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ASSESSMENT OF COAL RESERVES

FENTON SEAM

NICHOLAS RANGE, TASMANIA

MICROFILMED

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	DEPT. OF MINES			
REF. No.	8102/85			

REPORT PREPARED

FOR

CORNWALL COAL COMPANY N.L.

BY

McELROY BRYAN AND ASSOCIATES PTY LIMITED

REPORT 60/1/10

J.H. BRYAN

JULY 1985

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REPORT 60/1/10

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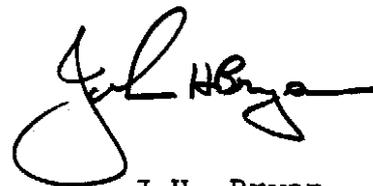
SECTION 1. INTRODUCTION AND SUMMARY

Drilling in the latter part of 1984 provided significant new data for an assessment of coal reserves in the Nicholas Range. Report 60/1/6, dated December 1984, includes estimates for the Fenton Seam, but the data was insufficient to allow reliable mine planning of that seam. Additional data was required to confirm the thickness and quality of the Fenton Seam, and to indicate the nature of the roof strata.

In April and May 1985 an additional 5 holes were drilled (501.75m) to intersect the Fenton Seam. Drill hole CC24 also intersected the upper seams. (Blue Seam and Cornwall Seam). The drilling costs (including water pumping, moving between sites, etc.) were about \$70 per metre overall.

The drilling of holes CC24 to CC28 has increased the reliability of the data on the Fenton Seam and enabled reserves to be calculated for all potentially mineable areas. These reserves include coal in the Fenton Seam in the area being acquired from The Shell Company. That coal was not included in the assessment made in December 1984.

For areas where the Fenton Seam is thicker than 1.8m the *in-situ* Measured and Indicated Reserves are estimated to be 33 million tonnes. Allowing for overall mining recovery and beneficiation yields it is estimated that 12 million tonnes of saleable coal could be produced from the Fenton Seam.



J.H. Bryan
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SECTION 2. SEAM THICKNESS, CORRELATIONS AND STRUCTURE

The Fenton Seam (known as L2 Seam in the Shell Area) extends throughout the eastern part of the Nicholas Range in areas held by Cornwall Coal Company N.L. The Seam thins to the east and is only 1.01m thick in CC9, but is more than 3m thick in CC's 12 and 13. For much of the reserves area the Fenton Seam is about 2m thick. (See Map 1).

The Fenton Seam is recognised in all drill holes and has the lowest raw ash content of the 4 or 5 seams which comprise the lowest coaly section of the Upper Parmeener Super-Group. Correlation Diagrams A, B and C show the seam continuity and also indicate the structure of the Nicholas Range Coalfield. Map 2 shows the regional dip of the strata within each fault block. Adjacent to some faults there is significant structural disturbance at the level of the upper seams, but in other areas the disturbed zone may be only a few metres wide. In areas where the upper seams have not been mined the structure of the Fenton Seam, as shown on Map 2, is less certain.

SECTION 3. COAL QUALITY

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The Fenton Seam has a raw coal ash content of about 30% (air dried basis) in most areas where the seam is more than 1.5m thick. The coal is mostly dull, but becomes stony towards the top. If there are any bright bands they occur near the base of the seam. The seam contains 3 to 6 thin claystone bands in all drill holes. (See Figure 3.1). These are brown or grey/brown, possibly tuffaceous claystones. The claystone bands are commonly from 0.020m to 0.080m thick, and while some bands are present in all intersections they cannot always be correlated from drill hole to drill hole. Both the claystone bands and the coal intervals vary in thickness over a few hundred metres.

The floor of the Fenton Seam is usually sandstone while the roof is quite variable. In some areas the upper coal plies have been eroded prior to deposition of sandstone but elsewhere the upper plies have been replaced by mudstone or claystone which can be up to 4m thick. The most complete (thickest) sections of the Fenton Seam are in drill holes CC12 and CC13.

Table 3.1 gives a summary of the analytical data for drill holes that intersected the Fenton Seam. A total of 11 drill holes provide analyses that indicate reasonably uniform coal quality throughout the eastern part of the Nicholas Range. For all areas where a potential working section exists (Seam thicker than 1.5m) the coal could be mined and beneficiated to produce a coal with the following specifications:-

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CORNWALL COAL COMPANY N.L.

