81-1562
vol 1.

965001

MICROFILMED

RENEWAL & PROGRESS REPORT TO MAY 21, 1981

TASMANIAN EXPLORATION LICENCE 31/80

Licence Holder:

Northwest Bay Company Pty. Ltd.

Manager & Operator:

Victor Petroleum & Resources Ltd.

Report by E. ESHUYS & J. O. SMITH

Signed

20 May 1981

E. Eshuys B.Sc., A.M.A.I.M.M.
Exploration Manager
Victor Petroleum & Resources
1373 Burke Road
East Kew, Victoria

of M	A.O.	C.G.	E.O.	D.S.M.E
				Registrar
Received Answered	21 MAY 1981			E & IL
DEPT. OF MINES REP. No. 4191/81				

C O N T E N T S

	Page
SUMMARY	1
1. INTRODUCTION	4
2. REGIONAL GEOLOGY	5
3. GEOLOGICAL RECONNAISSANCE	6
4. SCOUT DRILLING PROGRAMME	6
4.1 INTRODUCTION	6
4.2 DRILLING RESULTS	7
4.2.1 Bells Lagoon Area	7
5. WOODBURY COAL PROJECT AREA	10
5.1 INTRODUCTION	10
5.2 STRATIGRAPHY	11
5.3 DEPOSITIONAL ENVIRONMENT	14
5.4 STRUCTURE	15
5.5 SCOUT DRILL HOLES	16
6. ESTIMATE OF INSITU INFERRED COAL RESOURCE	17
7. GENERAL	18
8. FUTURE EXPLORATION PROGRAMME	19
9. PROPOSED EXPLORATION EXPENDITURE	21
TABLE 1 SUMMARY OF DRILL HOLE DATA	
TABLE 2 SUMMARY OF INTERSECTED COAL SEAMS	
APPENDIX 1 STATEMENT OF EXPENDITURE	
APPENDIX 2 REGIONAL RECONNAISSANCE REPORT	

LIST OF PLANS

Locality Map of EL 31/80
Drill Hole Location Plan.

WOODBURY COAL PROJECT AREA

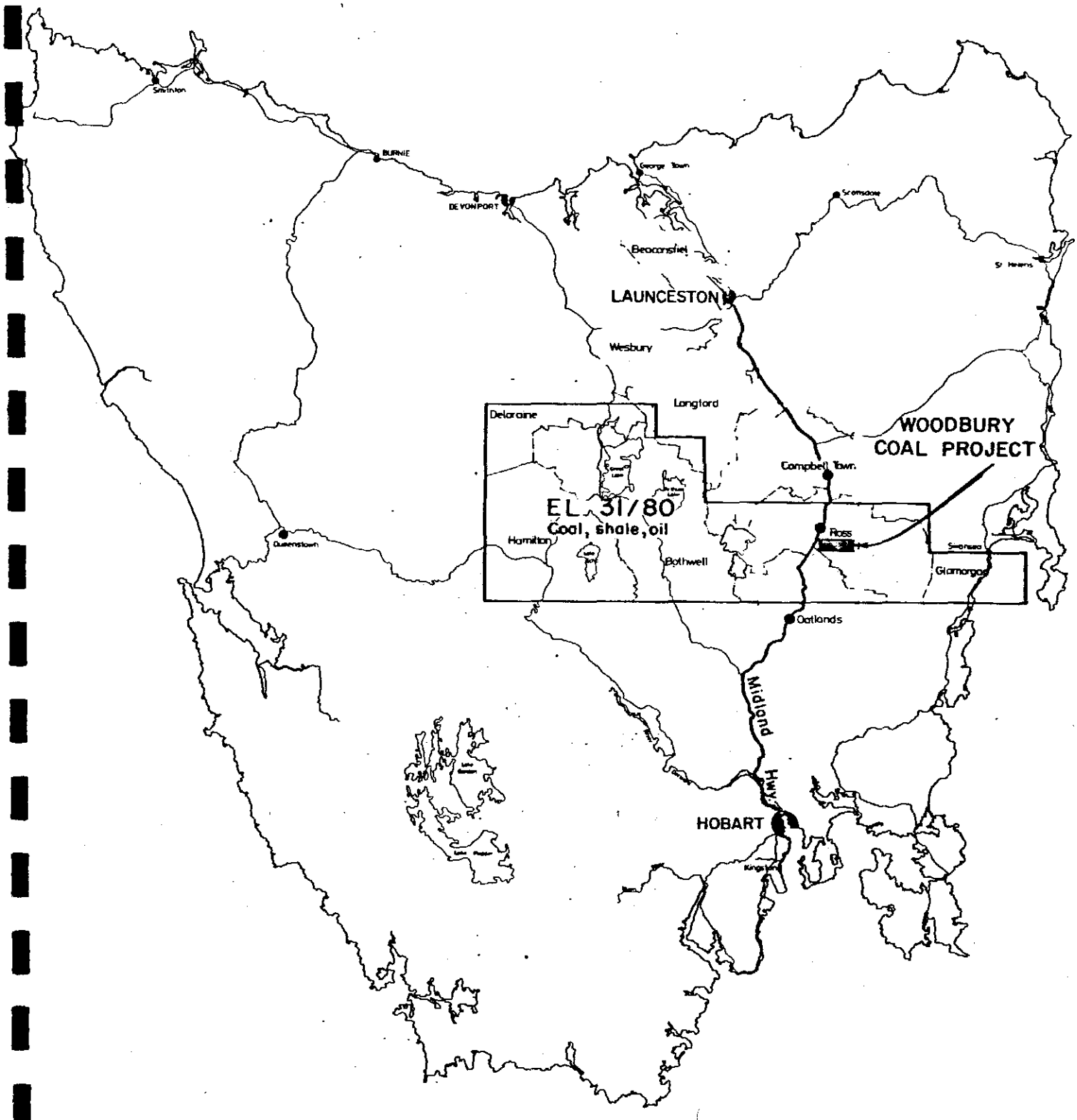
Lithological Correlation and Density Logs. } Woodbury Bells Lagoon ×2
Lithological Correlation and Gamma Logs. } Woodbury Bells Lagoon ×2
Lithological Correlation and Resistivity/sp Logs. Woodbury Bells Lagoon ×2
Lithological Correlation and Caliper Logs. } Woodbury Bells Lagoon
Reduced Levels of Seam I.
Reduced Levels of Seam II.
Isopach Map of Seam I.
Isopach Map of Seam II.
Overburden to Seam I Map.
Interseam Isopach Map.
Dolerite Outcrop Map.
Subsurface Dolerite Intrusion Map.
Cross Sections.
Scout Drilling Hole Lithology and Wire Line Logs. (Missing-not on Microfiche)

BELLS LAGOON AREA

Scout Drill Hole Lithologics and Wire Line Logs.
(Missing-not on Microfiche)

NB Transparencies
In large Vertiplan
in Library

965004



VICTOR PETROLEUM & RESOURCES LTD.

LOCALITY PLAN OF E.L. 31/80 & E.L. 6/81

20 10 0 20 40 60 km.

MARCH 1981

DRAFTING & CARTOGRAP

RENEWAL AND PROGRESS REPORT TO MAY 21, 1981

EXPLORATION LICENCE 31/80

SUMMARY

Exploration activities since the granting of the Exploration Licence 31/80 to the Northwest Bay Company Pty. Ltd., has consisted of literature studies, ground geological reconnaissance and sampling and an initial scout drilling programme.

The principal objectives of the ongoing exploration programme is to develop a geological, geophysical and geochemical base for an oil exploration programme of the onshore Tasmania Basin and to test the potential of the outcropping Permo-Triassic sediments for near surface coal.

Victor Petroleum has an agreement with the licence holder of EL 31/80 to earn an equity of 75% in EL 31/80 by managing and funding all exploration expenditure up to and including feasibility studies.

A scout drilling programme of 32 open rotary percussion holes for a total of 2663 metres, resulted in the discovery of a number of coal seams of one metre or more thickness within a sequence of lithic sandstone, shale, and quartzose sandstone, in the Woodbury area. The geophysical logs and drill cuttings indicate that two significant coal seams have been intersected. The top seam occurs between 4.5 and 57 metres below the surface, reaches a maximum thickness of 3.1 m in W 15 and has a mean cumulative thickness of 2.3 metres. The second seam has an average thickness of 1 metre and occurs between 30 and 50 metres below the top seam, but occurs within 20 metres of the surface north of W 7.

Assessment of all geological and wire line logging data allows correlation of the top seam over an estimated area of 11.1 sq. kms and the lower seam of 14.8 sq. km. respectively. Using a density factor of 1.6 kgm^{-3}, the estimated insitu inferred resource for the top seam is 41 million tonnes and 24 million tonnes for the second seam giving a total insitu inferred resource of 65 million tonnes.

No reliable coal quality data has been obtained to date. However a coring programme at 1 km centres has commenced, to improve the status of the reserves and obtain the overall quality of the coal seams intersected.

The shallow depth of the coal and its close proximity to established infrastructure, including the railway prompted the commissioning of a prefeasibility engineering study by consulting mining engineers Dames & Moore. The purpose of this study is to develop the guidelines for ongoing exploration and engineering studies.

The proposed exploration programme for the ensuing six month period is to consist in principle of core drilling on the Woodbury Coal Project area, continued scout drilling of Permo-Triassic sediment windows within the Jurassic dolerite and regional studies including photogeology and gravity analysis of the entire area within EL 31/80.

The aim of the regional studies is to generate a solid data base for field geological and geophysical surveys, and drilling to identify targets for coal and oil to be conducted during the field season of 1981-1982.

965007

Victor Petroleum has established an operational base at Campbelltown for its Tasmanian activities. A senior geologist has been appointed to supervise and co-ordinate a field team presently of two geologists with plans to increase this to three with appropriate support staff. This company will continue to seek expert consultant advice at appropriate stages throughout the exploration programme.

Exploration expenditure for EL 31/80 for the period to April 30, 1981 was $227,551.

An exploration expenditure of $275,000 is proposed for the ensuing six months to November 21, 1981.

1. INTRODUCTION

Exploration activities since the granting of licence 31/80 to the Northwest Bay Company Pty. Ltd. has consisted of literature studies, ground geological reconnaissance and sampling, and a scout drilling programme.

The principal objective of the exploration programme to date was to develop a geological base for an oil exploration programme of the onshore Tasmania Basin and to test the potential of the outcropping Triassic sediments for near surface coal.

The scout drilling programme consisted of 32 open rotary percussion holes for a total of 2,663 metres. The drilling commenced on January 19, 1981 and was completed on March 13, 1981.

Victor Petroleum has an agreement with Northwest Bay Company Pty. Ltd. the licence holder of EL 31/80 to earn an equity of 75% in EL 31/80 by managing and funding all exploration expenditure up to and including feasibility studies.

As a result of the scout drillings programme and wire line logging of each of the holes with, resistivity SP, gamma, density and caliper tools, a number of coal seams of one metre or more of thickness occurring within a sequence of lithic sandstones and shale probably overlying a quartzose sandstone unit have been discovered in the Woodbury area. For the purpose of this report, the scout drilling results will be discussed under two headings, namely The Woodbury Coal Project area, and the Bells Lagoon area.

965009

2. REGIONAL GEOLOGY

The sedimentary rocks of the Parmeener Supergroup within EL 31/80 rest on a folded and eroded basement of Precambrian and early Paleozoic rocks. The upper sequences of the marine and non-marine beds of the Parmeener Supergroup have been intruded by concordant and discordant dolerite sills of Jurassic age. Basaltic lava extrusions associated with minor fluviatile sedimentation occurred during the Tertiary period.

Tectonic activity associated with the Tabberabberan orogeny during the Devonian initiated a prolonged phase of erosion which persisted through to the Triassic.

From the cessation of Triassic sedimentation until the recent times, Tasmania was subjected to normal NNW trending faulting. During this tensional phase there was only limited sedimentation in restricted basins.

During the Tertiary, horst and graben structures of major dimensions developed with the largest horst forming the Central Highlands Plateau and West Coast Range. Most Tertiary faults are normal with dips varying between 45^{o} and vertical. Drag folding against faults results in locally steep dips and gentle tilting of the fault blocks.

The overall result of both the Jurassic dolerite intrusions and Tertiary epeirogeny was the development of the central plateau mass consisting of a huge slab of block faulted and warped Permo-Triassic sediments and dolerite.

3. GEOLOGICAL RECONNAISSANCE

Geological reconnaissance of the area was conducted during December 1980 and principally directed at obtaining initial geological data on the occurrence of a Permain mudstone with a "petroliferous odour" discovered by Mr. M. Forster, near Maydena.

This reconnaissance was carried out by Petroleum consultant Mr. M. Wiltshire, in conjunction with Victor's geological staff.

A report covering the reconnaissance and results of the geochemical analyses and palynological work are included as Appendix 1.

4. SCOUT DRILLING PROGRAMME

4.1 INTRODUCTION

In order to allow an early start to a scout drilling programme it was decided to commence work by concentrating on outcropping Triassic sediment windows within the Jurassic dolerite outcrop in easily accessible areas. Furthermore, permission was obtained from local municipal councils to drill on council road reserves (crown land).

Rapid geological reconnaissance of the Triassic areas was carried out with the support of a helicopter in early January 1981 and a programme of some 15 holes for a total meterage of 3,000 m. was planned. The aim of the drilling programme was to test for near surface Triassic and Upper Permian coal below the Triassic Ross sandstone.

Initial drilling difficulties required some modification to the programme as planned.

Drilling commenced in the Bells Lagoon area on January 19, 1981. After completing several holes in this area, the rig was moved to the Woodbury area. Drill hole data is summarised in Table 1.

Enclosed with this report are maps summarising the lithology and wire line logging characteristics of the sedimentary succession.

4.2 DRILLING RESULTS

4.2.1 Bells Lagoon Area

The holes drilled in this area will be treated separately, as no correlation at this point in time is possible due to their wide separation.

Bells Lagoon 1A and 1B.

Fine to medium quartz sandstone was intersected in each hole, with hole No. 1B terminating in dolerite. Coarser grained samples were present, as were very fine grained to silty sands within the main sandstone.

The sandstones were typically equigranular, subgranular to subrounded, coloured white to pale yellow and the presence of a silty matrix was often observed. The rock was mostly composed of quartz grains often sparkling with only traces of dark opaque mineral grains.

Bells Lagoon 2.

The major rock type was a fine sandstone with some mudstone units and silty sandstone within the main sandstone units.

