

73-944

THE HYDRO-ELECTRIC COMMISSION
TASMANIA

COAL RESOURCES
INVESTIGATION

FINGAL AREA
GEOLOGICAL REPORT

687001

JANUARY 1967

OPEN FILE

687D

E. C. I.COAL RESOURCES INVESTIGATION
FINGALGEOLOGIST-IN-CHARGE.

References:

- (1) Notes of Meeting with Joint Coal Board 10-2-66
- (2) Report of Joint Coal Board 18-3-66
- (3) Proposals for Further Investigations of Coal Reserves 7-7-66.
- (4) Memo - Geologist-in-Charge to E.C.I. 12-8-66.
- (5) Memo - Geologist-in-Charge to D/E.C.I. 2-12-66.

As recommended in reference (2), a drilling programme of 2,899 feet has been completed with the aim of defining the continuity of the East Fingal Coal Seam. Two holes C3 and C8 were located at a higher elevation than the rest of this season's holes to explore the extent of the Valley Coal Mine Seam. The location of the holes C3 - C9 inclusive as well as C1, and C2 and the Department of Mines holes are shown on the accompanying plan of the Cornwall Land District.

A regional geological map of the area is being prepared by the Department of Mines but is not yet available. Because of the scree and talus and deep soil cover on the rocks in the area a regional map cannot be accurate or useful as might be desired. However the mapping has indicated that in this area the stratigraphic sequence is as follows.

Scree and talus
Jurassic Dolerite
Triassic sandstones, mudstones and coal.
Permian mudstones.

The information that follows was derived from study of the cores.

1. PERMIAN.

The Permian rocks were not drilled beyond the point needed to ensure their recognition, and beyond indicating from the level at which they occurred in each hole that the area drilled is unfaulted do not concern the coal investigation. The rocks were dark coloured mudstones containing small pebbles usually less than $\frac{1}{4}$ " in diameter, some plant fossils, and in C3 a distinctive sandstone containing worm-castings. The top of the Permian as indicated in Drawing A14144 has a regional dip of about 1° in the direction from C4 toward C2. This dip was mentioned in my memo of 12-8-66 and further drilling has indicated no major change.

II. TRIASSIC.

The rock type overlying the Permian is a medium grained quartzose sandstone. The change is clear cut in every hole but there is no evidence of marked angular disconformity in the sequence. In some holes the grain size varies from a coarse sandstone to fine sandstone but no fixed sequence can be determined so far. The sandstones usually are clean fairly well sorted rocks but in some places clay pellets, coaly nodules and bands of finer material have been seen. The normal colour is whitish. The thickness varies from about 60' in C6 to 20' in DOM4, but not sufficient information is available to establish a trend in the thickness variation.

These rocks are succeeded upwards by a variable thickness of mudstones, banded mudstones, sandstones and siltstones and thin subgreywacke sandstones (called "feldspathic sandstones" in older report and this name will be used henceforth to avoid confusion). This sequence grades into a distinctive bed of uniform "feldspathic" sandstone varying in thickness from about 140' in C4 to about 50' in C8 and C2. These sandstones and the underlying more variable beds make up a band of about 200' thick below the first coaly horizons - where the sandstone is thick the lower beds are thin and vice versa, but both types are present in every hole.

The feldspathic sandstone is succeeded by another sequence of mudstones and banded mudstones and fine sandstones about 100 feet thick. This layer contains the first coal seams above the Permian, and the East Fingal Seam of the above reports occurs near the top of this interval.

The lower part of this band contains a number of thin coal seams. In C9 at this level, two seams of poor coal show thicknesses of up to ten feet. But although the seams at this height above the Triassic base persist in other holes they are thinner and could not be considered useful even if the quality was good. They do however tend to indicate the lateral persistence of coal-forming conditions at this level.

At an elevation of from 270' to 300' above the Permian, the seam called the East Fingal Seam in C2' can be traced in holes C2, C7, C6, C3 and DOM4. In C9, C4, C5 and C8 this seam has been eroded and the holes were drilled in scree and talus so that the persistence of the seam westwards of C3 has not been tested. In the holes which do cut the relevant portion of the section it is still difficult to be sure of correlating because the number and thicknesses of seams change from hole to hole.

In C2 the Joint Coal Board named a thickness of 7' (approx.) of poor coal at an elevation of 270' above the Permian the East Fingal Seam. Between 290' - 310' in C7, two seams, a lower one of 6 feet and a higher one of 8 feet were cut; in C6 a three foot seam and a number of carbonaceous bands are present in this zone, in C3 2 bands one of 7 feet and one of 2 feet are present; and in DOM4 one seam of 2 feet and a number of carbonaceous beds occur at this elevation above the Permian.

If we accept the appearance of the quartzose sandstone at 710' in the DOMI core as a marker and correlate using the information from the East Fingal holes, the seams discussed above would correlate with the carbonaceous bands lying between 500 feet and 591 feet down DOM I. This correlation is very tentative and would indicate a deterioration of the East Fingal Seam in this direction, i.e. it correlates with the 0' 11" seam at the depth of 503' 9" in DOMI.

Above the 100' coal bearing band of mudstones, more feldspathic sandstones and mudstones occur. The logs show beds of "feldspathic" sandstone are usually up to 20 feet thick near C3 and DOM4 but up to 200 feet thick in C2; the associated finer beds are more numerous and thicker near C3. Thin coal seams occur in the beds but the only seam of interest is the Valley Mine Seam which occurs in C3 and DOM4 at about 400 feet above the Permian. In C3 the seam has thinned to 3' 10". At 400 feet above the Permian in C1 a 3 foot seam occurs but at the same level in C2 there is a massive feldspathic sandstone. There are two 2" coal bands in a thin fine layer between 379' and 380' 7" but this cannot be correlated surely with the Valley Seam. To the westward in DOMI a coal seam at 382' (i.e. approximately 370' above the Permian if the correlation suggested above is valid) has been correlated with the Delta Seam and the Duncan Seam. If correlation between these two areas is possible there are the main possibilities here: (1) The Valley Coal Seam is the correlate of Delta Seam not the Gamma Seam as suggested in reference (2). (2) The seam in DOMI does not persist into the Valley area as a workable seam.

If alternative (1) is correct there is a good possibility that sufficient reserves of coal for our purpose exist here. C8 was drilled from a high level in an effort to explore this possibility but was not successful because of the deep scree encountered. The Mines Department hole on Spion Kop has not progressed but would be necessary to solve this problem.

If alternative (2) is correct, the seam at 382' in DOM1 may correlate with the thin coaly beds seen in C3 and DOM4 at about 370' above the Permian. In this case the Valley Seam does not persist towards Fingal and cannot be correlated with the seam supposed to be the Gamma Seam there.

The possibility that the correlation between the seam in DOM1, the Delta Seam and the Duncan Mine Seam is faulty cannot be overlooked at this stage. However the general continuity of the coal bearing horizons if not workable seams suggests that correlation between the two areas should be possible.

If the correlation of the DOM1 382' seam with the Valley Seam is assumed to be correct and the two areas are plotted as unfaulted, the correlation (ref. 2) of the 382' seam (Delta Seam) with the Duncan Seam is incorrect. The Duncan seam is topographically some 200 feet higher and may correlate with seams in DOM4 at 340', and in DOM5 at 327'. There is no seam at the relevant stratigraphic level in DOM1 for either the Yates or the Duncan seams. The level of the seams mentioned is about 570' above the Permian.

However the 2 seams correlated in reference 2 to the Duncan Seam in DOM2 and DOM3 are about 460' above the Permian if the region is considered as unfaulted. This seems a more likely correlation but introduces further difficulties in the correlations suggested by the Joint Coal Board who have suggested that the seams at 469' and 480', in DOM5 may be divisions of a split East Fingal Seam.

The East Fingal Seam lies between 290' and 310' above the Permian and the two DOM5 seams occur at about 400'+ above the Permian i.e. at the stratigraphic level of the Valley Mine Seam.

It follows that there is a strong indication that the seams of DOM1 and 2 correlated with the Duncan and Yeates adit seams may be continuous or perhaps interfinger with the Valley Seam, but that these seams are not very thick in the DOM1 area.

A 2'6" seam of coal occurs in DOM5 at 591' i.e. in the correct stratigraphic level for the East Fingal Seam. The stratigraphy below this is in accord with C3 strata.

A further complication arises when the levels of the Duncan and Yeates adits above the assumed Permian level is considered. Measured up DOM1, they lie at 620' and 575' respectively above the Permian. Seams of coal near these levels occur in DOM3,5,4, C1 and C2 but have not been logged in DOM2 or 1.

III. DOLERITE.

The dolerite appears to rise slowly through the succession from east of the area drilled and there has been no indication yet of lower intrusions or vertical feeder bodies in the Spion Kop area.

IV. SCREE AND TALUS.

Unexpected depths of scree in C9, C4, C5 and C8 have prevented the proving of the continuity of the East Fingal Seam beyond the Valley Mine area. The scree and talus is made up mainly of dolerite with some clayey and sandy bands or matrix. All material is of local origin. The age of the material has not been established. The main concentration of these deposits seems to be in old valleys and the spurs between them are largely free of ancient talus material. The present cycle of erosion and soil formation has yielded an even profile over both the rocks on the spurs and the infilled valleys.

CONCLUSIONS (see also reference 5).

- I. The Permian bedrock and the Triassic coal seams are virtually unfaulted so that correlation measuring up from the Permian is possible.
- II. There is a possibility that the coal seams worked at Fingal may be the Valley Mine Seam (compare with reference 5) or seams higher in the sequence.
- III. The Valley Mine Seam does not persist as a workable seam to the locality of C2 but there is a good chance that it is continuous into the Fingal area.
- IV. The continuity of the coal-bearing horizon containing the East Fingal Seam has been indicated but the thicknesses and quality of the seams at this level are variable. In general the seam appears to deteriorate to the south and west.
- V. The floors and roofs of all seams considered are in mudstones which usually does not stand up well under mechanical extraction.
- VI. Thick scree and talus deposits make open cut mining unlikely to be cheap in the East Fingal area.
- VII. The completion of DOM6 to the Permian is urgently required to confirm the correlations between the two areas.
- VIII. The seams are rather thinner and more variable than desirable but there is a strong possibility that adequate reserves of low quality coal are present to yield 12,000,000 tons of coal but further drilling and analyses are required to prove this.
- IX. If an average thickness of 5' of coal in the East Fingal Seam is assumed, an amount of 2,000,000 tons has been outlined in the area between C2, C3, C7 and DOM4.
- X. It is possible that the East Fingal Seam extends for some significant distance eastwards of C2 and beyond the area outlined in IX.
- XI. Significant quantities of better quality coal may exist in the westward extension of the Valley Coal Seam and in seams above this.
- XII. The coal bearing horizons seem to be continuous over both the Fingal and East Fingal areas, but the seams of coal are variable in thickness and quality. Interfingering of seams within the main coal-bearing beds may account for some of the anomalies in correlation.

c.-Commissioner.

C.C.E.-Records (2)

C.E.E.

E.C.I.

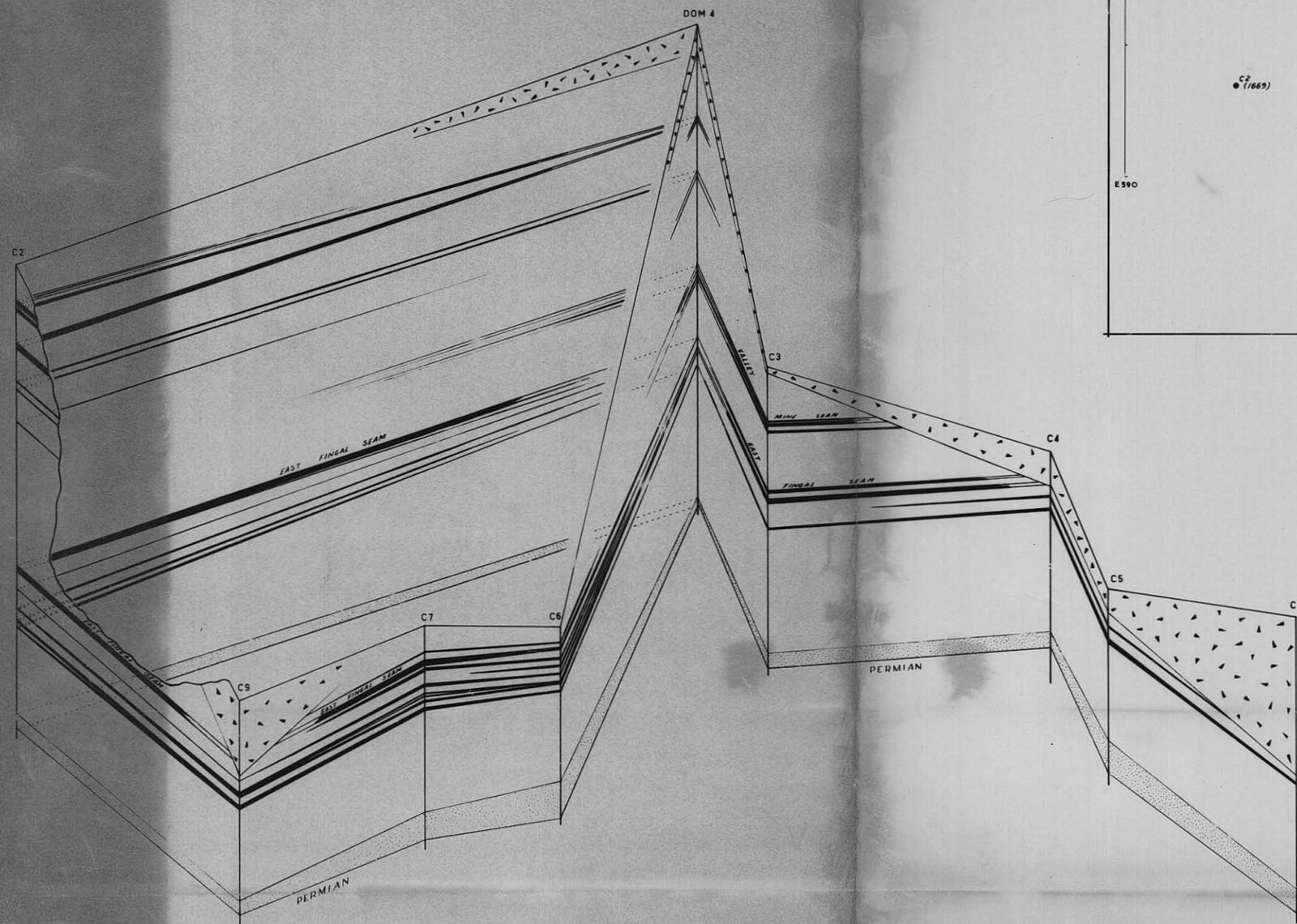
Department of Mines.

Joint Coal Board.

