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REPORT NO. 52/49.

OPEN CUT COAL PROGRAMME - NEWCASTLE REGION

B U C H A N A N A R E A

DRILLING RESULTS

By G. M. BURTON

Report No: 52/49

CONTENTS.

SUMMARY

A total of 22 "testing and defining" rotary cored drill holes were drilled by the Bureau and J.McD. Royle Ltd., contractor to the Bureau, during the prospecting for reserves of open-cut coal in the Tomago Stage of the Upper Coal Measures near Buchanan in Ports. 14, 15 & 16, Ph. Stockrington, and Ports. 1 & 9, Ph. Maitland, County Northumberland, N.S.W. These 22 holes involved 3640 ft. of drilling and indicated possible reserves of 4,200,000 tons of coal suitable for mining by underground and open cut methods.

Results of the drilling campaign were disappointing. The first drill holes were located to test the seam outcrops as shown on the original drilling recommendation supplied to the Bureau. Drilling revealed that the outcrops lay much further to the west and scout drilling to revise the mapping was necessary. Drilling difficulties and the consequent low coal core recoveries produced results lacking detail in the banding of the seams in some holes where such information would have been most useful in assessing the value of the seams. Fortunately most of these holes were outside the final limits of the possible open cut site so, while failing to provide information which would have been valuable in the development of underground collieries and as a future guide for geological prospecting, the holes did supply valuable structural information for use within the final possible open cut site.

The original drilling programme commenced under the Joint Coal Board's earlier open cut prospecting limits of a maximum depth of 170ft. to the base of the seam or a 15/1 overburden/coal ratio, whichever was the lesser. The second half of the programme was under the revised prospecting limits of 100ft. to the roof of the seam and a maximum overburden/coal ratio of 10/1.

The bulk of the reserves of open-cut coal was found to lie in the south-eastern quarter of Port. 9, Maitland and the adjoining north-eastern quarter of Port. 14, Stockrington. Maximum reserves totalling approximately 700,000 tons in Donaldsons Seam and approximately 1,000,000 tons in the Big Ben Seam were defined in this region. The quality of the coal however, is still doubtful. Any development of the seams will be hindered by the presence of a main road, major water supply line and power line within the open cut site.

INTRODUCTION

The prospecting area lies one mile north of Buchanan and five miles due south of Maitland. The centre of the most suitable part of the area is about 2 or 3 miles south-west by gravel and bitumen roads from the new loading screens and picking belt at the terminus of the Bloomfield railway branch line. Coal is hauled by this line to Thornton and thence by the Great Northern Railway Line to Newcastle and Port Waratah. Thus the area is ideally located being about 20 miles by road and rail from the main northern coal terminus.

The Buchanan Area was nominated as a possible open cut area by the N.S.W. Department of Mines and then recommended by the Joint Coal Board to the Bureau with a request that "testing and defining" drilling be undertaken to determine the suitability of Donaldson's and Big Ben Seams for open cut mining.

Around the Buchanan Area mining has been restricted in the past to underground collieries working the Rathluba Seam (Dagworth Greta, Stanford Greta, and Maitland Greta Collieries) and the Big Ben Seam (Bloomfield Main Colliery).

Previous prospecting for the Donaldson's and Big Ben Seams in, or immediately adjoining the Bureau's prospecting area had been confined to:-

(a) Three shafts sunk in Port. 1, Ph. Maitland (BMR Plan N14/88);
(b) Two shafts sunk and one tunnel commenced in Port. 14, Stockrington, (J.C.B. Plans XG94 and XG95);
(c) Eighteen percussion drill holes sunk by J. & A. Brown Ltd. in Ports. 7,14 & 15, Stockrington and Ports. 1 & 9, Maitland (J.C.B. Plans XG94 and XG95) ;
(d) Six percussion holes sunk by Buchanan Maitland Colliery in Ports. 14 & 15 Stockrington (Plans BMR N14/88 & J.C.B. CN115);
(e) Two diamond drill holes sunk by contractors for the Joint Coal Board (Plans J.C.B. DN20, DN66A & B.M.R. N14/88);

Recently a southerly dipping cross-measure drift has been started by Buchanan Maitland Colliery in the eastern half of Port. 14, Stockrington. This tunnel has passed Donaldson's and is being driven to develop a pit in the Big Ben Seam.

Although the Bureau's drilling programme was concentrated on the Donaldson's and Big Ben Seams, one hole continued to or almost to the Rathluba Seam and a number of holes in Ports. 14 & 15, Stockrington, and Port.9, Maitland encountered the Buttai Seams above Donaldsons Seam.

The area drilled has low to medium relief. Ports. 14, 15 and 16, Stockrington, and Port. 1, Maitland are grazing land and practically free of vegetation, while Port. 9, Maitland is heavily timbered. The western halves of Ports. 14, 15 and 16, Stockrington, and Port. 9, Maitland are swampy in parts and in times of flood in the Maitland District some of the sections may be covered by flood water making the swampy zones most undesirable for open cut prospecting.

GEOLOGY

Coal bearing Permian sediments of the Tomago Stage of the Upper or Newcastle Coal Measures outcrop adjacent to the East Maitland-Buchanan road. The sediments have a general south-easterly dip and form part of the north-western flank of a southerly pitching syncline, the axis of which lies between the Buchanan and Bloomfield areas. The dip of the sediments is generally from 2 to 3° but on the extreme west in the vicinity of the junction between the Tomago Stage and underlying Upper Marine Series there is a marked rise in dip, and dips of 30° to 40° have been recorded. It seems likely however, that some of this steepening is due to faulting parallel to the eastern flank of the Lochinvar Dome which is the major structure lying immediately to the west of the Buchanan and Bloomfield syncline.