Mt. Nicholas

DDH 26

Fenton Seam

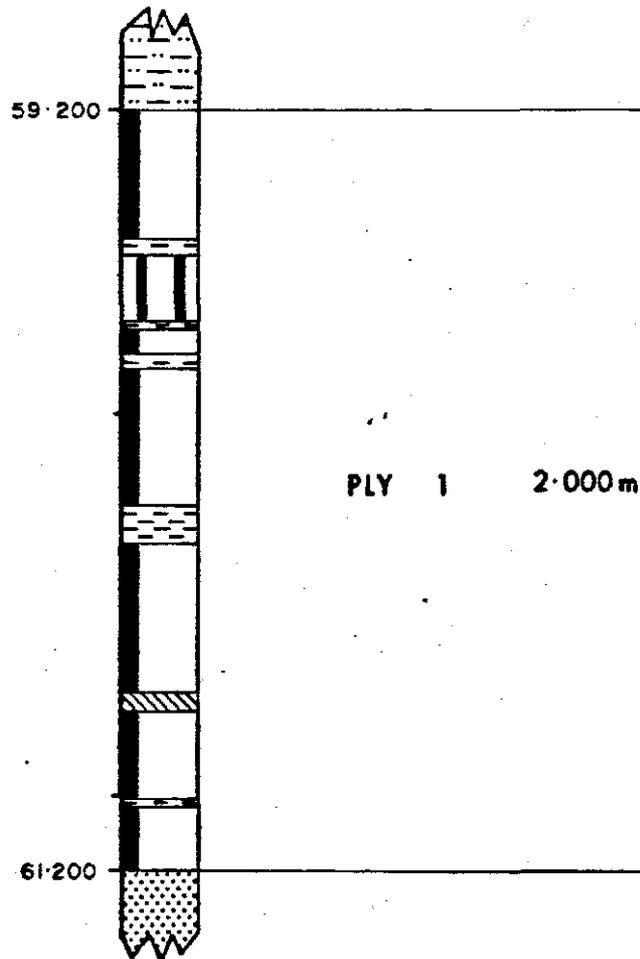
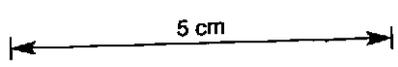


FIGURE 3.1



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(all analysis data is on air dried basis)

Moisture	: 6%
Ash	: 20%
Volatile Matter	: 26%
Fixed Carbon	: 48%
Sulphur	: 0.45%
Specific Energy	: 25MJ/kg
Relative Density	: 1.50

On the basis of float/sink tests the anticipated beneficiation yield at R.D. 1.70 would vary from about 60% to 70% for run-of-mine coal.

SECTION 4. RESERVES

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In-situ reserves of coal have been calculated for all areas where the Fenton Seam exceeds 1.50 metres in thickness. Reserves have been calculated separately for areas where the potential working section of the seam exceeds 1.80 metres. It is considered that a working section of less than 1.80m may in practice prove to be too thin for mining, especially if the roof strata are weak mudstones or claystones. Throughout the Nicholas Range the Fenton Seam is overlain by a thick, massive lithic sandstone unit, but the immediate roof is sandstone in only about 50% of the holes drilled.

Tables 4.1 and 4.2 set out the reserves for each of the 16 reserves blocks (FE1 to FE16) shown on Map 3. Estimates of run-of-mine coal and saleable coal have been made for Blocks FE1 to FE14 and FE16 using float/sink data and likely mining recovery factors. The mining recovery estimates are at least as conservative as those suggested by Mr R. Mellows and they take account of mining thickness, existence of faults, depth of cover, proximity to outcrop, and accessibility for mining purposes. The Fenton Seam has been mined in the past, in two small areas, near CC16 (Block FE1) and near CC18 (Block FE12).

4.1 MEASURED RESERVES

Blocks FE1 to FE5 contain *in-situ* Measured Reserves of 9.635 million tonnes from which it is estimated that 3.589 million tonnes of saleable coal could be produced.