TABLE 1. DRILL HOLE SUMMARY - EL 31/80

NAME	LOCATION	DATE	METRES DEPTH	CUMULATIVE DEPTH
Bells Lagoon 2.	147°20'47"E 42°2'54"S	20/1/81	194	
Bells Lagoon 1A	147°9'43"E 42°- 29"S	24/1/81	44	
Bells Lagoon 1B	147°9'39"E 42°- 24"S	25/1/81	69	
Bells Lagoon 3.	147°21'18"E 42°4'57"S	28/1/81	64	
Bells Lagoon 4.	147°21'55"E 42°6'46"S	2/2/81	58	
Bells Lagoon 5.	147°21'24"E 42°6'6"S	2/2/81	32	
Bells Lagoon 6.	147°21'25"E 42°5'55"S	3/2/81	148	
Annandale 1.	147°21'19"E 42°7'13"S	5/2/81	116	
Kitchener Ridge 1.	147°25'54"E 42°2'41"S	7/2/81	60	
Kitchener Ridge 2.	147°25'49"E 42°2'50"S	7/2/81	78	

.../2

TABLE 1. (Cont'd)

NAME	LOCATION	DATE	METRES DEPTH	CUMULATIVE DEPTH
Verwood 1.	147°19'25"E 42°2'28"S	7/2/81	142	
Woodbury 1.	147°27'54"E 42°11'6"S	9/2/81	125	
Woodbury 2.	147°27'52"E 42°11'23"S	10/2/81	97	
Woodbury 3.	147°29'9"E 42°11'45"S	11/2/81	148	
Woodbury 4.	147°29'43"E 42°11'36"S	11/2/81	78	
Woodbury 5.	147°26'39"E 42°10'- S	13/2/81	42	
Sorell Springs 1.	147°24'50"E 42°13'13"S	14/2/81	53	
Woodbury 6.	147°29'58"E 42°10'59"S	15/2/81	154	
Trefusis 1.	147°34'44"E 42°11'49"S	17/2/81	34	
Woodbury 7.	147°27'42"E 42°10'38"S	18/2/81	110	
Sorell Springs 2.	147°25'26"E 42°13'28"S	19/2/81	76	
Sorell Springs 3.	147°27'2"E 42°13'19"S	20/2/81	14	
Woodbury 8.	147°26'41"E 42°11'14"S	4/3/81	40	1,976
Woodbury 9.	147°25'13"E 42°10'51"S	4/3/81	104	2,080

.../3

TABLE 1. (Cont'd)

NAME	LOCATION	DATE	METRES DEPTH	CUMULATIVE DEPTH
Woodbury 10.	147°27'42"E 42°10'5"S	5/3/81	94	
Woodbury 11.	147°28'10"E 42°9'8"S	6/3/81	95	
Woodbury 12.	147°30'31"E 42°11'45"S	7/3/81	26	
Woodbury 13.	147°28'50"E 42°11'52"S	8/3/81	88	2,383
Woodbury 14.	147°28'56"E 42°11'32"S	9/3/81	50	2,433
Woodbury 15.	147°29'53"E 42°11'55"S	10/3/81	137	
Woodbury 16.	147°30'52"E 42°12'2"S	11/3/81	53	2,623
Woodbury 17.	147°24'26"E 42°10'22"S	12/3/81	40	2,663

Overlying the main sedimentary units to a thickness of about 26 m. were unconsolidated brown and yellow/brown clays and silty units. Below this were the consolidated sandstone and siltstones. The sandstones were typically grey/green in colour, subangular to subrounded, fine grained and composed of quartz grains with traces of biolite and varying amounts of silty matrix. The siltstones were commonly grey/green in colour with some black and grey examples, and often micaceous.

Bells Lagoon 3.

The rocks were mostly black and grey siltstones, overlain at the top with weathered unconsolidated sandstone and with occasional sandy siltstone horizons at lower depths. The siltstones are mostly dark grey in colour but the black siltstones do occur, with a carbonaceous appearance which also show up as variations on the density log. Colour banding is also present within the siltstones and sandy siltstones.

Bells Lagoon 4.

This hole intersected surface weathered ferruginized buckshot gravels to 12m. followed by fine grained dolerite to 58 m.

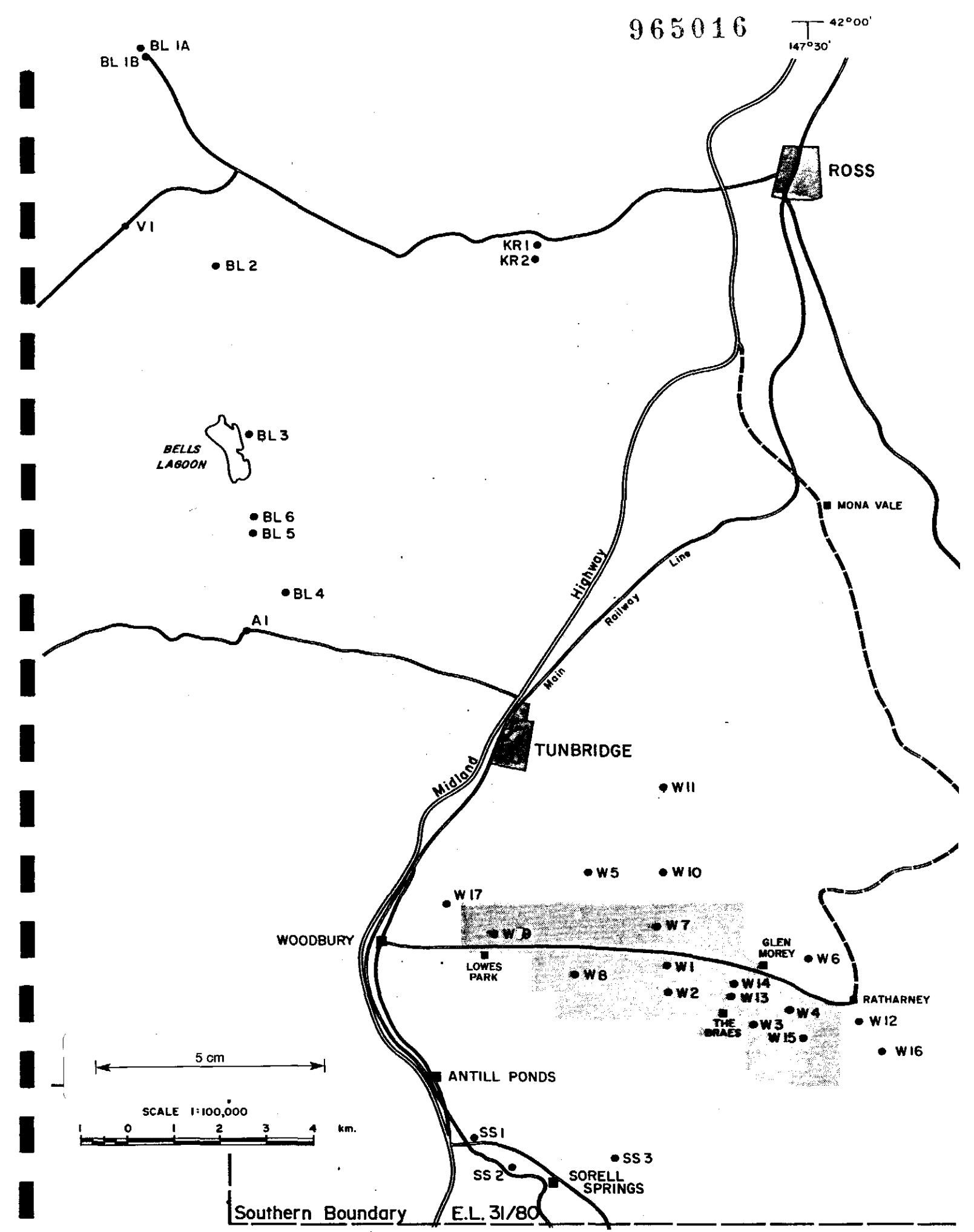
Bells Lagoon 5.

Approximately 28 m. of weathered and altered dolerite was intersected followed by 4 m. of unweathered dolerite.

Bells Lagoon 6.

Fine grained grey sandstone, grey siltstones and dolerite were intersected in this hole.

965016



VICTOR PETROLEUM & RESOURCES LTD.

TASMANIA E.L. 31/80

WOODBURY COAL PROJECT & DRILL HOLE LOCATION PLAN

The sandstones are commonly grey in colour, fine grained quartz rich, subangular to subrounded, with lesser amounts of feldspar and black opaque minerals. Some poorly sorted fine sandstones were noticed with grain sizes up to 0.4 mm.

The siltstones were commonly grey with variations to grey/green and grey/brown.

Dolerite was intersected at 3 horizons; at the surface below a weathered dolerite layer, a 4 m. band at approximately 58 m. and again at the end of the hole.

Annandale 1.

The rock types intersected in this hole are probably of Tertiary age. The tope 22 m. comprise an assortment of limonitic buckshot gravel, while to yellow poorly sorted grits and gravels with some grey/green clays. The following 29 m. consists of weathered and altered dolerite mixed with grey/green siltstone. The remainder of the hole comprises grey clayey mudstones with occasional brown mudstones with some brown woody fragments.

Verwood 1.

The lithologies of the intersected rocks are poorly sorted, unconsolidated bonds followed by grey siltstones and fine sandstones.

The first 36 m. comprise an assortment of grey clayey unconsolidated sands, grey/brown clayey sand and a grey gritty sand.

The remainder of the rock types are mostly grey siltstones and sandy siltstones, with occasional light grey fine grained sandstones.

Kitchener Ridge 1 and 2.

The rock types were grey siltstones with occasional horizons of light grey siltstone and dark grey siltstone. K.R.2 did intersect two horizons of white to light grey fine sandstone.

5. WOODBURY COAL PROJECT AREA

5.1 INTRODUCTION

Location

The Woodbury Coal Project area is located east of the Woodbury and includes the drilling carried out in the vicinity of Sorrell Springs and Trefusis.

Exploration Methods

A total of 21 holes were drilled within and around the area. The drilling methods employed rotary mud and percussion hammer, with samples being collected at each 2 m. interval. All holes were logged lithologically from the rock chips and geophysical wire line logging was carried out using an SIE T450 portable logging unit, incorporating the use of resistivity, spontaneous potential, natural gamma count, gamma-gamma density and caliper tools. Chart printout records were made for each tool run, and copies of each are included in this report.

The drilling sites were generally selected on the lower slopes of the hills and on the plains to the north of the western extension of the Black Tier range in an effort to avoid drilling within the dolerite. Eleven holes encountered coal seams of varying thickness, with the remaining holes intersecting sediments and/or dolerite.

Topography

The major topographical land forms within and around the Woodbury area are the NS-SE trending Black Tier range, the NS trending ridge from Landslip Hills to Chapel Hill and the flood plain area known as Saltpen Plains continuing north of Tunbridge to Mona Vale. The higher elevation areas are invariably capped with resistant dolerite with only minor sandstone ridges formed within the lower flood plains. The higher and variable relief areas generally coincide with dolerite outcrop and the Saltpen Plains area is underlain by Triassic sediments. A relatively higher relief area of sediments was drilled around Sorrell Springs.

5.2 STRATIGRAPHY

Triassic sediments with an intersected thickness of up to 148 m. and of an approximate horizontal dip, are present in the area. With the present hole correlation, dips of the beds are variable from approximately horizontal to around 3^{0} at the eastern margin of the area. The intrusion of the Jurassic dolerite manifests itself as a capping on the main topographic highs, with secondary intrusion found at varying depths in different holes.

The main rock types encountered in the sedimentary sequence were fine to medium grained lithic sandstone with lesser amounts of silty mudstones. A third minor rock type, but of economic significance, are the carbonaceous sequences, grading from carbonaceous mudstones through to coal. Hole No. W 11 encountered 95 m. of fine grained quartz sandstone.

Lithic Sandstone

The lithic sandstones are generally grey to grey/green in colour with grain sizes commonly fine to medium, with lesser amounts of very fine sandstone and occasional bands of coarse sandstone. The medium and coarse grained sandstones have a speckled appearance of varying degrees due to the presence of differing amounts of black opaque minerals and white clayey matrix. This matrix can vary up to 20% of the rock mass, giving a soft clayey drill chip sample with few hard rock chip samples. The major grain constituents appear to be quartz and feldspar with varying amounts of other constituent of clastic and mineral grains. The more thickly bedded sandstones appear not to follow any graded size variation and individual units of up to 35 m. were intersected.

Mudstones/Siltstones

These units are commonly light grey in colour but also occur in variations of almost white to black, with occasional brown examples. These units appear to be less continuous than the sandstone and occur in bed thicknesses of up to 25 mm. Carbonaceous mudstones, of varying carbonaceous contents, as indicated by the density logs, also occur to a lesser extent.

Quartz Sandstone

Hole No. W 11 intersected fine grained white quartz sandstone with little matrix and occasional black opaque grains up to 0.5 mm in size. A continuous intersection of 95 m. was drilled into this rock type.

Dolerite

Dolerite occurs as outcrop on the major hills and ridges and was also intersected in holes W 4, 5, 6, 8, 12, 15, 16 and 17 at varying depths. The contacts of the dolerite showed chilled margins with fine grained dolerite being encountered, with a gradation to medium grained dolerite over a two metres. In all instances except W 8, the rock preceding the contact was a mudstone, invariable baked for a two metres or so into a "cherty" type sediment and often bleached white to light grey in colour.

Coal Seams

The identification of the coal seams was based on wire line logs and drill cutting in consultation with Mr. R. Nolan, Geological consultant of Robertson Research Australia. The assessment indicated that a number of coal seams of one metre or more in thickness occur within the lithic sandstone and mudstone sediments of the freshwater Triassic coal measures.

The relationship of the coal to the depositional environment is variable, but a general pattern for the top seam (seam I) of a sandstone roof and mudstone floor and the occurrence of the second seam (seam II) within mudstone may be observed.

Two main seams occur within holes W 1, 2, 3, 4, 7, 8, 9, 10, 13, 14 and 15, with lower seams being intersected in W 9, 10 and 13. The top seam which occurs between 4.5 and 57 m. below the surface reaches a maximum thickness of 3.1 m. in W 15 and has an average cumulative thickness of 2.3 m. The second seam which has an average thickness of 1.0 m. varies between 30 and 50 metres below the top seam but in W 10 occurs within 13 m. of the surface. (See Table 2.)

Table 2.

SUMMARY OF INTERSECTED COAL SEAMS IN BOREHOLES W1 TO W15 BASED ON WIRE LINE LOGGING AND DRILL CUTTINGS :

Hole No.	TOP SEAM Depth interval metres	Cumulative Thickness m.	Interseam Thickness metres	SECOND SEAM Depth interval metres	Cumulative Thickness m.
W1	23.7 - 28.2	2.1	28.3	56.5 - 57.4	0.9
W2	54.3 - 57.0	2.7	32.4	89.4 - 91.7	1.3
W3	47.5 - 49.9	2.4	47.0	96.9 - 98.2	1.3
W4	22.9 - 23.9	1.0	34.9	58.8 - 59.8	1.0
W7	4.5 - 6.3	2.1	37.5	43.8 - 44.6	0.8
W8	20.3 - 23.4	3.1			
W9				20.8 - 22.0	1.2
W13	30.9 - 32.7	1.8	40.7	73.4 - 74.3	0.9
W14	4.9 - 7.5	2.6			
W15	13.2 - 16.3	3.1	47.0	63.3 - 64.4	1.1

The geophysical logs indicate that seam I is variable in character with the seam being comprised of coal and shaley coal plies. Density variations within seam I appear to be due to inherent ash variations rather than the presence of stone bands. Seam II appears to be more consistent in thickness and in character and is probably dominantly coal. The other seams below seam II appear to be similar to seam II in most respects but a dominantly coal section probably grades to shaley coal and to carbonaceous shale in some places with the thickness being fairly consistent.

Splitting of seams was observed and can be witnessed on the logs of W 1 and 2. Seam I is found to split in three seams in W 1 whereas seam II is seen to split into 2 seams in W 2 respectively.

One core hole has been drilled and was sited 10 m. from W 13 and is referred to as W 13a. Coring through seam I was unsatisfactory with only a 33% core recovery due primarily to the unsuitability of the low bit r.p.m.

As a result of the poor core recovery no reliable coal data can be reported. Inspection of the core however indicates the presence of plies of bright and dull shaley coal. Thin carbonate veining was present.

5.3 DEPOSITIONAL ENVIRONMENT

The coal measure sequence of the Triassic, as encountered at Woodbury, is known to be of a fluviatile environment. Evidence from the drilling programme for this can be observed in the discontinuous nature of some of the sedimentary bands as presently correlated and the ash variation of the top seam as indicated by the density logs.

The nature of the coal deposition in the Woodbury area may be likened to that of the northern edge of a coal basin. Structural maps as presented, indicate a thickneing of seams I and II, and also of the inter seam sediments, to the south. The shallow dip of the beds (4^{o}) also trends southerly and the paleogeography of the sedimentary rocks of the Woodbury area may be interpreted as those sediments being deposited on the northern margin of a local basin within fluviatile system, with the central portion of the basin further south than the explored area.

5.4 STRUCTURE

The two major structural elements are the almost horizontal sediments and the dolerite intrusions. No evidence for faulting can be proven on the existing drill hole records and the structural trend lines shown on the enclosed maps indicate a higher westerly dip (about 3^{o}) in the eastern section of the Woodbury area which may be explained by an uplifting of sediments by dolerite intrusion rather than faulting. Hole No's W 4, 12 and 15 encountered dolerite below the sediments.

