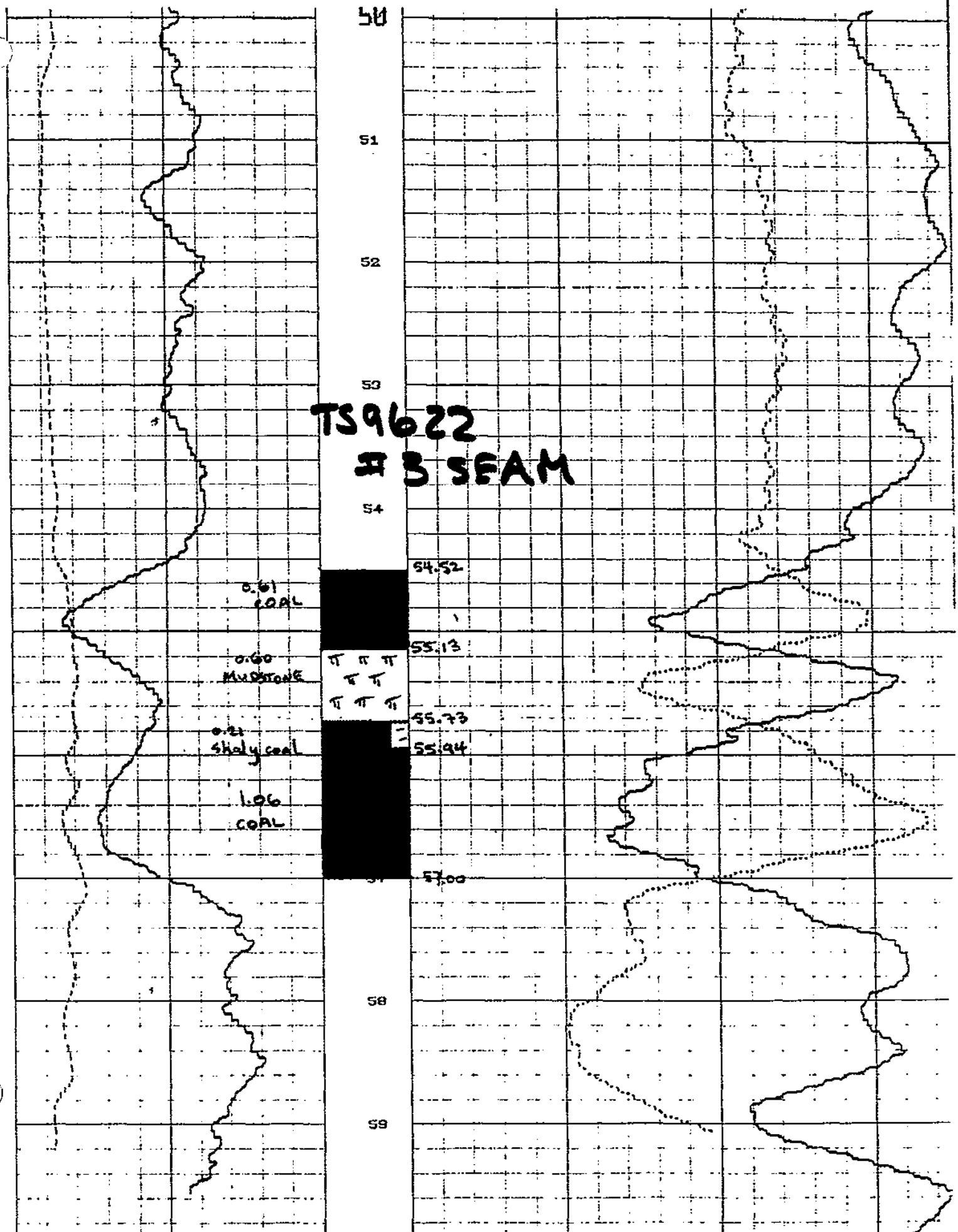
Hole Number: TS 96 22 C — #1 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___




90
TS9622
B1 SEAM
40.51
MUDSTONE
91.80
0.18 SILTSTONE
0.03 COAL
91.98
92.01
MUDSTONE
94.10
0.48 COAL
94.58
0.37 SHALY COAL
0.03 SHALY COAL
94.81
94.98
0.77 COAL
95.75
MUDSTONE
96.24
0.10 COALY MUD
96.37
MUDSTONE
98
99


50
51
52
53
TS9622
#3 SEAM
54
54.52
0.61
COAL
55.13
0.60
MUDSTONE
55.73
0.21
shaly coal
55.94
1.06
COAL
57.00
58
59

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-23C
CO-ORDINATES : 5485002.4 N. - 363158.7 E.
ELEVATION : 163.7 m
DATE DRILLED: October 10, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	7.5	Glacial till
7.5	60.6	Sandstone; thin coal at 16 and 23m
60.6	63.1	COAL, No. 3 Seam
63.1	96.0	Sandstone; thin coal at 77. Started coring at 87.5m
96.0	97.0	Sandstone/Siltstone/Mudstone interbeds
97.0	100.0	Mudstone; silty & carbonaceous sections
100.0	104.5	COAL.; No. 1 Seam; mudstone partings at base
104.5	104.8	Mudstone; silty
104.8	109.5	Siltstone/Mudstone/Sandstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-23C
CO-ORDINATES : 5485002.4 N. - 363158.7 E.
ELEVATION : 163.7 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	87.50	89.50	2.00	1.05	1.05	SANDSTONE
						Medium grey, medium grained, well sorted. Hard. No fractures. Bedding at 20 - 30 degrees to horizontal on thin mudstone lamellae. Fizz low to good. 50/50
2	89.50	91.50	2.00	2.04	2.04	SANDSTONE
						As above. Fine to medium grained and hard. Broken and ground at top where first core had missing sample. More mudstone bands near the base in bottom 0.6m. Some coaly fragments and inclusions. Medium grey at top going browner near bottom. Bedding at 25-30 degrees to horizontal. No fracturing. Bottom contact with next core is sharp on a mudstone band. Fizz good except for nil in bottom 0.7m
3	91.50	93.50	2.00	2.02	2.02	SANDSTONE
						Medium to fine grained. Medium grey. As above with coaly & muddy lamellae throughout. Also has calcite bands < 1mm unlike first two core seams. Mudstone bedding is wavy & variable at 30 degrees to horizontal. No fracturing. Bottom contact with next run is again on a mudstone bed & is sharp. Fizz - Nil in upper 0.4m and good in rest.
4	93.50	95.50	2.00	2.09	2.09	SANDSTONE
						As above but fewer, 10% mudstone bands. Hard medium grey and fine to medium grained. No fractures. Bedding at 30 degrees to horizontal. Very minor coaly inclusions. Minor calcite in mudstone lamellae. More homogeneous and massive. Fizz - good to very good.
5	95.50	98.50	3.00	0.80	2.91	SANDSTONE
						fine grained. Medium grey brown & very hard. Coaly and mudstone bands 20% as well as coaly inclusions. No fractures. Bedding at 20-30 degrees to horizontal. Minor calcite veins < 1mm < 1% along bedding. Fizz - moderately good.
				1.11		SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded in even proportions except mainly mudstone in bottom 0.5m. Minor fractures at 50 degrees to bedding in mudstone near base. Bedding 25-30 degrees to horizontal. Some crossbedding. Hard to moderately hard near base. Fizz - moderately good to good in interbedded section and nil in mudstone.
6	98.50	101.50	3.00	1.17	2.62	MUDSTONE
						Silty. Medium brown grey. Leaf fragments included throughout bottom .4m. Fracture near top at 75 degrees to bedding. Minor calcite and siltstone beds in central portion. Moderately hard. Fizz - low to nil
TS962301				0.34		MUDSTONE - ROOF #1 SEAM
						2 cm coal band near top. Carbonaceous inclusions throughout. Fracture at 60 degrees to horizontal. Core broken and fractured at 30- degrees too. Fracture surfaces polished with calcite. Sharp contact with underlying coal
TS962302				1.07		COAL (may be .42 missing?)

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-23C
CO-ORDINATES : 5485002.4 N. - 363158.7 E.
ELEVATION : 163.7 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						SHALY in top 4 cm. Some brown in the streak throughout. Bright with dull bands. 60 degrees fractures. Pyrite on vertical cleating. Fairly hard with a minor 3cm band of soft friable coal. Visible pyrite throughout.
7	101.50	104.50	3.00	1.37	1.79	COAL (1.21 missing may be coal)
TS962303						
						As above. More shiny than above and shaly in central 0.3m by streak. Thin calcite vein near top. Fractured at 60 degrees to horizontal with visible pyrite on fracture planes. Not cleated as last run. Minor visible pyrite throughout.
TS962304				0.31		SHALY COAL
						Duller. Brown streak. Hard. Visible pyrite throughout. Fractured at 60 degress and polished. Also polished on horizontal fractures.
TS962305				0.11		COAL
						Very friable soft and bright. Missing section probably comes from here. Visible pyrite. Vertical cleating. Good coal.
8	104.50	106.50	2.00	0.33	2.02	MUDSTONE
						Silty and moderately hard. Medium grey. Grading downwards to siltstone. Fractured and polished at 20 & 30 degrees which may just be slippage along bedding.
				1.69		SILTSTONE/SANDSTONE/MUDSTONE
						Interbedded. Sandstone fine to coarse grained and up to .13m beds. One bed looks like basal sandstone 4 cm thick with white subangular grains. Sandstone is about 20%. Silstone mudstone are mixed beds accounting to 80% Moderately hard to hard with a 3cm carbonaceous shale band. Coaly inclusion & bands are < 5%. Bedding at 20 degrees to horizontal with crossbedding in evidence.
						Fizz - good in sandstone, nil to low in rest.
9	106.50	109.50	3.00	3.00	3.00	MUDSTONE/SILTSTONE/SANDSTONE
						Mudstone 70%, Silstone 25%, Sandstone 5%. Coarse white flecks in mudstone in central portion & in sandstone inclusions. Also 1 cm coaly bands in central portion. Bedding is irregular and undetermined (30 degrees?). Fractures at 60, 30 & 20 degrees are polished. Mudstone inclusion in siltstone & carbonaceous inclusion throughout. Also minor calcite inclusion. Fizz - nil
						END OF CORE & HOLE

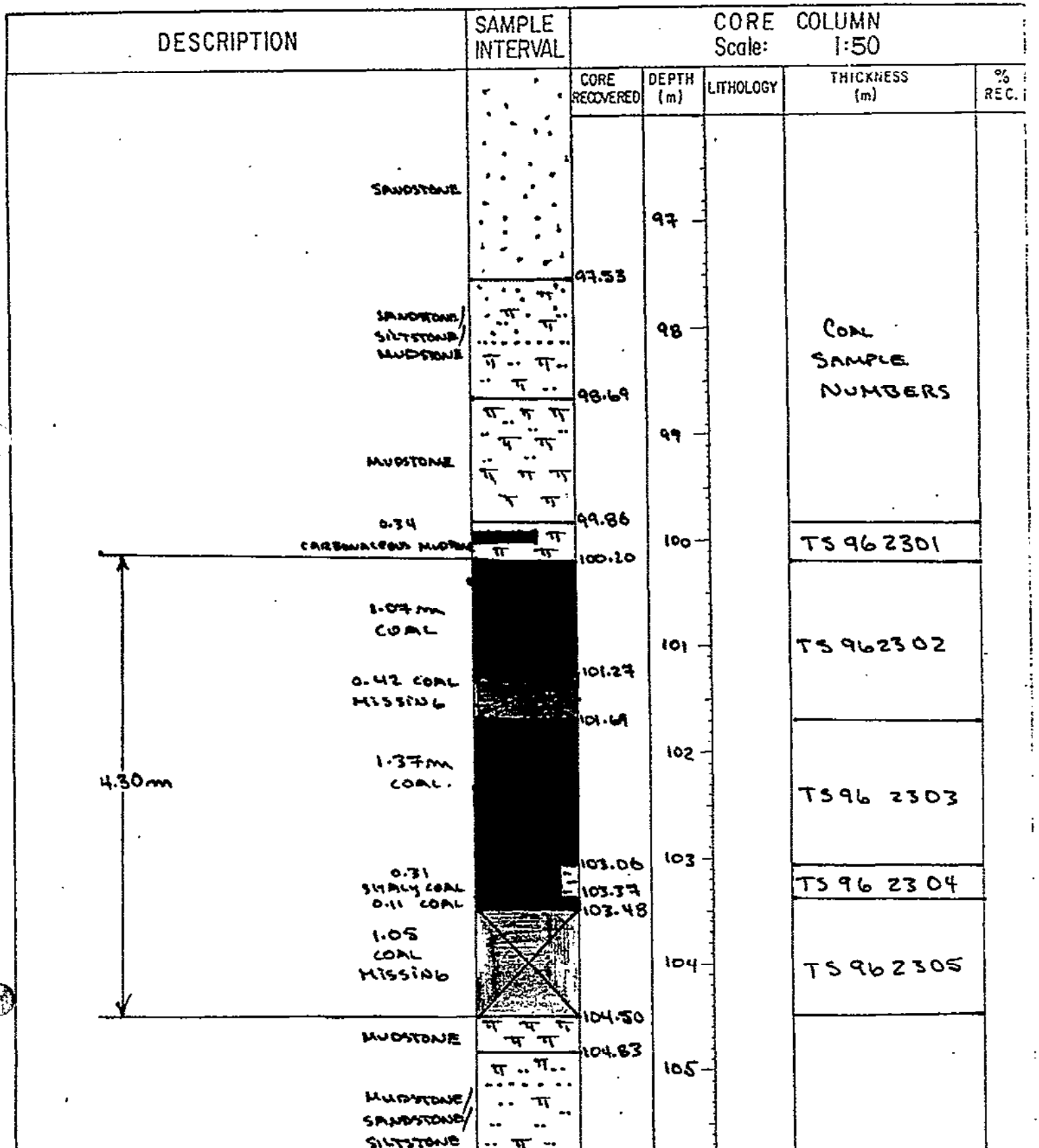
: DEPTHS FROM E-LOG.