The seams of the Tomago Stage in the Buchanan Area are stratigraphically from top to bottom:-

Buttai Seam(s)
Donaldson's Seam
Big Ben (Tomago Thick) Seam
Tomago Thin Seam
Rathluba Seam

BUTTAI SEAMS. The Buttai Seams have never been adequately defined but are generally taken as the group of thin seams lying above Donaldson's Seam. The Bureau drilling obtained little additional information on the nature of these seams because few cores were taken while at the level of the seams. The main seam however appears to lie about 40ft. above Donaldson's and to thicken in an easterly direction. It contains generally 2ft. or less of coal but may be as thick as 4 ft. in the north-eastern part of the Buchanan Area.

DONALDSON'S SEAM. Drilling revealed that the area structurally suitable for open cut mining is restricted to the part adjoining the road in Port. 9, Maitland but that the quality of the coal is doubtful. Poor core recoveries make it impossible to place accurately the bands in the seam. While it seems sure that there is a relatively clean section of 4ft. of coal in the basal portion it is not clear whether the bands of the seam are restricted mainly to the upper plies of the top portion. If the bands are in the upper plies then the clean lower plies will form with the lower 4ft. of the seam a workable section of 5 to 6ft.

From the detailed sections it would appear that banding and splitting increases towards the west and north-west.

The apparent thinning of the seam shown in bores S1,S2,S9, and S11, is suspect. All of these holes were drilled with a Failing 2500 heavy drill during a scout drilling stage when it was not possible to predict accurately at what depth the seam would be encountered. Accordingly coring bits possibly were not substituted for rock bits in time to determine accurately the top of the seam. A case in point is S11 where only the last 2 to 3 feet of the seam were cored. In this particular hole a close inspection of the Rotary Cutting Report shows that there is evidence that the drill encountered coal before the estimated 126'4". There is some evidence that the same thing happened in S1 and S2.

Under deep cover Donaldson's Seam shows the lower portion of 4ft. and possibly up to 5ft. to be of good quality and relatively free of bands. Poor recoveries render anything better than generalisations impossible but it appears that the lowest 3 to 4ft. has a composition of approximately 37.5% volatile matter and 12% ash and a calorific value of 12,500 B.Th.U's/lb. It is not possible to determine accurately what effect the banding above the middle of the seam will have but it may be possible to obtain an underground working section in the eastern halves of Ports. 15 & 16 of 5 to 6ft. of coal giving a section of average quality (bands 1" and greater excluded) of about 35% volatile matter, 16% ash and 11,000 to 12,000 B.Th.U's/lb.

BIG BEN SEAM. The Big Ben Seam lies from about 25 to 40ft. below the Donaldson's Seam in this particular area.

Like Donaldson's it only offers possibilities of open-cutting in the vicinity of the road in Port. 9, Maitland. It appears to offer possibilities of underground mining in the eastern halves of Ports. 14, 15, 16 and 53, Stockrington. East of a line drawn from BMR 7 through S15 to S14 the seam has a working thickness varying from about 6 to 9ft. Analyses of core suggest that in this area unweathered coal for the average working section excluding bands greater than 1" would have an ash content of 13 to 18%, volatile matter content would vary between 31 and 32% and have calorific value lying somewhere between 11,800 and 12,500 B.Th.U's/lb.

The three holes drilled west of the line are very hard to correlate with the main easterly section but it appears that towards the west the upper plies of the seam split rapidly. The evidence available points to the fact that S13 was only drilled into the upper splits and did not penetrate the main or lower body of the seam.

SEAMS BELOW BIG BEN SEAM. Holes S6 and S15 Stockrington and BMR 12, Buchanan-Maitland were drilled below the Big Ben Seam. S15 encountered two thin seams, between 20 and 40ft. below the Big Ben. These would fall within the Tomago Thin group of seams. S6 passed through the same seams but no cores were taken. S6 may have also passed completely through the Buttai Sandstone and struck the Rathluba Seam somewhere between 470 and 500ft. Coal is recorded in these limits but it is impossible to determine from the records the exact thickness of coal encountered. BMR 12 encountered the Tomago Thin Seam about 26feet below the Big Ben. The Tomago Thin was about 5 ft. thick but contained 6 ins of non-coal bands.

The Tomago Thin Seam is from the evidence available unsuitable for open-cut mining.

It is considered that there is evidence of the seams of the Buchanan Area being the products of a receding basin of deposition in the Buchanan Bloomfield Area probably caused by the then periodically active and rising block of the Lochinvar Dome to the west. The result of this is an easterly migration of the best areas of development of the higher seams in the Buchanan Area. The best area of development of any seam appears to have been somewhere between the edge of the basin and the centre. Towards the edge the seams are split by sediments from marginal drainage. The central portion of the basin was subject to a much greater rate of subsidence than is suitable for thick seam production and the seams appear to have been washed out or split by drainage following the axis of the basin.

Thus the Rathluba Seam is best developed in Port. 1, Maitland about Dagworth Greta Colliery, and to the north around Stanford Greta, Maitland Greta and Tipton Collieries, while indications from BMR bore S6, Stockrington in the western half of Port. 16 are that the seam has split or deteriorated again. Unfortunately the drilling records of this hole are so brief as to offer nothing more than a very rough indication on this point. The old Buttai bore to the south partially supports the suggestion of splitting. The Big Ben does not develop in importance until the western boundary of Ports. 14 & 15, while Donaldson's does not approach normal requirements until the eastern half of Ports. 14 & 15. The Buttai Seam while not of economic standard is showing a marked improvement towards the eastern boundary of Port. 15.