The nature of the dolerite intrusion in the area is uncertain. No direct relationship has been found yet between the lower dolerite intersected in holes W 4, 5, 6, 12, and 15 and the dolerite capping the main ridges and hills. The possibility that the dolerite outcropping on the Black Tier range is sill like or dyke like is unclear. Further drilling will be required to prove a concordant contact or almost vertical or a steeply southerly dipping transgressive contact. Hole No's W 2, 3 and 13 were all drilled within about 30 m. of the dolerite sediment contact to depths of 97, 148 and 88 m. respectively, without intersecting dolerite.

5.5 SCOUT DRILL HOLES IN THE WOODBURY PROJECT AREA

Sorrell Springs 1

This hole intersected dolerite only, grading from fine grained to medium grained at lower depths.

Sorrell Springs 2

The predominant rock type was sandstone with lesser amounts of mudstone and dolerite being intersected at the base of the hole.

The sandstones were grey in colour, of medium grain size and of a dissimilar nature to those sandstones encountered in the W. area due to the lesser amounts of feldspar and dark opaque minerals. The siltstones were commonly grey/green in colour with one carbonaceous black mudstone present. The hole terminated in dolerite.

Sorrell Springs 3

This hole penetrated fine to medium grained yellow weathered sandstone and grey/green siltstone and intersected dolerite at 14 m.

Trefusis 1

This hole intersected buckshot gravel at the surface and then fresh dolerite at 10 m.

6. ESTIMATE OF INSITU INFERRED COAL RESOURCE

To arrive at an estimate of the insitu inferred resource the calculation was made within the following parameters.

1. It is assumed as a result of the assessment of geological data, structure contour, isopach maps and cross sections, that the top seam and second seam can be correlated across the area. This is based on a drill spacing of between 200 m. and 3.5 km.

2. The top seam has a cumulative mean coal thickness of 2.3 metres, while the second seam has a mean thickness of 1.0 m.

3. The top seam is estimated to be continuous over an area of 11.1 sq. km. while the second seam is estimated to be continuous over an area of 14.8 sq. km.

4. For holes on the perimeter of the area, influence of the holes has been extended 1 km. or as determined by geological criteria whichever is lesser.

The density of each of the two seams was taken as 1.6 kgm^{-3}.

The insitu inferred coal resource was thus calculated using the following formula.

Area extent of seam x mean thickness x density factor = tonnes.

TOP SEAM 11.1 x 2.3 x 1.6 = 41.0 m toqnes
SECOND SEAM 14.8 x 1.0 x 1.6 = 24.0 m tonnes

TOTAL INSITU INFERRED RESOURCE is estimated at 65 million tonnes.

This resource estimate is not intended to indicate or take into account percentage mining recovery and or washery yield.

absolutely nil for second seam — NO WORKING SECTION.

7. GENERAL

7.1 As a result of the announcement of the discovery of coal seams in the Woodbury area to the Stock Exchange of Melbourne Ltd. and shareholders on 17th March 1981, this company was approached by a number of major corporations.

Open discussions were held with the majority of companies which resulted in preliminary proposals being received. This company continues to assess the proposals.

7.2 In order to establish a general framework for further exploration and possible engineering studies, discussions were held with representatives from mining engineering consultants, Dames & Moore and McMahon Burgess and Yeates. Dames & Moore were commissioned to carry out a prefeasibility study for $10,000. McMahon Burgess and Yeates proposed a similar study for $17,000.

7.3 Preliminary discussions have been held with Tasmanian government officials to ascertain the policy towards the Woodbury coal and coal resources in Tasmania in general.

Mr. Peter Sinclair, the former Director of the Tasmanian Department of Industrial Development, has been appointed as a consultant to advise Victor Petroleum on government matters.

7.4 Discussions have been held with landholders in the Woodbury area. Compensation for access to their land has been agreed upon. The possibility of an option to purchase the land was raised but not pursued.

7.5 This company has established an operations base at Campbelltown, and will shortly be opening a small office in Hobart.

7.6 A senior geologist Mr. T. Summons has been appointed to co-ordinate and supervise our Tasmanian exploration activities.

7.7 A recent trip to the United States of America was carried out by company officers to investigate current "state of the art" oil exploration technology and exploration techniques, to further develop the oil exploration programme of EL 31/80.

8.0 FUTURE EXPLORATION PROGRAMME FOR EL 31/80

The ongoing exploration programme with EL 31/80 will be directed at three principal objectives which are:

1. To attempt to raise the status of the Woodbury insitu inferred resource to measured reserve status by conducting a core drilling programme on a 1 km x 1 km grid.

2. To continue scout drilling of the Permo-Triassic windows within Jurassic dolerite outcropping areas for near surface coal, and to provide geological information for the assessment of the oil potential of the sediments.

   The near surface coal exploration programme will be directed at the Triassic Coal Measures and the equivalents of the Cygnet Coal Measures at the top of the Permian.

3. To carry out geological, geophysical and geochemical studies of the Permo-Triassic sediments of the Tasmania basin to identify the potential for oil and to define possible target areas. In particular this work will include analysis of regional gravity data to assess the basin configuration, and photo-geological studies to identify the general stratigraphic and structural geology.

The exploration programme over the ensuing six months is intended to provide a substantial base for proposed field activities during the summer field season of 1981-1982.

Field activities proposed dependent on the results of our studies will most likely include:

- ground geological reconnaissance to follow up the photogeological study
- detailed geophysical surveys included gravity, airborne magnetics and possibly seismic
- core drilling of the Permian sediments along the margin of the Tasmania Basin.

9. PROPOSED EXPLORATION EXPENDITURE FOR PERIOD TO NOVEMBER 21, 1981

	$
WOODBURY COAL PROJECT	
Core Drilling (1000m)	75,000
Rotary Drilling (2000m)	35,000
Coal Quality Analyses	5,000
Engineering Studies (prefeasibility study)	10,000
	125,000
REGIONAL PROGRAMME	
Scout Open Hole Drilling (2000m)	50,000
Geophysical Logging	5,000
Geophysic Studies (gravity analysis)	5,000
Photogeological Studies (by consultants)	20,000
Geochemical Analysis	5,000
	85,000
Salary & Wages	40,000
Technical Consultants	10,000
Travel & Accomodation	5,000
Field Operation Expenses	5,000
Administration Expenses	5,000
	65,000
	$ 275,000

E. Eshuys B.Sc., A.M.A.I.M.M.

20 May 1981

APPENDIX 1

965031

Victor Petroleum & Resources Ltd.

Incorporated in Victoria

Registered Office: Arthur Phillips & Just,
21st Floor, Commonwealth Bank Building,
367 Collins Street, Melbourne. Victoria 3000. Australia.

All Correspondence to:
P.O. Box 118,
Balwyn. Victoria 3103.
Telephone: (03) 859 8456

Department of Mines,
G.P.O. Box 124B,
Hobart,
TASMANIA. 7001.

Exploration Licence 31/80
Statement of Expenditure
April, 1981.

		Total to 31/3/81	April 1981	Total to date
1.	Salaries & Consulting Fees	51,855	14,174	66,029
2.	Travel & Accomodation	11,843	10,928	22,771
3.	Operation & Field Expenses	24,407	11,845	36,252
4.	Administration	19,996	724	20,720
5.	Geochemical Analyses	1,677	-	1,677
6.	Geophysics Contracts	-	-	-
7.	Drilling	80,102	-	80,102
		$189,880	$37,671	$227,551

Statutory Declaration

I, Ernest Maxwell Allen of 1 Dale Street, Deepdene 3103 Melbourne in the State of Victoria, do solemnly and sincerely declare that to the best of my knowledge and belief the above statement of expenditure fulfils the requirements of Schedule "A" (Revised), Conditions of the Special Prospectors' Licences and Exploration Licences under the Mining Act, 1929.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of an Act of the Parliament of Victoria rendering persons making a false declaration punishable for wilful and corrupt perjury.

Declared at Melbourne)
in the State of Victoria)
this 19th. day of May,) E. M. Allen
1981.)

Before me:- J. L. Sims Justice of the Peace

JUSTICE OF THE PEACE J.P. FOR VICTORIA

965032

APPENDIX 2

Report on : E.L. 31/80, Tasmania
for : Victor Petroleum and Resources Ltd.

Subject : OIL SHALE, COAL AND PETROLEUM PROSPECTS

Contents : Report on field trip, sampling, observations on general prospects.

Author : M.J.Wiltshire
Wiltshire Geological Services Pty Ltd.

Date : 10th December 1980

INTRODUCTION

Tasmanian exploration licence 31/80 for coal, oil shale and petroleum is held by the North West Bay Company Pty. Ltd., a holding company of Mr. M.Forster, "Lee Wave", Sandfly, Tasmania. Following discovery of petroliferous siltstones at several locations in the Tasmania Basin, the North West Bay Company and Victor Petroleum and Resources Ltd of 1373 Burke Road, East Kew, Victoria entered into an agreement to jointly evaluate the E.L.

Following an approach by Victor Petroleum and Resources, Wiltshire Geological Services Pty. Ltd. was employed as technical consultants to that company, for the purpose of geologic review and further evaluation of E.L. 31/80.

WORK CARRIED OUT

This report concerns the initial evaluatory work on the licence. This work consisted of a brief review of available geologic and geophysical data, and a field trip to sample and observe rocks in outcrop in and adjacent to the exploration licence. At the time of writing this report, laboratory analyses of the rocks sampled are still pending, and final conclusions regarding prospectivity of the licence cannot yet be drawn.

DIARY OF ACTIVITY

October - November 1980 : Initial contact between Victor and Wiltshire. Agreement reached on terms and timing of work.

December 1st : M.Wiltshire flew Adelaide to Melbourne, spent day in discussion with M.Forster and Victor representatives G.Reed, J.Smith, R.Whiting, E.Eschews.

December 2nd : J.Smith and M.Wiltshire flew to Hobart, met M. Forster. Drove to Maydena and Styx River area, sampled Permian rocks. Returned to Hobart for night.

December 3rd : Smith, Forster and Wiltshire drove to Waddamana Power Station to inspect and sample cores stored there. (Cores are Permian rocks ex Poatina area.) Drove via Bronte Park to King William area, sampled rocks. Drove to Poatina, stayed there.

December 4th : Drove to Mersey River, sampled rocks there, drove to Quamby Brook area, sampled rocks there, returned to Poatina for night.

December 5th : Inspected rocks in Poatina Power Station. Sampled rocks from tailings dump ex power station excavation. Drove via Ross to Hobart, J.Smith departed for Melbourne. Forster and Wiltshire sampled rocks from Permian in Hobart area. End of work at 1800 hrs 5/12/80.

December 6th : Wiltshire returned to Adelaide.

December 8th to 10th.: Work in Adelaide. Deliver samples to W.K.Harris and Associates, and to AMDEL. Write report.

PURPOSE OF FIELD TRIP AND SAMPLING

At the time of initial contact, the basic data needed for evaluation of petroleum prospects in the area was not available.

The field trip was undertaken for the following purposes:

1. sample sedimentary rocks for subsequent chemical and petrophysical analyses, in order to obtain some indicators of capacity of the sediments for generation of petroleum, and retention of that petroleum.

2. visual inspection of the sequence to obtain some feel for possibilities of development of reservoir rocks.

3. topographic assesment in order to obtain some idea of operational difficulties likely to be encountered if subsequent exploration takes place.

4. reconnaissance inspection with a view to best location of further exploration for coal and oil shale, and to make some estimate of the merits of such further work.

At the time of writing this report the results of analyses are not to hand, and conclusions reached are only tentative. However, certain comments can be made with regard the above points.

GEOLOGIC SUMMARY

The Tasmania Basin contains sediments of Permo-Carboniferous or Early Permian to Triassic age. The sequence begins with glacigene sediments, passes up into coldwater marine shales and siltstones and terminates in fluvial sediments. In mid-Jurassic time large scale dolerite intrusion in sills and sill-like bodies up to 500 m thick occurred, and the basin has since been uplifted and up to about 1000 m of sediments and dolerites have been removed by erosion.

The total sedimentary thickness in the basin centre, and even the location of the thickest preserved sedimentary sequence is now unclear, since by now the northern part of the basin is eroded to the point where massive dolerites nearly completely cover the surface. Seismic methods are unable to cope with such conditions and give meaningful subsurface data, and other methods (gravity, magnetics) are adversely affected by near-surface dense and magnetic rocks. Photo methods are also of limited value, since structural deformation in the zone of sill intrusion may have obscured the original basin shape.

However, it is reasonable to assume that the general shape of the basin has remained through geologic time, and that the thickest accumulation of sediments is

therefore likely to be in the approximate centre of the present basin. We can therefore conclude that the available geologic data, based as it is on outcrop sections and some shallow boreholes near the basin margin, may not be representative of basin centre geology.

The general nature of the sediments does not vary significantly over a large area, as inspection of outcrops from Styx River, Bronte Park, Mersey River, Quamby Brook and Poatina all show similar fine grained low energy marine sediments in the lower Permian. It is therefore probable that similar lithotypes are present in the basin centre as are seen on the margins, except that slightly more marine facies, and lower energy deposition can be expected.

Details of the basin geology have been published, and will not be repeated in detail here. Rather, I will try to consider those aspects of the geology which relate directly to petroleum prospects.

The source potential of the sediments is as yet unknown. There are oil shale equivalents in the thin remnants of early Permian rocks in the north of Tasmania, north of the lease being considered. The fact that thin oil shale units are present does not necessarily imply that conventional petroleum source rocks exist at depth in the basin centre, and we must await the laboratory analyses before we can estimate the source potential of the basin. The results may be interpreted in the context of the principles outlined in the papers appended to this report (Ruth and Cooper especially).

However, it is possible to make some general observations. The rocks are remarkably uniform over a large area of the outcrop edges of the basin, and it is therefore likely that similar properties will exist in the basin centre as we observe in outcrop, except that allowance must be made for some increase in level of organic metamorphism due to increased depth and duration of burial in the basin centre.

The oil shales and the observed occurrences of "oily" or petroliferous odour occur at similar stratigraphic level - in the basal marine Permian finer grained facies. It seems likely therefore that the source of the oily odour of the rock on fresh fracture is the same, chemically, as the source of the oil shale material known to the north. The rocks are uniformly fine grained, medium to dark grey, moderately hard to hard silty mudstones. Fracture is difficult to determine in outcrop, since the rocks are deeply weathered, but in some locations fractures of conchoidal pattern are evident. Whether such fractures are present only in limited areas due to stress relief in the vicinity of faults, or are generally present in the basin due to overburden removal stress release as a general feature, is not clear.

It is generally observed that cold water sediments such as these (much evidence exists for ice-water conditions in a large part of the sequence) are not the best potential oil source rocks. The reasons for this are not yet clear, but it is generally true that warm-water sediments having comparable total organic carbon contents are better potential oil sources than cold-water sediments. We may find apparently reasonable total organic carbon contents, but may also find that generation has not taken place.

On the basis of the colour of these rocks, and the dry petroliferous odour on fresh fracture in several locations, it seems that we will find modest TOC, with level of organic metamorphism probably adequate for generation. The likely type of hydrocarbon product should be indicated by the source facies work; however, it seems most likely to me that dry gas and some high wax oil could be expected - that is, similar hydrocarbon products to those of the lower Permian in, for example, the Cooper Basin.

The greatest limitation to prospects in this basin is likely to be potential reservoirs, or the lack thereof. There seems little chance of significant porosity development in the marine rocks, and chances of significant

porosity development below the level of the Ross Sandstone are not good. The best potential reservoirs are within the Ross Sandstone, with potential seals in the overlying Cluan Formation. The younger rocks of the Triassic Tiers and Brady Formations while being generally sandy, are also generally finer grained, feldspathic and clay-choked, and may be discounted as potential reservoirs.

So we are left with a sequence in which the best potential sources are at the base, and a potential reservoir and seal sequence exists at the middle part of the section. However, due to erosion the present depth of burial of the potential reservoir sequence is probably not more than about 800 metres, and as a consequence the pore pressures are not likely to exceed about 1000 psi. The most likely hydrocarbon is gas, and at these pore pressures, very good porosity and permeability are a prerequisite if we are to achieve economic production. The chances of such porosity development are not good.