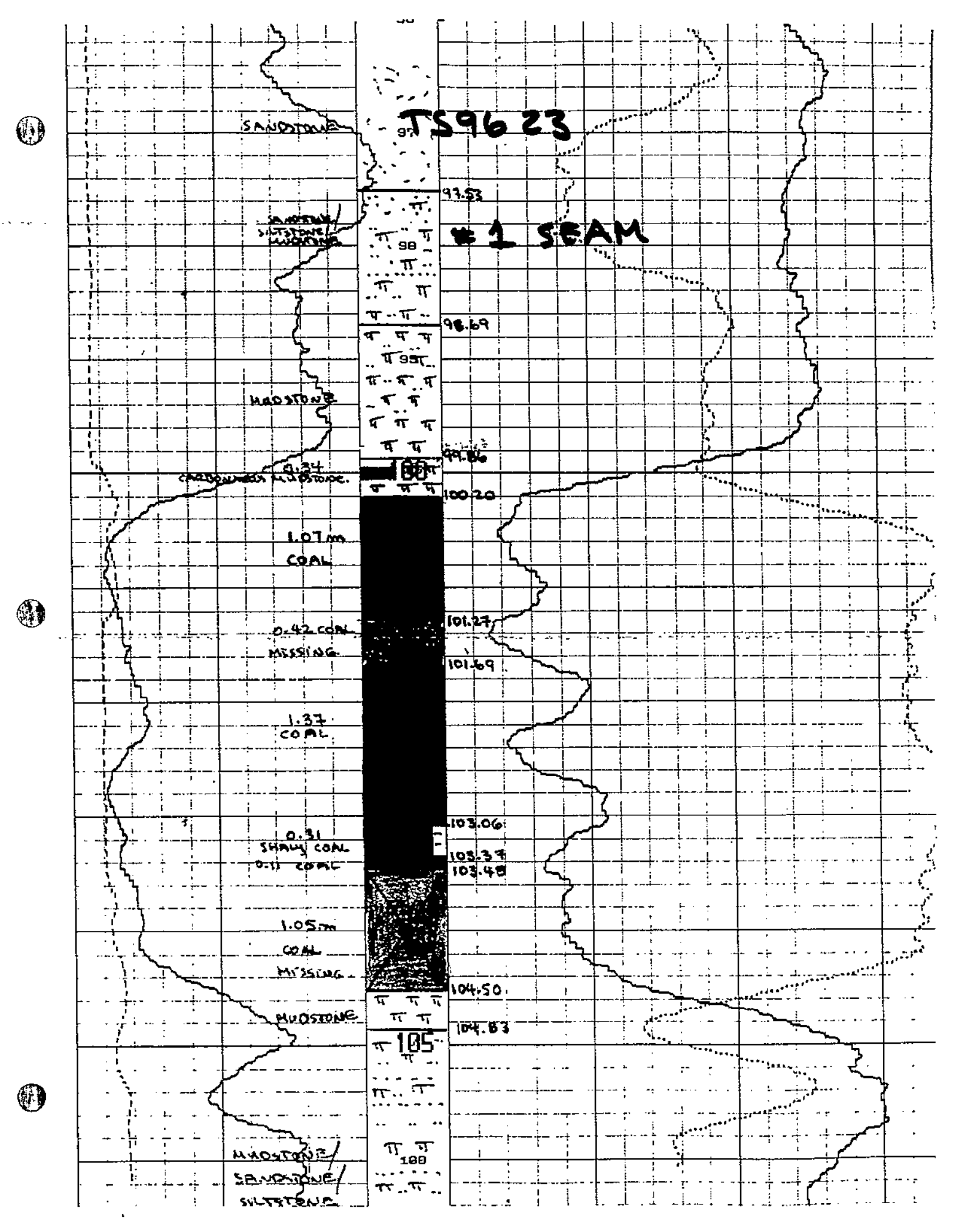
QUINSAM COAL CORPORATION

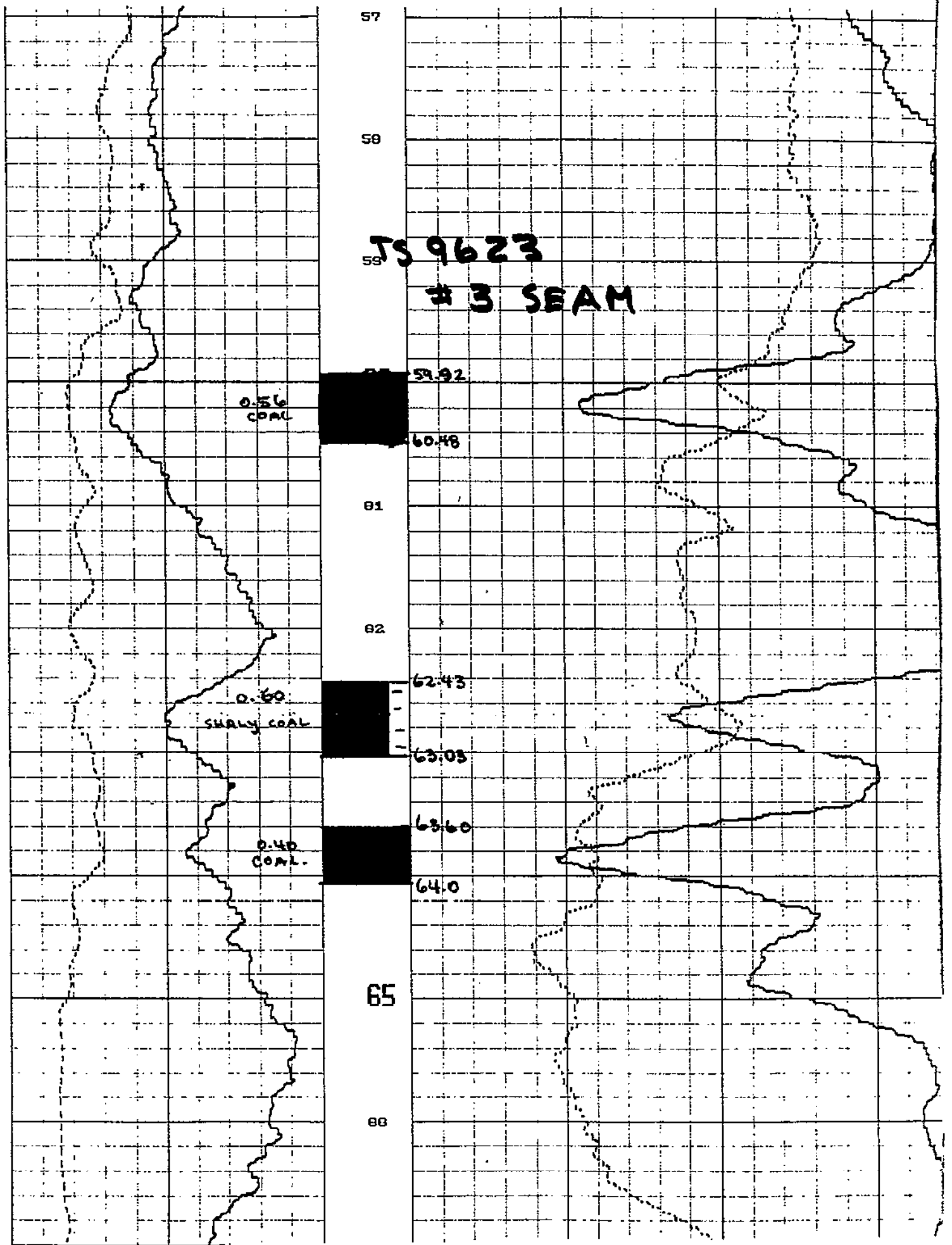
Hole Number: TS96 23 C — #1 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___




TS9623
#1 SEAM
SANDSTONE
97
97.53
SANDSTONE/SILTSTONE/MUDSTONE
98
98.69
MUDSTONE
99
99.86
0.34
CARBONACEOUS MUDSTONE
100
100.20
1.07m
COAL
101.27
0.42 COAL
MISSING
101.69
1.37
COAL
103.06
0.31
SHALY COAL
0.11 COAL
103.37
103.48
1.05m
COAL
MISSING
104.50
MUDSTONE
104.83
105
MUDSTONE/
SANDSTONE/
SILTSTONE
100


57
58
59
TS 9623
#3 SEAM
59.92
0.56
COAL
60.48
61
62
62.43
0.60
SHALY COAL
63.03
63.60
0.40
COAL.
64.0
65
66

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-24C
CO-ORDINATES : 5485262.8 N. - 363181.4 E.
ELEVATION : 139.8 m
DATE DRILLED: October 12, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	8.0	Glacial till
8.0	26.5	Sandstone
26.5	27.5	COAL, dirty
27.5	84.0	SANDSTONE, coal stringers at 48 & 50m
84.0	85.0	COAL, No. 3 SEAM
85.0	118.0	Sandstone; thin coal at 97m
118.0	120.4	Mudstone, started coring 120.2m
120.4	123.0	COAL, No. 1 Seam
123.0	123.8	Siltstone, sandy sections
123.8	128.2	Siltstone, muddy sections
128.2	128.9	Sandstone; white, basal
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-24C
CO-ORDINATES : 5485262.8 N. - 363181.4 E.
ELEVATION : 139.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
1	120.20	123.20	3.00	0.19	1.80	MUDSTONE - CARBONACEOUS
TS962401 (Roof)						
						Dark grey to black. More coaly material 50% in bottom 0.05m. Polished & slickensided in a horizontal direction with a sharp contact at 0-10 degrees with coal. Partially broken but not fragmented. Hard with coaly inclusions, lenses and finer particles throughout.
TS962402				1.41		COAL (1.20 missing from bottom?)
						Hard. Blocky and bright. Good coal with two vertical cleat planes at 90 degrees to one another & calcite on surfaces. No visible pyrite. Central portion shows fractures polished at 45 degrees as well as micro folding as with flow structure. When broken it shows to be friable with flaking along polished surfaces and is very bright. Apparent bedding at 7-10 degrees from horizontal
TS962402				0.10		SHALY COAL
						Polished on horizontal planes. More shaly bands up to 1 cm thick are brownish. Probably > 30% ash in this zone. Vertical fractures are also polished & slickensided in a vertical direction with very minimal apparent movement. No visible pyrite. Some calcite on fracture planes.
TS962402				0.10		COAL (1.20 missing below this?)
						Dirtier at contact with above getting cleaner downwards. Same as upper coal with no pyrite
2	123.20	126.20	3.00	0.08	2.70	COAL (0.30 missing above?)
TS962403						Basal contact with mudstone is sharp & at 25-30 degrees bedding. The bedding plane also shows polishing & slickensides in vertical direction. This bedding may not be true and may be due to the coal flowing.
				0.77		SILTSTONE
						Highly fractured and broken. Polished & slickensided at 20 & 30 degrees vertical. Some fine brownish sandstone in the middle with very irregular bedding. Coaly plant material throughout. Hard & dark grey brown.
				0.30		MUDSTONE
						Dark grey brown. Thin coaly bands & lenses of 1 cm thickness in top section - grades siltier towards bottom. Moderately hard. No fizz. Apparent calcite veins at 10 degrees to horizontal More fissile and friable in upper central portion
				1.55		SILTSTONE
						Quite muddy but hard. Medium grey brown. Fractures at 0 and 30 degrees to horizontal. Fairly competent and homogeneous with minimal coaly inclusions except at basal 0.5m where they are 10%. No apparent bedding. No fizz. Quite polished and slickensided at 0-10 degrees throughout the basal portion as well as being more broken up.
3	126.20	128.90	2.70	1.94	2.48	SILTSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-24C
CO-ORDINATES : 5485262.8 N. - 363181.4 E.
ELEVATION : 139.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness Contamination
						As above but harder & less muddy. GRades down into medium to coarse sandstone. One 3 cm zone near the bottom is an old fracture zone with irregular calcite infill up to 1 cm & variable. Other fracture planes, some with are at 30 degrees to horizontal & are polished & slickensided. Carbonaceous inclusions, lenses & plant fragments are not uncommon. Medium brown colour.
				0.54		SANDSTONE
						Portions at the basal 2 cm and near the top are coarse with the subangular white grains as common to the basal sandstone. Thin calcite veins are < 1% on old fracture planes of 20-30 degrees. Apparent bedding on finer sandstone layers at 10 degrees. Colour is medium grey brown. Fizz low to nil
						END of CORE & HOLE