Drilling results confirmed these views and it was found that Donaldson's and Big Ben were both either too thin or too dirty on the western side of the swamp. Coal lying to the east of the swamp in Ports. 15 & 16 and over most of Port. 14, was too deep for open-cut mining. Consequently the search for open-cut coal had to be confined ultimately to the eastern half of Port. 9, Ph. Maitland and north-eastern part of Port. 14, Stockrington.

In Port. 9 both seams are of economic thickness and although banded, the seams in unweathered zones appear to contain reserves of suitable steam coal. The seams are separated by 30 to 40 ft. of sediments. Drilling revealed that the East Maitland-Buchanan road, the Buttai Reservior -Kurri Kurri water supply line and a power line traversed some of the best parts of the possible open-cut area.

The quality of the coal is largely still to be determined. Coal core recovery was quite low in some early holes but by careful drilling almost full sections were brought back in later holes. The latter recovered core was broken into small fragments but still showed stratification. Evidence pointed to crushing of brittle weathered coal rather than tectonic distrubances. Examination of the core indicated that some at

least of the broken zones were largely composed of vitrain and fusain finely interbanded and that the fusain had weathered making the immediate plies of coal most brittle. Swelling tests were carried out by C.S.I.R.O. Coal Research Section on vitrain from a core which the Bureau considered typical (119'9 -120'6,Big Ben Seam, BMR10 Buchanan) and it gave low swelling numbers indicating weathering. In view of the broken nature of much of the core and contamination with mud and clay from the holes,it was decided that the coal could not be sampled and analysed by the normal Bureau field method. The matter was discussed with Mr. McGarry, Newcastle Prospecting Supervisor of the Joint Coal Board and he, on behalf of the Joint Coal Board, accepted the coal core for a more detailed study. Therefore it will be necessary to study in conjunction with this report the results of whatever tests the J.C.B. apply before the future possibilities can be assessed and a decision made on the necessity for and location of prospecting shafts and further bores.

The overburden of Donaldson's and the Big Ben Seam is mainly sandstone, siltstone and shale interstratified.

Drilling provided no evidence of major faulting. A fault of 6 to 8 ft. throw has been mapped in the southern boundary of the Bloomfield Main Colliery. This fault lies approximately along the north-westerly creek shown in this vicinity on BMR Plan N14/88. The swing in the structure contours in the vicinity of S5 and S6, Maitland and BMR 12 indicates that small faulting may occur in this zone. The heavy weathering of the coal in BMR 7,10 & 12 suggests faulting nearby but the structure contours fail to show an appreciable swing to confirm this.

The structural picture in the vicinity of S13 & 14, Stockrington is uncertain. The structure contours drawn on the Big Ben Seam indicate a south-easterly trend in the strike which is not in keeping with nearby north-easterly to easterly strike. The seam correlation is somewhat doubtful and there are the possibilities that Donaldson's Seam may have been washed out in this area or the drill may have passed through the seam in a non-coring period without detecting it. As a result of this another seam may have been mistaken for Donaldson's Seam. Additional drilling,which is not warranted under the open-cut programme, would be necessary to clarify the position. In the absence of this extra drilling the results are interpreted as they appear but attention is drawn to their possible unreliability.

No evidence was found of igneous intrusions.

MINING

Open-cut mining possibilities are limited to Port. 9, Maitland in the vicinity of the Buchanan-Maitland road.

In this area about 75 acres are underlain by the Donaldson's and/or the Big Ben Seam at depths which bring them within consideration of open-cut mining. An extension of this area lies to the east of S6, Maitland but is close to past or future workings of the Bloomfield Colliery. In view of the presence of the colliery no prospecting was done east of S6.

The exact location of the bands in the seams will determine the mineable thickness of coal in each seam. An inspection of the detailed sections indicates that it may be possible to recover an average of about 7ft. of coal in Donaldson's Seam and 8ft. in the Big Ben Seam.

This would mean that if the full 75 acres were stripped it would be necessary to remove to the 100ft. overburden isopach of Donaldson's Seam to recover about 700,000 tons of coal (calculated on the basis of 1500 tons/acre ft.) and then to work over the same area removing the intervening 25 to 30ft. of overburden to recover about 1,000,000 tons of the Big Ben Seam.

This would mean working overburden ratios of about 0 - 1¢:1 for Donaldson's Seam and about 0 - 4:1 for the Big Ben Seam or an average of 0 - 9:1 for the combined 15ft. of coal to recover the maximum 1,700,000 tons of reserves.

However when the presence of the road, the swamp, the water pipe and power lines, inferior coal near the outcrop and near possible faults north of bores BMR 7 and S5 are considered it is unlikely that more than a third or half of this would be mineable.

It is unlikely that any of the shallow seams drilled around bores S24 and S28 and the J. & A. Browns old series percussion holes Nos. 5 and 6, 10 and 11, (see J.C.B. plans XG94 and 95) offer open-cut possibilities. The seams are for the most part less than 5ft. and show signs of rapid splitting. The nearby and underlying Rathluba Seam appears to offer open-cut prospects but is developed partly already by the Dagworth Greta underground colliery.