A possibility which I am unable to comment on fully is the prospect of fracture porosity in the otherwise tight silty basal sequence in which hydrocarbon odours have been noted. It is likely that in any well drilled in the central part of the basin the lower marine rocks of the Parmeneer Supergroup will contain similar traces of at least dry gas. If a microfracture system is well developed, as may be possible due to the deeper earlier burial and recent uplift and erosional stripping of part of the sequence, then such a system could provide good permeability.

Some fractures are present in the outcrop occurrences, and in rocks that have been exposed to weathering for a short time (Styx Quarry) fractures are well developed. Some fractures are also present, though not so well developed, in subsurface samples from bore holes in the Poatina area.

There seems little chance of worthwhile intergranular porosity development in the basal section, so any hydrocarbon accumulation would depend effectively completely

on fracture porosity. The only way that development of porosity from fractures can be tested is by drilling. And if source potential and LOM study of the samples taken suggests that dry gas is the only potential hydrocarbon, it is probable that such drilling could not be justified, since depth of burial and pore pressure considerations would suggest that recovery percentages would be very low.

Oil shale prospects exist only in the basal sequence of the marine rocks of the Parmeneer Supergroup. Within E.L. 31/80 these rocks are generally too deeply buried to be of interest, but in the vicinity of 42°S and 147°15'E lower marine sequence rocks are near surface and topography may be gentle enough to allow some chances of proving some reserves of oil shale. A further chance exists in the area east and north of Arthurs Lake, where Permian rocks outcrop. A careful examination of the topographic contour maps of this region should allow the selection of drilling locations for shallow holes to test for oil shale. Consideration of dips and potential overburden volumes should be a basic input to drill site selection. It is, nevertheless, my opinion that the rocks seen are not likely to contain sufficient volumes of retortable hydrocarbons to constitute oil shales.

Coal prospects seem to be limited to the Cygnet Coal Measures and Brady Formation. The Brady is probably the best prospect, and shallow drilling in the gently undulating topography of the Ross area, if any areas of preservation of the entire section can be found, may encounter near-surface coal. However, the Cygnet should not be ignored in the Ross area, since it is also likely to be near surface in many areas. However, seams are likely to be thin, discontinuous, and high in ash.

AREAS SAMPLED

Styx River : Lower Marine siltstones having petroliferous odour on fresh fracture, and well developed fracture system in exposed surfaces are present in the Maydena area (42°45' S, 146°40'E). The rocks are dark drey, hard, finely micaceous. Samples were taken for analysis by both AMDEL and W.K.Harris.

Bronte Park and MT.King William : Lower marine siltstones and shales, dark grey, fossiliferous (Bronte) moderately hard. Samples are weathered more than the Styx River samples. Location 42°07'S 146°30'E(Bronte) and 42°12'S 146°06'E (King William).

Mersey River : 41°50'S 146°07'E : Weathered river cliff exposure of lower marine sequence siltstones, similar to those above, with petroliferous odour on fresh fracture. Surfaces have oily appearance, and are not easily wet with water, the water forming beads on the rock surface. Three samples were taken for analysis - basal, middle and upper being separated by about 10 metres vertically, and the upper samples gave dry petroliferous odour on fresh fracture.

Quamby Brook : 41°35' 146°42'E : Road cut exposure, moderately weathered dark grey siltstones, no odour. Attempts to sample from the lowest exposures in the creek were not successful, as the rocks present were too weathered to be acceptable. The samples are from about 50 m above the brook.

Poatina : 41°47'S 146°57'E : Samples were taken from three borehole levels -#5021 90 feet and 795 feet, and #5024 287 ft. Reference should be made to hole logs to place these samples stratigraphically. A sample was also taken from the power station cut tailings dump, where petroliferous odour on fresh fracture of fossiliferous material was noted.

Hobart : 42°50'S 147°12'E : Limestone. Because of silty and deeply weathered lithologies in the road cut examined, a sample was taken from a crystalline limestone lens in the lower marine sequence.

ANALYSES PROPOSED

The object of the proposed analyses is to determine if:

- the rocks are sufficiently rich in organic content to constitute potential sources of hydrocarbons.
- the thermal history has been suitable for the conversion of organic components into hydrocarbons.
- the post-generational history has been suitable for the preservation of some of the generated hydrocarbons if trapped.

The state of thermal alteration of the included organic material can be readily checked by visual examination of organic residues extracted by procedures identical to sample preparation for palynologic analysis. The extracts may also be quickly assessed for maceral types, and some estimate of probable hydrocarbon product types may be made from the combination of maceral types (organic facies) and level of thermal alteration (spore colouration). These studies are conducted by commercial laboratories routinely; I have asked Wayne Harris (W.K.Harris and Associates, 50 Garnet Avenue, Blackwood, S.A. 5051, Adelaide telephone 2748243/2782917) to conduct these examinations and report directly to the company.

The organic richness of the rocks is best checked by analysis for total organic carbon content. This technique is fairly simple and the results are highly significant and definitive. If indicated organic contents are sufficiently high to give some hope for generation of hydrocarbons to have occurred, and if spore colouration and organic facies are suitable for hope to be held for generation and preservation of hydrocarbons, then we should further chemically analyse the rocks to determine if the included organic material

has actually been converted into hydrocarbons.

The chemical analyses will be conducted by AMDEL, Adelaide. The results will be reported directly to the company, and the significance of the results should be interpreted in terms of the technical papers appended to this report,and by reference to texts such as that of Tissot and Welte (Petroleum Formation and Occurrence).

If analyses are encouraging, we should duplicate them by sending the second set of samples to either:

Global Geochemistry Corporation
3112 Pensylvania Avenue
SANTA MONICA CALIFORNIA 90404
Tel (213) 828 4237

OR GeoChem Laboratories (Canada) Ltd
3650 21st Street N.E.
CALGARY ALBERTA T2E 6V6

Only selected samples should be analysed, and limited weights should be shipped to the selected laboratory.

POST-ANALYSIS PROGRAMME

All subsequent work should be contingent on encouraging results from the above analyses.

If analyses allow some hope for conventional hydrocarbon accumulation, we are still faced with determination of prospectivity in the deepest parts of the basin. The geophysical difficulties caused by thick dolerite cover over most of the E.L. preclude conventional techniques for location of a central basin stratigraphic test, and the costs of a deep test are such that an effort should be made to drill a jointly funded well in partnership with BHP, near the southern boundary of the E.L. in the Hermitage area. A small-scale seismic survey could be attempted in this area to try for penetration of the

sedimentary sequence, and joint funding of this survey with the adjoining tenement holder should also be sought.

If joint funding of such work is entered into, care should be taken to ensure that Victor's obligations are clearly defined and an upper limit to expenditure is agreed on - beyond that limit the two partners would be given rights to sole-risk further work.

Shallow drilling for oil shale and coal would be the best low-budget approach. The areas of best topography and suitable stratigraphy are the central -northern part of the E.L., as outlined above.

CONCLUSIONS

1. The field observation of petroliferous odour in freshly fractured fine grained rocks, which led to the initial entry into the area, has been observed, and in fact the area of observation has been extended to the Poatina area.

2. Samples taken for chemical and petrophysical analyses should give a basis for decisions regarding the future programme in the area.

3. The sequence seems to be a dominantly cold-water one, with modest organic carbon contents. Such sequences generally are not prolific producers of hydrocarbons.

4. The sequence is generally low-energy, and the only interval of potential reservoir development is the Ross Sandstone. Other reservoir potential most likely will depend on fracture development, and field observation is unable to provide subsurface information regarding such.

5. No deep (petroleum) drilling should be planned until results of the lab. analyses of the rocks sampled are assessed. Because of the high cost of such drilling,

and the difficulty of best location of a stratigraphic test caused by dolerite cover restricting the use of conventional geophysics, it is suggested that a joint test well, near the boundary of the E.L. on the South may be the best course of action, and an early approach to BHP is suggested.

6. The prospects for oil shale are rated low, since the potential source unit is thin, terrain is generally rugged, the overlying rocks are hard, and the observed rocks are relatively low in organic content. However, if shallow drilling is undertaken, regular sampling of the penetrated rocks, and their analysis for TOC should definitely resolve if any potential exists. If drilling is undertaken, it should be aimed at the lower marine sequence in areas of gentle topography and thin cover.

7. Coal prospects are poor, because the known seams are thin, laterally discontinuous, and shaly. If shallow drilling is undertaken, it should be aimed at the upper freshwater sequence, and in particular the Brady Formation and Cygnet Coal Measures. Site selection should be on the basis of one or the other unit as target. The Brady Formation is preferred. Topography should be gentle, and overburden cover should be thin.

8. If the results of the analyses pending are not encouraging, (ie TOC is uniformly too low, and/or LOM is not appropriate for generation or preservation of hydrocarbons) the area should be dropped. If indicators show that dry gas is the only likely product, the future programme needs very careful analysis. My view would be to drop the area, since the possibility of economically exploitable oil and gas accumulations would be low, in view of the questionable reservoir development and shallow depth of objectives.

9. In all exploration decision making, we will be dealing in probabilities and risks. Few decisions will be clear-cut.

10. The scientific basis of petroleum exploration has expanded rapidly in the last 10 or so years. It is essential that the company develop some in-house expertise, and it is suggested that the appended technical papers be read carefully in this regard. Basic textbook references such as those of Selley 1970 (Ancient Sedimentary Environments. Chapman and Hall, London. 239p.) Selley 1975 (Introduction to Sediment-ology. Academic Press, London. 400p.) and Tissot and Welte, 1978 (Petroleum Formation and Occurrence. Springer Verlag, 538p.) should be obtained and studied. Technical training courses such as those offered by AMF Inc., Adelaide should be used for further training.

M.J.Wiltshire

M.J.Wiltshire
Wiltshire Geological Services
Adelaide
December 10th 1980

965046

28/11/80.

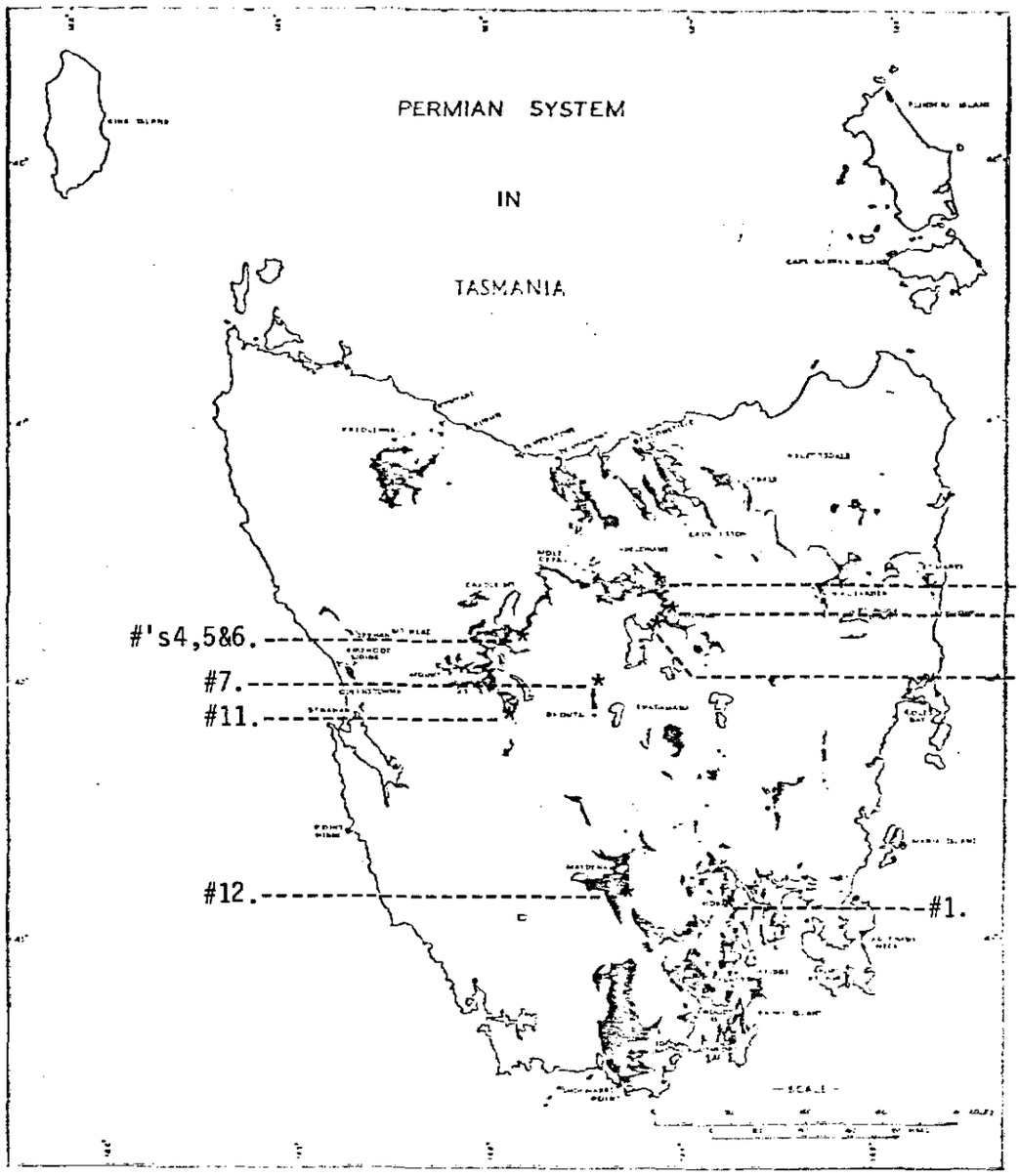
ROCK ANALYSIS - QUAMBY MUDSTONE

PERFORMED BY DR. J. SAXBY - C.S.I.R.O. SYDNEY

1.	Mineral Analysis (x - ray diffraction):	Mixture of quartz, chlorite, feldspar and clays. No organic materials
2.	Thermographimetric analysis:	Low organic matter. Up to 500^{o} C, 1 - 2%
	Weight Loss (Probably moisture)	From 500^{o} - 900^{o} C, 4 - 5%
	Weight Loss (Probably pyrite	and carbonates)
3.	Combustion:	No significant weight loss. (Concluded no existance of charry organic material)
4.	Microscopically:	Nothing of interest
5.	Conclusions:	No source potential Low in organic carbon (1%) Could not detect a kerosene odour.

..ooOOO..

965047



LOCALITY MAP OF PERMIAN SAMPLES.

SAMPLE NO.	IDENTIFICATION
1.	Permian limestone - near Hobart.
2.	? Road above Quamby Brook.
3.	Poatina Power Station, 218 metres above sea level.
4.	Mersey River, top sample.
5.	Mersey River, middle sample.
6.	Mersey River, lower sample.
7.	? Serpentine Creek road cutting, Bronte.
8.	H.E.C. DD hole 5021, 27.5 metres.
9.	H.E.C. DD hole 5021, 241 metres.
10.	H.E.C. DD hole 5024, 87 metres.
11.	Road cutting, King William Saddle.
12.	Styx River.

The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

965048

amdel

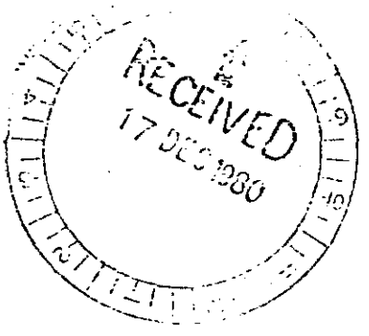
NATA CERTIFICATE

3/0/0 - AC 3125/81

15 December 1980

PART REPORT 1

Mr G Reed
Victor Petroleum and Resources Ltd
PO Box 118
BALWYN VIC 3103



REPORT AC 3125/81

YOUR REFERENCE: Application of 9 December 1980

IDENTIFICATION: As listed

DATE RECEIVED: 9 December 1980

D.K. Rowley
Manager
Analytical Chemistry Division

for Norton Jackson
Managing Director

dam

Pilot Plant: Osman Place
Thebarton S.A.
Telephone 43 8053
Branch Laboratory: Perth

This laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full.