QUINSAM COAL LIMITED

: DEPTHS FROM D-606

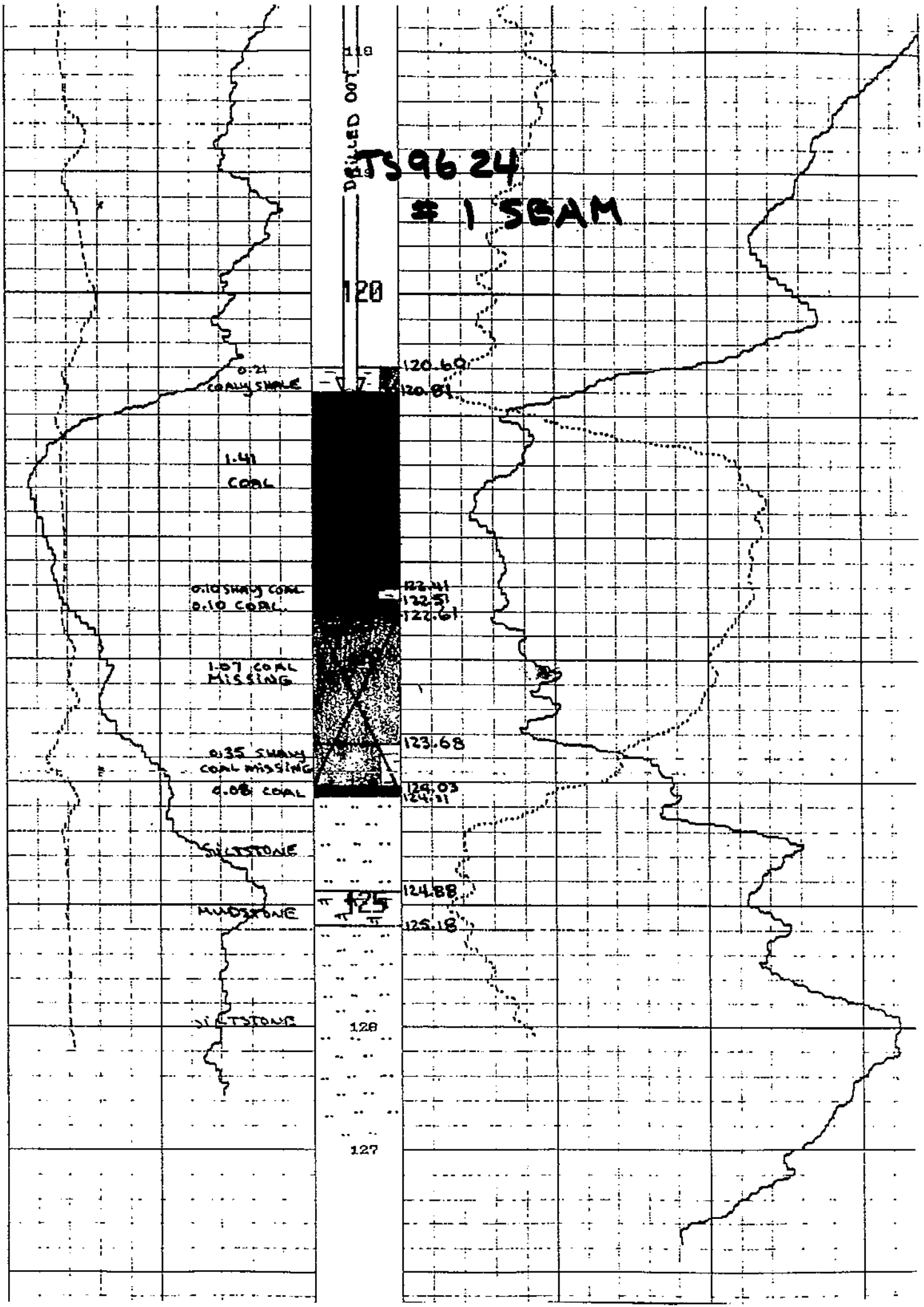
Hole Number: TS 96 24 C Pit Number: 1 SEAM.

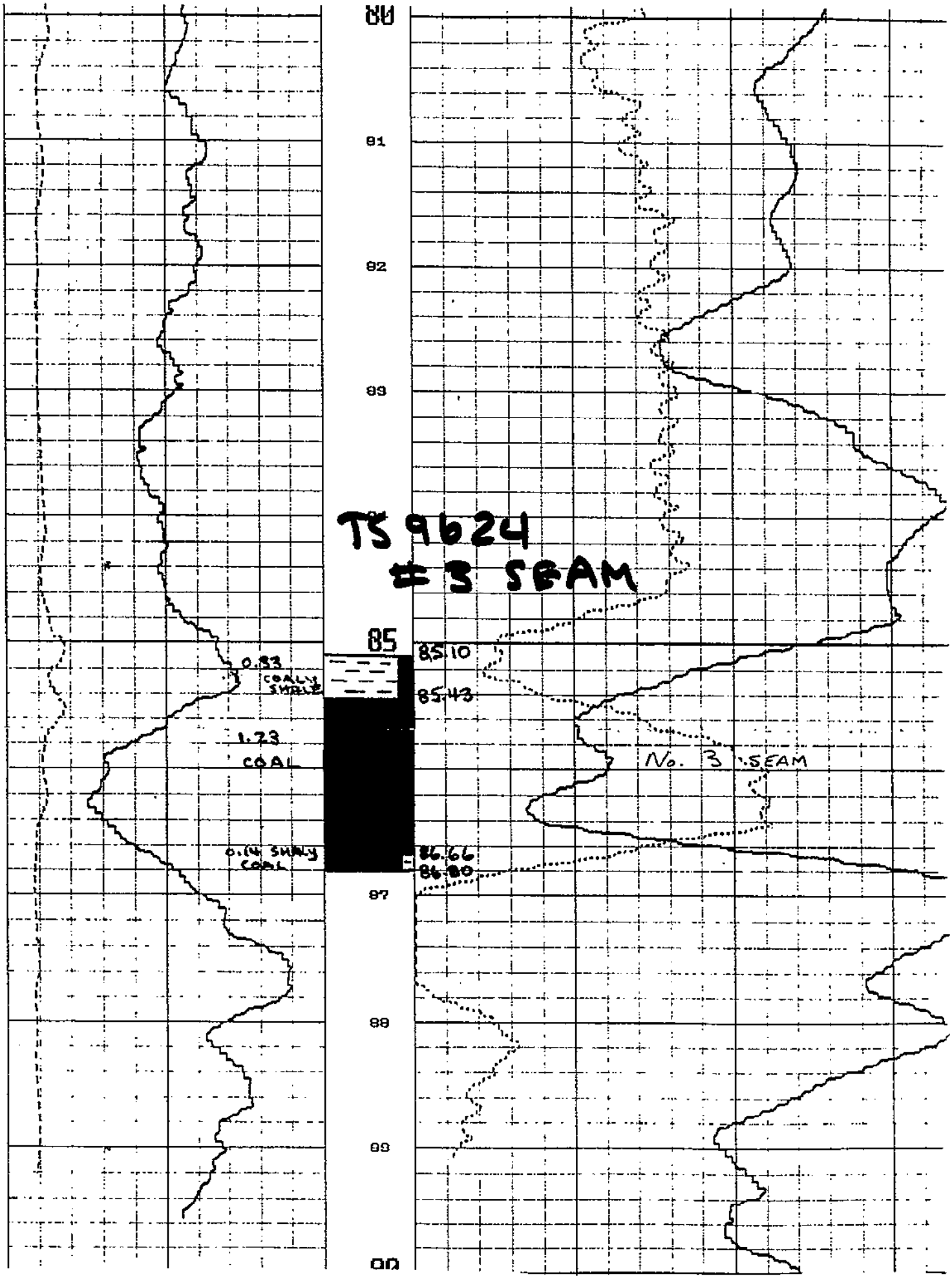
Location: TSABLE RIVER Elevation:

Page ___ of ___

DESCRIPTION	SAMPLE INTERVAL	CORE COLUMN Scale: 1:50				
		CORE RECOVERED	DEPTH (m)	LITHOLOGY	THICKNESS (m)	% REC.
	DRILLED OUT		119		COAL SAMPLE NUMBERS	
			120			
0.21 SHALY COAL DRILLED OUT		120.60				
0.19 MUDSTONE		120.81				
		121.0	121		TS 962401	
1.41 COAL					TS962402	
			122			
0.10 SHALY COAL		122.41				
0.10 COAL		122.51				
1.07 COAL MISSING.		122.61				
			123			
0.35 SHALY COAL MISSING		123.68				
0.08 COAL		124.03	124		TS 96 2403	
		124.11				
0.77 SILTSTONE		124.88				
0.30 MUDSTONE		125.18	125			
			126			
SILTSTONE						
			127			

3.41m.


DRILLED OUT
TS9624
#1 SEAM
118
120
125
128
127
120.60
120.81
0.21
COAL/SHALE
1.41
COAL
122.41
122.51
122.61
0.10 SHALY COAL
0.10 COAL
1.07 COAL
MISSING
123.68
0.35 SHALY
COAL MISSING
0.08 COAL
124.03
124.31
SILTSTONE
124.88
MUDSTONE
125.18
SILTSTONE


80
81
82
83
85
87
88
89
90
TS 9624
#3 SEAM
85.10
85.43
0.33
COAL & SHALE
1.23
COAL
0.14 SHALY COAL
86.66
86.80
No. 3 SEAM

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-25C
CO-ORDINATES : 5485530.6 N. - 363449.7 E.
ELEVATION : 122.9 m
DATE DRILLED: October 14, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	5.7	Glacial till
5.7	45.0	Mudstone, silty
45.0	57.2	Sandstone, medium grey
57.2	63.3	Sandstone, interbedded mudstone, thin coal
63.3	69.4	Sandstone, interbedded mudstone
69.4	83.0	Sandstone; medium grey
83.0	83.3	COAL
83.3	107.0	Sandstone; medium grey
107.0	107.5	COAL, No. 4 Seam
107.5	144.0	Sandstone
144.0	146.0	COAL,. No. 3 Seam
146.0	148.7	Mudstone
148.7	173.0	Mudstone, Sandstone interbeds
173.0	176.0	COAL; No. 1 Seam, Started coring 174.6m
176.0	179.0	Mudstone, carbonaceous at top
179.0	182.0	Sandstone; white, basal
182.0	183.5	Mudstone; dark grey; sandy
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-25C
CO-ORDINATES : 5485530.6 N. - 363449.7 E.
ELEVATION : 122.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Drilled up to 0.70 meters into coal before coring was commenced