PE

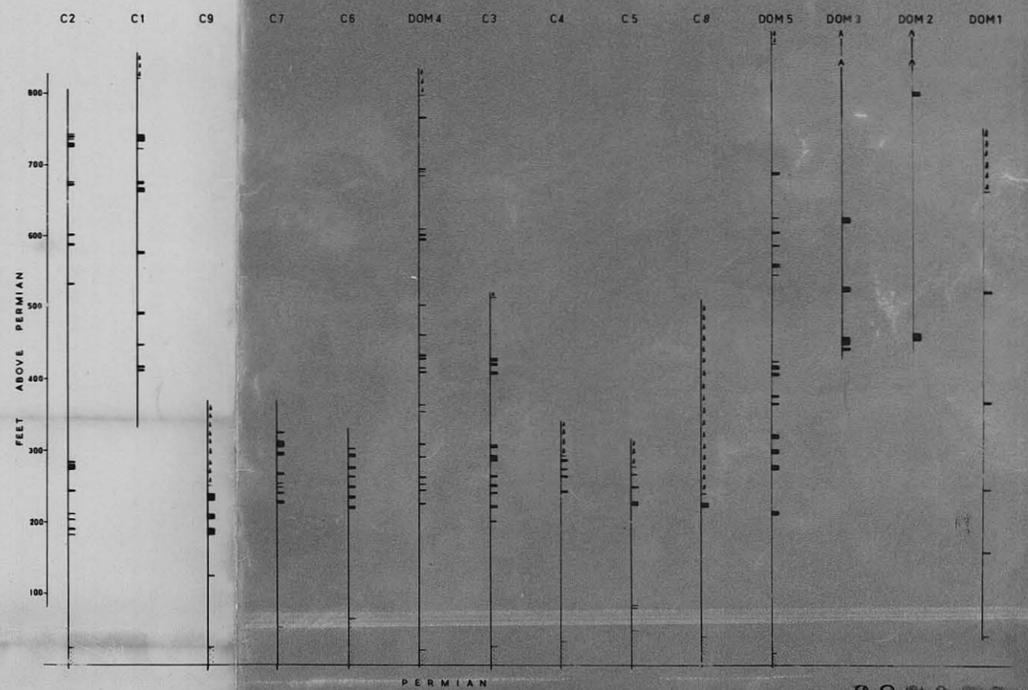
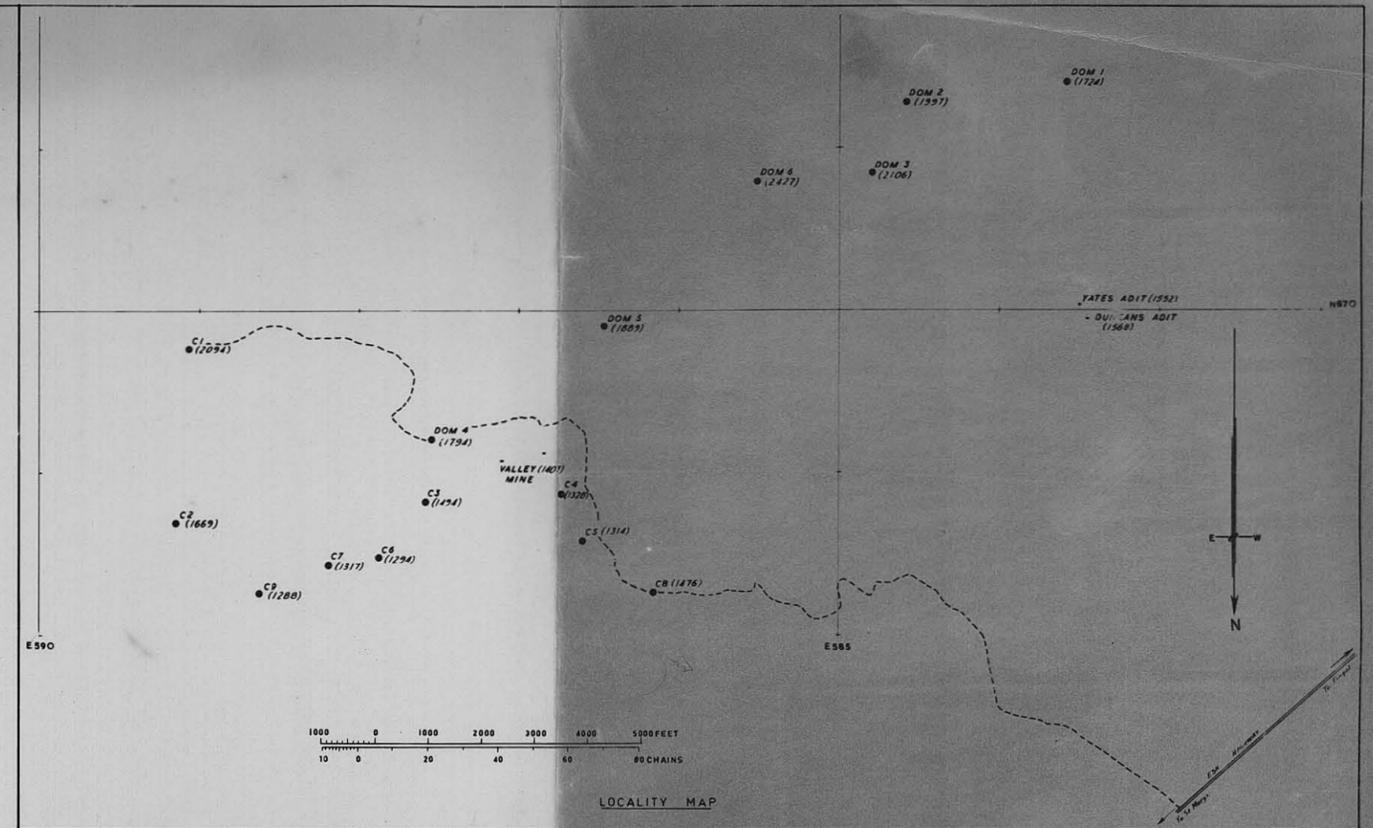
S.E.R. 1/1/67
GEOLOGIST-IN-CHARGE

6-1-67



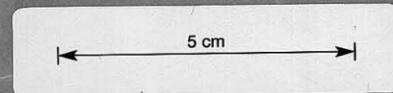
Vertical Scale: 100 Ft to 1 in.
Horizontal Scale: 400 Ft to 1 in.

-  Talus
-  Coal
-  Basal Triassic Sandstone



PERMIAN

687006



To Accompany Geological Report to E.C. January 1967.		THE HYDRO-ELECTRIC COMMISSION TASMANIA	
		COAL RESOURCES INVESTIGATION	
		FINGAL AREA	
		FENCE DIAGRAM - DRILL HOLES C2-C9	
Drawn by:	P.R.P.	Checked by:	G.E.H.A.
Geology by:	G.E.H.A.	Geologist in Charge	
SCALE		Series	A14144

DRILLING RECORD

687007

003

AREA: <i>COAL RESOURCES INVESTIGATION</i>		CO-ORDINATES:	E:	N:	HOLE No. CI
LOCATION: <i>FINGAL</i>		ON LINE:	BEARING:	AT CH:	
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: <i>22 10 64</i> (b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE	SHEET 1 OF SHEETS
METHOD: DIAMETER:					
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT./HOR./INC.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0										
5										
10										
15										
20										
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										
80										
85										
90										
95										
100										

N⁴

Nx

5 cm

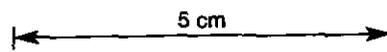
DRILLING RECORD

687008

006

AREA: <i>COAL RESOURCES INVESTIGATION</i>		CO-ORDINATES:		E:	N:	HOLE No. CJ
LOCATION: <i>FINGAL</i>		ON LINE:		BEARING:	AT CH:	
GEOLOGICAL PLAN:		SURVEY PLAN:		AT STN:	BEARING:	FILE No.
DATES (a) DRILLED:		(b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE
METHOD:		DIAMETER:				SHEET 2 OF SHEETS
SITE REMARKS:				HOLE DRILLED	ANGLE FROM HORIZONTAL	
				VERT./HOR./INC.		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LDG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				%						
100'										
5'										
10'										
15'										
20'										
25'										
30'										
35'										
40'										
45'										
50'										
55'										
60'										
65'										
70'										
75'										
80'										
85'										
90'										
95'										
100'										



DRILLING RECORD

687009

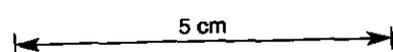
007

AREA: <i>COAL RESOURCES INVESTIGATION</i>		CO-ORDINATES:	E:	N:	HOLE No. 01
LOCATION: <i>FINGAL</i>		ON LINE:	BEARING:	AT CH:	
GEOLOGICAL PLAN:	SURVEY PLAN:	AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED:	(b) WATER TABLE:	SURFACE	COLLAR	WATER TABLE	
METHOD:		DIAMETER:			SHEET 3 OF SHEETS
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT/HOR/INC.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0										
5										
10										
15										
20										
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										
80										
85										
90										
95										
100										

NX

N

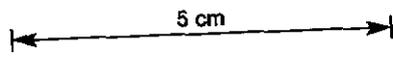


DRILLING RECORD

687010

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 589 Kyd 0072 Ft N: 870 Kyd 0696 Ft		HOLE No.
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH:
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: 22-10-64 (b) WATER TABLE: 19-3-65		SURFACE	COLLAR	WATER TABLE
METHOD: DIAMETER:		-21262094		FILE No.
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		VERT./HOR./INC.		SHEET 4 OF 9 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
300'			Nx							
305'										
310'										
315'							light grey			
320'					clay 3'					
325'							lost			
330'										
335'										
340'										
345'										
350'										
355'					Cavity					
360'										
365'										
370'										
375'										
380'										380'10"-383'4" Fine grained brecciated mudst. & sandstone weathered insitu to angular rock fragments & clay. Travertine at contact.
385'						BROKEN				383'4"-385' Fine grained light grey jointed mudst.
390'						BROKEN	grey			385'-386' Coal bed with moderately pure layers of vitrinite. Becomes more impure towards 386' where it grades into mudstone. Gypsum veins upto 1/8".
395'						BROKEN				386'-390' Light coloured mudstone weathered to clay at 389'
400'										390'-391'9" Carbonaceous mudstone. 391'9"-409'8" Dark grey fine grained mud-st.



DRILLING RECORD

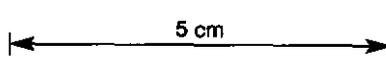
687011

AREA: <i>COAL RESOURCES INVESTIGATION</i>	CO-ORDINATES:	E: 589Kyd 0072Ft	N: 870Kyd 0696Ft	HOLE No.
LOCATION: <i>FINGAL</i>	ON LINE:	BEARING:	AT CH:	CI
GEOLOGICAL PLAN:	SURVEY PLAN:	AT STN:	BEARING:	DIST:
DATES (a) DRILLED: <i>22-10-64</i> <i>19-3-65</i>	(b) WATER TABLE:	SURFACE	COLLAR	WATER TABLE
METHOD:	DIAMETER:	2126		
SITE REMARKS:	INCL.:	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		VERT./HOR. LINE		

FILE No.
SHEET 5
OF 9 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				% 0 20 40 60 80 100						
400'			BX				Grey			<i>Mudstone, weathered to clay & small fragments in some patches.</i>
405'										
410'										<i>409'8" - 415'</i> <i>Fine even-grained light grey mudstone.</i>
415'										<i>415' - 426'</i> Medium to coarse grained feldspathic sandstone with thin coal seams and lenses up to 1/8"
420'										
425'										
430'										<i>426' - 432'</i> Rock weathered. Mudstone & feld. sandstone fragments in clay.
435'										<i>432' - 458'8"</i> Feldspathic sandstone & some siltstone with coal seams & lenses up to 3/8". The thicker seams (7/8") are mostly more than 3" apart, whereas the thin seams are often very close (spacing to 1/16") Banded sandstone
440'										<i>458'8" - 460'6"</i> Very fine brownish-grey mudstone which grades into the coal.
445'										<i>460'6" - 468'2"</i> Black homogeneous coal seam of fairly low quality.
450'										<i>467' - 467'6"</i> Coal is broken and there are thin clay beds up to 1/8"
455'										<i>468'2" - 479'6"</i> Alternating beds of carbonaceous sediments & non-carbonaceous mudstone & sandstones. The coal beds became less carbonaceous downwards.
460'							Black			
465'							Brown			
470'							Black			
475'							Brown			
480'										<i>3" Rock fragments & clay.</i>
485'										<i>479'9" - 509'</i> Light grey fine grained mudstone. Some thin carbonaceous lenses between 487' & 490'. Most breaks in the core are drilling breaks parallel to the bedding.
490'							clay			
495'							Grey			

See detail Sheet 1



DRILLING RECORD

687012

AREA: <i>COAL RESOURCES INVESTIGATION</i>		CO-ORDINATES: E: 589Kyd 0072Ft	N: 870Kyd 0696Ft	HOLE No.
LOCATION: <i>FINGAL</i>		ON LINE:	BEARING:	AT CH.
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: <i>22-10-64</i> (b) WATER TABLE: <i>19-3-65</i>		SURFACE	COLLAR	WATER TABLE
METHOD: DIAMETER:		2126		FILE No.
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		VERT./HOB/ING.		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY			GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	80						
500'												
505'												
510'												
515'												
520'												
525'												
530'												
535'												
540'												
545'												
550'												
555'												
560'												
565'												
570'												
575'												
580'												
585'												
590'												
595'												
600'												

up to 3" mostly 1/2" LA

BROKEN

BROKEN

See detail Sheet 2

BROKEN

509'-526'4"
Massive feldspathic sandstone with thinly bedded, closely spaced black carbonaceous layers.
Jointing sub-vertical. Coal lenses up to 1/8" at 526'.

526'2"-529'9" Alternating fine grained grey mudstone & coal. Coal becomes more vitreous & broken towards 529'.
Green clay. 529'9" - 535'3"

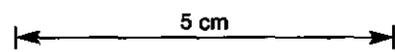
535'3"-541' Severely broken vitreous coal grading into carbonaceous mudstone at 541'.

541'-547' Mudstone with thin clay beds brecciated & decomposed to clay & rock fragments in patches.

547'-558'7" Fine grained light grey cross-bedded mudstone.

558'7" - 611'3" Medium grained massive feldspathic sandstone. Coaly lenses and seams up to 1/4" are common from 577'-580'.

Clay pellet conglomerate bands

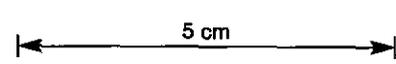


DRILLING RECORD

687013

AREA: <i>COAL RESOURCES INVESTIGATION</i>		POSITION	CO-ORDINATES: E. 589 Kyd 0072 FT	N. 870 Kyd 0696 FT	HOLE No.	
LOCATION: <i>FINGAL</i>			ON LINE:	BEARING:	AT CH:	CI
GEOLOGICAL PLAN: SURVEY PLAN:		LEVEL:	AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: <i>22-10-64</i> (b) WATER TABLE: <i>19-3-65</i>			SURFACE	COLLAR	WATER TABLE	
METHOD: DIAMETER:		INCL.	2126			
SITE REMARKS:			HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT. / HOR. / INC.				