ANALYSIS %

SAMPLE MARK	ORGANIC AND ELEMENTAL CARBON AS C
1 Permian Limeston Hobart	0.44
2 Road above Quamby Brook	0.72
3 Poatina Stion 720ft above s.l. Petroliferous siltstone	0.62
4 Mersey River Petroliferous siltstone	0.79
5 Mersey River Middle	0.92
6 Mersey River Lowest sample 4/12/80	0.52
7 Bronte Serpentine Creek RoadCut	0.52
8 Hole 5021 91 ft	0.87
9 Hole 5021 795 ft	0.57
10 Hole 5024 287 ft	0.45
11 King William Saddle	0.84
12 Styx River 2/12/80 Petroliferous siltstone	1.19

METHOD: C2

The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

965050

amdel

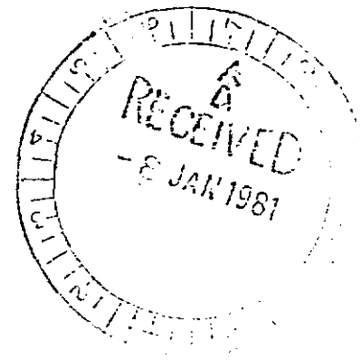
NATA CERTIFICATE

3/0/0 - AC 3125/81

30 December 1980

PART REPORT 2

Mr J O Smith
Geologist
Victor Petroleum and Resources Limited
PO Box 118
BALWYN VIC 3103



REPORT AC 3125/81

YOUR REFERENCE: Letter of 8 December 1980

IDENTIFICATION: As listed

DATE RECEIVED: 11 December 1980

D.K. Rowley
Manager
Analytical Chemistry Division

for Norton Jackson
Managing Director

dam

Pilot Plant: Osman Place
Thebarton S.A.
Telephone 43 8053
Branch Laboratory: Perth

This laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full.

Victor Petroleum Resources Limited

Twelve rock samples identified as below submitted by Mr M Wiltshire for analysis for total organic carbon plus extractable organic matter and pyrolysis gas chromatography of those samples where TOC is greater than 0.5%.

SAMPLE NUMBER	IDENTIFICATION
1	Permian limestone - Hobart
2	Road above Quamby Brook
3	Poatina Station 720ft above sea level
4	Mersey River Petroliferous siltstone
5	Mersey River Middle
6	Mersey River Lowest sample 4.12.80
7	Bronte, Serpentine Creek road cut
8	Hole 5021, 91ft
9	Hole 5021, 795ft
10	Hole 5024 287ft
11	King William Saddle
12	Styx River, 2.12.80 Petroliferous siltstone

ANALYSIS

SAMPLE MARK	TOC%	EXTRACTED ORGANIC MATTER	
		MICROGRAMS PER GRAM OF SAMPLE	MILLIGRAMS PER GRAM OF TOC
1	0.44	-	-
2	0.72	552	76.7
3	0.62	755	121.8
4	0.79	735	93
5	0.92	827	89.9
6	0.52	368	70.8
7	0.52	228	43.8
8	0.87	687	79.0
9	0.57	604	106.0
10	0.45	-	-
11	0.84	756	90.0
12	1.19	2287	192.2

965053

PALYNOLOGICAL REPORT

W K HARRIS & ASSOCIATES

Kerogen Studies on Twelve Permian Samples From Tasmania

Client: Victor Petroleum & Resources Limited

14 January 1981

INTRODUCTION

Twelve outcrop and core samples from Tasmania have been examined for their kerogen content in order to 1) determine the proportions and types of kerogen and qualitative estimate of total organic matter (TOM) and 2) to estimate the degree of thermal maturation expressed as the thermal alteration index (TAI).

Samples were crushed and treated with 70% hydrofluoric acid to remove mineral components. One sample required pretreatment with hydrochloric acid to remove carbonates. The residues were then separated with heavy liquids to obtain mineral free kerogens which were then examined visually.

The kerogens have been divided into four groups viz. melanogen - includes all coaly fragments such as micrinite, vitrinite, inertinite; hylogen includes plant tissue recognised as being of woody origin; phyrogen includes what previously would have been called "herbaceous" elements such as spores, pollen, cuticle and other structured plant debris; and amorphogen which approximates to amorphous non-structured debris and includes most sapropels.

The thermal alteration index (TAI) grades from 1 to 5 and is based on the colour of particular palynomorphs ranging from light yellow through orange, brown and finally black.

The ability of a sediment to generate hydrocarbons depends on the total organic carbon (related to TOM), the degree of thermal alteration and the proportions of the various kerogen types. At a TAI of 2, amorphogen forms liquid hydrocarbons whereas phyrogen produces only minor amounts of thermally derived gas and little or no liquids. At a TAI of 2+ all four types contribute to hydrocarbon formation. The upper boundary of the "oil window" is at a TAI of approximately 3 but varies according to organic type.

Above a TAI of 3+ all organic types only have a potential for thermally derived methane.

RESULTS

Styx River Core - Prep. No. WM 499

TOM - Moderate yield

Melanogen 20%

Amorphogen 80%

No recognisable herbaceous content. The amorphogen is mostly very fine (2um) detritus and is dark brown. No palynomorphs were observed hence no TAI is indicated. It would probably be at least 4.

Road above Quamby Brook - Prep. No. WM 444

TOM - Low yield

Melanogen 70%

Phyrogen 20%

Amorphogen 10%

Amorphogen is present as very finely dispersed detritus. Spores and pollen are present in moderate numbers and indicate a TAI of 2+.

Hole 5021, core at 90 feet - Prep. No. WM 450

Melanogen 40%

Hylogen 10%

Phyrogen 10%

Amorphogen 40%

Spores and pollen were rare, highly corroded and yellow brown. TAI 2+.

Hole 5021, core at 795 feet - Prep. No. WM 441

TOM - Low yield

Melanogen 60%

Phyrogen 30%

Amorphogen 10%

Amorphogen is present as finely dispersed organic matter and spores and pollen are moderately abundant. TAI is 3.

Petroliferous siltstone, Mersey River - Prep. No. WM 440

TOM - Low yield

Melanogen 50%

Amorphogen 50%

Amorphogen is again very fine grained and dark brown. No spores or pollen were observed and TAI is therefore estimated at above 4.

Mersey River, middle sample - Prep. No. WM 439

TOM - Low yield

Melanogen 30%

Hylogen 5%

Amorphogen 45%

Phyrogen 20%

Spores and pollen are dark brown and highly corroded. TAI is 3+.

King William Saddle - Prep. No. WM 448

TOM - Moderate yield

Melanogen 5%

Amorphogen 95%

Amorphogen is present as dark brown finely dispersed particles. No spores

or pollen were observed and TAI is estimated at above 4.

Hobart Limestone - Pref. No. WM 447

This sample was virtually barren of organic matter.

Bronte Park, Serpentine Creek road cutting - Prep. No. WM 445

TOM - Low yield

Melanogen 60%

Phyrogen 30%

Amorphogen 10%

Spores and pollen were rare and brown. TAI, 3+.

Poatina Siltstone, core samples - Prep. No. WM 443

TOM - Low yield

Melanogen - 30%

Amorphogen 70%

Amorphogen is present as dark brown finely dispersed particles. No spores or pollen were observed and TAI is estimated at above 4.

CONCLUSIONS

The majority of samples processed yield very low contents of organic matter and this alone suggests that they have very low potential for generating hydrocarbons. Added to this is the preponderence of melanogen which would be expected to produce thermally derived gas with little or no liquid hydrocarbons. Finally the TAI in most samples is high and in some cases cannot be determined directly and these samples are probably overmature.

In summary, the samples could only be considered as poor potential source rocks for hydrocarbons and would produce mainly gas with little or no liquid hydrocarbons. All, however, are mature for generation and some are probably over mature.

W K Harris
Consulting Geologist - Palynology

14 January 1981

965059

OPEN

Min. of M. | A.O. | C.G. | E.O. | D.S.M.E | Registrar
Received 21 MAY 1981 | E & M
Answered
DEPT. OF MINES
REF. No. 4191/81

exploration licence 31/80

maps to accompany renewal and progress report to 21st. may 1981

81-1562

965060

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT AREA

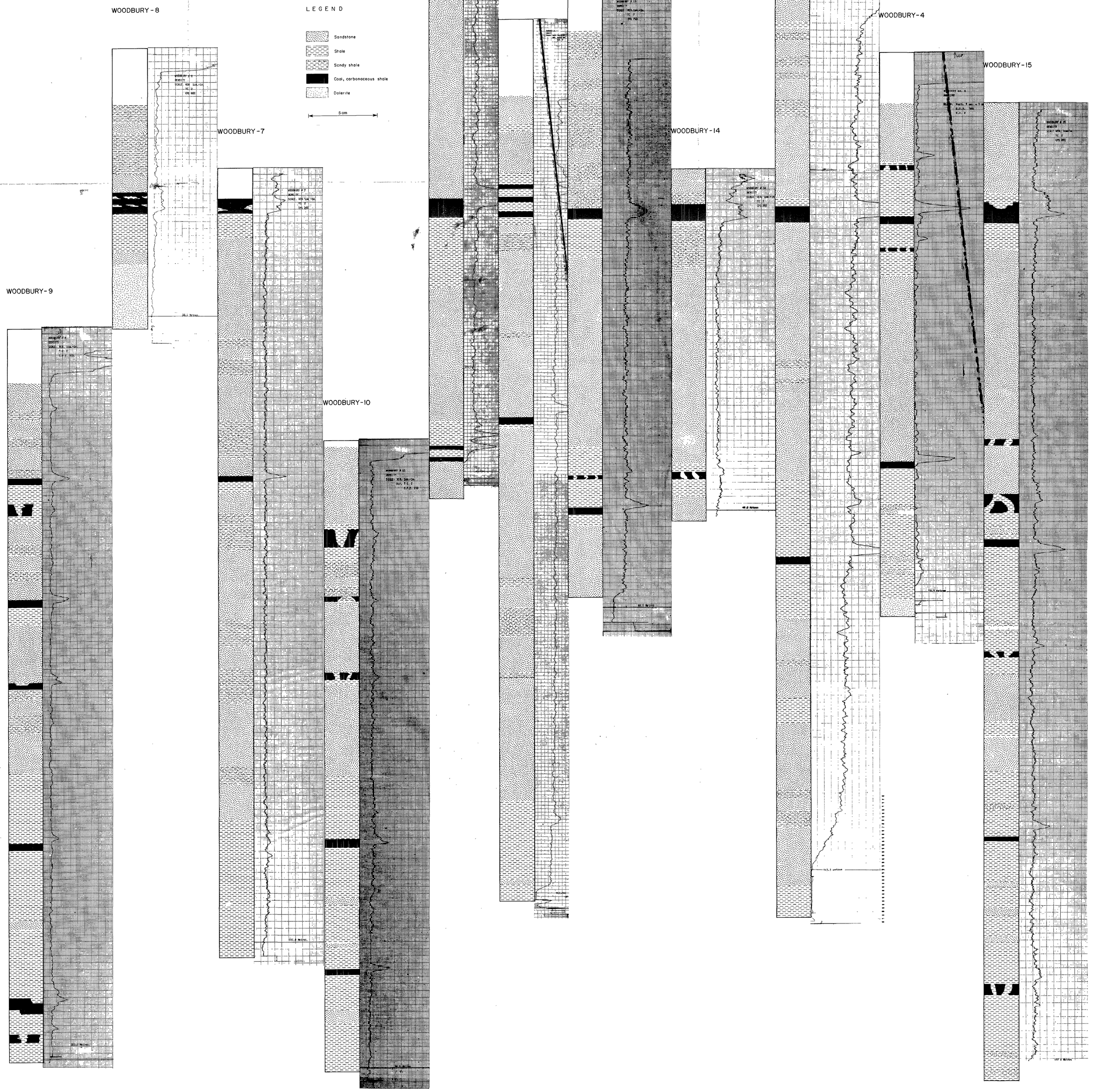
DRILL HOLE CORRELATION SHOWING DENSITY LOG

GEOLOGIST - J O SMITH VERTICAL SCALE - 1 200 DATE - MAY 1981

LEGEND

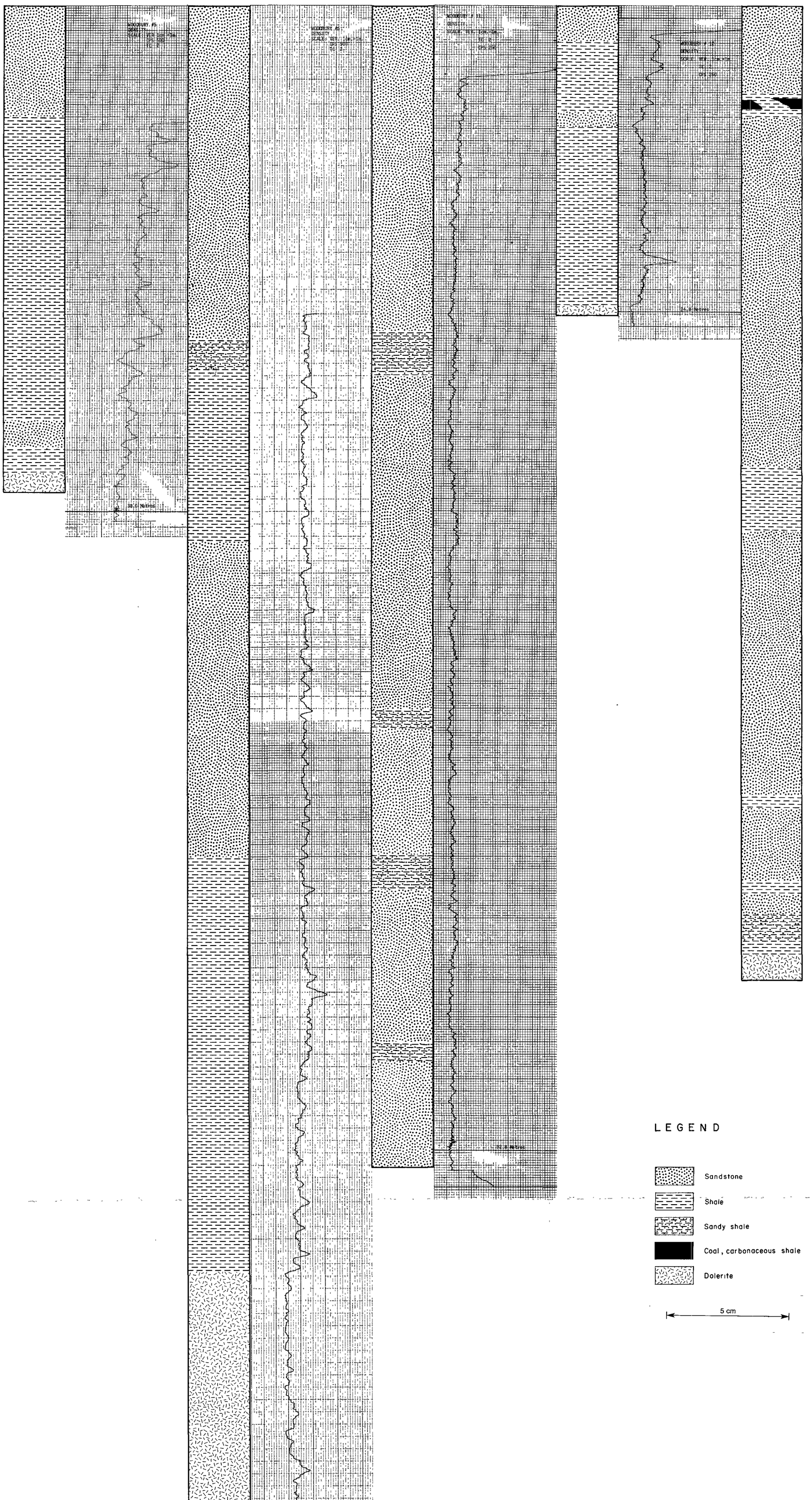
- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite

5 cm



KEMP DRAFTING & CARTOGRAPHY PTY. LTD.