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TABLE 4.1
SUMMARY OF RESERVES - FENTON SEAM
NICHOLAS RANGE
(SEAM THICKNESS GREATER THAN 1.8M)

RESERVES BLOCK	RESERVES CATEGORY (SEE NOTE 1)	AREA M ² x10 ⁶	SEAM THICKNESS (M)	R.D. OF IN-SITU COAL	IN-SITU COAL TONNES X 10 ⁶	ESTIMATED MINING RECOVERY %	RUN-OF-MINE COAL TONNES X 10 ⁶	ESTIMATED WASHING RECOVERY	SALEABLE COAL TONNES X 10 ⁶
FE 1	A	0.56	2.0	1.6	1.792	55	0.985	70	0.689
FE 2	A	1.01	2.2	1.6	3.555	55	1.955	70	1.368
FE 3	A	0.44	2.0	1.6	1.408	55	0.774	65	0.503
FE 4	A	0.72	2.0	1.6	2.304	55	1.267	65	0.823
FE 5	A	0.18	2.0	1.6	0.576	55	0.317	65	0.206
TOTAL MEASURED RESERVES (Seam thicker than 1.8m)					9.635		5.298		3.589
FE 6	B	0.65	2.2	1.6	2.288	60	1.373	75	1.030
FE 7	B	0.44	2.5	1.6	1.760	60	1.056	75	0.792
FE 8	B	0.91	3.0	1.6	4.368	60	2.621	70	1.834
FE 9	B	0.5	2.5	1.6	2.000	50	1.000	55	0.550
FE 10	B	0.61	2.5	1.6	2.440	50	1.220	55	0.671
FE 11	B	2.01	2.75	1.6	8.844	60	5.306	60	3.183
FE 16	B	0.53	2.00	1.6	1.696	40	0.678	55	0.373
TOTAL INDICATED RESERVES (Seam thicker than 1.8m)					23.396		13.254		8.433
FE 15	C	1.40	2.00	1.6	4.50	-	-	-	-

NOTE 1: RESERVES CATEGORIES -
A - Measured Reserves
B - Indicated Reserves
C - Inferred Resources

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TABLE 4.2
SUMMARY OF RESERVES - FENTON SEAM
NICHOLAS RANGE
(SEAM THICKNESS LESS THAN 1.8M)

RESERVES BLOCK	RESERVES CATEGORY (SEE NOTE 1)	AREA M ² x10 ⁶	SEAM THICKNESS (M)	R.D. OF IN-SITU COAL	IN-SITU COAL TONNES X 10 ⁶	ESTIMATED MINING RECOVERY %	RUN-OF-MINE COAL TONNES X 10 ⁶	ESTIMATED WASHING RECOVERY	SALEABLE COAL TONNES X 10 ⁶
FE 12	A	1.68	1.6	1.6	4.300	40	1.720	70	1.204
FE 13	A	1.25	1.6	1.6	3.200	40	1.280	60	0.768
TOTAL MEASURED RESERVES (Seam less than 1.8m)					7.500		3.000		1.972
FE 14	B	0.51	1.7	1.6	1.387	40	0.555	65	0.360

NOTE 1: RESERVES CATEGORIES - A - Measured Reserves
B - Indicated Reserves
C - Inferred Resources

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For these areas the working section exceeds 1.80m and is up to 2.40m. Blocks FE1 to FE4 are accessible from the outcrop and the structure is reasonably well known from drilling and from workings in the higher seams. The cover thickness is generally less than 200m except in Block FE2 where it is up to 400m to the north of CC17.

Blocks FE12 and FE13 contain *in-situ* measured reserves of 7.50 million tonnes. The Fenton Seam in these areas is between 1.50m and 1.80m thick and could probably be mined economically with appropriate mining equipment if the roof conditions were favourable. In drill holes CC2 and CC24 the seam has a good sandstone roof. In drill holes CC5 and CC28 the immediate roof is about 0.3m of claystone, which is between the seam and a strong sandstone unit. In CC25 there is a considerable thickness of weak mudstone above the Fenton Seam. If these areas could be mined it is estimated that 1.972 million tonnes of saleable coal could be produced.

4.2 INDICATED RESERVES

Blocks FE6 to FE11 and FE16 contain *in-situ* Indicated Reserves of 23.396 million tonnes, from which it is estimated that 8.433 million tonnes of saleable coal could be produced. The potential working section in those areas exceeds 1.8m and is up to 3.9m thick. These blocks are classified as indicated reserves due to a wider spacing of drill holes and less data on the structure.

The cover is up to 350m thick along the higher parts of the Nicholas Range. Access for mining is available either from the south or the north from outcrop.

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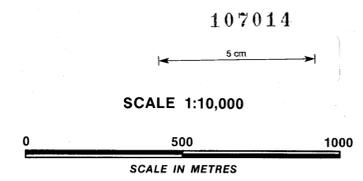
Block FE14 contains *in-situ* reserves of 0.51 million tonnes, where the Fenton Seam is less than 1.8m thick.