Both Donaldson's and Big Ben Seams offer good prospects for mining by underground methods in the western halves of Port. 14, 15 & 16, Stockrington and Port. 9, Maitland. In these portions excluding the possible open-cut area drilling has indicated possible reserves of about 2,500,000 tons. In this underground area however indescriminate mining of the Big Ben Seam before Donaldson's may cause subsidence in the latter seam as only about 30ft. of rock lies between the two seams and this would mean the loss of reserves in Donaldson's Seam. Hence any plan to work first the Big Ben in preference to Donaldson's should be weighed against the destruction of future reserves.

LOGGING, SAMPLING AND ANALYSIS

For all holes, except S5 and S6, Maitland and BMR 7 to 12 Buchanan-Maitland, the full coal core was logged in the field and despatched to the Laboratory Section of the N.S.W. Department of Mines for analysis. At the Mines Department the core was relogged. The logs of the two agencies differ and for the preparation of this report the field logs have been used almost entirely and supplemented with information from the internal reports of the Petroleum Technologists Section. In cases of core loss the writer has used his discretion and distributed the core loss to whichever beds he saw fit. Actual core recoveries are shown in the logs and are a measure of the possible errors in these calculations. Mainly for the sake of necessary comparision and completeness but also because they show bands excluded from analyses the logs of the Mines Department analyst have been included in Appendix II.

The Mines Department also analysed samples of coal core from S5 Maitland and BMR 12 Buchanan-Maitland. Samples of coal core from BMR 7 to 11 Buchanan-Maitland were handed over to the Joint Coal Board for special investigation. All of these samples were prepared in the Bureau field laboratory after the exclusion of non-coal bands of probably greater than ¼" in the case of S5 and as shown on the logs in the case of BMR 12.

The practice of the Petroleum Technologist in logging holes S6,9, 11,13 and 14, Stockrington, and S1 & S2, Maitland was to measure all drilling depths from the rotary table of the Failing drill which was anything from 1 to 5½ft. above true ground level. In this report however all depths shown on the Bureau logs and Table A of Appendix I have been converted to measure from ground level. No attempt has been made to alter the depths on the Mines Department analyst's logs to make them read from ground level but this may be done, if necessary, by subtracting the rotary table height shown.

The possible errors in all of this work, involving as it does certain unavoidable assumptions, are obvious and it is possible to determine the reliability of all information and to use it with according

discretion.

SURVEYING

The Buchanan Area was surveyed and bore collars levelled by plan table and telescopic alidade in several stages under the supervision of W.J.Perry, T.H.Rodger, J.J.Veevers and G.M.Burton.

The survey was extended to cover the Joint Coal Board's Bloomfield Bore No.8 and the collar level of this bore, which was difficult to determine, was used as the datum level for the area.

Great difficulty was encountered in fixing actual portion and parish boundaries, as has been the case with most other areas in the Newcastle Region. After consultation with a member of the local Land Office and reference to several different plans of the area, the parish boundary was fixed tentatively on the Bureau plans as lying 1 chain north of, and coincidental with, the northern and western fences, respectively, of the most northerly fenced paddock, shown on Plan N14/88. All bore locations have been fixed with regard to either the north-eastern corner of this paddock, on the assumption that it is the north-eastern corner of Port. 14, and that its northern general fence line is due east magnetic, or with regard to the south-western corner of Port. 9, Maitland, on the assumption that it is the same as the north-western corner of Ph. Stockrington as shown on BMR Plan N14/88

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APPENDIX I

TABULATED PROXIMATE ANALYSES.

APPENDIX I.

BUCHANAN - MAITLAND.

HOLE NO.	BUR.MIN.RES SAMPLE NO.	MINES DEPT. ANALYSIS NO.	SEAM	DEPTH OF SAMPLE	PROXIMATE ANALYSIS						Calorific Value
					H. Moisture %	Volatile Matter %	Fixed Carbon %	Ash %	Coke Nature	Ash Colour	B.ThU's/lb. (Total)
Ph. Stockrington		1951/2130	D	204'8"-208'1"	2.3	31.9	44.4	21.4	Cw.	Red	11,130
S6		2131	D	208'5"-212'8"	2.4	35.7	47.5	14.4	Cm.	Red	12,120
		2132	B.B.	252'2"-255'	2.6	32.4	49.4	15.6	Cw.	Pink	11,950
		2133	B.B.	255'2"-256'3½"	2.5	29.9	44.1	23.5	Cw.	Pink	10,800
		2134	B.B.	256'3½-258'10½	2.6	32.0	50.6	14.8	Cw.	Pink	12,070
S7		2112	D	156'6"-157'6"	2.1	28.8	39.0	30.1	Af.	Pink	9.880
		2113	D	162'8"-166'7"	2.3	37.2	50.3	10.2	Cm.	Pink	12,760
		2114	B.B.	206'4"-208'10"	2.4	32.1	51.5	14.0	Cw.	Pink	12,220
		2115	B.B.	208'10-211'6"	2.3	31.8	48.2	17.7	Cw.	Pink	11,680
S9		2120	D	146'4"-148'3"	2.0	26.7	36.1	35.2	Af.	Pink	--
		2121	D.	148'6"-152'7"	2.1	37.3	50.7	9.9	Cm.	Pink	12,830
		2122	B.B.	193'1"-197'4"?	2.1	31.2	48.2	18.5	Cw.	Pink	11,600
		2123	B.B.	197'4"-201'5"?	2.4	32.8	53.6	11.2	Cm.	Pink	12,630
S10		2327	D.	120'8"-124'8⅓	2.0	31.0	43.4	23.6	Cw.	Pink	10,850
		2328	D.	124'9½-127'8"	2.0	38.3	48.1	11.6	Cm.	Pink	12,580
		2329	B.B.	165'9"-171'1"	2.0	33.8	47.6	16.6	Cw.	Pink	11,870
		2330	B.B	171'1"-173'10	2.2	30.7	53.1	14.0	Cw.	Pink	12,260
S11		2124	D	129'10-132'6½	2.7	36.8	50.6	9.9	Cm.	Pink	12,740
		2125	B.B	170'5"-173'2"	2.7	34.6	51.3	11.4	Cm.	Pink	12,540
		2126	B.B	173'3"-177'7"	2.9	31.5	52.4	13.2	Cw.	Pink	12,270
S13		No Samples									
S14		2307	Butt?	c58'0"-60'0"	2.4	35.1	47.0	15.5	Cm.	Pink	11,970
		2308	D.	154'2"-157'	2.3	34.6	45.3	17.8	Cm.	Pink	11,640
		2309	D.	160'11-162'7"	2.3	38.1	46.8	12.8	Cm.	Pink	12,360
		2310	D.	162'7"-165'	2.3	40.9	47.0	9.8	Cm.	Pink	12,780