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY			GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	80						
600'												
605'												
610'												
615'									Grey Black			611'3" - 614'4" Grey mudstone.
620'												614'4" - 619'9" Greenish - grey mudstone with alternating bands of black slightly carbonaceous mudstone. Average thickness of bands is 1/8"
625'												616' - 616'8" Region of slickensided & sheared mudstone.
630'												619'9" - 620'2" Brown slightly weathered mudstone.
635'												620'2" - 624'3" Carbonaceous mudstone with slickensides at 622'.
640'									Grey			624'3" - 628'4" Coal with closely spaced vitreous layers up to 1/8" thick. 1" mudstone beds at 624'7" (weathered) and one at 625'1".
645'												No vitreous layers below 627'8" and from here it grades into a carbonaceous mudstone at 628'6".
650'												628'6" - 634'11" Grey mudstone with some slickensides.
655'												634'11" - 709'8" Fine to coarse grained feldspathic sandstone with sets of thin coaly lenses at 646'6", 654', 662', 668', 678'4", 685'9", 706' & 709'. The sets are up to 1 ft. long and consist of thin (up to 1/8") coal lenses with an average spacing of 1/4".
660'												
665'												
670'												
675'												
680'												
685'												
690'												
695'												
700'												



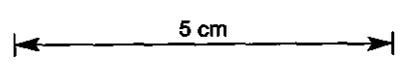
DRILLING RECORD

60114

AREA: <i>COAL RESOURCES INVESTIGATION</i>		CO-ORDINATES: E. 589Kyd 0072FF N. 870Kyd 0696 FF		HOLE No.
LOCATION: <i>FINGAL</i>		ON LINE:	BEARING:	AT CH:
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: <i>22-10-64</i> (b) WATER TABLE: <i>12-3-65</i>		SURFACE	COLLAR	WATER TABLE
METHOD: DIAMETER:		2126		FILE No.
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		VERT/HOR LINE		
				SHEET 8 OF 9 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	60	80						
700													
705													
710													709'8" - 712' Black coal with vitreous layers up to 1/8". Broken from 710'6" to 711'8".
715													712' - 713'5" Grey weathered mudstone consisting of rock fragments & clay. 713'5" - 719'10" Fairly uniform dark grey carbonaceous mudstone. Broken core due to fretting.
720													719'10" - 724'10" Carbonaceous sandstone containing thin wavy lenses of carb. material up to 1/16" and some mud beds with gradational contacts.
725													724'10" - 753'6" Massive feldspathic sandstone medium to coarse grained with coal lenses up to 1/8" at 735'10", 736'10", 738'1".
730													
735													
740													
745													
750													
755													753'6" - 754'7" Grey banded carbonaceous mudstone. 754'7" - 755'9" Dull coal with vitreous bands up to 1/16". 755'9" - 756'7" Dark grey carbonaceous mudstone. 756'7" - 759'4" Grey weathered & decomposed carbonaceous mudstone with closely-spaced fissile partings.
760													759'4" - 760'11" Carbonaceous mudstone. 760'11" - 761'4" Coal with vitreous layers up to 1/2". Vertical gypsum veins.
765													761'4" - 782'1" Light grey slightly carbonaceous mudstone due to scattered vegetable matter; No coal lenses
770													
775													
780													1" clay 3" Coal
785													3" Weathered mudstone 782'7" - 784'6" Dark grey carbonaceous mudstone 784'6" - 786'4" Dull coal with irregular vitreous layers Vertical gypsum veins common. Carbonaceous mudstone. 786'4" - 788'4" 788'4" - 790'9" Coal with mudstone beds at 788'6" & 790'5" 790'9" - 809'7" Grey mudstone which grades from carbonaceous to slightly carbonaceous at the base.
790													
795													
800													

See detail sheet 3



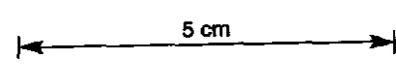
DRILLING RECORD

687015

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E. 589 Kyd 0072 Ft	N. 870 Kyd 0696 Ft	HOLE No. CI
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH:
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: 22-10-64 (b) WATER TABLE: 19-3-65		SURFACE	COLLAR	WATER TABLE
METHOD: DIAMETER:		2126		
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		VERT./HOR./INS.		

FILE No.
SHEET 9 OF 9 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
800'										
805'										2" weathered to mudstone fragments in clay Pyritic.
810'						BROKEN				
815'										809'7" - 850'0" Fine to medium grained feldspathic sandstone.
820'										820'3" - 1/8" coal lens
825'										
830'										
835'						BROKEN				834' - 835' group of very thin (1/16") carbonaceous lenses. 836'7" - 837'2" Coal lenses up to 1/4".
840'										
845'										850' - 853'3" Grey mudstone, only slightly carbonaceous. 853'3" - 853'4" Muddy coal with very thin vitreous layers
850'										
855'						BROKEN				2" Mudstone 853'4" - 870'9" Fine to medium grained feldspathic sandstone. Weathered from 861'6" to 864'7". 857'9" - 1" thick set of thin carb. layers.
860'										
865'						BROKEN				
870'										870'9" - 872' Grey mudstone becoming carbonaceous at 872'. Joints slickensided.
875'										Hole stopped at 872'
880'										Logged by T. Munro & D. Furber
885'										
890'										
895'										
900'										



0.14

DRILLING RECORD

687016

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E. 589 Kyd 519ft	N. 871 Kyd 900ft	HOLE No.
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH:	C2
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: July, '65 (b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE	SHEET 1 OF 9 SHEETS
METHOD: D.D. E1000 DIAMETER: No. 4, NMLC		1700			
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT/HOR/ANG.	90°		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0										Cl - clay gyp - gypsum sl - slickensides
0-5							Drilling mud			0'0" - 13'11" Mudstone weathered to greenish grey clay
5-10			No. 4							13'11" - 15'2" Grey massive mudstone
10-15										15'2" - 17'0" Partly weathered grey siltstone
15-20										17'0" - 21'6" Weathered, jointed feldspathic sandstone with limonite staining
20-25										21'6" - 54'7" Brown to grey, medium to coarse grained feldspathic sandstone 24'3" - 25'0" Cavities left by leached coal seams up to 1/8" wide. Clay pellet conglomerate phases as shown.
25-30										
30-35										35'0" - 46'6" Coal lenses up to 1/8" are spaced from 1/4" to 12".
35-40					m/c					
40-45										
45-50										54'7" - 60'0" Dark grey, slightly carbonaceous mudstone with some thin vitreous coal lenses up to 1/4". One 1" band of dull coal at 59'9"
50-55										60'0" - 62'7" Mudstone with dull coal bands up to 3".
55-60										62'7" - 63'5" Dull, jointed and broken coal with thin vertical gypsum veins and some pyrite.
60-65										63'5" - 64'1" Weathered mudstone
65-70										64'1" - 64'7" Dull coal
70-75										64'7" - 66'7" Mudstone containing small (< 1/4") carbonaceous pellets
75-80										66'7" - 69'9" Dull and vitreous coal with mudstone bands up to 4".
80-85										69'9" - 71'4" Carbonaceous mudstone with coal beds up to 1"
85-90										71'4" - 72'0" Dull coal with vitreous bands.
90-95										72'0" - 76'6" Carbonaceous mudstone
95-100										76'6" - 81'10" Dirty dull coal beds up to 8" interbedded with slightly weathered mudstone.
										81'10" - 84'1" Slightly carbonaceous mudstone
										84'1" - 87'2" Fine-grained feldspathic sandstone
										87'2" - 89'0" Mudstone and siltstone

see detail: Sheet 1

5 cm

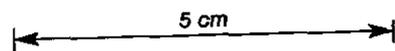
DRILLING RECORD

687017

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 589 Kyd 519 ft N: 871 Kyd 900 ft	HOLE No. C2
LOCATION: FINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: <i>July, '65</i> (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 2 OF 3 SHEETS
METHOD: <i>D.D. E1000</i> DIAMETER: <i>No. 4, NMLC</i>		LEVEL: 1700	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT./HOR. LINE: 90°	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY		GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	100						
165											Cl - clay Cr - crushed Sl - slickensides
105											
110											
115											
120											
125											
130											
135											
140											
145											
150											
155											
160											
165											
170											
175											
180											
185											
190											
195											
200											

see detail sheet 2

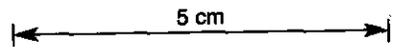


DRILLING RECORD

687018

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 589 Kyd 519 R. N: 871 Kyd 900 R.	HOLE No. C2
LOCATION: FINGAL		ON LINE: BEARING: AT CH.	FILE No.
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN: BEARING: DIST:	SHEET 3 OF 9 SHEETS
DATES (a) DRILLED: July, '65 (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	
METHOD: D.D. E1000 DIAMETER: NMLC		1700	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT./HOR./INC. 90°	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
200'					m		white			Sl - Slickensides
203'						Sl	black			203'0" - 204'2" Carbonaceous mudstone
204'						Sl	black			204'2" - 206'0" Dull coal with vitreous bands up to 1/8". Gypsum veins up to 1/8". Two 1" bands of clayey weathered carbonaceous mudstone at 204'5" and 205'3"
206'						Sl	brown			206'0" - 218'3" Sheared grey siltstone. Clay in the thicker joints
218'										218'3" - 220'8" Dull coal with some vitreous bands
220'										218'6" - 219'4" Brecciated band containing clay and broken coal.
222'										220'8" - 222'6" Carbonaceous mudstone and siltstone.
222'										
225'										
230'										
235'										
240'					f/m					
245'										
250'										
255'							white			222'6" - 268'10" fine to medium grained feldspathic sandstone with some groups of thin impure coaly lenses.
260'										
265'							lost return			
270'										268'10" - 273'10" Clay, feldspathic sand and sandstone fragments formed by decomposition of sandstone and mudstone. A slickensided surface at 268'10" has a 1" thick brecciated zone containing clay and sandstone fragments. Very stiff clay and mudstone fragments from 272'0" - 273'0". The whole interval is probably a fault zone.
275'										
280'										
285'										273'10" - 275'9" Dull coal with vitreous layers up to 3/8". Vertical gypsum veins up to 1/16".
290'										275'9" - 279'1" Mudstone with 2" clay at 276'8".
295'					m/c					279'1" - 285'1" Sandy siltstone



DRILLING RECORD

687019

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 589 Kyd 519 ft N: 871 Kyd 900 ft	HOLE No. C2
LOCATION: FINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: July, '65 (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 4 OF 9 SHEETS
METHOD: D.D. E1000 DIAMETER: NMLC		1700	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL 90°	
		VERT. HOR. INC.	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20 40 60 80 100						
290										cl - clay sl - slickensides
305							white			285'1" - 316'10" Medium to coarse grained feldspathic sandstone.
310					m/c					
315										316'10" - 317'5" Broken, jointed, slickensided mudstone with sandstone lenses
320					f					317'5" - 317'9" Feldspathic sandstone with irregular mudstone lenses up to 1" thick. Some lenses are carbonaceous
325										317'9" - 329'9" Coarse siltstone to fine sandstone with small groups of very thin carbonaceous lenses.
330							grey to black			329'9" - 330'3" Coal with vertical gypsum veins. 1/2" brecciated clayey coal at 330'0".
335							ce, se			
340							ce, se se, ce	white		330'3" - 341'6" Mudstone with many slickensided joints, some containing clay.
345										341'6" - 344'0" Grey siltstone
350										
355					m/c					
360										
365										
370										
375										
380							black to white			379'10" - 380'7" 2" coal lens, 1" sandstone, 4" slickensided mudstone, 2" slickensided coal
385							white			
390					m/c					
395										
400										380'7" - 456'7" Medium to coarse grained feldspathic sandstone

5 cm

DRILLING RECORD

687020

018

AREA: COAL RESOURCES INVESTIGATION	CO-ORDINATES:	E: 589 Kyd 519 ft	N: 871 Kyd 900 ft	HOLE No.
LOCATION: FINGAL	ON LINE:	BEARING:	AT CH:	C2
GEOLOGICAL PLAN: SURVEY PLAN:	AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: <i>July, '65</i> (b) WATER TABLE:	SURFACE	COLLAR	WATER TABLE	
METHOD: D.D. 1000 DIAMETER: NMLC	1700			
SITE REMARKS:	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	SHEET
	VERT./HOR./ING.	90°		5 OF 9 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY				GRAPHIC LOG	JOINTS No. Per Foot	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				200	400	600	800						
400'													
405'													
410'													
415'													
420'													
425'													
430'													
435'													
440'													
445'													
450'													
455'													
460'													
465'													
470'													
475'													
480'													
485'													
490'													
495'													
500'													

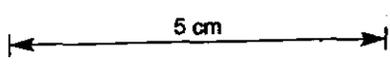
380'7" - 456'7" Medium to coarse-grained feldspathic sandstone

456'7" - 458'7" Carbonaceous siltstone
 458'7" - 460'0" Medium grained feldspathic sandstone with clay-pellet conglomerate phase. Pellets or lenses are carbonaceous and are up to 2" thick with most wider than 1/2".

460'0" - 484'11" Medium grained feldspathic sandstone with clay-pellet phase

484'11" - 485'7" Feldspathic sandstone containing thick carbonaceous mudstone lenses and pellets
 485'7" - 488'6" Fine grained feldspathic sandstone

488'6" - 489'9" Carbonaceous siltstone
 489'9" - 499'5" Banded fine grained sandstone to siltstone. Bands are carbonaceous beds up to 1" and some small lenses.



DRILLING RECORD

687021

AREA: COAL RESOURCES INVESTIGATION	CO-ORDINATES: E: 589 Kyd 519 ft	N: 871 Kyd 900 ft	HOLE No. C2
LOCATION: FINGAL	ON LINE:	BEARING:	AT CH:
GEOLOGICAL PLAN: SURVEY PLAN:	AT STN:	BEARING:	DIST:
DATES (a) DRILLED: July, '65 (b) WATER TABLE:	SURFACE	COLLAR	WATER TABLE
METHOD: D.D. Elong DIAMETER: NMLC	LEVEL: 1700		
SITE REMARKS:	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
	VERT/HOR/INC.	90°	
			SHEET 6 OF 9 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	60	80						
500'									lost				
505'									return				
510'													499'5" - 521'10" Mainly mudstone with some siltstone phases. Very carbonaceous from 504'8" to 505'7"
515'													
520'													
525'													521'10" - 525'0" Dull coal with some vertical joints. 525'0" - 526'0" Carbonaceous mudstone
530'													526'0" - 533'3" Dull coal with thin vertical gypsum veins
535'													
540'													
545'													
550'													533'3" - 561'9" Grey mudstone, banded in places due to thin siltstone phases. From 541'2" - 542'2" the rock is broken, partly weathered to clay and has slickensided joints.
555'													
560'													
565'													561'9" - 563'10" Dull coal with vertical gypsum veins. Broken from 562'4" to 563'0" 563'10" - 563'5" Carbonaceous siltstone
570'													
575'													569'5" - 579'0" Fine to medium grained feldspathic sandstone 579'0" - 579'4" Very carbonaceous mudstone with horizontal gypsum seams. 579'4" - 580'4" Completely weathered and broken muddy siltstone 580'4" - 583'2" Partly weathered siltstone, carbonaceous in some parts.
580'													
585'													583'2" - 588'3" Fine-grained siltstone
590'													588'3" - 595'2" Slightly carbonaceous mudstone, banded below 591"
595'													595'2" - 596'3" Dull, fairly impure broken coal with slickensided joints
600'													

see detail sheet 3

5 cm

DRILLING RECORD

687022

AREA: COAL RESOURCES INVESTIGATION		POSITION	CO-ORDINATES: E: 589 kyd 519 ft. N: 871 kyd 900 ft.	HOLE No. C2
LOCATION: FINGAL			ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: SURVEY PLAN:		LEVEL	AT STN: BEARING: DIST:	SHEET 7 OF 9 SHEETS
DATES (a) DRILLED: <i>July, '65</i> (b) WATER TABLE:			SURFACE COLLAR WATER TABLE	
METHOD: D.D. E1000 DIAMETER: NMLC		INCL.	HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
SITE REMARKS:			VERT./HOR./INC. 90°	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS	
										CL - clay	SL - slickensides
600											
605											596'3" - 602'6" Mudstone
											602'6" - 603'4" Dull coal with some thin vitrinite layers. Partly broken
											603'4" - 607'0" Black, very carbonaceous mudstone. Density too high for coal.
610							grey				607'0" - 615'6" Mudstone, banded in places, with carbonaceous mudstone and siltstone beds.
615											615'6" - 617'2" Partly broken dull coal with thin vitrinite layers. Vertically jointed.
620											617'2" - 624'11" Brown to grey fine-grained mudstone or claystone.
625											Decomposed to clayey silt from 618'3" - 618'10", + 621'2" - 621'6".
											624'11" - 625'8" Dull coal with vitrinite bands up to 1/2"
630											625'8" - 632'10" Carbonaceous mudstone
635											
640							white				
645											
650											
655					f/m	1" cl					
660											632'10" - 632'10" Fine to medium grained feldspathic sandstone. Some vitrinite lenses up to 1/4" from 279'6" - 281'3"
665							grey				
670											
675											
680											
685											
690											692'10" - 693'0" Carbonaceous mudstone
695											693'0" - 697'4" Siltstone with some mudstone phases.
700											