4.3 INFERRED RESOURCES

Block FE15 contains no drill holes and occupies an area of structural uncertainty where the cover thickness is generally between 200m and 450m. The *in-situ* Inferred Resources are 4.5 million tonnes. The area adjoins the Shell area where mining of the same seam is almost certainly planned by that company. However, there is insufficient data and there are potential mining problems which preclude inclusion of the coal in a category for which saleable coal can be estimated.

REFERENCE

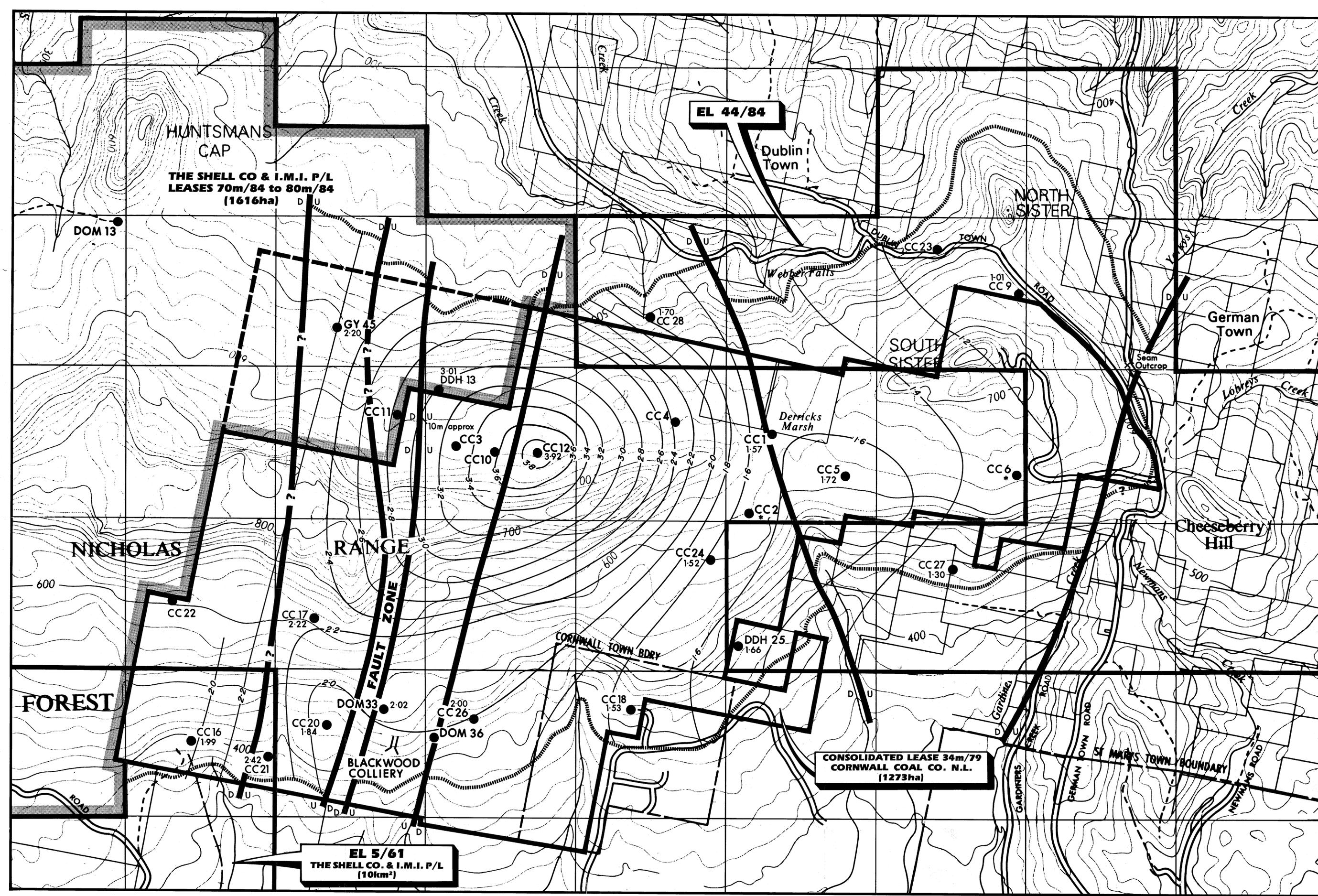
-  Fault
-  Subcrop/Outcrop of Fenton Seam
-  Seam Isopach
-  Drill hole with seam thickness
-  Seam thickness not reliable (core loss etc)