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	174.60	177.60	3.00	1.56	2.67	COAL (0.33 may be missing) (0.70 drilled)
TS962501						
Ash	VM	FC	S MJ/kg	FSI		
						Top broken up in coring. Hard, bright, blocky. Cleating vertical in two places at 90 degrees to one another. Visible pyrite & calcite on vertical fracture planes & as inclusions. Fractures at 40 degrees and vertical. Coal is quite competent with no really discernible partings although a brownish streak showing up to 20% shale is in evidence through some parts.
				0.38		SHALY COAL
TS962502						
Ash	VM	FC	S MJ/kg	FSI		
						Still part of the middle seam but more shaly with thin horizontal calcite veins, visible pyrite & polished slickensided horizontal beds. Basal portion has dull & bright bands 50/50 with the coal grading into silty mudstone floor. Apparent bedding is 5-10 degrees.
				0.55		MUDSTONE
						Slightly silty. Hard, competent dark grey. Carbonaceous beds, lenses, and inclusions 10%. Fractures at 40 degrees. Bedding at 5-10 degrees. Calcite on fractures & very thin on bedding.
				0.18		COALY SHALE (missing? her or top of core?)
						Hard, dull banded with 20% bright bands. Visible sulfur throughout. Calcite on vertical planes. Grades up into mudstone. Coal is also thinly disseminated through shale.
2	177.60	180.60	3.00	0.17		CARBONACEOUS SHALE
						More shaly than above. Hard. Dark grey. Plant fragments & thin bands & inclusions of coaly material throughout.
				2.03		MUDSTONE
						Hard. Competent. Dark grey. Plant fragments throughout. Carbonaceous coaly lenses and inclusions < 10%. Slightly silty in middle and fine grained in basal .15 meter. Grades into thin sand and finally down into coarse sandstone. Sand zone is mixed with mudstone and siltstone. Pyrite lenses common in basal 0.2m up to 1 cm thick & found more rarely in vertical section. 1 coaly lense 4cm thick is .5m from base & is associated with a 0.5cm pyrite band below it.
						Very thin calcite veins are found in basal 0.5m. Bedding variable at 5-15 degrees. No fizz.
				0.80		SANDSTONE
						Coarse basal unit. Medium grey to buff with large 1mm subangular white grains scattered throughout. Coarse is mixed with 3cm bands of fine grained sandstone. Bedding at 0-7 degrees. Minor thin carbonaceous bands. No fractures. Good to very good fizz.

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-25C
CO-ORDINATES : 5485530.6 N. - 363449.7 E.
ELEVATION : 122.9 m
LOGGED BY: R. A. Swaren
COMMENTS: Drilled up to 0.70 meters into coal before coring was commenced

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
3	180.60	183.60	3.00	1.50	3.00	SANDSTONE (Basal)
						Coarse as above with finer grained sandstone only in upper 0.3 meters. Gets even coarser towards base with large white 1mm subangular grains. Base very thin < 1mm. Mudstone & carbonaceous bands < 2%. Beds are at 7 degrees with no fracturing. Fizz low in top meter and good in basal 0.5m. Sharp basal contact with mudstone below.
				1.50		MUDSTONE
						Dark grey & somewhat sandy in top 0.5m. Fractures are polished & slickensided at 45 & 30 degrees and are irregular. Bedding at 10 degrees also shows polishing & slickensides in most cases. One thin coal band of 1cm in bottom third & one 1cm coarse sandstone band in top third. Coaly inclusion & fragments <5% & visible sulfur on fracture planes as well as on some bedding. Thin calcite veins are in top 2/3's.
						No fizz
						END OF HOLE & CORE