5 cm

DRILLING RECORD

687023

091

AREA <i>COAL RESOURCES INVESTIGATION</i>		CO-ORDINATES: E: 589 Kyd 519 ft N: 871 Kyd. 900 ft	HOLE No. C2
LOCATION: <i>FINGAL</i>		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: <i>July '65</i> (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 8 OF 9 SHEETS
METHOD: <i>QDE1000</i> DIAMETER: <i>NMLC</i>		1700	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL: 90° DIRECTION:	
		VERT./HOR./INC.	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				2	4	8	100						
700'													
705'													697'4" - 711'4" Medium grained feldspathic Sandstone
710'													
715'													711'4" - 722'4" Mudstone with some siltstone
720'													
725'													722'4" - 725'10" Siltstone
730'													725'10" - 733'4" Mudstone with some siltstone phases. Partly sheared near 730'
735'													
740'													733'4" - 744'8" Coarse grained siltstone, banded with very thin carbonaceous bands from 740' - 744'.
745'													
750'													
755'													744'8" - 769'0" Mainly mudstone with thin beds of siltstone and coarse sandstone. Carbonaceous from 764'0".
760'													
765'													
770'													
775'													769'0" - 805'1" Medium to coarse grained white, banded, sandy quartzite. Slightly feldspathic with many very thin, closely spaced carbonaceous bands. Some broken and partly weathered patches.
780'													
785'													
790'													
795'													1" quartz vein
800'													

5 cm

DRILLING RECORD

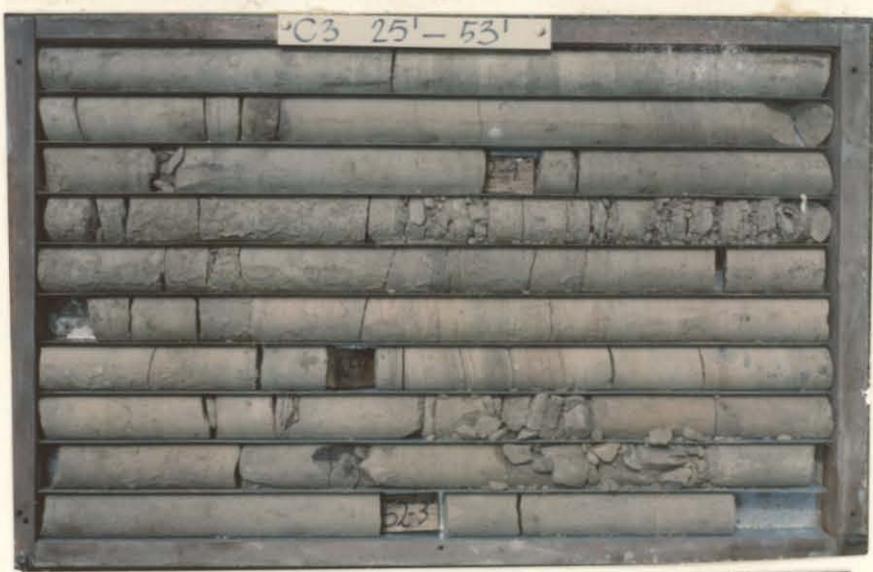
687024

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 589 Kys 519 ft N: 871 Kys 900 ft.	HOLE No. C2
LOCATION: FINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: July, '65 (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 9 OF 9 SHEETS
METHOD: DD E1000 DIAMETER: NMLC		1700	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT./HOR./INC.	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
800'							White			
805'							Grey			805'1" - 806'8" Pebble conglomerate containing rounded quartz pebbles and many clay pellet lenses. The Triassic - Permian boundary lies at 805'1" where the mudstone - siltstone - feldspathic sandstone changes to a pebbly greywacke lithology.
810'										
815'										806'8" - 821'0" Grey, sub-greywacke with a few very small white pebbles. From 815'9" - 818'3" the rock is brecciated and weathered and probably represents a fault zone. The weathered rock consists of angular rock fragments in a black clayey matrix.
820'										
825'										
830'										
835'										Hole completed at 821'0"
40'										Logged T. Munro July 1965
45'										
50'										
55'										
60'										
65'										
70'										
75'										
80'										
85'										
90'										
95'										
100'										

5 cm

023

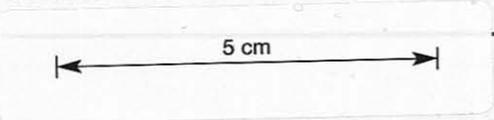


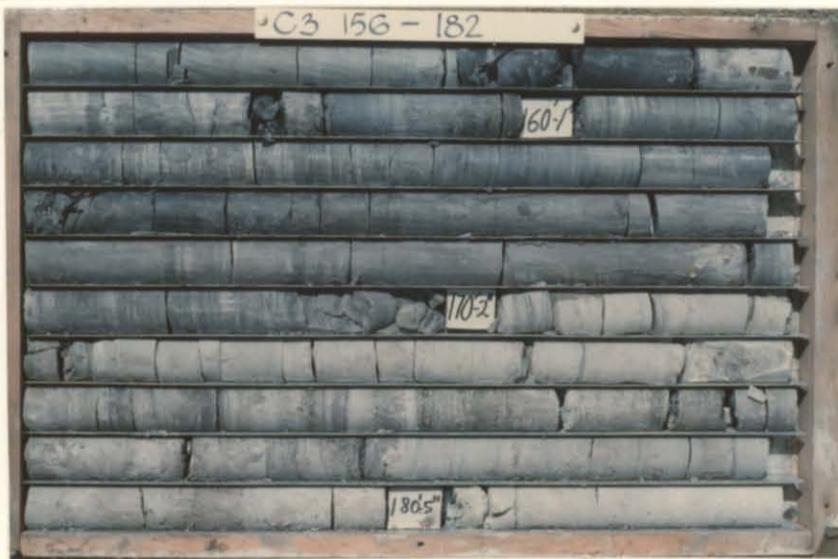
DRILLING RECORD

687026

AREA: COAL RESOURCES INVESTIGATION	CO-ORDINATES:	E: 587.1065	N: 871.0504	HOLE No.
LOCATION: FINGAL	ON LINE:	BEARING:	AT CH:	CB
GEOLOGICAL PLAN: A14144 SURVEY PLAN:	AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: 14-7-66 to 11-8-66 (b) WATER TABLE:	SURFACE	COLLAR	WATER TABLE	SHEET 1 OF 6 SHEETS
METHOD: DD DIAMETER:		1404		
SITE REMARKS:	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
	VERT./HOR. INCL.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0'			N/A				Drain			0' - 8' 6" scree
5'			NMLL		A					8' 6" - 18' 6" weathered mudstone with sandstone bands
10'					A					18' 6" - 58' weathered sandstone
15'										
20'							Drain yellow			
25'										
30'										
35'										
40'										
45'										
50'							Drain brown to grey			
55'										
60'							grey			58' - 73' fresh medium feldspathic sandstone with black streaks clay pellet conglomerate at 72'
65'										
70'										73' - 94' grey banded mudstone clear transition to coal at 94'
75'										
80'							grey and black			
85'										94' - 97' 10" Coal = Valley Mine Seam
90'										97' 10" - 100' 10" mudstone with coaly bands
95'							grey			
100'										



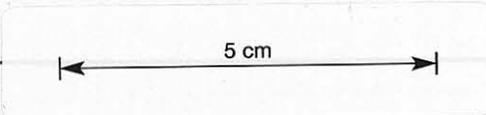


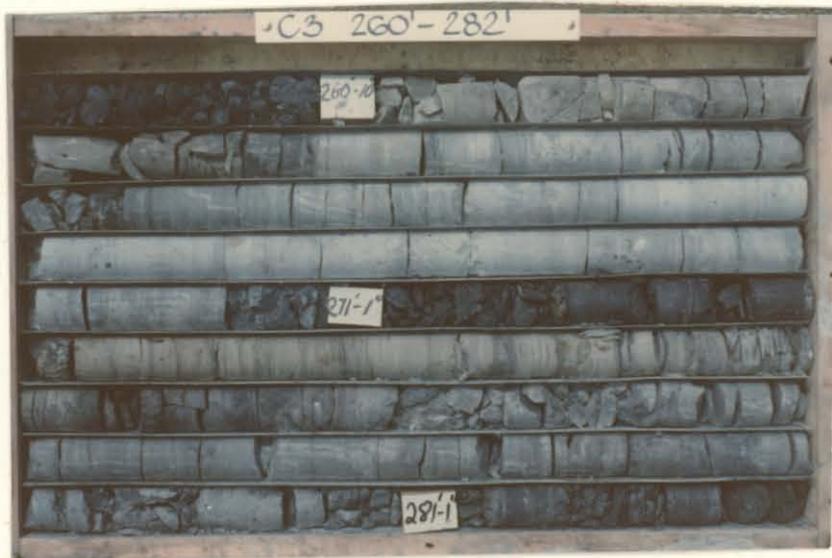
DRILLING RECORD

687028

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 587.1065	N: 871.0504	HOLE No.
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH.	C3
GEOLOGICAL PLAN: A11144 SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: 14-7-66 to 11-8-66 (b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE	SHEET 2 OF 6 SHEETS
METHOD: DD DIAMETER:		1494			
SITE REMARKS:		INCL. VERT/HOR/ANG.	ANGLE FROM HORIZONTAL	DIRECTION	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				%						
100'			W4LC				grey and black			100' 10" - 103' coal
105'										103' - 106' weathered mudstone (seat earth)
110'										106' - 113' 6" grey mudstone
115'										113' 6" - 115' 10" coal
120'										115' 10" - 121' mudstone 2" coal at 117' and 6" coal at 120'
125'							grey			121' - 122' fine sandstone
130'										122' - 129' banded mudstone with bands of sandstone increasing downwards
135'										129' - 151' medium feldspathic sandstone
140'										151' - 170' banded mudstone, darker downwards, thin coal 6" at 157', grain increases downwards in bands to medium feldspathic sandstone at 170'.
145'										
150'							black			
155'										
160'							grey			
165'										
170'							lost return			crystals of calcite at 170' in near vertical joint.
175'										170' - 215' 3" medium feldspathic sandstone
180'										
185'										
190'										
195'										
200'										





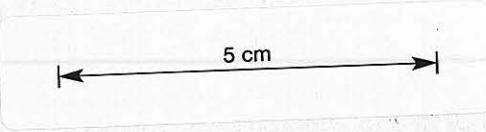
DRILLING RECORD

687030

028

AREA: COAL RESOURCES INVESTIGATION		POSITION	CO-ORDINATES: E: 587.1065 N: 871.0504	HOLE No. CB
LOCATION: FINGAL			ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: A1114 SURVEY PLAN:			AT STN: BEARING: DIST:	
DATES (a) DRILLED: 4-7-66 to 11-8-66 (b) WATER TABLE:		LEVEL	SURFACE COLLAR WATER TABLE	SHEET 3 OF 6 SHEETS
METHOD: DIAMETER: 4.94			HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
SITE REMARKS:		INCL.	VERT./HOR. INC.	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	60	80						
200'			NALC										
205'													
210'													
215'													
220'													215'3" - 218'3" coal 1" coal to 215'4" 2" band to 215'6" 1" coal to 215'7" 1/2" band to 215'7 1/2"
225'													218'3" - 229' grey mudstone
230'													229' - 237' dull coal, broken core.
235'													237' - 252' banded siltstone - mudstone with coarser sandstone beds
240'													
245'													
250'													252' - 257'7" grey mudstone (fossils)
255'													257'7" - 260'10" broken coal
260'													260'10" - 270'10" banded sandstone - siltstone and mudstone
265'													270'10" - 272'10" coal
270'													272'10" - 275' banded weathered sandstone
275'													275' - 281' mudstone
280'													281' - 283'3" coal
285'													283'3" - 299'6" grey banded mudstone
290'													299'6" - 302' coal.
295'													
300'													



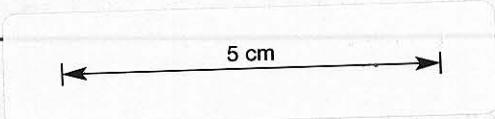


DRILLING RECORD

687032

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 587.1065	N: 871.0504	HOLE No.
LOCATION: PINGAL		ON LINE:	BEARING:	AT CH:	CS
GEOLOGICAL PLAN: A444 SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: 12-7-66 to 11-8-66 (b) WATER TABLE:		LEVEL:	SURFACE	COLLAR	WATER TABLE
METHOD: DD DIAMETER:			1.54		
SITE REMARKS:		INCL.	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
			VERT. LOGGING		
					SHEET 4 OF 6 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
300'			NHLC				NIL			
305'										302' - 321' banded siltstone, mudstone sandstone (coarsest near 310)
310'										321' - 322' coal grading down into coaly mudstones
315'										322' - 327' black mudstones.
320'										
325'										
330'										327' - 334' grey mudstone
335'										334' - 387' banded fossiliferous feldspathic sandstone to 340', then fossiliferous but fewer bands to cleaner
340'										380' - 381' coaly partings, bands, and finer sandstone banding.
345'										
350'										
355'										
360'										
365'										
370'										
375'										
380'										387' - 406' banded fine sandstone and siltstone
385'										
390'										
395'										
400'										





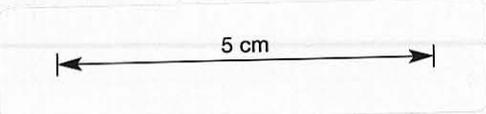
DRILLING RECORD

687034

032

AREA: COAL RESOURCES INVESTIGATION		POSITION	CO-ORDINATES:	E: 587.1065	N: 871.0504	HOLE No. C3
LOCATION: FINGAL			ON LINE:	BEARING:	AT CH:	
GEOLOGICAL PLAN: A12144 SURVEY PLAN:			AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: 11-7-66 to 11-8-66 (b) WATER TABLE:		LEVEL:	SURFACE	COLLAR	WATER TABLE	SHEET 5 OF 6 SHEETS
METHOD: DD DIAMETER:				1494		
SITE REMARKS:		INCL.	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
			VERT./HOR./INC.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
400'			Nil				Nil			
405'					m					406' - 429' medium feldspathic sandstone clay pellets at 411'
410'					m					
415'					m					
420'					m					
425'					m					429' - 437' fine and medium banded sandstone
430'					f					437' - 439' medium sandstone
435'					m					439' - 448' 10" medium sandstone banding towards end
440'					m					448' 10" - 458' banded sandstone, coaly pellets at 450' for 1/2" and at 452' for 2 1/4"
445'					m					458' - 466' banded mudstone
450'					m					466' - 470' banded mudstone, fine sandstone and siltstone
455'					m					470' - 475' banded whitish sandstone, thin black bands and coal streaks
460'					m					
465'					m					
470'					m					475' - 494' fine banded sandstone, fossiliferous, siltstone bands
475'					m					494' - 522' medium grey sandstone quartzose becomes coarser downwards, black coaly partings throughout.
480'					f					
485'					m					
490'					f					
495'					m					
500'					m					