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CORNWALL COAL COMPANY N.L.
NICHOLAS RANGE

ISOPACH MAP
Fenton Seam
MAP 1

Prepared by McElroy Bryan & Associates Pty Limited
To accompany report by J.H.Bryan - June, 1985

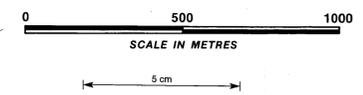


REFERENCE

-  Fault
-  Subcrop/Outcrop of Fenton Seam
-  Regional structure contours (m) (25 m intervals)
-  CC 5
448.3 Drill hole with RL of Fenton Seam

485 200
600 x 80 x 16 x 15 15000

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SCALE 1:10,000



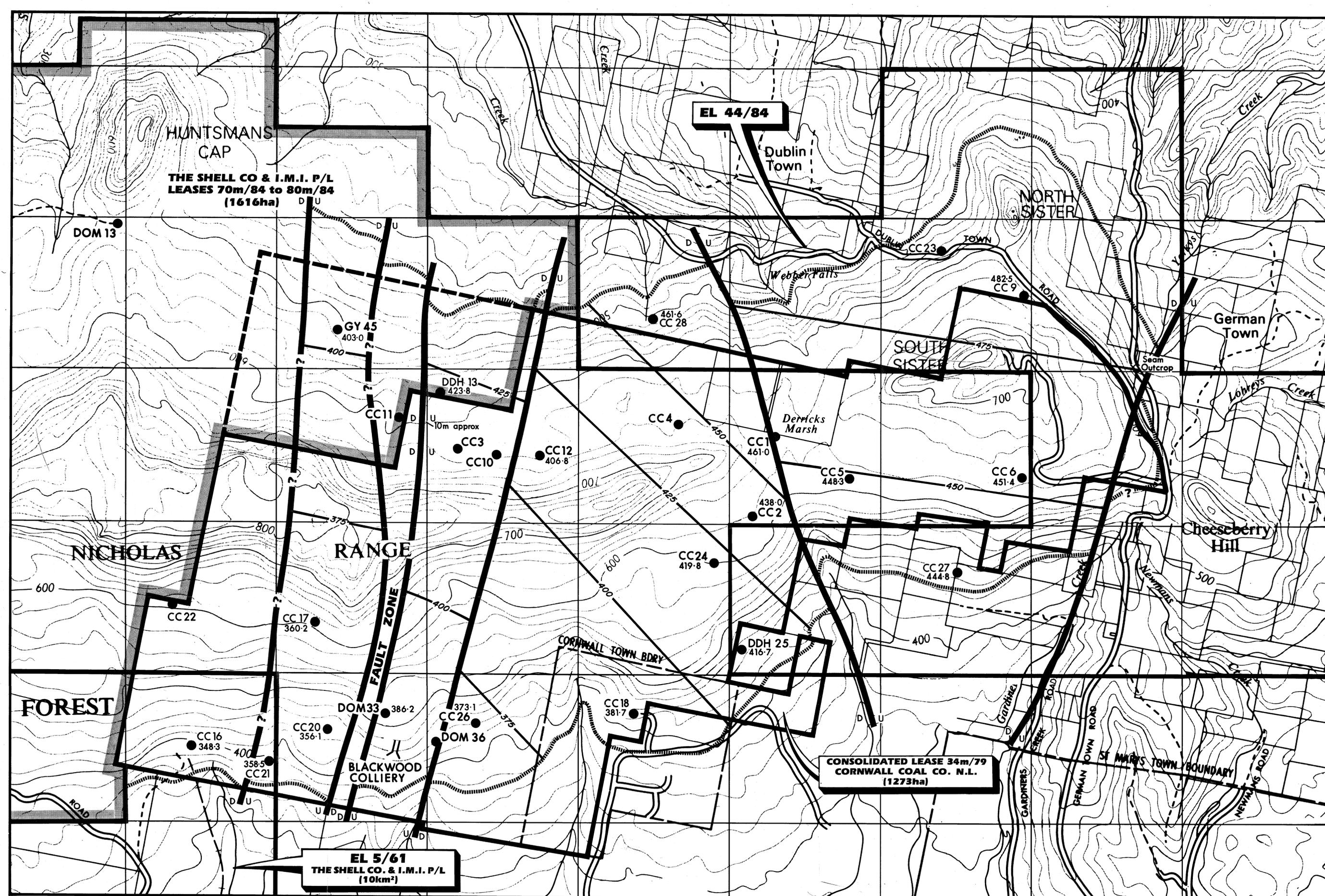
5496

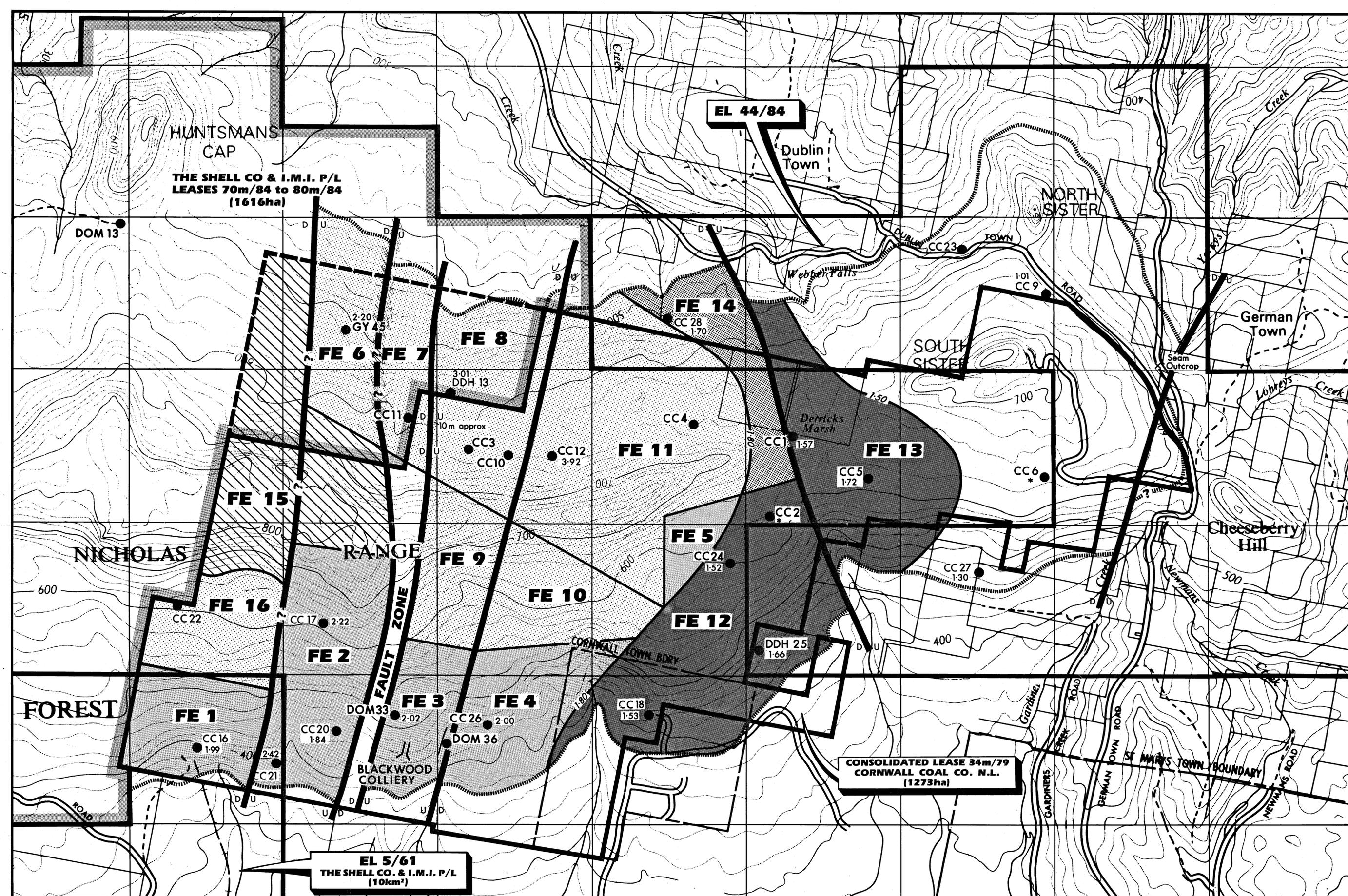
CORNWALL COAL COMPANY N.L.
NICHOLAS RANGE

STRUCTURE MAP
Fenton Seam

MAP 2 85-2465

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To accompany report by J.H.Bryan - June, 1985