WOODBURY-5 WOODBURY-6 WOODBURY-11 WOODBURY-12 SORELL SPRINGS-2



LEGEND

- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite

5 cm

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL AREA

DRILL HOLE LITHOLOGY & DENSITY LOG

GEOLOGIST - J O SMITH VERTICAL SCALE - 1:200 DATE - MAY 1981

965061

81-1562

KEMP DRAFTING & CARTOGRAPHY PTY LTD

BELLS LAGOON - 1A

BELLS LAGOON - 1B

BELLS LAGOON - 3

BELLS LAGOON - 6

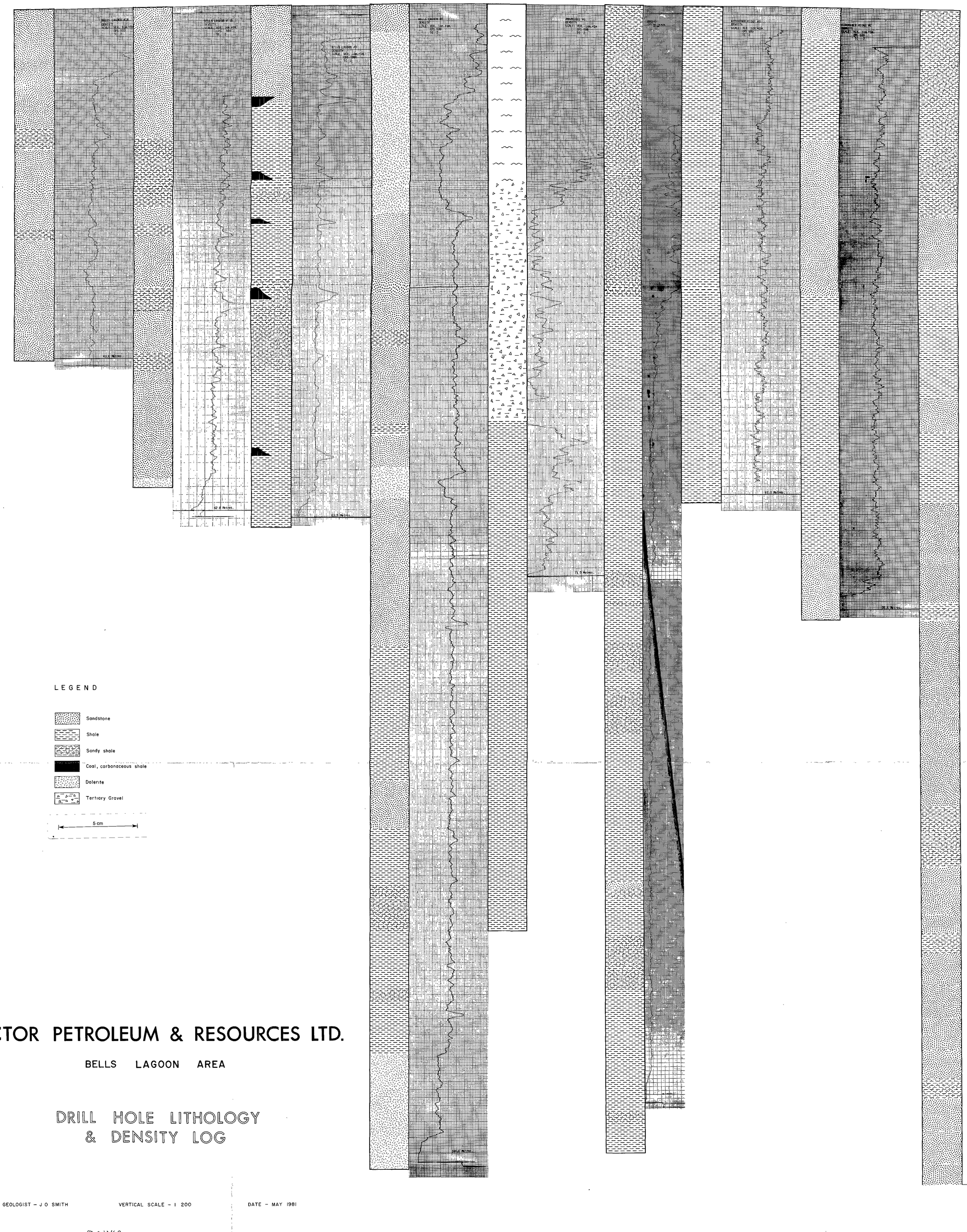
ANNANDALE - 1

VERWOOD - 1

KITCHENER RIDGE - 1

KITCHENER RIDGE - 2

BELLS LAGOON - 2



LEGEND

- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite
- Tertiary Gravel

5 cm

VICTOR PETROLEUM & RESOURCES LTD.

BELLS LAGOON AREA

DRILL HOLE LITHOLOGY & DENSITY LOG

GEOLOGIST - J O SMITH

VERTICAL SCALE - 1 200

DATE - MAY 1981

965062

81 - 1862

KEMP DRAFTING & CARTOGRAPHY PTY LTD

81-1562

965063

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT AREA

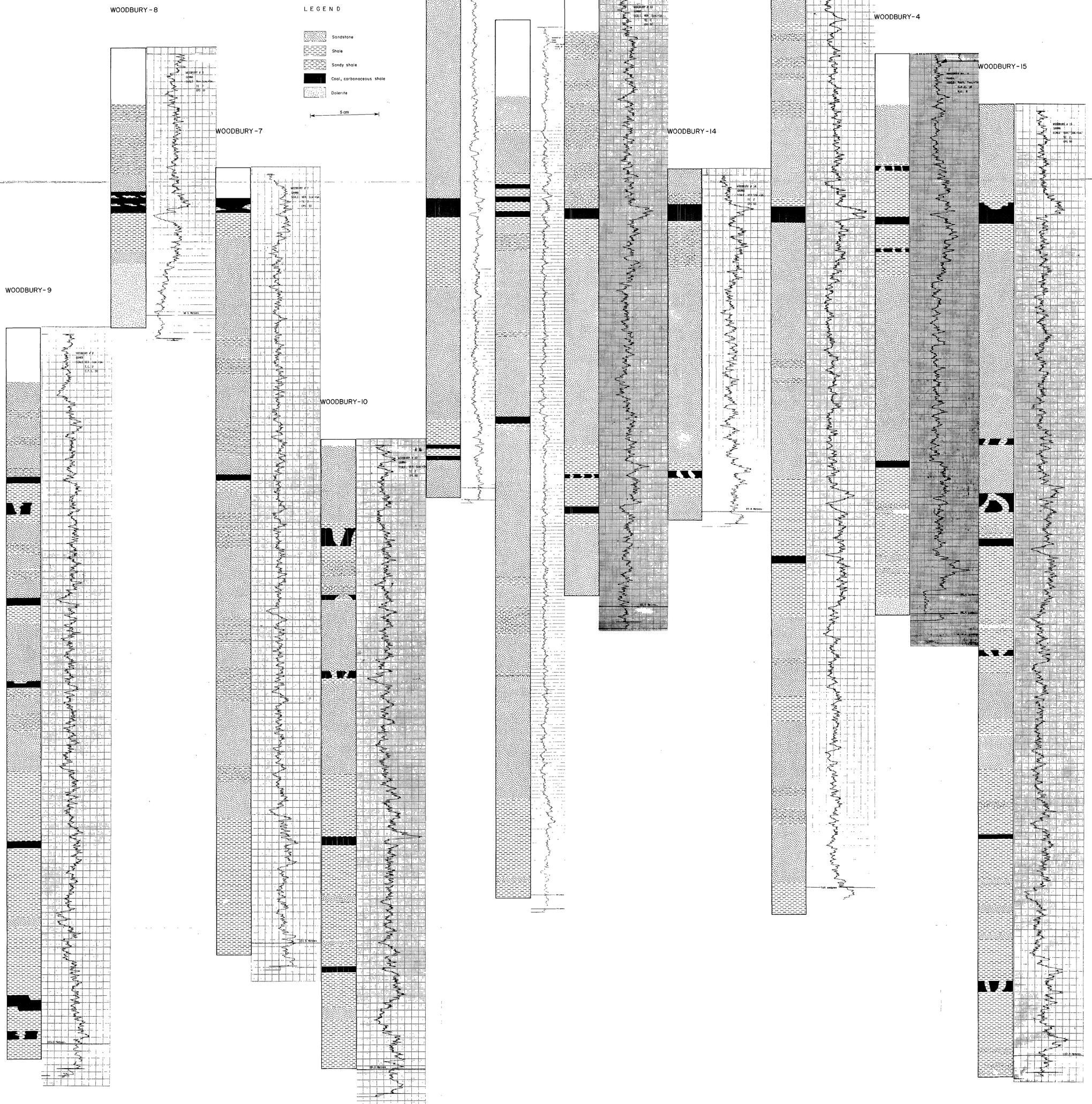
DRILL HOLE CORRELATION SHOWING GAMMA RAY LOG

GEOLOGIST - J O SMITH VERTICAL SCALE - 1 200 DATE - MAY 1981

LEGEND

- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite

5 cm



KEMP DRAFTING & CARTOGRAPHY PTY LTD

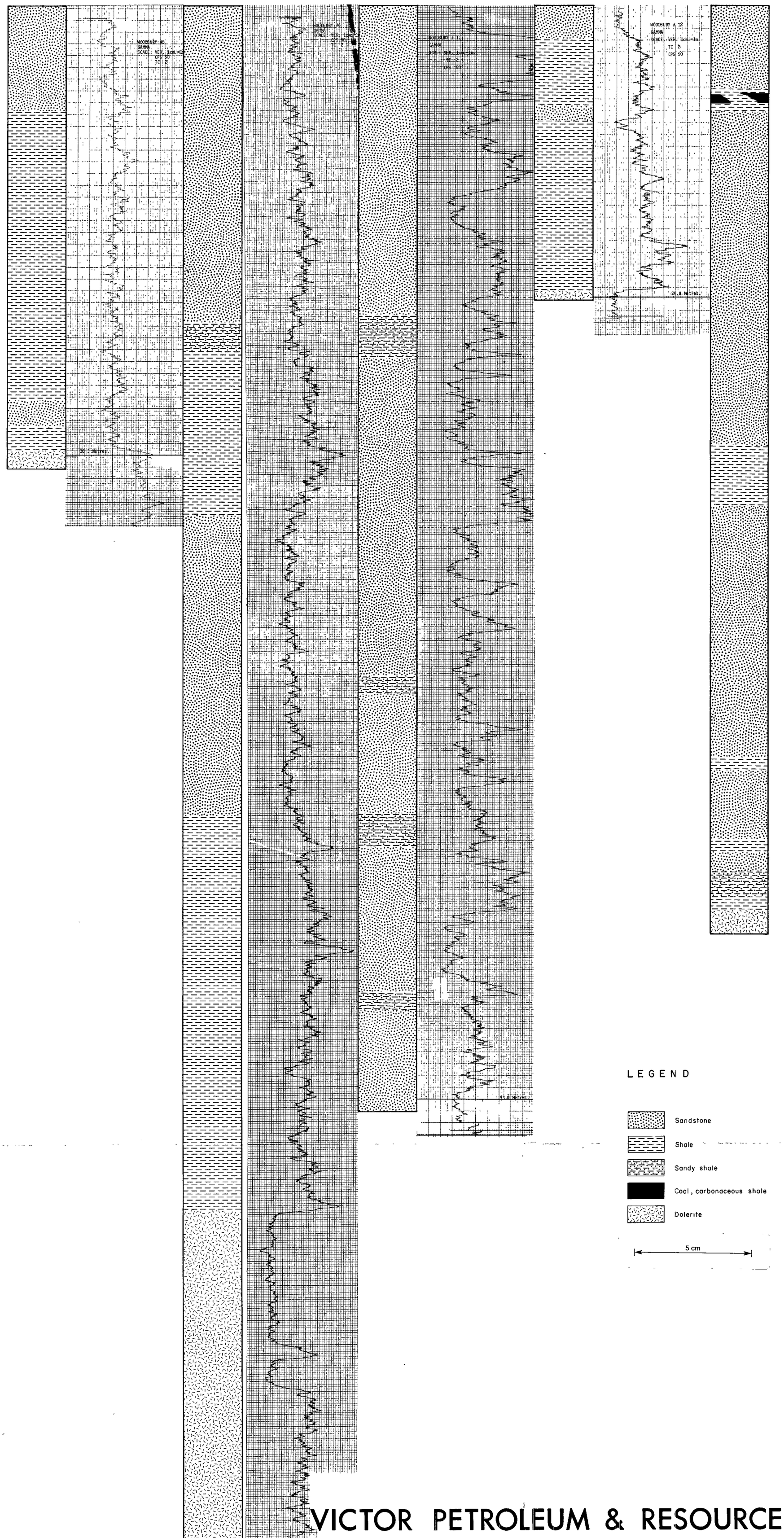
WOODBURY-5

WOODBURY-6

WOODBURY-11

WOODBURY-12

SORELL SPRINGS-2



VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL AREA

DRILL HOLE LITHOLOGY & GAMMA RAY LOG

GEOLOGIST - J O SMITH

VERTICAL SCALE - 1:200

DATE - MAY 1981

81-1562

965064

KEMP DRAFTING & CARTOGRAPHY PTY LTD

BELLS LAGOON - 1A

BELLS LAGOON - 1B

BELLS LAGOON - 3

BELLS LAGOON - 6

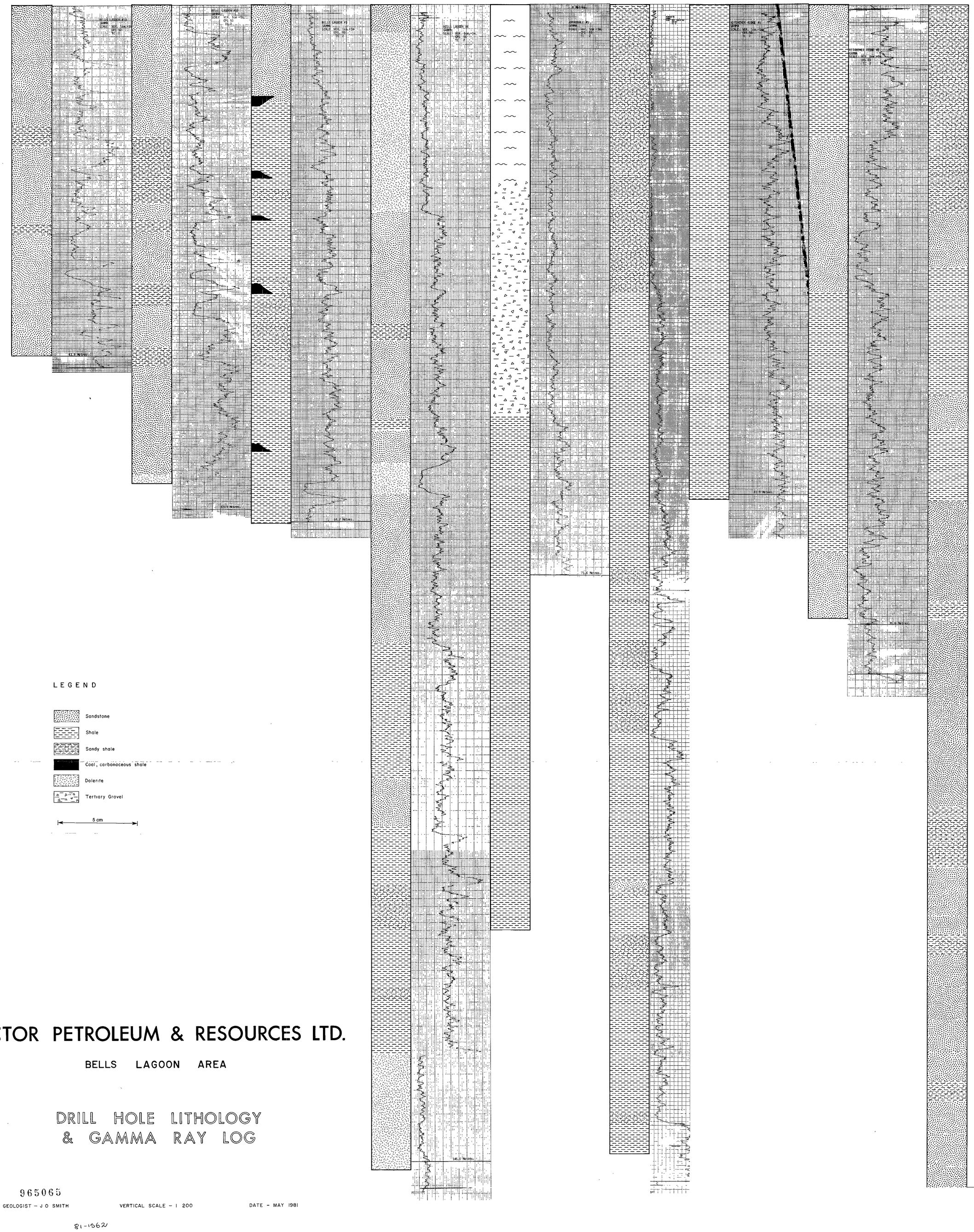
ANNANDALE - 1

VERWOOD - 1

KITCHENER RIDGE - 1

KITCHENER RIDGE - 2

BELLS LAGOON - 2



LEGEND

- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite
- Tertiary Gravel

5 cm

VICTOR PETROLEUM & RESOURCES LTD.