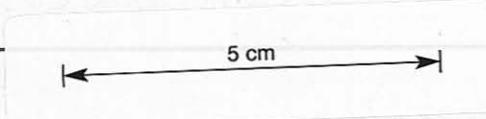
DRILLING RECORD

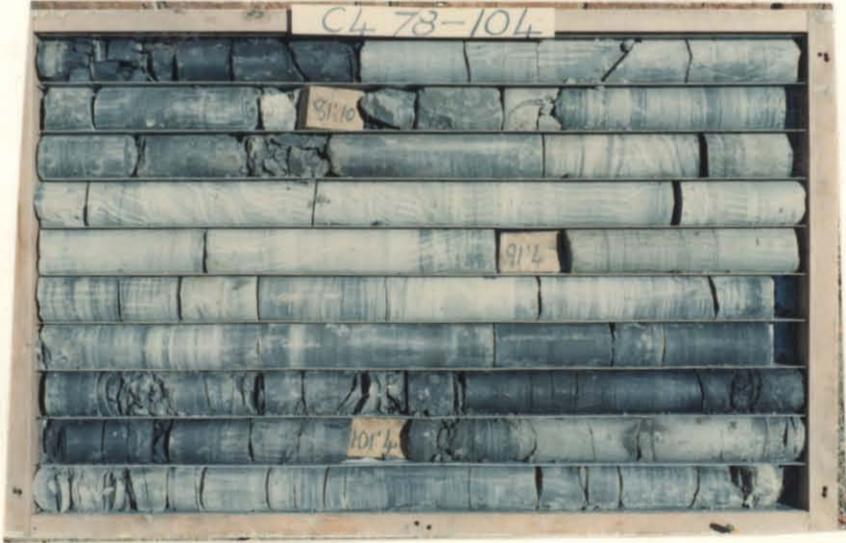
687136

034

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 587.1065 N: 871.0504		HOLE No. C3
LOCATION: FINCAL		ON LINE:	BEARING:	AT CH:
GEOLOGICAL PLAN: A14.144 SURVEY PLAN:		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: 4-7-66 (b) WATER TABLE: to 10-10-66		SURFACE	COLLAR	WATER TABLE
METHOD: DD DIAMETER:		1494		FILE No.
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		VERT./HOR./ING		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				%						
500'			NMLC				NML			
505'										
510'										
515'										522'- Permian, pebbles to 1" plant
520'										533'9" fossils, mudstone dark grey to black.
525'										Hole completed 533'9"
530'										Logged by G.E. Hale.
535'										
40'										
45'										
50'										
55'										
60'										
65'										
70'										
75'										
80'										
85'										
90'										
95'										
00'										





DRILLING RECORD

687038

136

AREA: *COAL RESOURCES INVESTIGATION.*

LOCATION: *FINQAL.*

GEOLOGICAL PLAN: SURVEY PLAN:

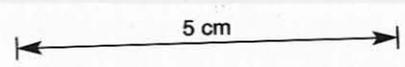
DATES (a) DRILLED: (b) WATER TABLE:

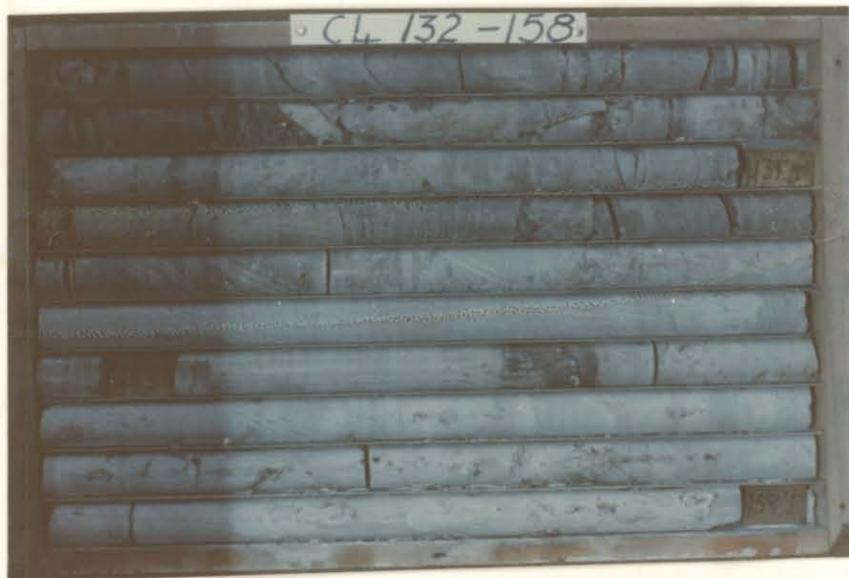
METHOD: DIAMETER:

SITE REMARKS:

POSITION	CO-ORDINATES: E: N:	LEVEL	SURFACE	COLLAR	WATER TABLE	SHEET 1 OF 4 SHEETS
	ON LINE: BEARING: AT CH:		1328			
	AT STN: BEARING: DIST:					
INCL.	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION			
	VERT./HOR./INC.					

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0										
5					△					
10										
15					△					
20										
25					△					
30										
35					△					
40										
45					△					
50										
55					M.					
55'6"										55'6" - 57'6" Coal.
57'6"										57'6" - 67'9" Banded sandstone + mudstone.
60										
65										
67'9"										67'9" - 68' Coal.
68'										68' - 77'7" Mudstone with thin coal bands.
70										
75										
77'7"										77'7" - 80'1" Coal.
80'1"										80'1" - 85' Mudstone with 3" coal
85'										
85'										85' - 94' Medium sandstone.
90'										
94'										94' - 99' Mudstone.
99'										
99'										99' - 101'7" Coal with mudstone bands.
100										





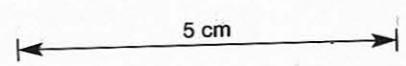
038

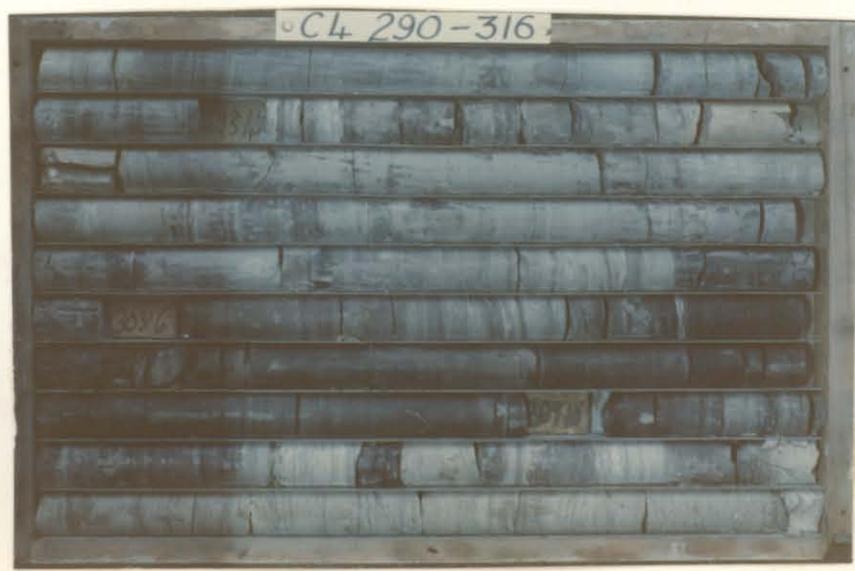
DRILLING RECORD

687040

AREA: <i>COAL RESOURCES INVESTIGATION.</i>		CO-ORDINATES:	E:	N:	HOLE No.
LOCATION: <i>FINGAL.</i>		ON LINE:	BEARING:	AT CH:	<i>C4</i>
GEOLOGICAL PLAN:	SURVEY PLAN:	AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED:	(b) WATER TABLE:	SURFACE	COLLAR	WATER TABLE	SHEET 2 OF 4 SHEETS
METHOD:	DIAMETER:	<i>1328</i>			
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT. <i>1328</i>			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
100'					<i>C</i>					<i>101'7" - 102'7" Coarse sandstone.</i>
105'										<i>102'7" - 110' Grey mudstone.</i>
110'										<i>110' - 119' Medium grey sandstone.</i>
115'					<i>M</i>					<i>119' - 121' Dark grey mudstone.</i>
120'										<i>121' - 131'6" Banded sandstone & mudstone.</i>
125'										
130'										<i>131'6" - 142' Dark grey mudstone.</i>
135'										
140'										<i>142' - 190' Medium grey sandstone (feldspathic.)</i>
145'					<i>M</i>					
150'										
155'										
160'					<i>M</i>					
165'										
170'										<i>NIL</i>
175'					<i>M</i>					
180'										
185'										
190'										<i>190' - 198'8" Grey mudstone.</i>
195'										
200'										<i>198'8" - 253' Grey medium feldspathic sandstone.</i>





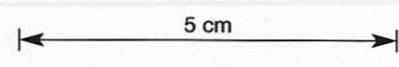
DRILLING RECORD

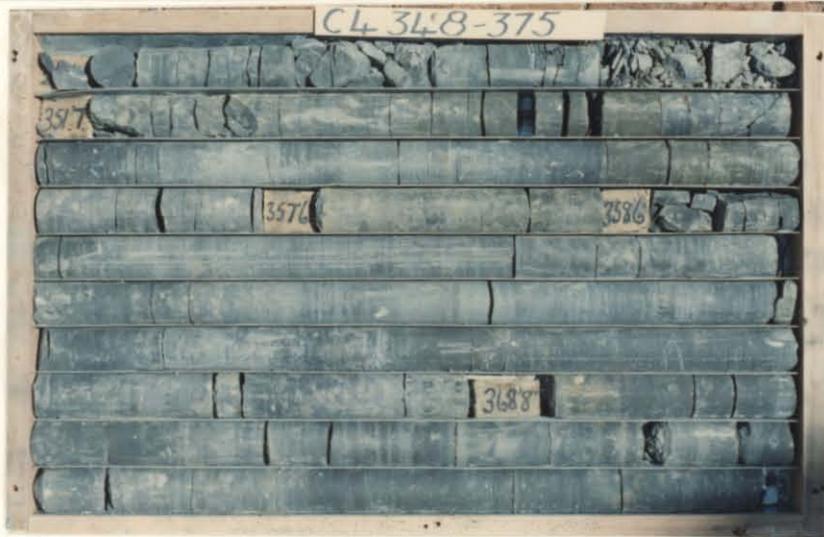
687042

040

AREA: <i>COAL RESOURCES INVESTIGATION</i>		CO-ORDINATES:	E:	N:	HOLE No. <i>CA</i>		
LOCATION: <i>FINGAL</i>		ON LINE:	BEARING:	AT CH:			
GEOLOGICAL PLAN:		SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED:		(b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE	SHEET <i>3</i> OF <i>4</i> SHEETS
METHOD:		DIAMETER:		<i>1328</i>			
SITE REMARKS:		INCL.	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION		
			VERT. / HOLE / INCL.				

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
200'			NMUC				NIL			
205'					M					
210'										
215'										
220'										198'8"-253' Medium grey feldspathic sandstone - clay pellets. at 219'-221' + 244'-245'
225'										
230'					M					
235'							GREY			
240'										
245'										
250'										
255'										3" Mudstone + sandstone more banded below + becomes finer.
260'										253'-266'6" Medium sandstone.
265'										266'6"-282' Grey medium sandstone, banded.
270'										
275'										
280'										282'-290' Banded sandstone with 12" black mudstone at 284'
285'										Black
290'										
295'										290'-305' Finer sandstone with shale bands.
300'										





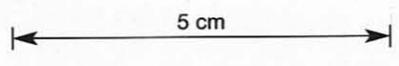
042

DRILLING RECORD

687044

AREA: <i>COAL RESOURCES INVESTIGATION.</i>		CO-ORDINATES:	E:	N:	HOLE No.	
LOCATION: <i>FINGAL.</i>		ON LINE:	BEARING:	AT CH:	<i>C4</i>	
GEOLOGICAL PLAN:	SURVEY PLAN:	AT STN:	BEARING:	DIST:	FILE No.	
DATES (a) DRILLED:		(b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE
METHOD:		DIAMETER:		<i>1328</i>		
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	SHEET	
		VERT. <i>1328</i>			<i>4</i>	
					<i>OF</i>	
					<i>4</i>	
					SHEETS	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	80	100						
300'			NWLC						GREY				
305'							<i>XXXX</i>		No RETURN				<i>305'-310' Carbonaceous mudstone + poor coal.</i>
310'							<i>XXXX</i>						<i>311'-342' White quartzose sandstone.</i>
315'							<i>XXXX</i>						<i>311'5" Clay pellets.</i>
320'							<i>XXXX</i>						<i>311'9" 1" of coal.</i>
325'													
330'													
335'													
340'													<i>Permian at 342'. Dark grey mudstone with pebbles to 1/4" diameter.</i>
345'													
350'													
355'													
360'													
365'													
370'													
375'													
380'													
385'							<i>XXXX</i>						<i>Worm cast sandstone with 6" quartzite at bottom.</i>
390'													
395'													<i>Hole completed at 397'3".</i>
400'													<i>Logged by G.E.HALE.</i>





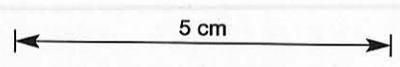
DRILLING RECORD

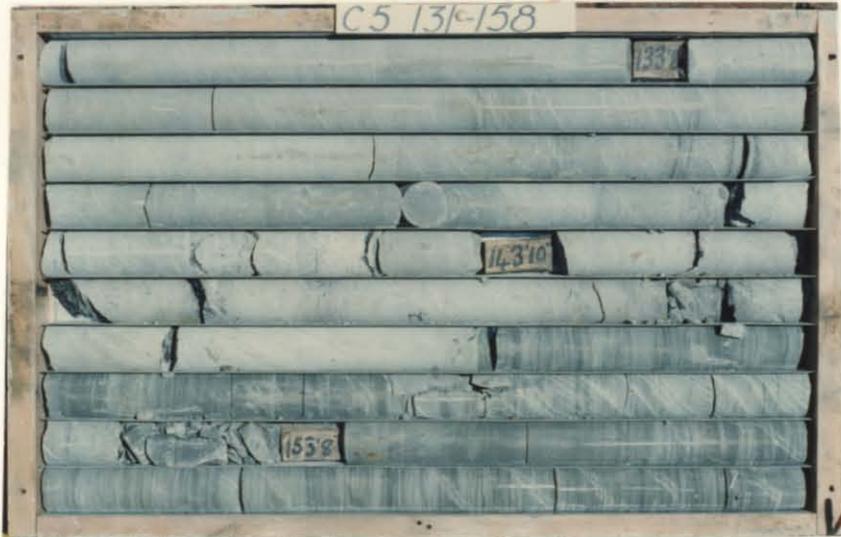
687046

044

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 586.1674 N: 871.1233	HOLE No. 05
LOCATION: FINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: A14144 SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 1 OF 4 SHEETS
METHOD: DD 11-8-66 to 24-8-66 DIAMETER:		1314	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT. / MIN. / SEC.	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0'			N ^o 4		Δ					0' - 40' scree - dolerite boulders
5'					A					
10'					A					
15'					Δ					
20'					Δ					
25'			Nx Nwlc		Δ					
30'					Δ					
35'					Δ					
40'					Δ					
40'					GREY					40' - 43' weathered grey mudstones
45'										43' - 51' grey mudstone with carbonaceous bands; 43' 6" - 3"
										45' - 2"
										46' - 2"
50'										51' - 52' grey mudstone
55'					f					52' - 61' 9" fine medium banded feldspathic sandstone
60'					f					61' 9" - 66' banded mudstone (fossils)
65'										66' - 67' 6" coal
70'										67' 6" - 83' 3" banded sandstone (calcareous) near top, mudstone increases downwards, current bedded
75'										
80'										83' 3" - 88' 6" fine banded sandstone
85'										88' 6" - 94' 2" dull coal or black carbonaceous mudstone
90'										94' 2" - 100 black mudstone grading to banded sandstone
95'										
100'										