REFERENCE

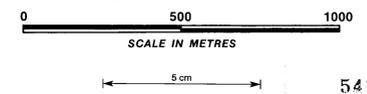
- Fault
- Subcrop/Outcrop of Fenton Seam
- Seam Isopach
- Drill hole with seam thickness

**RESERVE CATEGORIES
Fenton Seam**

- MEASURED RESERVES
- Fenton Seam more than 1.80m thick.
 - Fenton Seam less than 1.80m thick.
- INDICATED RESERVES
- Fenton Seam > 1.80m
 - Fenton Seam < 1.80m
- INFERRED RESOURCES
- Fenton Seam > 1.80m

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SCALE 1:10,000



CORNWALL COAL COMPANY N.L.
NICHOLAS RANGE

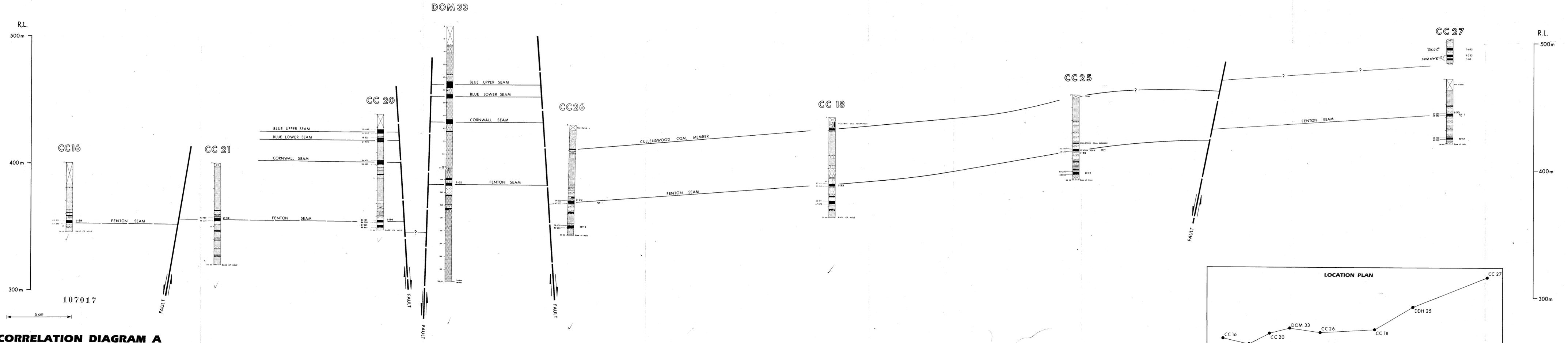
**RESERVES MAP
Fenton Seam**

MAP 3

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To accompany report by J.H.Bryan - June, 1985

CORNWALL COAL COMPANY N.L. CORRELATION DIAGRAM A

VERTICAL SCALE 1:1000
HORIZONTAL SCALE 1:5000



CORRELATION DIAGRAM A

Prepared by McElroy Bryan & Associates Pty Ltd
J. Bryan, 1985

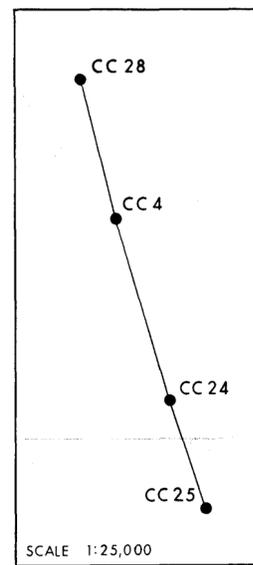
85-2465

SCALE 1:25,000

CORNWALL COAL COMPANY N.L. CORRELATION DIAGRAM B

VERTICAL SCALE 1:1000
HORIZONTAL SCALE 1:5000

LOCATION PLAN



R.L.