HOLE NO.	BUR.MIN.RES SAMPLE NO.	MINES DEPT. ANALYSIS NO	SEAM	DEPTH OF SAMPLE	PROXIMATE ANALYSIS						Calorific Value
					H. Moisture %	Volatile Matter %	Fixed Carbon %	Ash %	Coke Nature	Ash Colour	B.ThU's/lb (Total)
Ph. Stockrington S14		1951/2311	B.B.	202'4"-208'8"	2.5	33.6	48.7	15.2	Cm.	Pink	12,010
S15		2312	B.B.	93'4"- 95'	2.5	30.0	40.0	27.5	Af.	Pink	10,200
		2313	B.B.	95'1"- 99'	2.7	31.9	51.5	13.9	Cw.	Cream	12,190
		23.4	Thin	139'3"-140'6"	2.5	33.8	51.3	12.4	Cw.	Cream	12,430
S24		No Samples									
S28		No Samples									
Ph. Maitland S 1		1951/2319	D	119'4"-123'2	2.0	33.1	46.4	18.5	Cw.	Pink	11,560
		2320	D	123'2"-125'6	2.1	37.4	51.4	9.1	Cw.	Pink	12,370
		2321	B.B.	153'6"-159'9	2.4	31.1	53.5	13.0	Cw.	Pink	12,370
S 2		2322	B.B.	166'4"-169'7	2.3	30.6	48.4	18.7	Cw.	Pink	11,540
		2323	B.B.	169'7"-172'1	2.5	32.8	55.4	9.3	Cw.	Pink	12,890
S 3		2378	D	41'3½-45'7"	1.7	31.2	44.8	22.3	Cw.	Red	11,090
		2379	D	45'7"- 49'	2.0	35.4	49.4	13.2	Cm.	Pink	12,370
		2380	B.B.	79'9"- 81'	2.1	34.0	50.9	13.0	Cm.	Pink	12,400
		2381	B.B.	81' - 83'	2.1	30.0	41.4	26.5	Aw.	Pink	10,260
		2382	B.B.	83'2"- 86'	2.2	31.0	53.5	13.3	Cw.	Pink	12,810
S 4		1952/41	D	51'6"- 60'	2.8	34.3	45.1	14.8	Cw.	Pink	12,020
		42	B.B.	89'2"- 91'3	3.0	32.0	45.9	19.1	Cw.	Pink	11,370
		43	B.B.	91'3"- 94'8	3.2	30.3	51.7	14.8	Cw.	Pink	12,000
S 5	1/S5	477	B.B.	84'2"-87'6"	2.9	31.6	48.6	16.9	Cw.	Buff	11,680
	2/S5	478	B.B.	87'6"- 91'	2.8	32.7	53.5	11.2	Cw.	Buff	12,570
S6		No Samples									

HOLE NO.	BUR.MIN.RES. SAMPLE NO.	MINES DEPT. ANALYSIS NO.	SEAM	DEPTH OF SAMPLE	PROXIMATE ANALYSIS						Calorific Value
					H. Moisture %	Volatile Matter %	Fixed Carbon %	Ash %	Coke Nature	Ash Colour	B.ThU's/lb (Total)
Ph. Maitland											
BMR 7, 8 & 9		Coal Samples transferred to J. C.B. for special investigation.									
BMR 10		" "		" " "	"	"	"				
BMR 11		" "		" " "	"	"	"				
BMR 12	1/BMR 12	1952/1586	B. B.	42'5"-45'5"	2.5	32.3	49.8	15.4	Af	Pink	11,830
	2/BMR12	1587	B. B.	45'5"-48'4½	2.6	32.0	50.6	14.8	Cw.	Pink	11,960
	3/BMR12	1588	B. B.	(48'5½-49'3"							
				(49'5"-51'5"	2.6	32.2	53.1	12.1	Af.	Grey	12,310

Sulphur Content was not analysed in any coal sample

APPENDIX II

(a) FIELD LOGS

(b) ANALYSTS LOGS

APPENDIX II

ANALYST LOGS.

ROTARY TABLE HEIGHT CORRECTION FACTORS.