BELLS LAGOON AREA

DRILL HOLE LITHOLOGY & GAMMA RAY LOG

965065

GEOLOGIST - J O SMITH

VERTICAL SCALE - 1 200

DATE - MAY 1981

81-1562

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.

81-1562

965066

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT AREA

DRILL HOLE CORRELATION SHOWING S. P. & R. LOG

GEOLOGIST - J O SMITH VERTICAL SCALE - 1 200 DATE - MAY 1981

LEGEND

- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite

5 cm

WOODBURY - 8

WOODBURY - 7

WOODBURY - 9

WOODBURY - 10

WOODBURY - 2

WOODBURY - 1

WOODBURY - 13

WOODBURY - 14

WOODBURY - 3

WOODBURY - 4

WOODBURY - 15

KEMP DRAFTING & CARTOGRAPHY PTY LTD

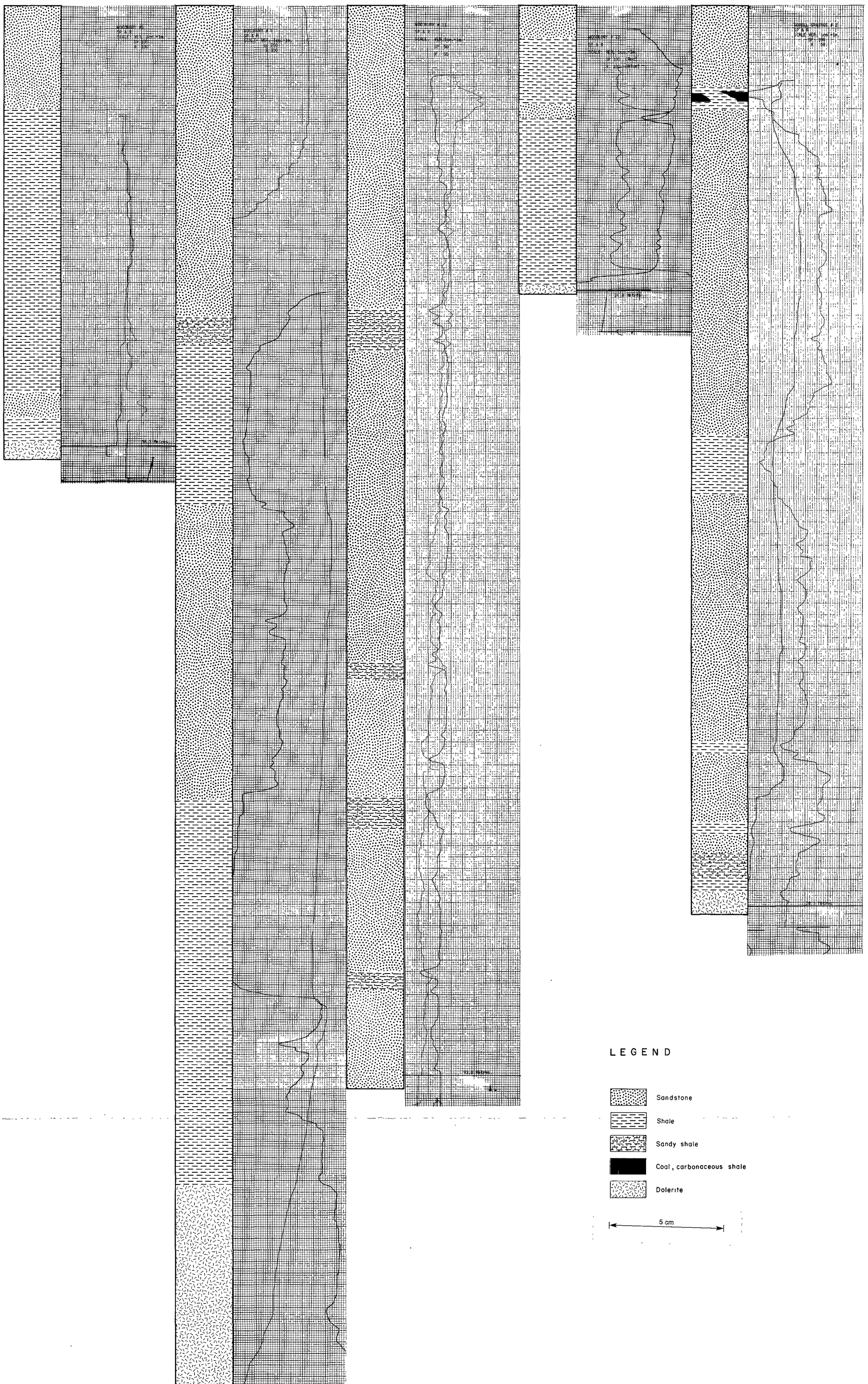
WOODBURY-5

WOODBURY-6

WOODBURY-11

WOODBURY-12

SORELL SPRINGS-2



LEGEND

- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite

5 cm

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL AREA

DRILL HOLE LITHOLOGY & S.P. & R. LOG

GEOLOGIST - J O SMITH

VERTICAL SCALE - 1:200

DATE - MAY 1981

81-1562

965067

KEMP DRAFTING & CARTOGRAPHY PTY LTD

BELLS LAGOON - 1A

BELLS LAGOON - 1B

BELLS LAGOON - 3

BELLS LAGOON - 6

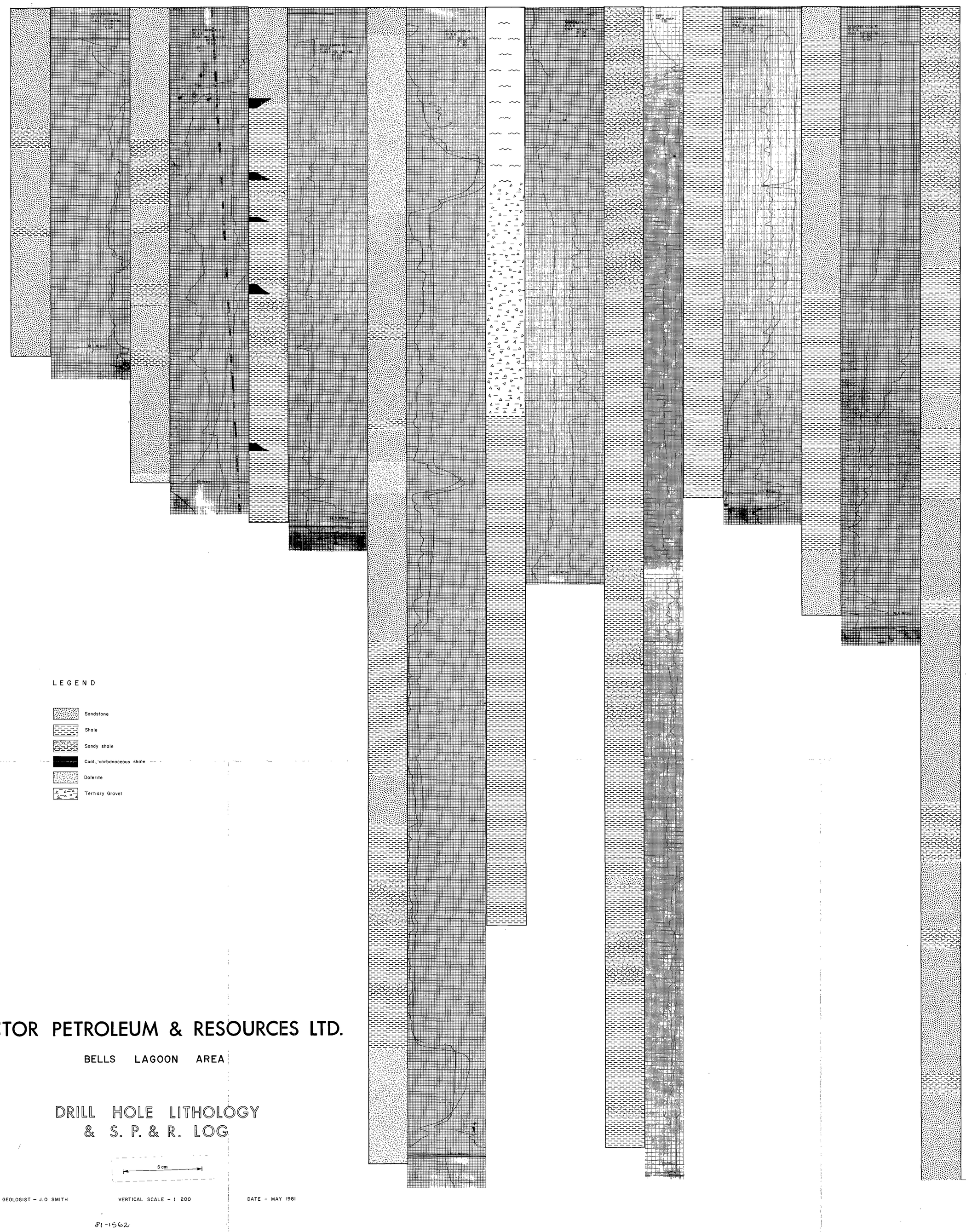
ANNANDALE - 1

VERWOOD - 1

KITCHENER RIDGE - 1

KITCHENER RIDGE - 2

BELLS LAGOON - 2



LEGEND

- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite
- Tertiary Gravel

VICTOR PETROLEUM & RESOURCES LTD.