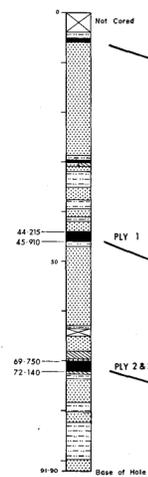
600m

500m

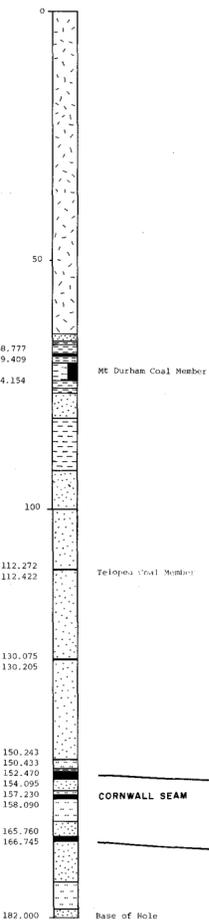
400m

5 cm

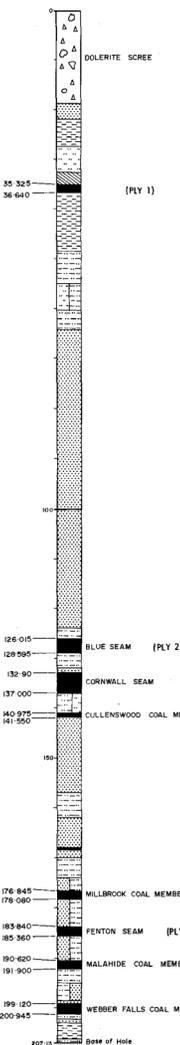
CC 28



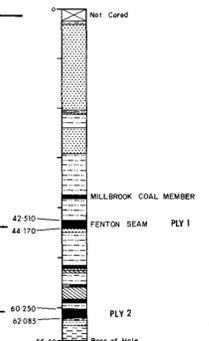
CC 4



CC 24



CC 25



R.L.

600m

500m

400m

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5409

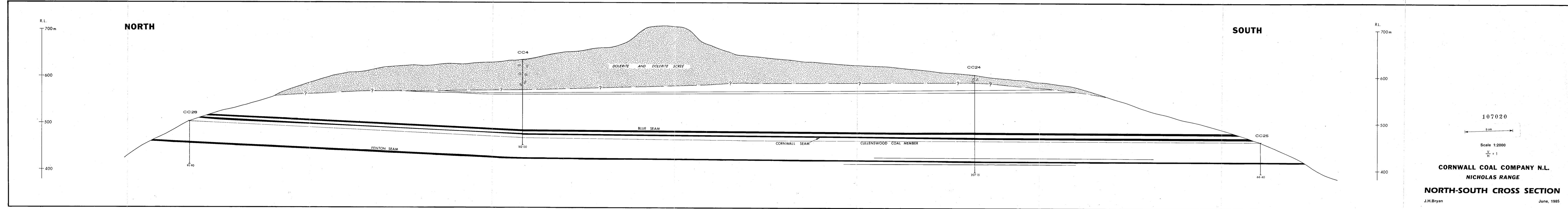
CORRELATION DIAGRAM B

Prepared by McElroy Bryan & Associates Pty Ltd

J. Bryan, 1985

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107020
 5 cm
 Scale 1:2000
 $\frac{V}{H} = 1$

CORNWALL COAL COMPANY N.L.
NICHOLAS RANGE

NORTH-SOUTH CROSS SECTION

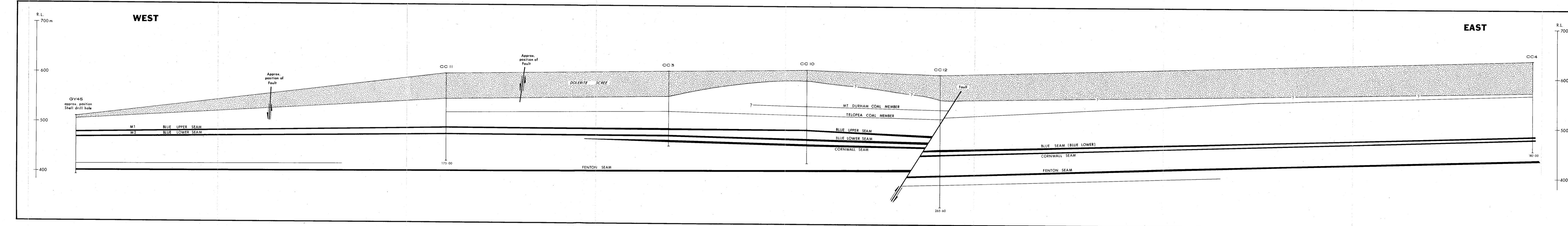
J.H. Bryan

June, 1985

85-2465

5411

5412



R.L.
700m
600
500
400

107021
5 cm
Scale 1:2000
 $\frac{V}{H} = 1$

CORNWALL COAL COMPANY N.L.
NORTHERN SIDE OF NICHOLAS RANGE

SKETCH CROSS SECTION

J.H.Bryan June, 1985