BORE NO.		TABLE HEIGHTS.
S6	Stockrington	5'4"
S7	"	0
S9	"	5'2"
S10	"	0
S11	"	5'2"
S13	"	1'4"
S14	"	1'4"
S15	"	0
S1	Maitland	5'3"
S2	"	5'2"
S3	"	0
S4	"	0

Rotary table heights are to be subtracted from analyst's figures of depth to give correct sub-surface levels.

APPENDIX II.

ANALYST LOGS.

BORE NO.	ANALYSIS NO.	DEPTHS	RECOVERY	DESCRIPTION
S6 Stockrington	1951/2130	210'0" - 215'0"	23"	Coal
			3"	Shale
			3"	Coal
	2131	215'0" - 216'8"	6"	Coal
		216'8" - 219'0"	5"	Coal
			2"	Carb. shale
			9"	Shale & siderite
	2132	257'6" - 261'0"	33"	Coal
			2"	Shale & carb. shale
	2133	261'0" - 263'6"	9"	Coal
			4"	Inferior coal
	2134	263'6" - 265'0"	23"	Coal
			7"	Coal
			2"	Shale
			2"	Coal
			13"	Carb. shale & shale
S7 Stockrington	2112	156'4" - 159'10"	3"	Shale
			11"	Coal
			9"	Carb. shale with coaly bands.
		159'10"- 161'8"	2"	Shale
			4"	Coal
			4"	Shale
			3"	Coal
		161'8" - 163'8"	2"	Coal
			2"	Carb. shale
	2113	(	12"	Coal
		(163'8" - 165'8"	3"	Coal
		(165'8" - 167'2"	2"	Inferior Coal
			4"	Carb. shale & shale
			5"	Shale
		203'6" - 205'4"	6"	Coal
			1"	Carb. shale
		205'4" - 208'10"	6"	Inferior coal
			4"	Carb. shale
	2114	(	13"	Coal
		(	5"	Carb. shale(ex)
		(	2"	Coal
		(	6"	Coal
	2115	(	9"	Inferior coal
		(208'10"- 212'4"	7"	Coal and inferior coal
			5"	Sideritic mat.
			10"	Shale
S9 Stockrington	2120	151'6" - 153'8"	13"	Coal & bands
		153'8" - 156'0"	3"	Shale
	2121	(	32"	Coal
		(156'0" - 158'3"	6"	Coal
		(	4"	Coal
			3"	Carb. shale
	2122	198'6" - 202'6"	34"	Coal

BORE NO.	ANALYSIS NO.	DEPTHS	RECOVERY	DESCRIPTION
S9 Stockrington	1951/2123	(202'6" - 204'2"	13"	Coal
		(204'2" - 206'10"	10"	Coal
			20"	Carb. shale
S10 Stockrington		119'4" - 121'0"	3"	Grey shale
			9"	Carb. shale & inferior coal
	2327	(	4"	Coal
		(121'0" - 121'8"	10"	Coal
		(121'8" - 123'4"	3"	Coal
		(	3"	Carb. shale (ex)
		(123'4" - 126'2"	5"	Coal
			1"	Sandy band with pyrites
	2328	(	8"	Coal
		(126'2" - 127'10"	5"	Coal
		(127'10"- 128'1"	5"	Coal
			4"	Sandy shale & carb. shale
	2329	(165'0" - 170'0"	10"	Coal
		(	4"	Carb. shale (ex)
		(	5"	Coal
		(170'0" - 171'1"	5"	Coal
			1"	Grey shale (ex)
	2330	(	4"	Coal
		(171'1" - 173'10"	16"	Coal
		173'10"- 174'9"	2"	Carb. shale
		174'9" - 175'6"	6"	Carb. shale
			6"	Grey shale.
S11 Stockrington	2124	135'0" - 138'0"	19"	Coal
			5"	Carb. shale & shale
		175'6" - 179'0"	1"	Carb. shale
	2125		32"	Coal
			3"	Shale
			2"	Inferior coal
	2126	(179'0" - 182'0"	36"	Coal
		(182'0" - 184'1"	6"	Coal
			15"	Carb. shale
			5"	Coal
S13 Stockrington		216'4" - 219'4"	1"	Carb. shale & coal
		219'4" - 220'4"	2"	Carb. shale & coal
			3"	Shale & sandy shale
		248'6" - 249'6"	6"	Carb. shale & coal
			6"	Sandy shale
		256'6" - 257'6"	5"	Coal
		270'4" - 271'4"	6"	Carb. shale & coal
			4"	Carb. shale
			6"	Grey shale
S14 Stockrington		53'10"- 58'0"	9"	Carb. shale
			3"	Coal
			12"	Carb. shale
			9"	Coal
			4"	Sandy shale