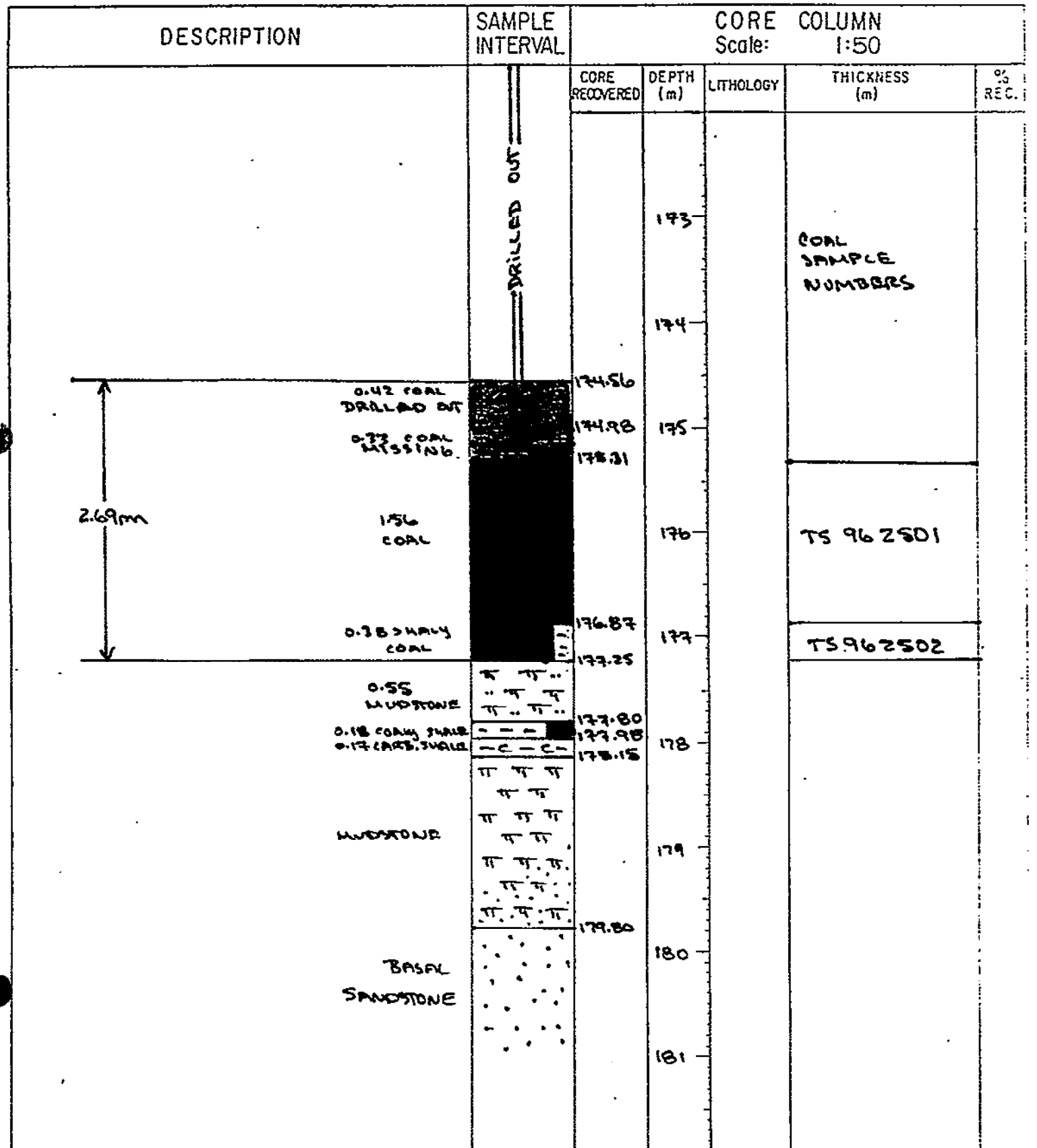
QUINSAM COAL CORPORATION

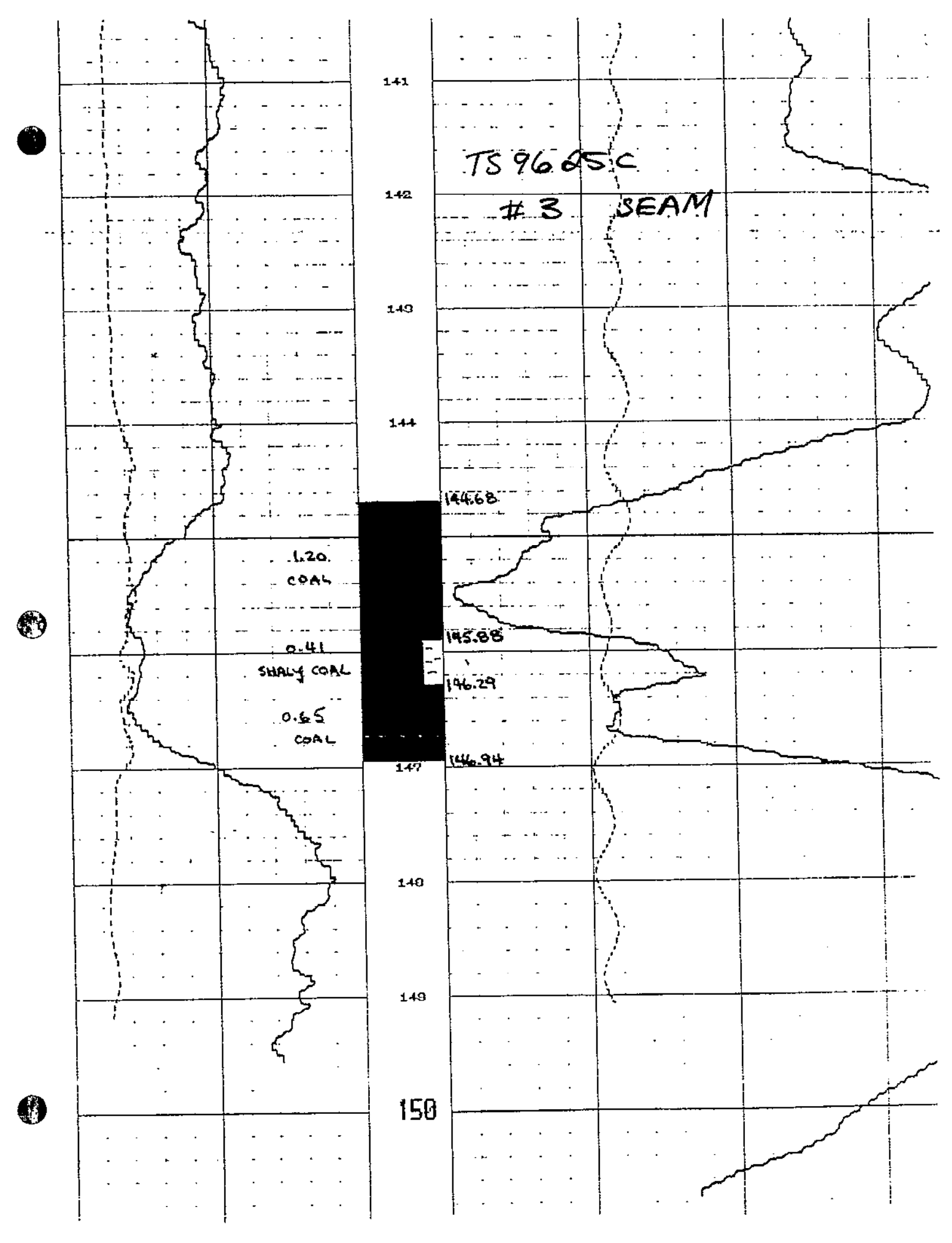
DEPTHS FROM B-LOG

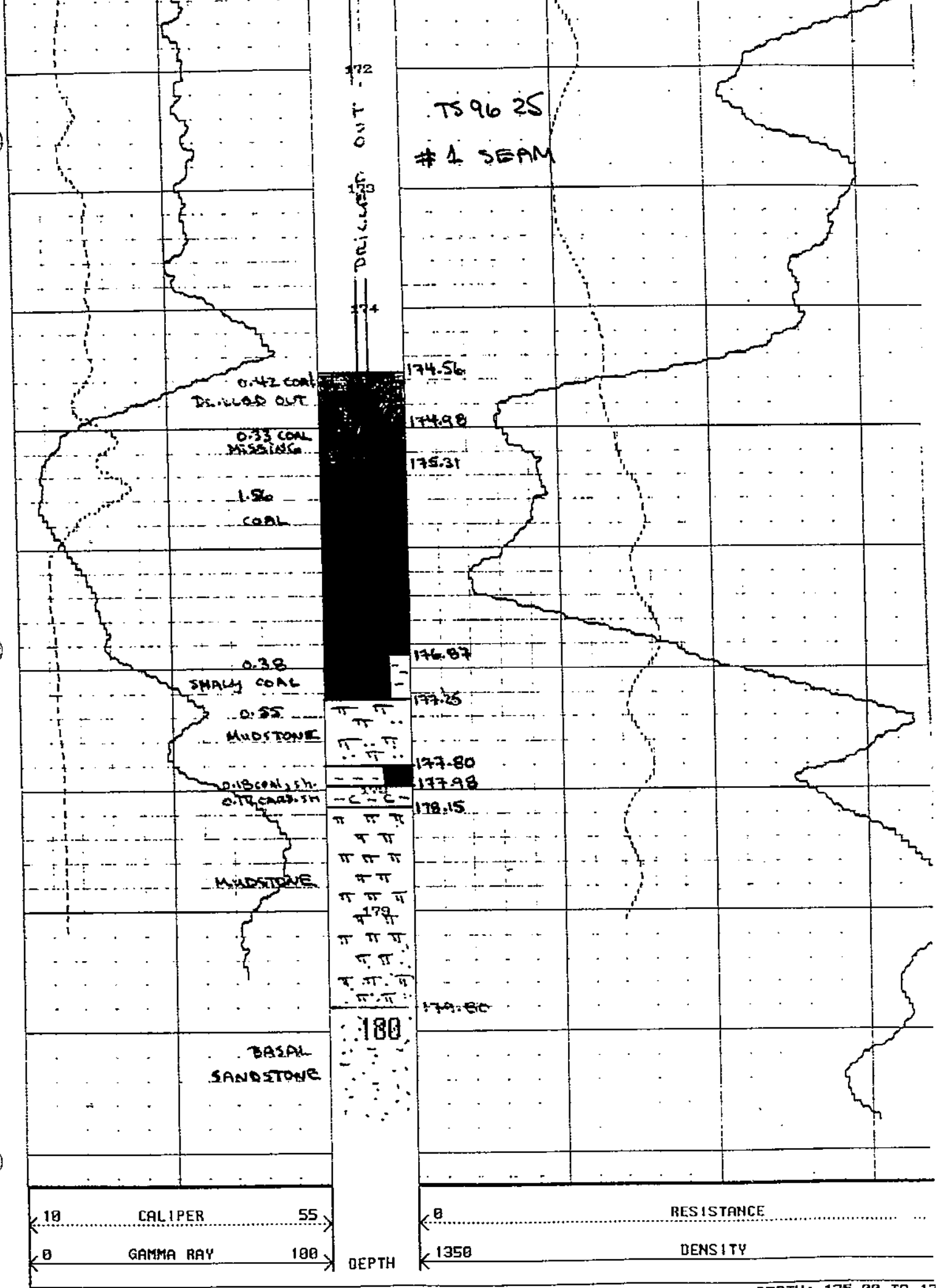
Hole Number: TS 96 05C #1 SEAM

Location: TSABLE RIVER Elevation:

Page ___ of ___




TS 9625C
#3 SEAM
141
142
143
144
144.68
1.20
COAL
145.88
0.41
SHALY COAL
146.29
0.65
COAL
146.94
147
140
149
150


TS 96 25
#1 SEAM
DRILLERS OUT
172
174
174.56
174.98
175.31
176.87
177.25
177.80
177.98
178.15
179.60
180
0.42 COAL
DRILLED OUT
0.33 COAL
MISSING
1.56
COAL
0.38
SHALY COAL
0.55
MUDSTONE
0.18 COAL, sh.
0.12 COAL, sh.
MUDSTONE
BASAL
SANDSTONE
10 CALIPER 55
0 GAMMA RAY 100
DEPTH
0 RESISTANCE
1350 DENSITY
PULSE RUN # 16
DEPTH: 175.00 TO 17

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-26C
CO-ORDINATES : 5486194.0 N. - 363351.4 E.
ELEVATION : 122.0 m
DATE DRILLED: October 23, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	27.5	Glacial till
27.5	87.4	Mudstone;dark grey; silty
87.4	99.6	Mudstone; sandstone interbeds
99.6	136.2	Sandstone; medium grey
136.2	141.0	Sandstone
141.0	141.3	COAL;, thin
141.3	148.4	Sandstone, mudstone interbeds
148.4	164.0	Sandstone, medium grey
164.0	164.3	COAL, thin
164.3	172.8	Mudstone, sandstone interbeds
172.8	190.0	Sandstone
190.0	190.3	COAL, No. 4 Seam
190.3	226.5	Sandstone
226.5	228.0	COAL, No. 3 Seam; mudstone partings
228.0	255.0	Sandstone, siltstone, mudstone interbeds
255.0	257.0	Sandstone
257.0	258.0	COAL. No. 1 Seam
258.0	262.7	Sandstone, siltstone, mudstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-26C
CO-ORDINATES : 5486194.0 N. - 363351.4 E.
ELEVATION : 122.0 m
LOGGED BY: R. A. Swaren
COMMENTS: Hole drilled into coal at 250 meters

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
1	251.60	254.20	2.60	0.28	2.60	COAL SHALE
						Broken up at beginning of core. medium hard. Dark grey to black. Some pieces show polishing and slickensided. One fracture at 25 degrees to horizontal is polished & slickensided in a horizontal direction. Coal is in thin laminae & inclusions (30%). Minor very thin calcite. Bedding at 5-10 degrees along calcite & coaly beds. Pyrite visible on bedding.
				0.20		SHALY COAL
						Hard. Bright. Blocky. Two vertical cleat faces at 90 degrees to one another. Visible pyrite on bedding and cleats. Grades into coaly shale above and mudstone below.
				1.50		MUDSTONE
						Hard but fractured & broken. Dark grey with carbonaceous laminations, lenses and inclusions throughout. Bedding at 8-12 degrees. Fractures at 50 degrees to horizontal are very common on basal half. Fracture planes are polished with visible pyrite & minor calcite.
				0.52		SILTSTONE
						Hard. Medium grey to dark grey. Finely disseminated pyrite. visible throughout. Fracture at 50 degrees at base. No fizz. Bedding at 3 degrees on one calcite vein.
2	254.20	257.20	3.00	0.48	2.42	SANDSTONE/SILTSTONE/MUDSTONE
						Interbeds. 60% sandstone, 20% mudstone, 20% siltstone. Moderately hard to hard. Broken & fragmented & partly ground from coring. Sandstone fine grained medium brown grey. Some fractures at 30 degrees. Bedding 0-10 degrees. No fizz.
				1.72		SANDSTONE
						Coarse grained hard medium brown grey poorly sorted. Looks like basal unit but sharp basal contact with coal. Large 1mm white subangular grains throughout. Highly fractured with long irregular vertical fractures as well as others at 75 degrees. Bedding is also variable at 8-15 degrees on thin carbonaceous & mudstone laminae. Fizz good to very good.
				0.22		COAL (0.58 missing?)
						Top of section is ground & pulverized coal & sandstone. Basal .15m is hard bright blocky coal with minor 10% dull banding. Visible pyrite on vertical cleating as well as on bedding planes. Apparent bedding is 10 degrees.
3	257.20	259.70	2.50	0.18	1.87	COAL (0.63 missing)
						Broken up in coring, only fragments left. Hard coal. Blocky. Fractured & polished at 50 degrees. Pyrite on fractures, beds and cleats visible.
				0.18		COALY SHALE
						25% coal - Dark grey black. Sharp basal contact with siltstone. Fractures at 50 degrees to horizontal. Visible pyrite on fracture planes & throughout.
				0.36		SANDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-26C
CO-ORDINATES : 5486194.0 N. - 363351.4 E.
ELEVATION : 122.0 m
LOGGED BY: R. A. Swaren
COMMENTS: Hole drilled into coal at 250 meters

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness, Contamination
						Poorly sorted. Very hard. Medium to fine grained. Medium grey brown with subangular 0.05m to smaller white grains randomly scattered throughout. Carbonaceous laminae, stringers plant remains at 15%. Irregular vertical fracture.
				1.03		MUDSTONE
						Medium grey. Hard. Partly broken due to fracturing at 60 degrees with polishing. Movement along bedding at 0-10 degrees with polishing & slickensides. Pyrite on fracture planes.
				0.12		SANDSTONE
						Medium to coarse grained. Medium brown basal sandstone. Bedding at top at 4 degrees. Good fizz. White 1mm subangular grains poorly sorted throughout. Hard. Thin carbonaceous & muddy laminae.
4	259.70	262.70	3.00	0.20	2.98	SANDSTONE
						Medium to coarse grained. Medium grey brown poorly sorted, hard with white angular grains to 1mm as well as mudstone fragments to 2 mm. Hard . One calcite filled fracture at 55 degrees & sharp basal contact with mudstone at 10 degrees. Fizz good.
				0.15		MUDSTONE
						Medium hard. Medium grey to dark grey. Thin calcite veins throughout as well as 2mm coaly beds. Sharp contact with carbonaceous shale at base.
				0.40		CARBONACEOUS SHALE
						Black. Medium hard. Fractures at 20 degrees are polished & slickensided. Coal at 30% of interval in lenses, fragments and inclusions. Broken & visible pyrite on fracture planes.
				0.06		MUD
						Soft, plastic, light grey to medium grey.
				2.17		MUDSTONE
						Medium grey, medium hard. Silty. Visible pyrite abundant on fracture & bedding planes. Some coaly lenses & inclusions < 5%. Fractures are at 30 degres & predominantly 65 degrees & are polished & slickensided at 45 degrees across fracture plane. Bedding at 10 degrees. No fizz.