BELLS LAGOON AREA

DRILL HOLE LITHOLOGY & S. P. & R. LOG

5 cm

GEOLOGIST - J.O SMITH

VERTICAL SCALE - 1 200

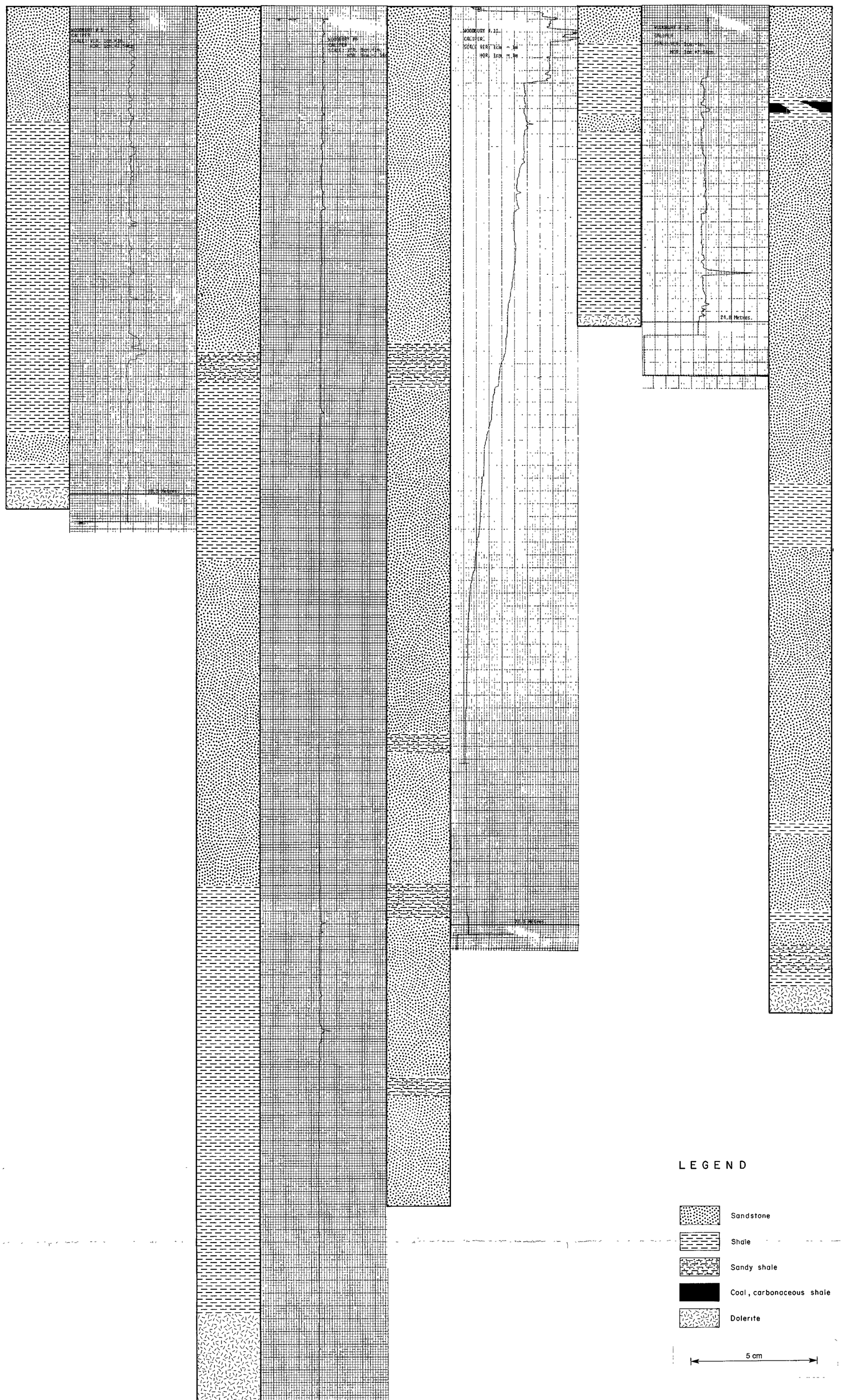
DATE - MAY 1981

81-1562

965068

KEMP DRAFTING & CARTOGRAPHY PTY LTD

WOODBURY-5 | WOODBURY-6 | WOODBURY-11 | WOODBURY-12 | SORELL SPRINGS-2



VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL AREA

DRILL HOLE LITHOLOGY & CALIPER LOG

GEOLOGIST - J O SMITH | VERTICAL SCALE - 1:200 | DATE - MAY 1981

965069

81-1562

KEMP DRAFTING & CARTOGRAPHY PTY LTD

BELLS LAGOON - 1A

BELLS LAGOON - 1B

BELLS LAGOON - 3

BELLS LAGOON - 6

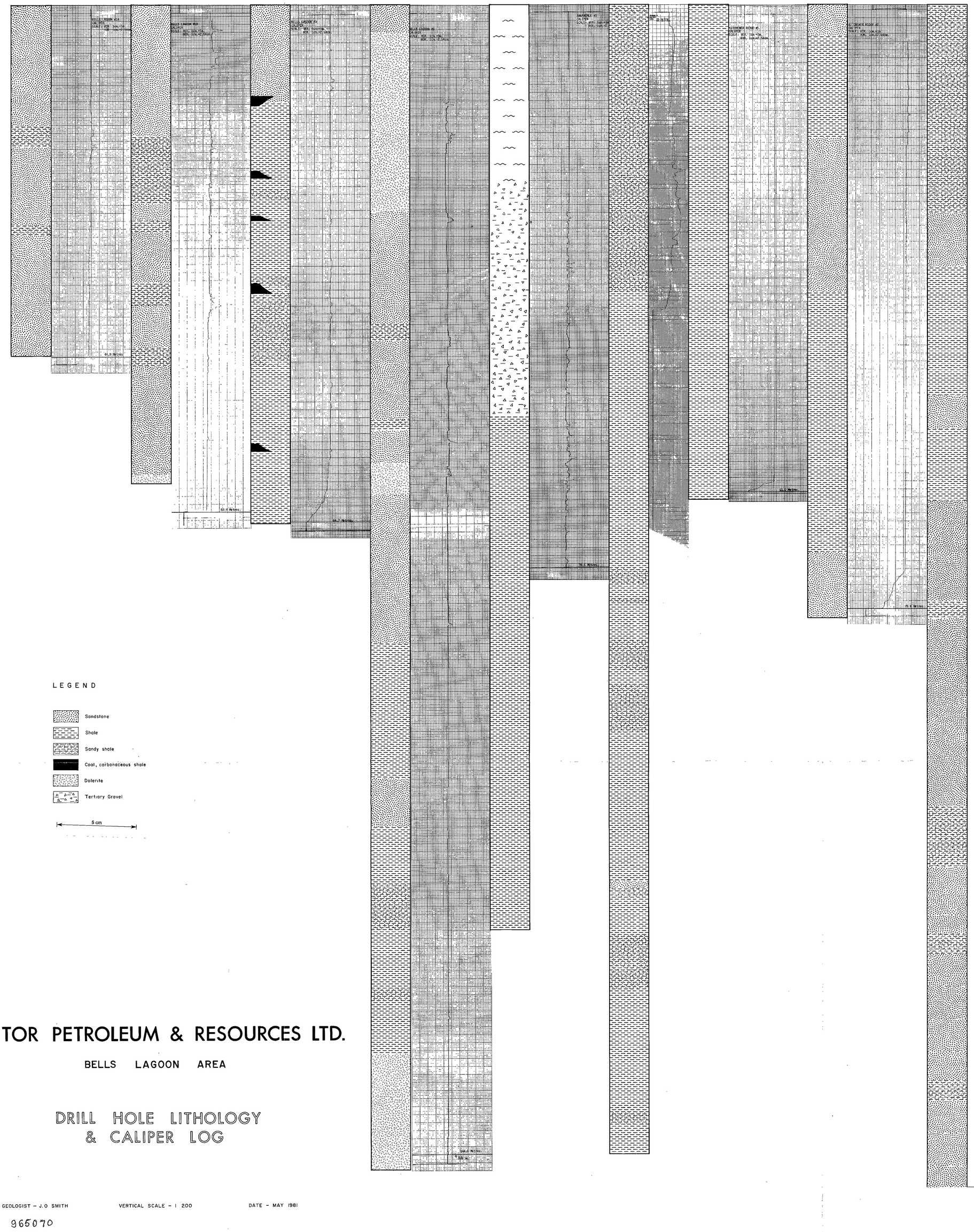
ANNANDALE - 1

VERWOOD - 1

KITCHENER RIDGE - 1

KITCHENER RIDGE - 2

BELLS LAGOON - 2



LEGEND

- Sandstone
- Shale
- Sandy shale
- Coal, carbonaceous shale
- Dolerite
- Tertiary Gravel

5 cm

VICTOR PETROLEUM & RESOURCES LTD.

BELLS LAGOON AREA

DRILL HOLE LITHOLOGY & CALIPER LOG

GEOLOGIST - J.O SMITH

VERTICAL SCALE - 1 200

DATE - MAY 1981

965070

81-1562

KEMP DRAFTING & CARTOGRAPHY PTY LTD

W.5
42 m.

W.10
94 m.

W.16
36 m.

W.7
110 m.

W.9
106 m.

W.1
125 m.

W.6
154 m.

W.8
40 m.

W.2
97 m.

W.14
52 m.

W.4
78 m.

W.13
88 m.

W.3
148 m.

W.15
137 m.

Estimated area extent of the seam.

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT

REDUCED LEVEL : TOP SEAM

965071

81-1562

SCALE - 1:10,000

500 0 500 1000 METRES

GEOLOGIST - J. O. SMITH

DATE - MAY 1981

5 cm

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.

W.5
42 m.

W.10
94 m.

W.16
36 m.

W.7
110 m.

W.9
106 m.

W.1
125 m.

W.6
154 m.

W.8
40 m.

W.2
97 m.

W.14
52 m.

W.4
78 m.

W.13
88 m.

W.3
148 m.

W.15
137 m.

200 190 180 170 160

210 220

150 170 180 190 200 210 220

5 cm

5 cm

Estimated area extent of the seam.

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT

REDUCED LEVEL : SEAM II

965072

SCALE - 1:10,000

500 0 500 1000 METRES

GEOLOGIST - J. O. SMITH
DATE - MAY 1981

5 cm

81-1562

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.

W.5
42 m.

W.10
94 m.

W.16
36 m.

W.7
110 m.

W.9
106 m.

W.1
125 m.

W.6
154 m.

W.8
40 m.

W.2
97 m.

W.14
52 m.

W.4
78 m.

W.13
88 m.

W.3
148 m.

W.15
137 m.

1.0
2.0
3.0
4.0
0.4
1.0
2.0
3.0

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT

ISOPACH : SEAM I

965073

SCALE - 1:10,000

500 0 500 1000 METRES

GEOLOGIST - J. O. SMITH

DATE - MAY 1981

5 cm

81-1562

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.

W.5
42 m.

W.10
94 m.

W.16
36 m.

W.7
110 m.

W.9
106 m.

W.6
154 m.

W.1
125 m.

W.8
40 m.

W.2
97 m.

W.14
52 m.

W.13
88 m.

W.4
78 m.

W.3
148 m.

W.15
137 m.

0·6 0·8 1·0 1·2 1·4 1·6 1·8 2·0 2·2 2·4 2·6

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT

ISOPACH SEAM II

965074

SCALE - 1:10,000

500 0 500 1000 METRES

GEOLOGIST - J. O. SMITH

DATE - MAY 1981

5 cm

81-1562

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.

532 000 33 34 35 36 37 38 39 540 000 41 42 543 000

5 332 000 31 5 330 000 29 28 27 26 5 325 000

W.16 36 m.
W.9 106 m.
W.5 42 m.
W.10 94 m.
W.7 110 m.
W.1 125 m.
W.8 40 m.
W.2 97 m.
W.6 154 m.
W.14 52 m.
W.4 78 m.
W.13 88 m.
W.3 148 m.
W.15 137 m.

0 10 20 30 40 50

5 cm

5 cm

532 000 33 34 35 36 37 38 39 540 000 41 42 543 000

VICTOR PETROLEUM & RESOURCES LTD.

OVERBURDEN THICKNESS : SEAM I

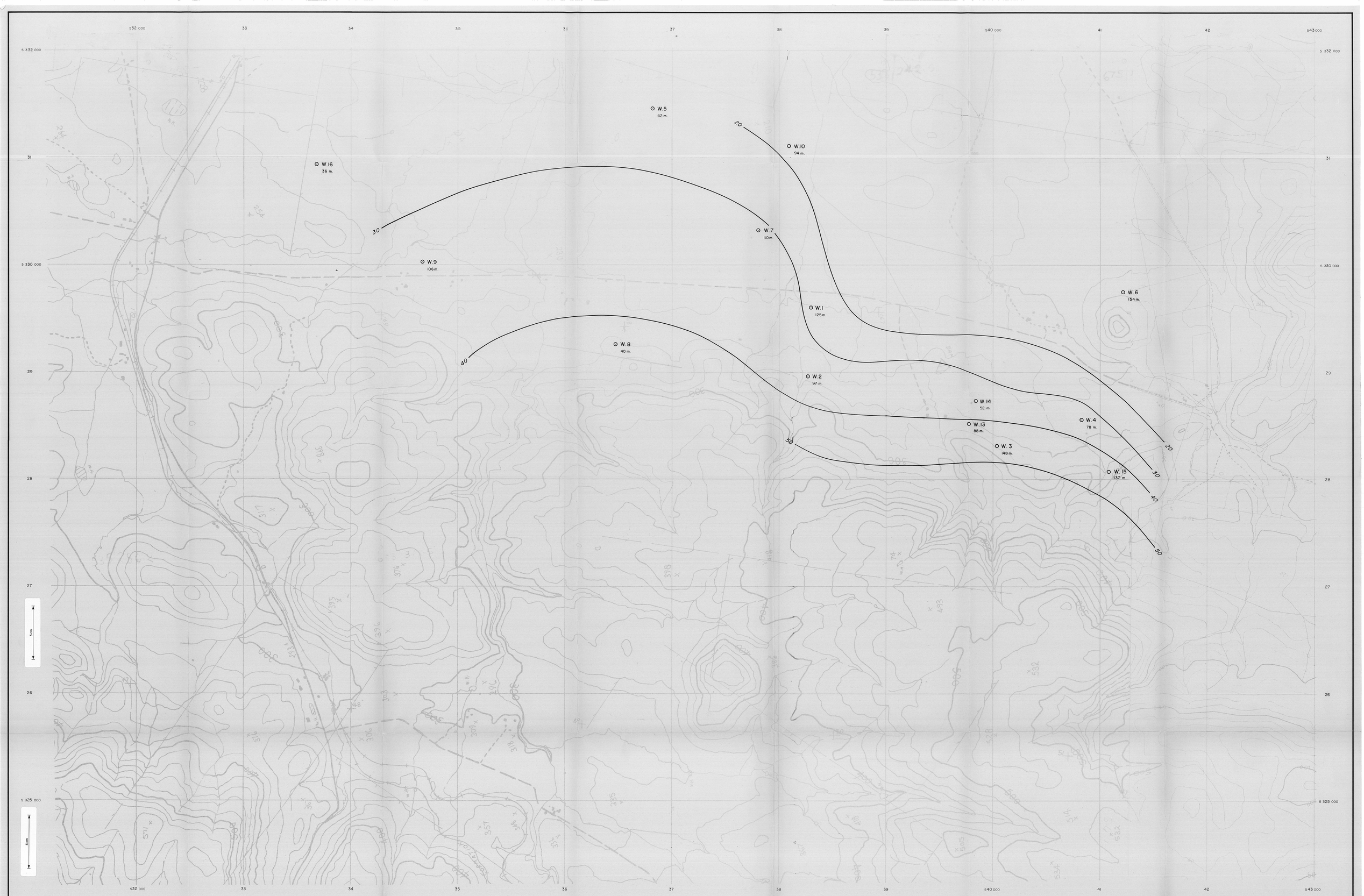
965075

SCALE - 1:10,000

500 0 500 1000 METRES

5 cm

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.



VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT

INTERVAL : SEAM I - II

965076

SCALE - 1:10,000

500 0 500 1000 METRES

GEOLOGIST - J. O. SMITH

DATE - MAY 1981

5 cm

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.

81-1062

W.5
42 m.

W.10
94 m.

W.16
36 m.

W.7
110 m.

W.9
106 m.

W.6
154 m.

W.1
125 m.

W.8
40 m.

W.2
97 m.

W.14
52 m.

W.4
78 m.

W.13
88 m.

W.3
148 m.

W.15
137 m.

Margin of Dolerite

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT

EXTENT OF DOLERITE OUTCROP

965077

81-1562.

SCALE - 1:10,000

500 0 500 1000 METRES

GEOLOGIST - J. O. SMITH

DATE - MAY 1981

5 cm

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.

W.5
42 m.

W.10
94 m.

W.16
36 m.

W.7
110 m.

W.9
106 m.

W.1
125 m.

W.8
40 m.

W.6
154 m.

W.2
97 m.

W.14
52 m.

W.4
178 m.

W.13
88 m.

W.3
148 m.

W.15
137 m.

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT

REDUCED LEVEL : LOWER DOLERITE SILL

965078

SCALE - 1:10,000

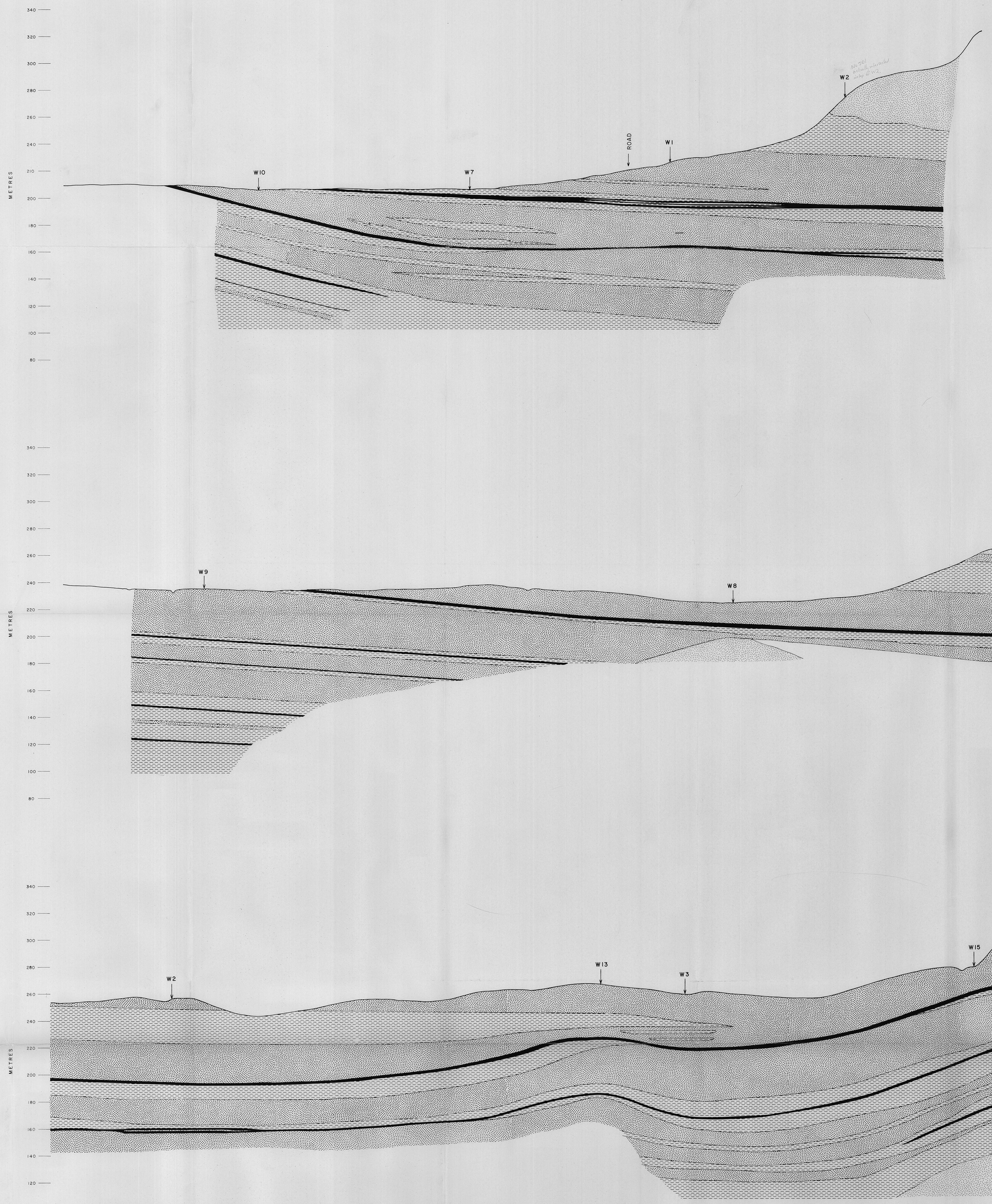
500 0 500 1000 METRES

GEOLOGIST - J. D. SMITH

DATE - MAY 1981

6 cm

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.



REDUCED LEVEL

LEGEND

- Sandstone
- Shale
- Coal, carboniferous shale
- Dolerite

VICTOR PETROLEUM & RESOURCES LTD.

WOODBURY COAL PROJECT

CROSS SECTIONS

965079

SCALE - 1:5000

250 0 250 500 METRES

81-1562

GEOLOGIST - J. O. SMITH
DATE - MAY 1981

5 cm

KEMP DRAFTING & CARTOGRAPHY PTY. LTD.