BORE NO.	ANALYSIS NO.	DEPTHS	RECOVERY	DESCRIPTION
S14 Stockrington		58'0" - 61'4"	3"	Sandy shale
			20"	Coal with bands
		155'9" - 156'9"	4"	Inferior coal & carb. shale
			7"	Shale
	2308	156'9" - 158'6"	14"	Coal (frag.)
			2"	Shale
		158'6" - 159'6"	7"	Carb. shale
			2"	Inferior coal
			5"	Shale & carb. shale
	2309	162'3" - 163'11"	16"	Coal (frag.)
	2310	(163'11"-	28"	Coal (frag.)
		(	2"	Coal with much ankerite
			4"	Shale & carb. shale
	2311	(204'0" - 209'0"	3"	Coal
		(	6"	Coal
		(	4"	Carb. shale(ex)
		(	3"	Coal
		(	6"	Carb. shale
		(	3"	Coal
		(	8"	Coal
		(	3"	Inferior coal(ex)
		(	2"	Coal (ex. bands)
		(	3"	Carb. shale (ex)
		(	18"	Coal
		(	3"	Coal
		(	2"	Carb. shale (ex)
		(	3"	Coal
		(209'0"	2"	Coal(fine frag.)
		(	3"	Coal
		(	3"	Coal
		(	1"	Shale
		(	4"	Coal
S15 Stockrington		91'11"- 94'7"	12"	Sandstone
			1"	Carb. shale
	2312	(	11"	Coal
		(94'7" - 96'7"	6"	Coal
			1"	Shale (ex.)
	2313	(	18"	Coal
		(96'7" - 98'11"	12"	Coal
		98'11"- 113'3"	11"	Carb. shale
			67"	Sandstone with carb. bands
	2314	139'3" - 140'6"	15"	Coal
			7"	Grey shale
			31"	Sandstone with carb. streaks
			5"	Carb. shale
			57"	Grey shale
			13"	Carb. shale
Maitland S1		125'5" - 128'5"	1"	Carb. shale
	2319		27"	Inferior Coal
	2320	128'5" - 131'2"	17"	Coal
			7"	Carb. shale
	2321	(162'0" - 165'0"	8"	Coal
		(	½"	Band (inc.)
		(	12"	Coal
		165'0" - 167'9"	5"	Carb. shale & coal

BORE NO.	ANALYSIS NO.	DEPTHS	RECOVERY	DESCRIPTION
Maitland S1			4"	Carb. shale
		167'9" - 168'9"	11"	Sandy shale
Maitland S2		143'9" - 146'1"	5"	Carb. shale & Inferior coal
			4"	Sandy shale
	2322	(171'9" - 174'9"	10"	Coal
		(	1"	Carb. shale(in)
		(	13"	Coal
	2323	174'9" - 177'3"	24"	Coal
Maitland S3		41'4"	12"	Carb. shale
	2378	(41'4" - 43'3"	4"	Coal
		(43'3" - 44'4"	3"	Inferior coal
		(	1"	Shale (ex.)
		(	2"	Coal
		(	2"	Shale (ex.)
		(	2"	Coal
		(44'4" - 45'7"	4"	Coal
			2"	Sandy shale(ex)
	2379	(	5"	Coal
		(45'7" - 47'3"	7"	Coal
		(47'3" - 49'7"	20"	Coal
			1"	Carb. shale & shale
		49'7" - 50'0"	5"	Sandy shale
		79'4" - 80'6"	5"	Sandstone
	2380	(	10"	Coal
		(80'6" - 81'0"	6"	Coal
	2381	(81'0" - 82'1"	8"	Inferior coal
		(	1"	Shale
		(82'1" - 83'0"	12"	Inferior coal
		83'0" - 84'0"	2"	Shale with pyrites
	2382	(	6"	Coal
		(84'0" - 85'6"	9"	Coal
		(85'6" - 86'4"	4"	Coal
			1"	Shale
		86'4" - 87'4"	10"	Shale & carb. shale
		87'4" -	10"	Grey shale
Maitland S4		50'2" - 52'4"	7"	Shale
			3"	Carb. shale
			6"	Shale
	41	(	8"	Coal
		(52'4" - 53'7"	3"	Coal
		(	7"	Shale (ex.)
		(53'7" - 54'4"	4"	Coal
		(	3"	Shale (ex.)
		(54'4" - 55'7"	6"	Carb. shale (ex
		(	2"	Coal
		(55'7" - 56'7"	2"	Inferior coal
		(	¼"	Band (ex.)
		(	4"	Coal
		(56'7" - 57'7"	6"	Coal & inferior coal
		(		
		(57'7" - 59'1"	3"	Coal
		(59'1" - 60'3"	6"	Coal
			3"	Shale & carb. shale
		88'5" - 89'5"	1"	Carb. shale
			5"	Coal
			½"	Pyrite
			1"	Shale

BORE NO.	ANALYSIS NO.	DEPTHS	RECOVERY	DESCRIPTION
Maitland S4	42	89'5" - 90'5"	2"	Coal
			4"	Coal
			2"	Inferior coal
		90'5" - 91'6"	4"	Coal
			3"	Coal and inferior coal
			1"	Shale (ex.)
			3"	Coal and inferior coal
			¾"	Pyrite
	43	91'6" - 92'6"	2"	Coal
			10"	Coal and inferior coal
		92'6" - 93'8"	10"	Coal
		93'8" - 94'8"	4"	Coal and inferior coal
		95'9" - 96'9"	2"	Coal
			8"	Shale

PLATE 1

Map of Bore Locations
BUCHANAN AREA
Parishes of Maitland and Stockrington
County of Northumberland, N.S.W.