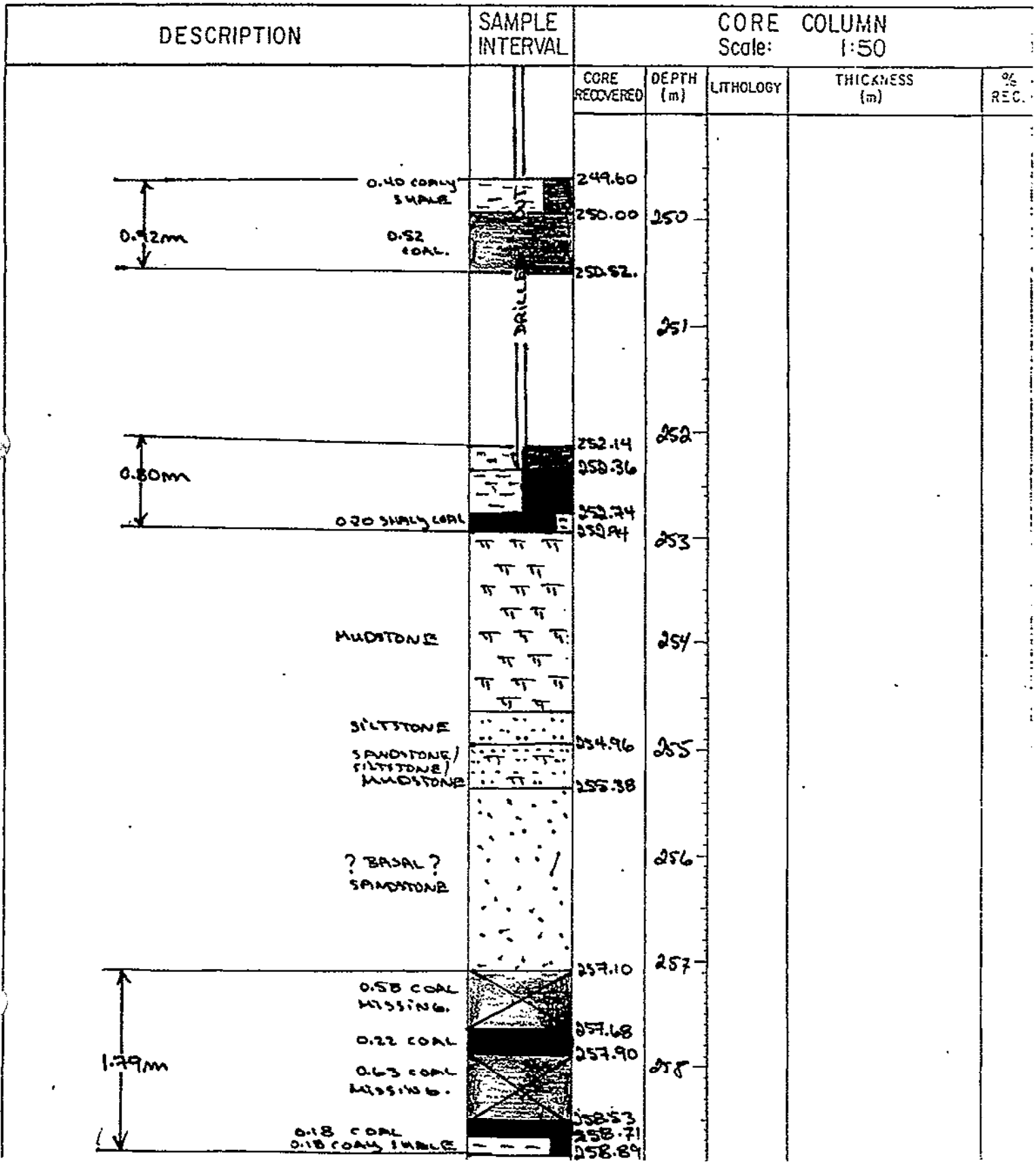
QUINSAM COAL CORPORATION

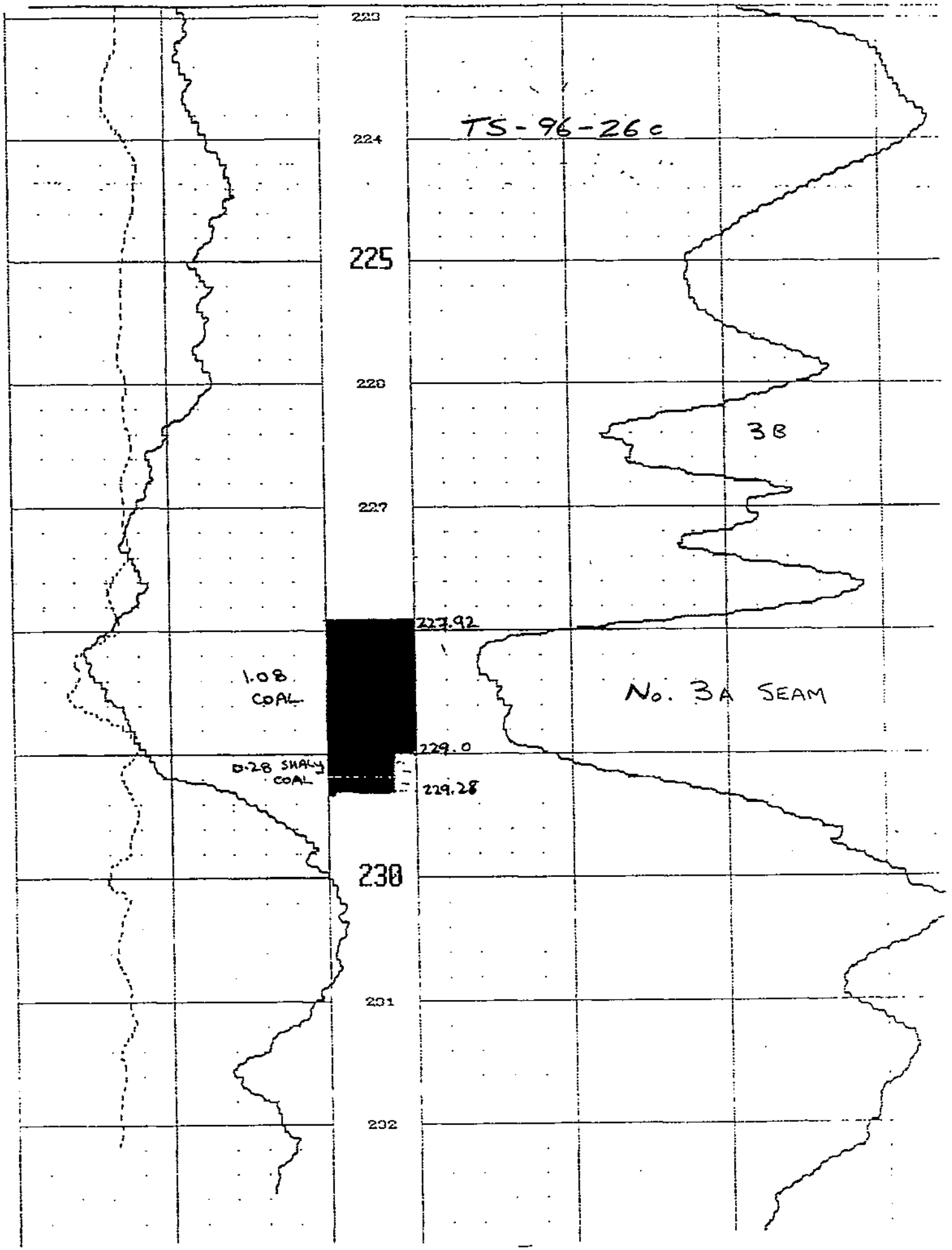
DEPTHS FROM E-LOG

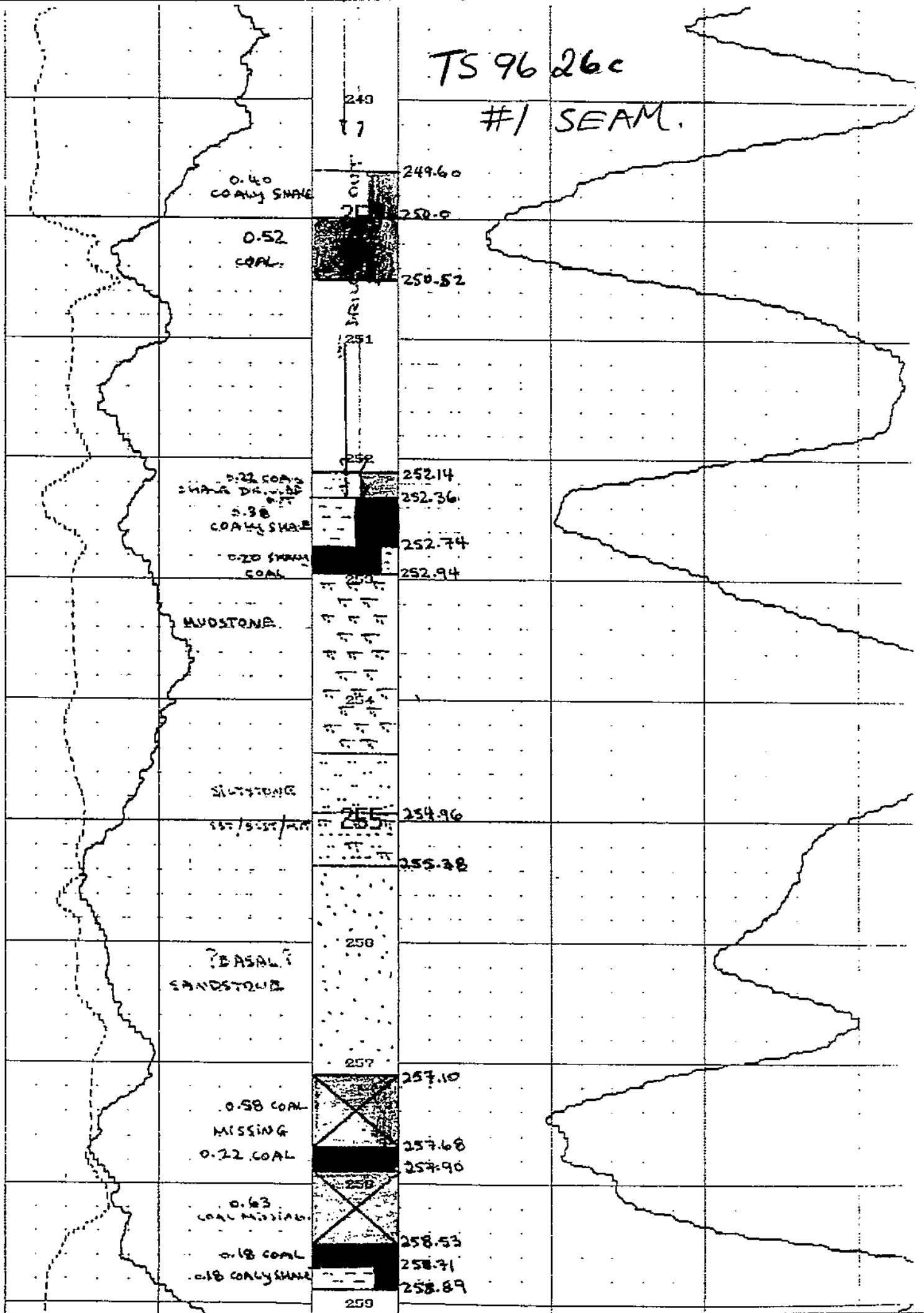
Hole Number: TS 96 26 C — #1 SEAM

Location: TSABLE RIVER — Elevation:

Page ___ of ___




TS-96-26c
223
224
225
226
227
3B
227.92
1.08
COAL
No. 3A SEAM
229.0
D-28 SHALY
COAL
229.28
230
231
232


TS 96 26c
#1 SEAM.
249
249.60
0.40
COALY SHALE
250.0
0.52
COAL
250.52
251
252.14
0.22 COAL
SHALE DIRTY
252.36
0.38
COALY SHALE
252.74
0.20 SHALY
COAL
252.94
MUDSTONE
254
SILTSTONE
254.96
255
255.38
250
?BASAL?
SANDSTONE
257
257.10
0.58 COAL
MISSING
257.68
0.22 COAL
257.90
259
0.63
COAL MISSING
258.53
0.18 COAL
258.71
0.18 COALY SHALE
258.89
259

TSABLE RIVER COAL PROJECT
LITHOLOGY LOG
(DRILLERS LOG)

HOLE NUMBER : TS 96-27C
CO-ORDINATES : 5486899.1 N. - 363636.4 E.
ELEVATION : 65.8 m
DATE DRILLED: October 22, 1996
DRILLER: Hi-Rate Drilling

DEPTH (m)		DESCRIPTION
From	To	
0.0	11.5	Glacial till
11.5	118.1	Mudstone; dark grey; silty
118.1	166.9	Mudstone; Sandstone interbeds
166.9	228.0	Sandstone; medium grey.; thin coal at 184 & 206
228.0	231.0	Sandstone; minor mudstone
231.0	231.9	COAL, No. 4 Seam
231.9	269.0	Sandstone; medium grey
269.0	271.0	COAL; mudstone interbeds; No. 3 Seam
271.0	286.6	Mudstone; siltstone interbeds; thin coal at 281
286.6	301.3	Sandstone/Siltstone/Mudstone interbeds
301.3	301.8	Mudstone; carbonaceous
301.8	305.6	COAL; No. 1 Seam, dirty near base
305.6	306.8	Mudstone; coaly
306.8	308.3	Sandstone; white; poorly sorted; basal
308.3	331.1	Sandstone/Siltstone/Mudstone interbeds
		END of HOLE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-27C
CO-ORDINATES : 5486899.1 N. - 363636.4 E.
ELEVATION : 65.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
1	278.80	281.80	3.00	1.17	2.80	SANDSTONE
						Poorly sorted medium grained with subangular gritty flecks throughout. Irregularly banded mudstone & siltstone laminae & lenses are 40%. Hard. Medium grey brown with leaf & stem fragments throughout. Sharp basal contact with mudstone at 6 degrees. One fracture near the base at 55 degrees. Very thin calcite bands - rare. Fizz - low to nil
				1.32		MUDSTONE
						Hard. Dark grey to black. Homogeneous & competent. No visible bedding but sharp basal contact with coal at 5 degrees. One irregular vertical fracture near top & a polished one near base at 50 degrees. No fizz.
				0.31		COAL (probably 0.20 missing)
						Hard. Competent. Some dull banding in bright bands (very thin). Calcite on vertical cleats. No visible pyrite. Slightly shaly.
2	281.80	284.60	2.80	0.11	2.68	COAL (probably 0.12 missing)
						As above but more shaly > 30%. Sharp contact on 6 degree bedding with mudstone
				1.72		MUDSTONE
						Hard. Competent. Dark grey to black but lighter in bottom 0.5m where it is much more silty. Also some silty banding 0.3m from top. Thin carbonaceous material throughout top 1.2m in bands, lenses and inclusions. Calcite filled fractures at 60 degrees in middle of unit. Also some calcite horizontal most likely on bedding.
				0.85		SILTSTONE
						Slightly muddy medium hard to hard. Highly fractured in central portion at 45 - 60 degrees to horizontal. Calcite infills fractures. No discernible bedding. Fizz - low.
3	284.60	287.60	3.00	2.02	3.00	SILTY MUDSTONE
						Dark grey to black with darker plant fragments throughout. Hard & competent grading up into siltstone above & downwards into interbeds of sandstone/siltstone/mudstone. Fracture in middle 70 degrees and calcite filled & another near the base at 40 degrees. Bedding 5 degrees at basal contact.
				0.98		SANDSTONE/SILTSTONE/MUDSTONE
						Interbeds, thin laminae banded throughout. Sandstone 60%, siltstone 20%, mudstone 20%. Some minor ;carbonaceous bands < 1%. Bedding variable at 5-10 degrees. Old calcite filled fracture 75 degrees as well as irregular vertical fractures. Core is broken along beds throughout. Fizz - Low to good.
4	287.60	290.60	3.00	3.00	3.00	SANDSTONE/SILTSTONE/MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-27C
CO-ORDINATES : 5486899.1 N. - 363636.4 E.
ELEVATION : 65.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