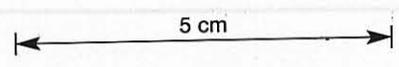
DRILLING RECORD

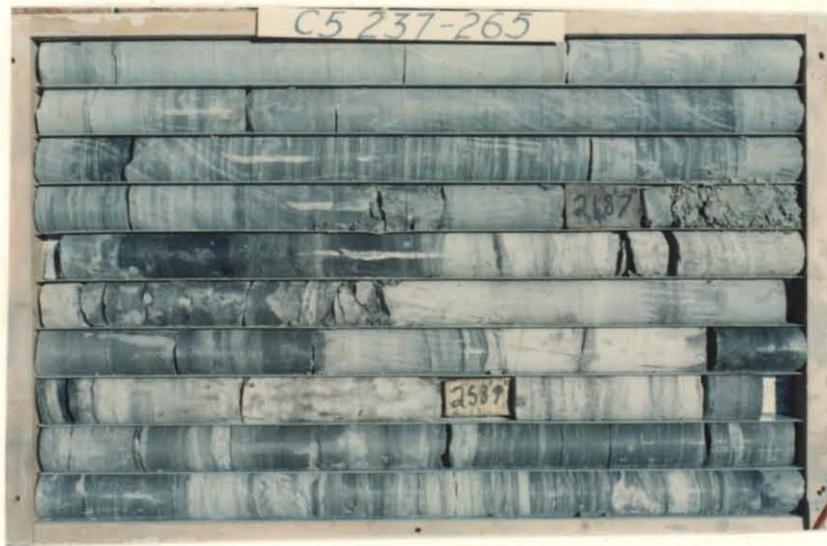
687048

043

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 586.1674 N: 871.1233	HOLE No. C5
LOCATION: PINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: A14144 SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: 11-8-66 to 24-8-66 (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 2 OF 4 SHEETS
METHOD: DP DIAMETER:		1314	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT. / ... / ...	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
100			NMCL							100' - 102 1/8" dark grey mudstone
105										102 1/8" - 105' banded mudstone and sandstone
110										105' - 106' dark grey mudstone
115										106' - 112 1/8" lighter banded mudstone and siltstone.
120										112 1/8" - 149' light grey medium feldspathic sandstone.
125										
130										
135										
140										
145										
150										149' - 161' darker bands of siltstone in sandstone
155										
160										
165										161' - 223 1/3" fine sandstone increasing in coarseness downwards. Clay pellet conglomerates at 190' - 194' 211' - 212' 214' - 220 (very coarse)
170										
175										
180										
185										
190										
195										
200										





DRILLING RECORD

687050

8

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 506.1074 N: 871.1233	HOLE No.
LOCATION: FINAL		ON LINE: BEARING: AT CH:	C5
GEOLOGICAL PLAN: A4144 SURVEY PLAN:		AT STN: BEARING: DIST:	FILE No.
DATES (a) DRILLED: 11-8-66 to 24-8-66 (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 3 OF 4 SHEETS
METHOD: DD DIAMETER:		1314	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT. 1000 / 1000	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %			GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	80						
200'			NMLC									
205'												
210'												
215'												
220'												223 - 223 1/3" coal pellets and a few inches of mudstone penetrates into sandstone at 224'
225'												223 1/3" - 227' fine sandstone
230'												227' - 232' banded mudstone
235'												232' - 233' fine sandstone
240'												233' - 237' dark grey and banded carbonaceous mudstone
245'												237' - 240' fine sandstone
250'												240' - 240 1/6" coaly band
255'												240 1/6" - 267' white sandstone with black bands.
260'												
265'												
270'												267' - 268 1/3" black carbonaceous mudstone
275'												268 1/3" - 317' light coloured quartzose sandstone - bands common below 281' 3" black band at 287'
280'												
285'												
290'												
295'												
300'												

5 cm

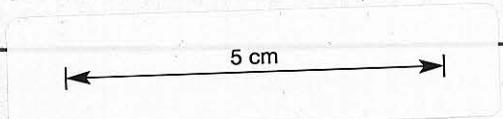


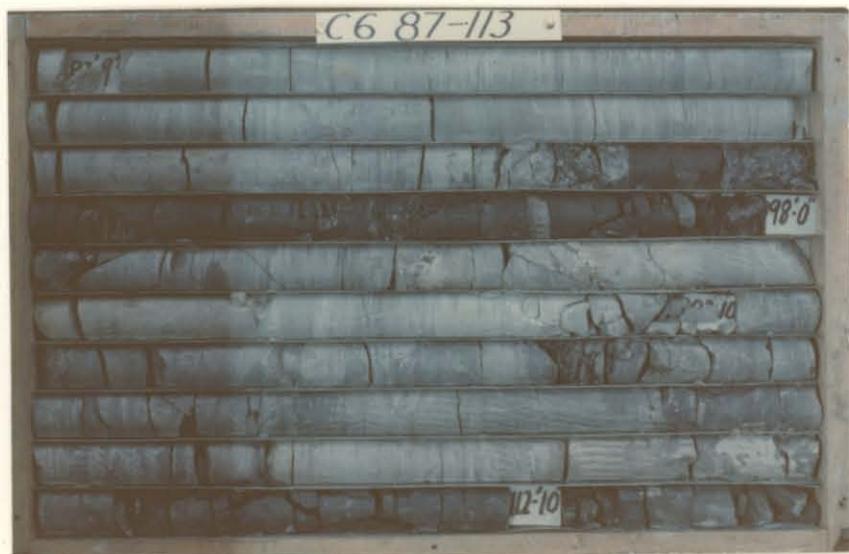
DRILLING RECORD

687052

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 586.1674 N: 871.1233		HOLE No.
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH:
GEOLOGICAL PLAN: A1144 SURVEY PLAN:		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: 11-2-66 (b) WATER TABLE: 24-8-66		LEVEL: SURFACE COLLAR WATER TABLE		FILE No.
METHOD: DD DIAMETER:		1314		SHEET 4 OF 4 SHEETS
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	
		VERT. / HOR. / DIA.		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %			GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				00	00	00						
300'			NMLC									
305'												
310'												
315'												
320'									GREY			317' - 329' 11" Permian - dark grey mudstone with pebbles to 1/4" diameter, some bonding.
325'												
330'												Hole completed 329' 11"
335'												logged by G.E. Hale.
340'												
345'												
350'												
55'												
60'												
65'												
70'												
75'												
80'												
85'												
90'												
95'												
98'												





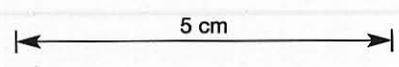
052

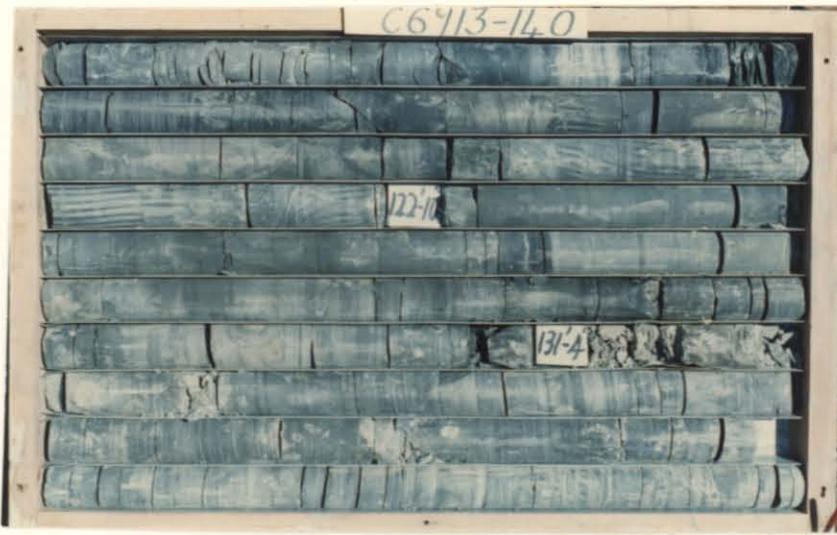
DRILLING RECORD

687054

AREA: COAL RESOURCES INVESTIGATION.		CO-ORDINATES: E: 587.2526 N: 871.1548		HOLE No.
LOCATION: FINAL		ON LINE:	BEARING:	AT CH: C6
GEOLOGICAL PLAN:	SURVEY PLAN:	AT STN:	BEARING:	DIST:
DATES (a) DRILLED:		(b) WATER TABLE:		FILE No.
METHOD:		DIAMETER: 1294		SHEET 1 OF 4 SHEETS
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	
		VERT. / HOR. / DIA.		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %		GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40						
0			N ^o 4								0'-34' Weathered mudstone
5											
10			NX								28'-29' Weathered coaly band.
15											
20											
25											
30											
35											34'-41'6" Yellow weathered mudstone.
40											36'2"-39'8" Broken carbonaceous bands.
45											41'6"-54'6" Dark grey mudstone with some fine sandstone bands.
50											
55											54'6"-57'6" Coal broken for 1 st foot.
60											57'6"-63' Medium sandstone with thin carbonaceous bands.
65											63'-67' Grey mudstone with sandstone bands.
70											67'-68'8" Coal with 1/2" bands.
75											68'8"-71'10" Grey soft siltstone with carbonaceous bands.
80											71'10"-72' Coaly band.
85											72'-75' Very broken mudstone with coaly bands.
90											75'-80'8" Dark grey mudstone.
95											80'8"-82'5" Coal.
100											82'5"-86'6" Dark grey mudstone grading to sandstone.
											86'6"-90' Fine banded sandstone grading to mudstone.
											90'-94'5" Mudstone with siltstone bands.
											94'5"-98' Coal - 1" band at 97'.
											98'-100' Banded mudstone faulted at 60° against sandstone.





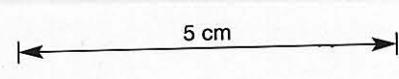
DRILLING RECORD

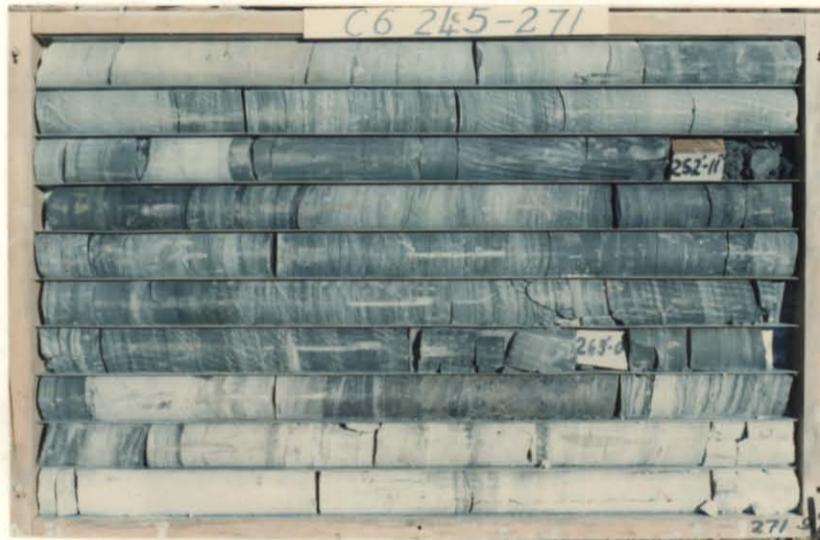
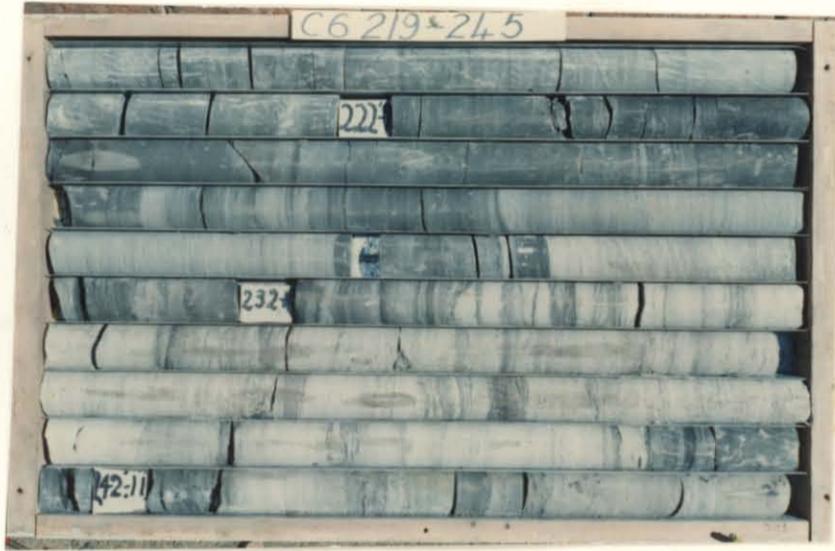
687056

054

AREA: COAL RESOURCES INVESTIGATION.		CO-ORDINATES:	E: 587.2526	N: 871.1548	HOLE No.
LOCATION: FINGAL.		ON LINE:	BEARING:	AT CH:	C6
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: (b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE	SHEET 2 OF 4 SHEETS
METHOD: DIAMETER:		1294			
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT. / HOV. / INC.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	80	100						
100'			NMLL										100'-102'10" Medium feldspathic sandstone.
105'													102'10"-110'6" Mudstone grading to coal.
110'							XXXX						110'6"-113' Coal grades to dark grey mudstone.
115'													113'-146' Dark grey mudstone - breaks easily.
120'													125'-130' More silty and lighter colour.
125'													146'-190'3" Dark grey feldspathic sandstone.
130'													Clay pellet conglomerate at 147'-151' and at 188'.
135'													
140'													
145'													
150'													
155'													
160'													
165'													
170'													
175'													
180'													
85'													
90'													190'3"-192'4" Banded sandstone and mudstone.
95'													192'-203' Bands of sandstone increase downwards.
96'													