CORE FOOTAGE'S						GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						As above. Competent, but more mudstone & siltstone. Sandstone 20%, Mudstone 35%, Siltstone 45%. Hard but fractured 85, 45 and 65 degrees. Calcite infilling on fractures. Sandstone medium brown colour, siltstone medium grey & mudstone dark grey. Slickensides at 60 degrees to horizontal. One 2cm muddy band 1m from base.
5	290.60	293.60	3.00	3.00	3.00	SANDSTONE/SILTSTONE/MUDSTONE
						Interbedded in equal amounts. Competent/hard/irregular & even bedding at 3 - 10 degres to horizontal. Relatively unbroken core except for two large fractures irregularly vertical & one at 60 degrees. Sandstone fine to medium grained & medium grey brown. Siltstone medium grey & mudstone dark ;grey. Thickest bands 1cm. Fizz - nil.
6	293.60	296.60	3.00	3.00	3.00	SANDSTONE/SILTSTONE/MUDSTONE
						As above but 35% sandstone. Thin calcite on bedding & in old fractures @ 70 degrees to horizontal. Bedding at 5-10 degrees to horizontal. Competent & relatively unbroken core. Hard. Fizz - low to nil.
7	296.60	299.60	3.00	3.00	3.00	SANDSTONE/SILTSTONE/MUDSTONE
						Sandstone 60%, siltstone 30%, mudstone 10%. More broken up than the last 2 runs. Irregular bedding & cross bedding. Apparent bedding is 5-10 degrees. Fractures at 60 degrees & 75 degrees with some calcite infilling. More turbid environment. Fizz - low to good on some sandstone beds.
8	299.60	302.60	3.00	1.12	3.00	MUDSTONE/SILTSTONE/SANDSTONE
						Interbedded but more muddy near base where it grades into mudstone. Sandstone is fine grained medium grey, very hard & makes up 35%. Siltstone hard. Medium grey brown & is 20%. Mudstone is 35% & is medium to dark grey-black.
						Bedding is varied at 8-15 degrees. from horizontal. Some thin calcite veins present along bedding. Fractures are irregular & vertical with calcite on fracture planes. Fizz is low to nil.
				0.62		MUDSTONE
TS962701 - Roof Sample (.26m)						
Ash	VM	FC	S MJ/kg	FSI		
82.00	13.63	4.37	0.33 3.2	-		
						Medium hard dark grey black with leaf & stem fragments throughout. Coaly lenses & laminae associated with calcite are up to 1 cm thick. Fractures at 30 degrees have calcite on planes. Sharp coal contact at base on bedding which show movement with polishing, slickenside and calcite. Bedding is 5-10 degrees.
TS962702				1.26		COAL
Ash	VM	FC	S MJ/kg	FSI		
14.56	33.97	51.36	0.95 29.55	6.0		

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-27C
CO-ORDINATES : 5486899.1 N. - 363636.4 E.
ELEVATION : 65.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						Hard. Bright.Blocky. Good coal. 2 thin 2mm shale laminae in top 0.3m. one and in bottom 0.3m. Visible pyrite on bedding, cleats and fractures & as inclusions pyrite is 25%. Calcite present on vertical cleating planes but not noticeable on bedding. Some fractures at 40 degrees to horizontal.
9	302.60	305.60	3.00	1.04	2.68	COAL (0.32 missing)
TS962703						
Ash	VM	FC	S MJ/kg	FSI		
31.17	29.71	39.12	0.72 23.07	6.5		
						Hard in top .13m followed by .25m of ground up polished grey coal (probably missing portion from this area). Coal is dirtier towards base with more shale. Fractured polished & slickensided. Some shaly coal 0.07m just below soft ground section. Pyrite visible & abundant & minor calcite on cleats. Basal contact is gradational into dirtier coal and shale interbedded.
				0.70		SHALY COAL/COAL/ SHALE/ COALY SHALE
TS962704						
Ash	VM	FC	S MJ/kg	FSI		
54.76	23.19	22.05	1.81 13.35	2.5		
						Interbedded with shale. Coal ratio 50/50 with more shale near the base. Fairly hard but broken , fractured and polished at top. 1 abrupt basal contact with coal in basal shale. Shale beds are .03 to .08 m thick & number 4. Shaly coal is near top with coal beds being < 0.2m thick. Most of the interval is coaly shale. Poor coal. Visible pyrite & thin calcite veins throughout.
TS962705				0.37		SHALY COAL
Ash	VM	FC	S MJ/kg	FSI		
30.21	29.22	40.58	2.01 23.31	6.5		
						Hard. Blocky. Two vertical cleat planes at 90 degrees to one another. Pyrite on cleats & bedding. Thin vertical veins of calcite.
TS962706 - Floor				0.14		MUDSTONE - Floor
Ash	VM	FC	S MJ/kg	FSI		
79.79	14.60	5.61	1.09 3.24	0.0		
						Hard. Dark grey brown. Vertical irregular on fracture. Sharp upper contact with coal but has broken core. No bedding.
10	305.60	308.60	3.00	1.17	2.84	MUDSTONE
						Broken.Irregular coal lenses. One .06m near base which is carbonaceous & another irregular 2 cm one near top.Silty in central parts. Medium to dark grey brown. Hard.Thin calcite veinlets near base. No visible pyrite in coal but calcite on cleating.Bedding at 5-7 degress. Polished fracture planes at 25 degrees as well as polished bedding showing horizontal movement. Fizz-nil.
						Grades into coarse sandstone below
				1.47		SANDSTONE (basal)

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-27C
CO-ORDINATES : 5486899.1 N. - 363636.4 E.
ELEVATION : 65.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						Coarse. Poorly sorted. Gritty basal sandstone. Medium grey brown with large subangular white grains. Some thin carbonaceous stringers on irregular bedding. Basal 0.2m more silty & quite broken up & incompetent. Fizz- low to good.
				0.30		SILTSTONE (-.16 missing)
						Medium grey brown. Medium hard. Broken & fractured with platy visible pyrite on fractures. Fractures irregular & vertical with calcite infilling.
11	308.60	311.30	2.70	0.24	2.50	MUDSTONE (0.20 missing ?)
						Dark grey to black. Very broken. Fractures & slickensided fractures at 56 & 50 degrees. Minor calcite veinlets & infills.
				0.31		SHALY COAL
						Broken,dull, visible pyrite on bedding. Thin calcite vertical veinlets in more coaly sections. No upper contact & lower grades into mudstone.
				1.99		MUDSTONE
						Dark grey & dark brown sections 50/50. Moderately hard with fractures at 55-65 degrees. Thin calcite veins on bedding & in fractures . Carbonaceous in upper section. No fizz.
12	311.30	313.80	2.50	0.08	2.46	MUDSTONE
						Carbonaceous as above. GRades down into siltstone.
				2.38		SILTSTONE
						Hard. Competent. Core only minimally broken. More sandstone interbeds of medium grained sandstone in basal 0.4m. Thin muddy lenses & blebs in upper part. Fizz - nil. Bedding variable 7-15 degrees. No fractures.
13	313.80	316.80	3.00	3.16	3.16	SILTSTONE
						As above. Hard. Competent. Missing sections recovered from previous runs. Medium grey brown. More sandy near base with fine to medium grained sandstone. Two fractures at 75 * 45 degrees. No visible bedding. Fizz - nil
14	316.80	319.80	3.00	0.29	3.00	SANDSTONE/SILTSTONE
						Interbedded in irregular varved. Turbulent environment. Grades down into coarse sandstone . Bedding at 10 degrees. One coarse 1mm white flecks near base.
				2.12		SANDSTONE
						Basal. Coarse to very coarse. Many large calcite grains & quartz grains 1mm or 2mm also mudstone fragments up to 1cm. Bedding variable at 10-15 degrees. No fractures. Irregular sharp basal contact with siltstone. Gritty & poorly sorted. Medium buff grey colour. Fizz- low.
				0.57		SILTSTONE/SANDSTONE
						Irregularly interbedded with coaly lenses & inclusions. Dark brown to grey. Hard and competent. Bedding 15-20 degrees. No fractures. Fizz- nil.
15	319.80	322.80	3.00	2.42	2.42	SILTY MUDSTONE

QUINSAM COAL COREHOLE LOG - TSABLE RIVER

HOLE NUMBER : TS 96-27C
CO-ORDINATES : 5486899.1 N. - 363636.4 E.
ELEVATION : 65.8 m
LOGGED BY: R. A. Swaren
COMMENTS:

	CORE FOOTAGE'S					GEOLOGICAL DESCRIPTION
	DRILLED			RECOVERED		Lithology, Colour,Size,Texture, Hardness, Shearing, Contacts, Bedding
Core No.	From	To	Total	Section	Total	Angle, Alteration, Wetness ,Contamination
						Medium grey brown. Medium hard. Competent but broken in central portion. Thin sandstone beds in upper 0.4m. Calcite veins on bedding? at 8 degrees. More silty in central portion. Some fractures at 30 degrees.
16	322.80	325.30	2.50	1.50	2.40	SILTY MUDSTONE
						Sandstone/siltstone interbeds in basal 0.1m gradational from upper mudstone to lower coarse sandstone. As above. No fractures. No fizz. Crossbedding at 10-25 degrees.
				0.90		SANDSTONE
						Coarse to very coarse basal unit with siltstone lenses in central portions. Large 2mm white subangular grains throughout. Bedding on siltstone 5-10 degrees. Excellent fizz.
17	325.30	328.30	3.00	0.92	2.70	SANDSTONE
						As above.
						SILTSTONE
						One muddy 0.08 soft ground section in basal 0.6m. Medium grey brown with darker carbonaceous area near top. Bedding 10-15 degrees with calcite on bedding planes. Fractures irregularly vertical & at 50 degrees polished & slickensided. Ground up at base & core i quite broken.
18	328.30	331.10	2.80	2.80	2.80	SILTSTONE
						Slightly muddy. Highly broken up & fractured with pyrite on fracture planes. Fractures vertical and 60 degrees. Some coaly lenses. Beds in top section with 10 degrees. Muddier sections in basal 0.4m.
						END OF HOLE & CORE