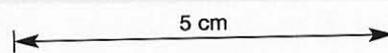
DRILLING RECORD

687058

056

AREA: <i>COAL RESOURCES INVESTIGATION.</i>		CO-ORDINATES:	E: <i>587.2526</i>	N: <i>871.1548.</i>	HOLE No.
LOCATION: <i>FINCAL</i>		ON LINE:	BEARING:	AT CH:	<i>C6</i>
GEOLOGICAL PLAN: SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: (b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE	SHEET <i>3</i> OF <i>4</i> SHEETS
METHOD: DIAMETER:					
SITE REMARKS:		INCL.	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
			VERT. <i>1000/1000</i>		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				230	40	80	100						
200'			NMLC										203'-216'3" Medium uniform feldspathic sandstone.
205'							m						216'3"-221'4" Mudstone
210'							m						221'4"-221'9" Fine sandstone.
215'													221'9"-227'3" dark grey mudstone.
220'													227'3"-245' Banded sandstone with bands decreasing from 232'2".
225'													
230'													
235'													
240'													
245'							m						245'-247' Medium feldspathic sandstone grades to banded sandstone.
250'													247'-251'4" Banded sandstone + thin mudstone.
255'													251'4"-252' Dark grey mudstone
260'													252'-265'7" Mudstone with thin sandstone bands.
265'													265'7"-314'9" Medium quartzose sandstone with black coaly streaks, some pyrite.
270'													1" of coal at 314'8".
275'							m						
280'													
285'							m						
290'													
295'							m						
300'													





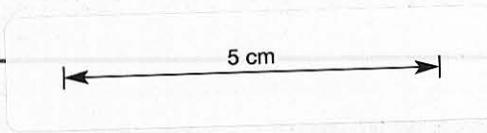
DRILLING RECORD

687060

058

AREA: COAL RESOURCES INVESTIGATION.		POSITION	CO-ORDINATES: E: 587,2526 N: 871,1548	HOLE No. C6
LOCATION: FINAL.			ON LINE: BEARING: AT CH:	
GEOLOGICAL PLAN: SURVEY PLAN:		LEVEL:	AT STN: BEARING: DIST:	FILE No.
DATES (a) DRILLED: (b) WATER TABLE:			SURFACE COLLAR WATER TABLE	
METHOD: DIAMETER:		INCL.	HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	SHEET 4 OF 4 SHEETS
SITE REMARKS:			VERT. / 100% / 100%	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	80	100						
30'			NMLC										
305'													
310'													314'9" - 316'9" Dark grey mudstone.
315'													316'9" - 330' Coarse quartzose sandstone.
320'													
325'													
330'													330' - 342' Permian greywacke sandstone
335'													4 1/2" Quartzose bands at 330'11" and 1" at 331'2".
40'													Plant fossils - very similar to Triassic.
45'													
50'													
55'													
60'													
65'													
70'													
75'													
80'													
85'													
90'													
95'													
100'													





DRILLING RECORD

687062

060

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 588.0474 N: 871.1683		HOLE No. C7
LOCATION: FINGAL		ON LINE:	BEARING:	
GEOLOGICAL PLAN: A1A1A4 SURVEY PLAN:		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: 30/8/66 to 10/9/66 (b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE
METHOD: DD DIAMETER:		1317		
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		VERT. / HOR. / etc.		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0										
5										0' - 13' weathered yellowish mudstone
10										13' - 16' weathered brown medium feldspathic sandstone.
15										16' - 30' 10" dark grey mudstone
20										30' 10" - 33' brown medium sandstone with black bands
25										33' - 34' black mudstone 3" brown sandstone
30										34' 3" - 45' grey and brown weathered mudstone with coaly intrusions at base.
35										45' - 46' broken coal
40										46' - 54' medium feldspathic sandstone
45										54' - 58' mudstone
50										58' - 60' coal
55										60' - 67' grey mudstone
60										67' - 68' feldspathic sandstone
65										68' - 72' 2" grey mudstone, 2" coal at bottom
70										72' 2" - 72' 8" grey mudstone
75										72' 8" - 78' coal 1 1/2" band at 73' and 1/2" clay at 77' 0"
80										78' - 97' banded sandstone and siltstone.
85										97' - 102' grey mudstone banded in part.
90										
95										
100										

5 cm



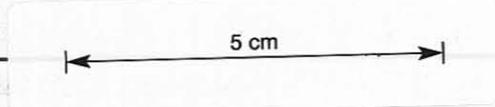
DRILLING RECORD

687064

062

AREA: COAL RESOURCES INVESTIGATION		POSITION	CO-ORDINATES: E: 588.0474 N: 871.1688	HOLE No. 07
LOCATION: FINGAL			ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: A14144 SURVEY PLAN:		LEVEL:	AT STN: BEARING: DIST:	
DATES (a) DRILLED: 30/8/66 to 10/9/66 (b) WATER TABLE:			SURFACE COLLAR WATER TABLE	
METHOD: DD DIAMETER:		INCL.	1317	
SITE REMARKS:			HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT./HOR./INC.		

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20 40 60 80 100						
100'										102' - 105' coal
105'							Grey to Black to Grey			105' - 107' banded black siltstone - claystone
110'										107' - 110' banded feldspathic sandstone - pellets at 110'
115'							to Black to Grey			110' - 116' medium feldspathic sandstone
120'										116' - 117' coal (broken)
125'										117' - 118' sandstone
130'										118' - 121' banded mudstone
135'							to Black to Grey			121' - 122' broken coal
140'										122' - 129' 6" dark grey mudstone
145'										129' 6" - 131' 6" poor coal
150'							to Black			131' 6" - 141' grey mudstone
155'							Grey			141' - 145' coal
160'										145' - 147' grey mudstone
165'										147' - 150' banded sandstone - mudstone
170'										150' - 173' banded mudstone
175'							Dark Grey			6" coal at 152'
180'										173' - 215' medium feldspathic sandstone
185'							Grey			
190'										
195'										
200'										





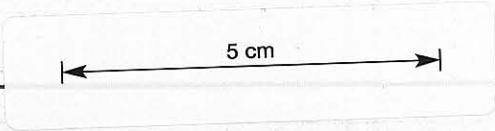
051

DRILLING RECORD

687066

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 588.0474	N: 871.1683	HOLE No. C7
LOCATION: FINAL			ON LINE:	BEARING:	
GEOLOGICAL PLAN: A1A144 SURVEY PLAN:		LEVEL:	AT STN:	BEARING:	FILE No.
DATES (a) DRILLED: 30/8/66 to 10/9/66 (b) WATER TABLE:			SURFACE	COLLAR	
METHOD: DD DIAMETER:		INCL.:	1317		SHEET 3 OF 6 SHEETS
SITE REMARKS:			HOLE DRILLED	ANGLE FROM HORIZONTAL	
		VERT./HOR./INC.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
200'										
205'					m					
210'										
215'										215'-217' carbonaceous material - calcareous and clay pellets.
220'					m					217'-232' medium feldspathic sandstone - clay pellets at 230'.
225'					m					232'-236' banded sandstone - mudstone becomes finer to siltstone between 236' and 237'
230'										237'-239' banded fine siltstone
235'										239'-240' banded mudstone becomes coarser between 240' - 245'
240'										245'-272' medium feldspathic sandstone
245'										
250'										
255'					m					
260'										
265'					m					
270'										
275'										272' - 276 banded mudstone grades to
280'										276' - 290' banded sandstone and siltstone
285'										mudstone band 283'-284'
290'										
295'										290' - 312' banded siltstone.
300'										



065

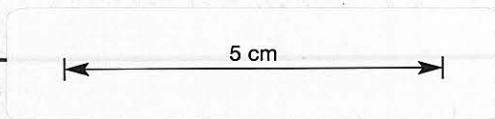


DRILLING RECORD

687068

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 580.0474	N: 871.1003	HOLE No. C7
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH:	
GEOLOGICAL PLAN: A1A144 SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: 20/8/66 to 10/9/66 (b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE	
METHOD: DD DIAMETER:		1317			SHEET 4 OF 4 SHEETS
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT./HOR./INC.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				200	400	600	800						
300'													
305'													
310'													312'6" - 314'8" calcareous medium feldspathic sandstone.
315'													314'8" - 319' black mudstone - slickensides at 310'
320'													319' - 329' quartzose sandstone with black bands and coaly streaks very coarse sandstone at 307'.
325'													
330'													
335'													
340'													
345'													
350'													
355'													
360'													
365'													369' coarse quartzose sandstone
370'													369' - 386'3" dark grey Permian mudstone - plant fossils pebbles to 1/2" diameter.
375'													
380'													Hole completed 386'3"
385'													logged by G.E. Hale.
390'													
395'													
400'													





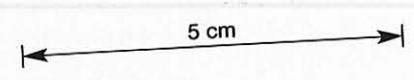
DRILLING RECORD

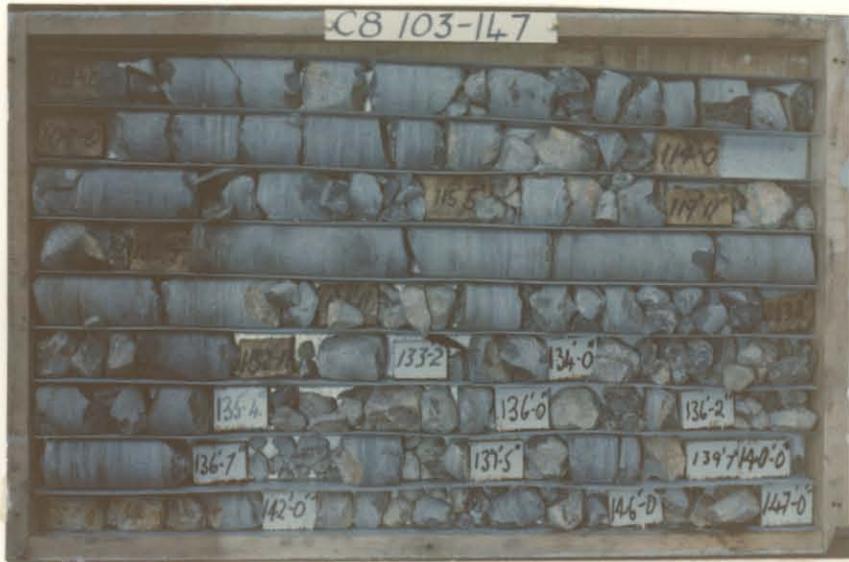
687070

068

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 586.0354	N: 871.2205	HOLE No.
LOCATION: PINCAL		ON LINE:	BEARING:	AT CH:	CB
GEOLOGICAL PLAN: A1444 SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: 31-5-68 (b) WATER TABLE: -10-11-68		SURFACE	COLLAR	WATER TABLE	
METHOD: DD DIAMETER:		1470			
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	SHEET 1 OF 6 SHEETS
		VERT./HOR./INC.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0'			Nx				BROWN			
5'					Δ					
10'					Δ					
15'					Δ					
20'					Δ		lost			0' - 27 3/4'
25'			Nx		Δ					Talus and scree - dolerite boulders, sand and clay.
30'					Δ					
35'					Δ					
40'					Δ					
45'					Δ					
50'					Δ					
55'					Δ					
60'					Δ					
65'					Δ					
70'					Δ					
75'					Δ					
80'					Δ		lost			
85'					Δ					
90'					Δ					
95'			Bx		Δ					
100'					Δ					





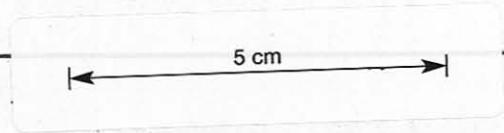
070

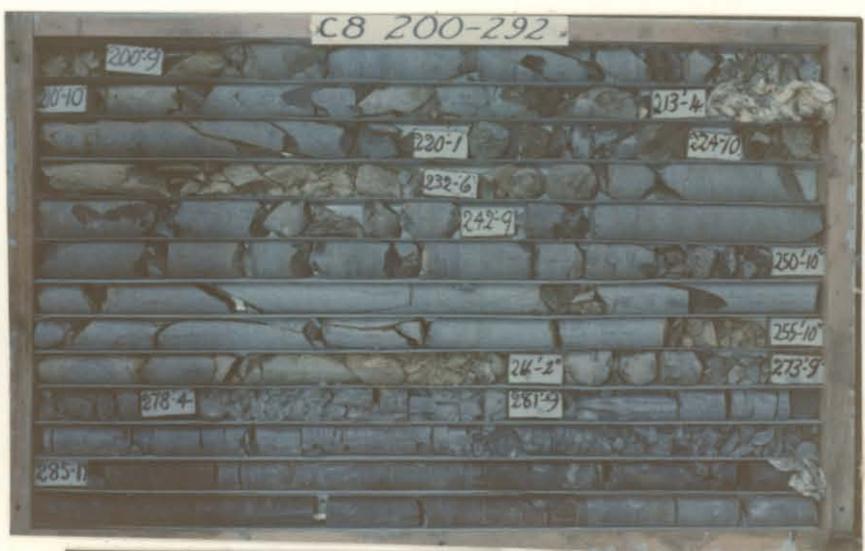
DRILLING RECORD

687072

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 586.0354 N: 871.2205	HOLE No. C8
LOCATION: FINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: A1114 SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: 31-8-66 to 18-11-66 (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 2 OF 6 SHEETS
METHOD: DD DIAMETER:		1476	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT. / HOR. INCL.	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
100'			EX		Δ		lost			
105'					Δ					
110'					Δ					
115'					Δ		lost			
120'					Δ					
125'					Δ		white			
130'					Δ		brn			
135'					Δ					
140'					Δ		brn			
145'					Δ					
150'					Δ					
155'					Δ		light grey			
160'					Δ					
165'					Δ					
170'					Δ					
175'					Δ					
180'					Δ					
185'					Δ					
190'					Δ		brn			
195'					Δ					
200'										





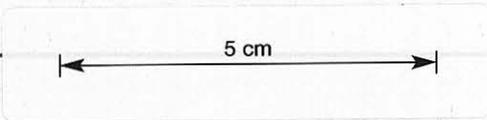
072

DRILLING RECORD

687074

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 586.0354 N: 871.2205		HOLE No. CB
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH:
GEOLOGICAL PLAN: A14144 SURVEY PLAN:		AT STN:	BEARING:	DIST:
DATES (a) DRILLED: 31-8-66 (b) WATER TABLE: to 18-11-66		SURFACE	COLLAR	WATER TABLE
METHOD: DD DIAMETER:		1476		
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
		VERT./HOR./ANG.		
				SHEET 3 OF 6 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
200'					Δ					
205'					Δ					
210'					Δ					
215'					Δ					
220'					Δ					
225'					Δ					
230'					Δ					
235'					Δ					
240'					Δ					
245'					Δ					
250'					Δ		light grey			
255'					Δ		brown			
260'					Δ					
265'					Δ					
270'					Δ					
275'										273'9" - 285' grey mudstone - no baking
280'										285' - 291' dark grey to black carbonaceous mudstone
285'							brown to grey			291' - 335' grey banded mudstone
290'							grey			
295'										
300'										





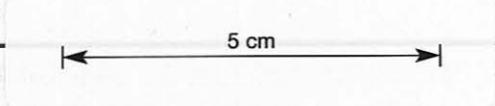
DRILLING RECORD

687076

074

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 586.0354 N: 871.2205	HOLE No. CB
LOCATION: FINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: AUJAA SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: 31-8-66 (b) WATER TABLE: to 18-11-66		SURFACE COLLAR WATER TABLE	SHEET 4 OF 6 SHEETS
METHOD: DD DIAMETER:		1476	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT./HOR./INC.	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				%						
300'										
305'										black colour from 304' to 320'
310'										
315'										
320'										
325'										
330'										
335'										335'-387' grey feldspathic sandstone
340'										
345'										
350'										
355'										
360'										
365'										
370'										
375'										
380'										
385'										
390'										387'-452' banded sandstones, mudstones.
395'										
400'										



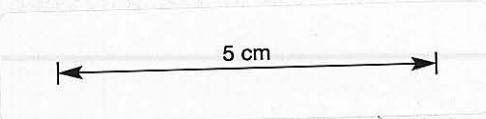


DRILLING RECORD

687078

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 586.0954	N: 871.2205	HOLE No. 08
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH:	FILE No.
GEOLOGICAL PLAN: A14144 SURVEY PLAN:		AT STN:	BEARING:	DIST:	
DATES (a) DRILLED: 31-8-06 to 18-11-06 (b) WATER TABLE:		SURFACE	COLLAR	WATER TABLE	SHEET 5 OF 6 SHEETS
METHOD: DD DIAMETER:		1470			
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT./HOR./ING.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
400							grey			
405										clay pellets at 407' for 18"
410										
415										
420										black band at 421'
425										
430										
435										
440										
445										452'-458' fine grey feldspathic sandstone with finer and darker bands towards bottom
450										458'-458'6" fine grey quartzose sandstone
455										458'6"-471' dark grey banded mudstone carbonaceous for bottom 2'
460										471'-491'9" medium white quartzose sandstone
465										
470										
475										
480										
485										
490										491'9"-494'6" coarse quartzose sandstone
495							grey			494'6"-511 medium white quartzose sandstone.
500										



077



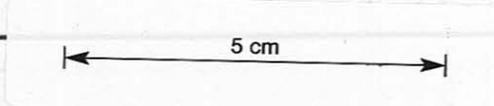
DRILLING RECORD

687080

078

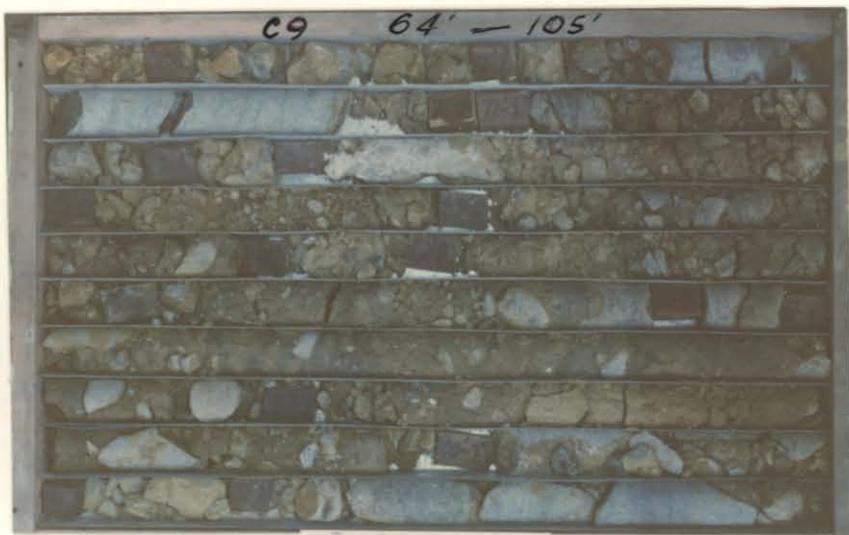
AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 586.0354 N: 871.2205	HOLE No. CB
LOCATION: FINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: A14144 SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES (a) DRILLED: 9-8-66 to 18-11-66 (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 6 OF 6 SHEETS
METHOD: DD DIAMETER:		1476	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT. / HOR. / ANG.	

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				%						
50'0"										
50'5"										51' - 52'10" dark grey Permian mudstones with pebbles to 1/4" diameter
51'0"										
51'5"										
52'0"										
52'5"										
53'0"										
53'5"										
54'0"										
54'5"										
55'0"										
55'5"										
56'0"										
56'5"										
57'0"										
57'5"										
58'0"										
58'5"										
59'0"										
59'5"										
60'0"										
60'5"										
61'0"										
61'5"										
62'0"										
62'5"										
63'0"										
63'5"										
64'0"										
64'5"										
65'0"										
65'5"										
66'0"										
66'5"										
67'0"										
67'5"										
68'0"										
68'5"										
69'0"										
69'5"										
70'0"										
70'5"										
71'0"										
71'5"										
72'0"										
72'5"										
73'0"										
73'5"										
74'0"										
74'5"										
75'0"										
75'5"										
76'0"										
76'5"										
77'0"										
77'5"										
78'0"										
78'5"										
79'0"										
79'5"										
80'0"										
80'5"										
81'0"										
81'5"										
82'0"										
82'5"										
83'0"										
83'5"										
84'0"										
84'5"										
85'0"										
85'5"										
86'0"										
86'5"										
87'0"										
87'5"										
88'0"										
88'5"										
89'0"										
89'5"										
90'0"										
90'5"										
91'0"										
91'5"										
92'0"										
92'5"										
93'0"										
93'5"										
94'0"										
94'5"										
95'0"										
95'5"										
96'0"										



079

687081



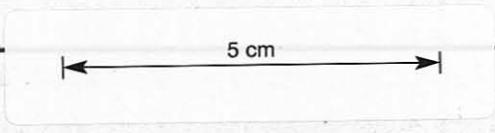
DRILLING RECORD

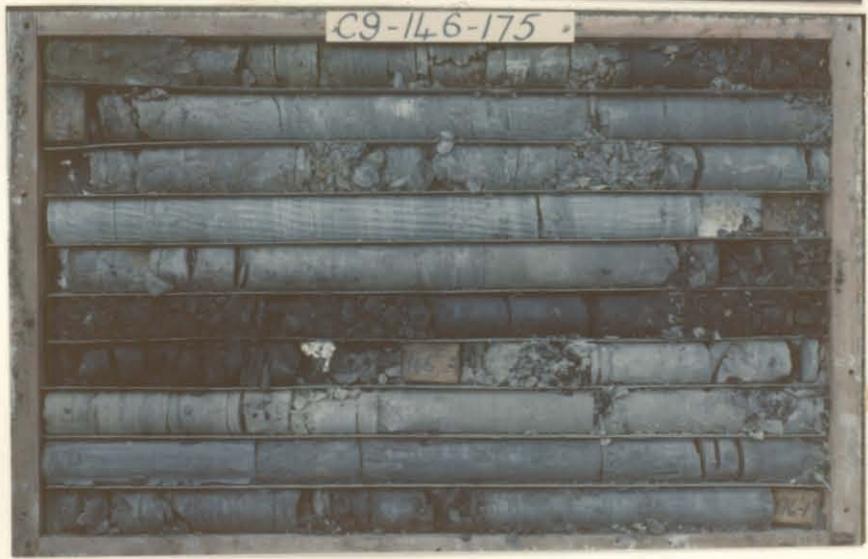
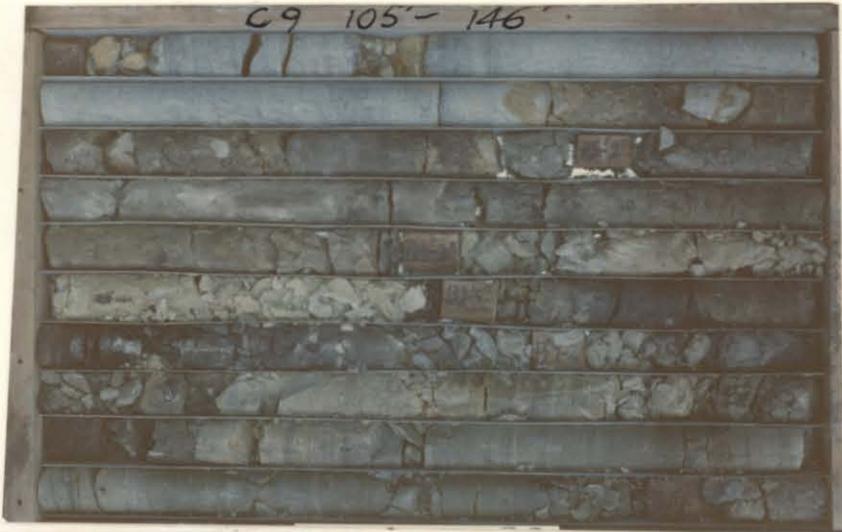
687082

080

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES: E: 588.1773 N: 871.2109	HOLE No. C9
LOCATION: FINGAL		ON LINE: BEARING: AT CH:	FILE No.
GEOLOGICAL PLAN: A1A144 SURVEY PLAN:		AT STN: BEARING: DIST:	
DATES: (a) DRILLED: 13-0-66 to 10-10-66 (b) WATER TABLE:		SURFACE COLLAR WATER TABLE	SHEET 1 OF 4 SHEETS
METHOD: DD DIAMETER:		1288	
SITE REMARKS:		HOLE DRILLED ANGLE FROM HORIZONTAL DIRECTION	
		VERT./HOR./INC.	

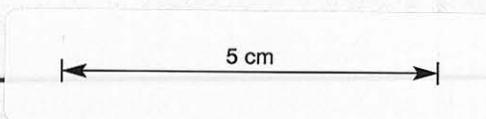
DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
0			N ⁴		Δ					
5					Δ					
10					Δ					
15			N _x		Δ					Screen and sand
20					Δ					
25					Δ					
30					Δ					
35					Δ					
40					Δ					
45					Δ					
50					Δ					
55					Δ					
60					Δ					
65					Δ					
70					Δ					
75					Δ					
80					Δ					
85					Δ					
90					Δ					
95					Δ					





AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 588 · 1773	N: 871 · 2199	HOLE No. C9
LOCATION: FINAL			ON LINE:	BEARING:	
GEOLOGICAL PLAN: 13-9-66 SURVEY PLAN: to 10-10-66		LEVEL:	AT STN:	BEARING:	FILE No.
DATES (a) DRILLED: A11111/ (b) WATER TABLE:			SURFACE	COLLAR	
METHOD: DD DIAMETER:		INCL.	1288		SHEET 2 OF 4 SHEETS
SITE REMARKS:			HOLE DRILLED	ANGLE FROM HORIZONTAL	
		VERT./HOR./INC.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %	GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
100'			NX		Δ		to brown			
105'					Δ		to grey			
110'					Δ					
115'					Δ		to brown			
120'					Δ					
125'					Δ		to brown			125' 2" scree and sand
130'							to black			132' - 139' weathered coal and mudstone
135'										139' - 148' banded mudstone
140'							to grey			148' - 149' broken coal
145'										149' - 159' grey mudstone
150'										159' - 166' coal 2' 11" loss
155'										
160'							to grey			
165'										166' - 169' banded sandstone and siltstone
170'										
175'										169' - 176' 1" grey mudstone 3" carbonaceous at 175' 1" grey sandstone at 176'
180'							to black			176' 1" - 179' 9" brown mudstone
185'										179' 9" - 187' 2" black carbonaceous mudstone and dull coal.
190'							grey			187' 2" - 191' 8" dark grey mudstone
195'										191' 8" - 247' 2" medium grey feldspathic sandstone
200'										



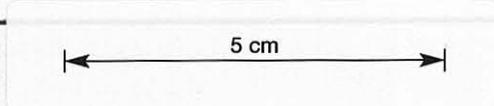


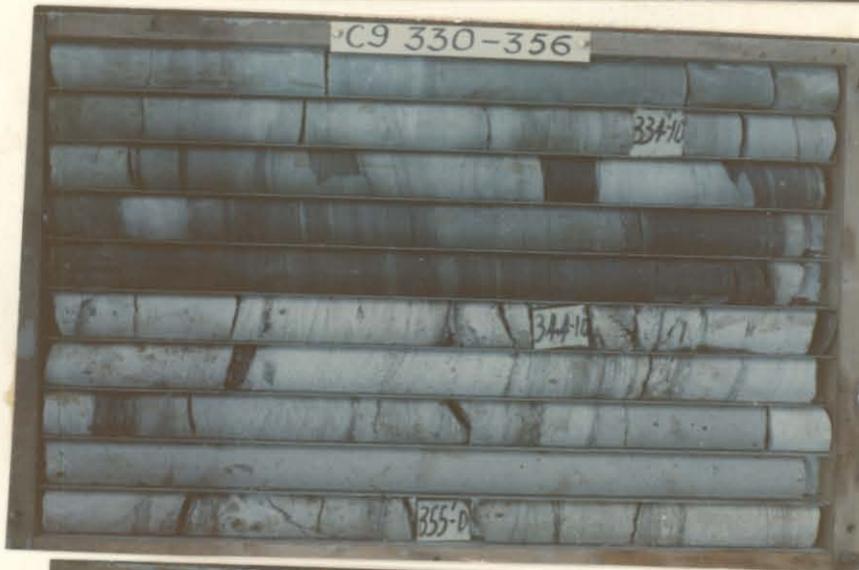
DRILLING RECORD

687086

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 588.1773	N: 871.2199	HOLE No.
LOCATION: FINGAL			ON LINE:	BEARING:	AT CH:
GEOLOGICAL PLAN: A14144 SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: 13-9-66 to 10-10-66 (b) WATER TABLE:		LEVEL:	SURFACE	COLLAR	WATER TABLE
METHOD: DD DIAMETER:			1288		
SITE REMARKS:		INCL.	HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION
			VERT./HOR./INC.		
					SHEET 3 OF 4 SHEETS

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY %				GRAPHIC LOG	JOINTS No. Per Foot.	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
				20	40	60	80						
200'													
205'													grey feldspathic sandstone
210'													clay pellets at 229'
215'													
220'													
225'													
230'													
235'													
240'													
245'							xxxxx						coal and mudstone fragments at 245' and 247 1/2"
250'													247 1/2" - 249' dark grey mudstone
255'													240' - 249' 6" sandstone
260'													240' - 252' banded sandstone and mudstone
265'													252' - 300' banded fine feldspathic sandstone and siltstone with some coarser bands.
270'													
275'													
280'													
285'													
290'													292' 2" carbonaceous band
295'													
300'													





DRILLING RECORD

687088

086

AREA: COAL RESOURCES INVESTIGATION		CO-ORDINATES:	E: 588.1773	N: 871.2109	HOLE No.
LOCATION: FINGAL		ON LINE:	BEARING:	AT CH:	CO
GEOLOGICAL PLAN: A1444 SURVEY PLAN:		AT STN:	BEARING:	DIST:	FILE No.
DATES (a) DRILLED: 15-9-66 (b) WATER TABLE: 10-10-66		SURFACE	COLLAR	WATER TABLE	SHEET 4 OF 4 SHEETS
METHOD: DD DIAMETER:		1288			
SITE REMARKS:		HOLE DRILLED	ANGLE FROM HORIZONTAL	DIRECTION	
		VERT./HOR./INS.			

DEPTH	CORE DRAWN	CORE LENGTH	CASING	RECOVERY	GRAPHIC LOG	JOINTS No. Per Foot	FLUID RETURN	GROUND WATER	WATER PRESSURE TESTS LEAKAGE	REMARKS
300'					m		grey			300' - 307' medium feldspathic sandstone
305'										307' - 321' banded sandstone - siltstone 3" carbonaceous bands at 310'
310'										321' - 343' grey feldspathic sandstone banded near 343'
315'										
320'										
325'										
330'										
335'										
340'										
345'					c		grey			343' - 368' 10" quartzose sandstone with black streaks, coarser towards top and bottom. pellets near bottom.
350'										
355'										
360'										
365'							dark grey			368' 10" - 385' 1/3" Permian dark grey mudstone with small pebbles.
370'										
375'										
380'										Hole completed at 385' 1/3" logged by G.E. Hale.
385'										
390'										
395'										
400'										