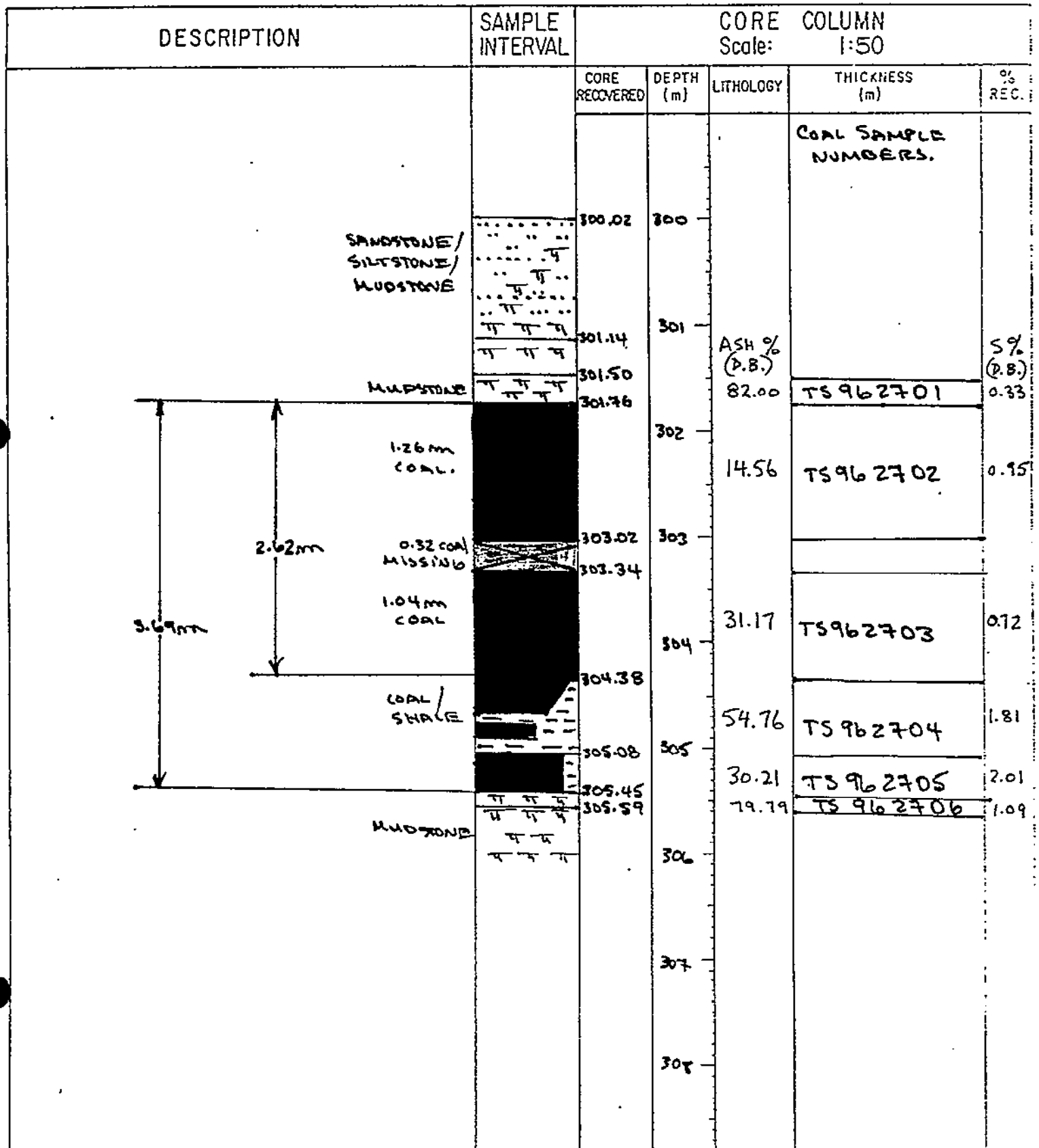
: DEPTHS FROM E-LOG.

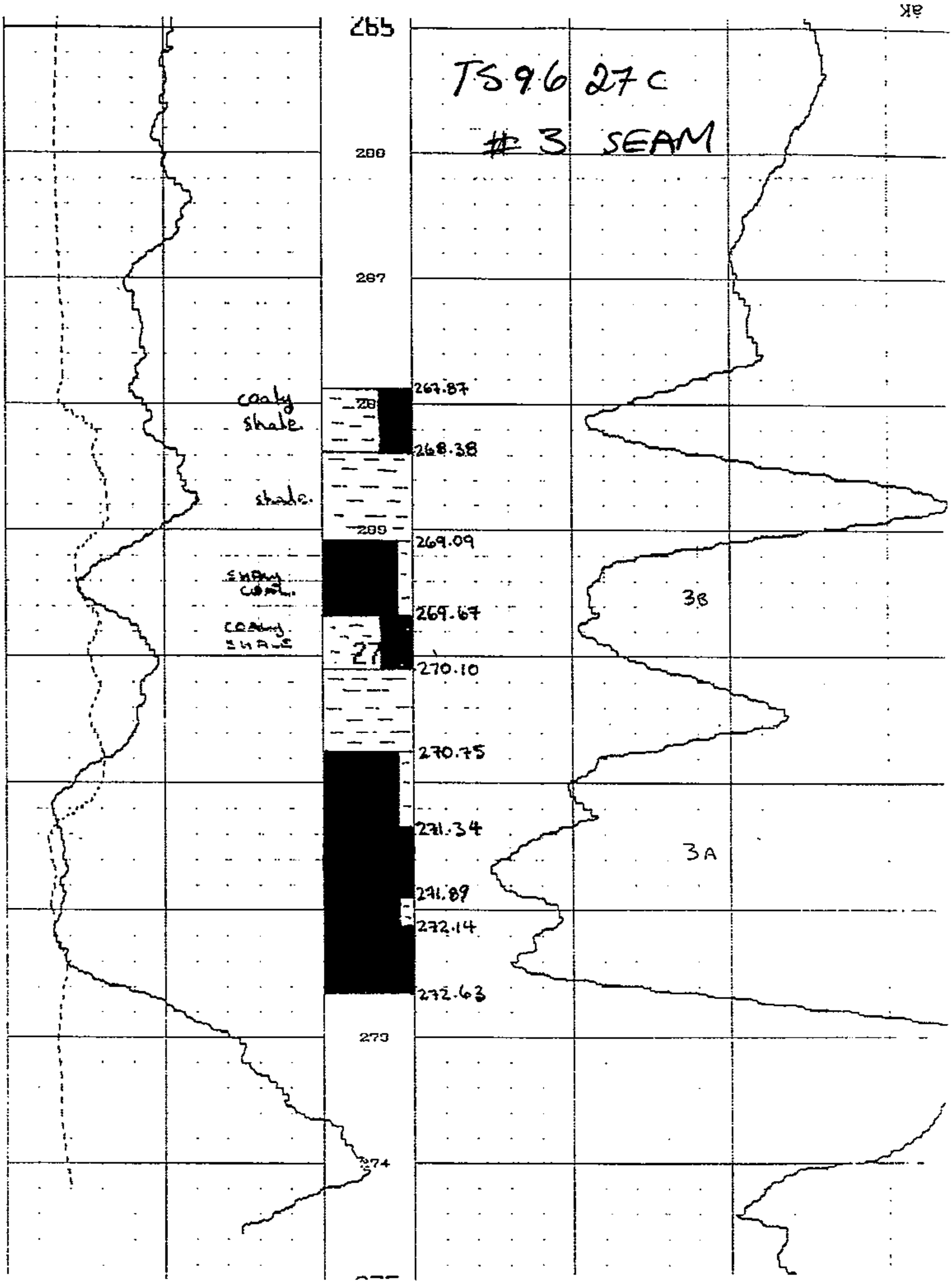
QUINSAM COAL CORPORATION

Hole Number: TS 96 27C — #1 SEAM.

Location: TSABLE RIVER — Elevation:

Page ___ of ___





TS96 27C
#3 SEAM
265
266
267
267.87
coaly shale
268.38
shale
269.09
shaly coal
269.67
coaly shale
270.10
270.75
271.34
271.89
272.14
272.63
3B
3A
273
274

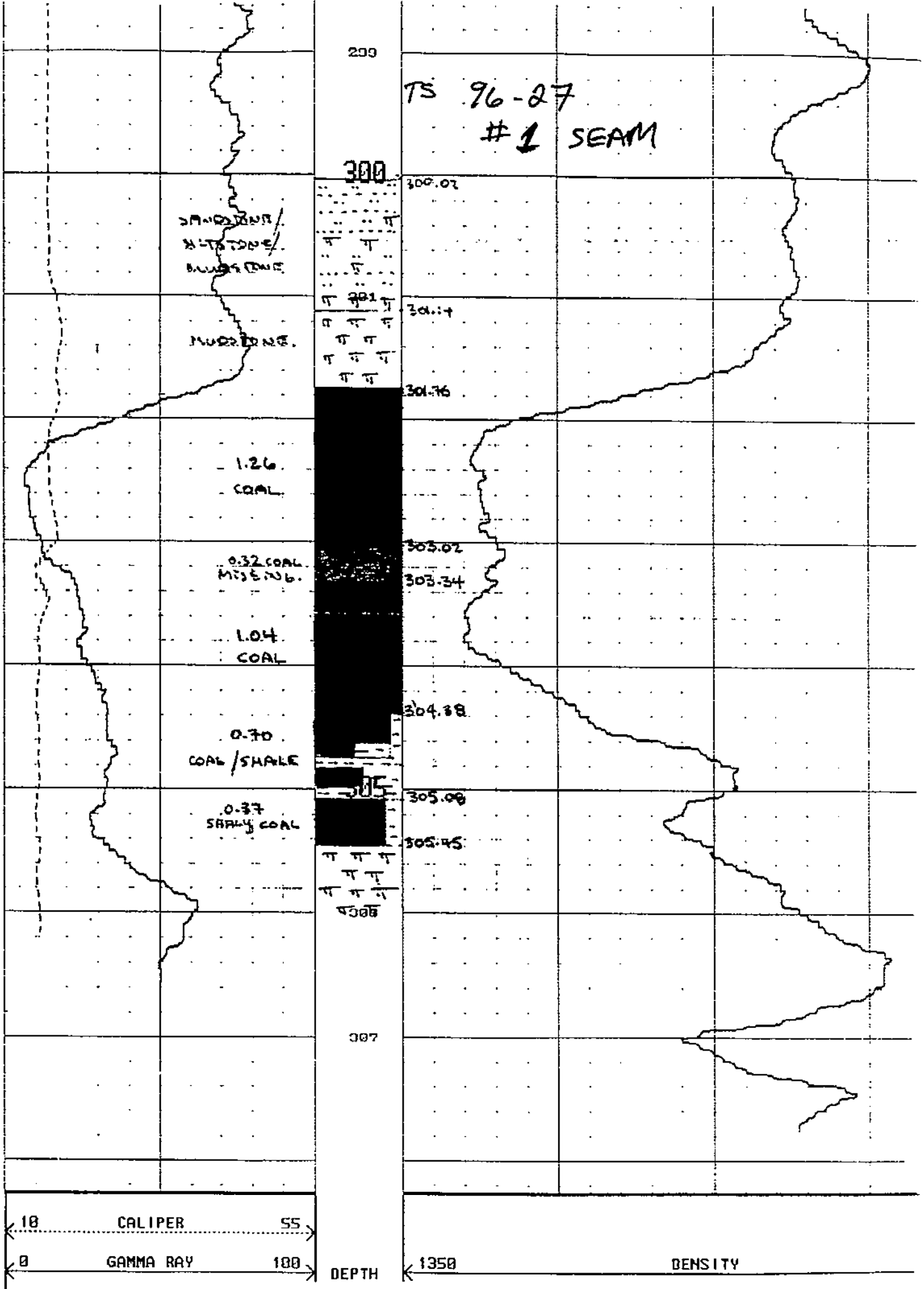

TS 96-27
#1 SEAM
299
300
300.07
301
301.14
301.76
1.26
COAL
303.02
0.32 COAL
MISTONE.
303.34
1.04
COAL
304.38
0.70
COAL / SHALE
305
305.08
0.37
SANDY COAL
305.45
307
10
CALIPER
55
0
GAMMA RAY
100
DEPTH
1350
DENSITY
PULSE RUN # 8
07/29/96
TS 96-27
DEPTH: 302.00 TO

PLATE 1. **TS-96-01;** **No. 1 Seam Horizon**

PLATE 2. **TS-96-02;** **No. 1 Seam Horizon**

PLATE 3. TS-96-02; No. 3 Seam Horizon

PLATE 4. TS-96-05; No. 3 Seam Section

PLATE 5. **TS-96-05;** **No. 1 Seam Section**

PLATE 6. **TS-96-06;** **No. 1 Seam Section**

PLATE 7. **TS-96-06;** **No. 3 Seam Section**

PLATE 8. **TS-96-07;** **No. 3 Seam Section**

PLATE 9. **TS-96-07;** **No. 1 Seam Section (Faulted)**

PLATE 10. **TS-96-09;** **No. 3 Seam Section**

PLATE 11. TS-96-10; No.3 Seam Section

PLATE 12. TS-96-10; No.1 Seam Section

PLATE 13. TS-96-11; No. 1 Seam Section

PLATE 14. TS-96-12; No. 1 Seam Section

PLATE 15. TS-96-13; No. 1 Seam Roof Contact

PLATE 16. TS-96-14; No. 1 Seam Section

PLATE 17. TS-96-15; No.1 Seam Section

PLATE 18. TS-96-16; No. 1 Seam Section

PLATE 19. TS-96-17; No. 1 Seam Roof Contact

PLATE 20. TS-96-17; No. 1 Seam Floor Contact

PLATE 21. TS-96-17; No. 1 Seam Section