200 0 200 400 600 FEET

REFERENCE

- BMR Rotary Borehole
- Buchanan Colliery Percussion Hole
- Joint Coal Board Diamond Drill Hole
- Alluvium

Grid on True North based on 1000 yard unit squares of the East Maitland sheet of the 1:25000 Military Map

TO EAST MAITLAND

Bloomfield Colliery Underground Workings

Roof of Big Ben Seam

BMR 12 72·3'

BMR 7,8,9 98·0'

BMR 10 116·7'

BMR 11 80·1'

Maitland S6 88·0'

S5 61·0'

S4 73·0'

S2 133·1'

B1

S24 104·1'

S28 63·5'

S3 168'

S1 91·3'

No.3 30·1'

No.2 20·4'

No.1 45·11'

No.4 24·2'

S15 14·9'

No.6 28·2'

No.5 18·1'

S11 82·1'

S10 18·7'

S9 55·8'

S13 72·2'

S14 21·6'

S7 84·2'

Stockrington S6 59·3'

J.C.B. No.8 D.D. 102·27'

WATER SUPPLY PIPE LINE

POWER LINE

PARISH OF MAITLAND

PARISH BOUNDARY

FROM BUCHANAN

Portion 9

Portion 1

Portion 14

Portion 15

MAITLAND

STOCKRINGTON

46

55

56

45

Shaft 65·0'

Shaft 94·0'

Shaft 62·0'

Shaft 27·6

Drift

10°13'

TRUE

MAGNETIC

LOCALITY MAP

N.S.W.

NEWCASTLE

SYDNEY

Reference to Grid Coordinates on the East Maitland Sheet of the 1:25000 Military Map

Bureau of Mineral Resources, Geology and Geophysics, September 1952.

N14-88

Structure Map and Seam Detail

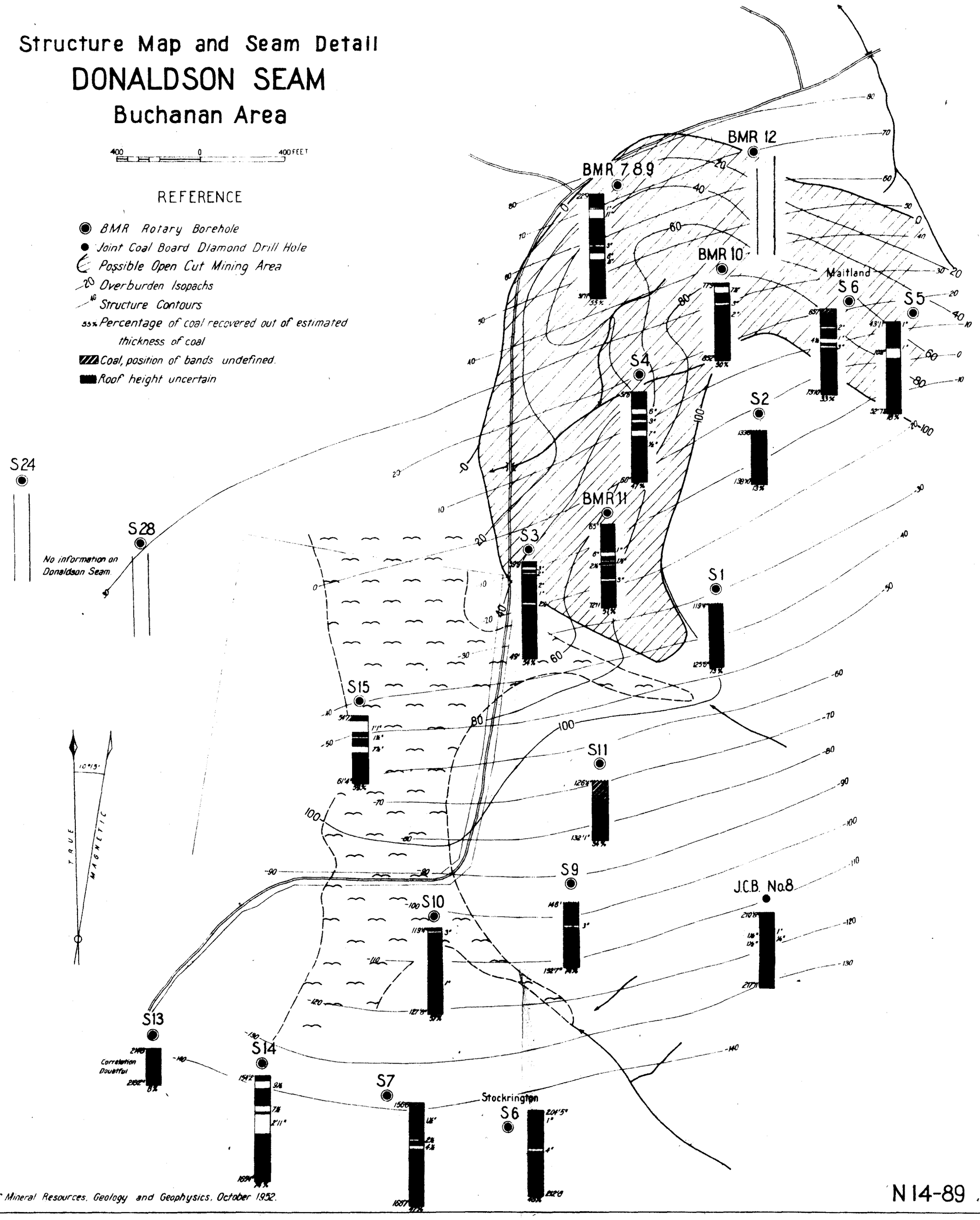
DONALDSON SEAM

Buchanan Area

400 0 400 FEET

REFERENCE

- BMR Rotary Borehole
- Joint Coal Board Diamond Drill Hole
- Possible Open Cut Mining Area
- 20 Overburden Isopachs
- 40 Structure Contours
- 55% Percentage of coal recovered out of estimated thickness of coal
- Coal, position of bands undefined.
- Roof height uncertain



Bureau of Mineral Resources, Geology and Geophysics, October 1952.

N14-89

PLATE 3

Structure Map and Seam Detail

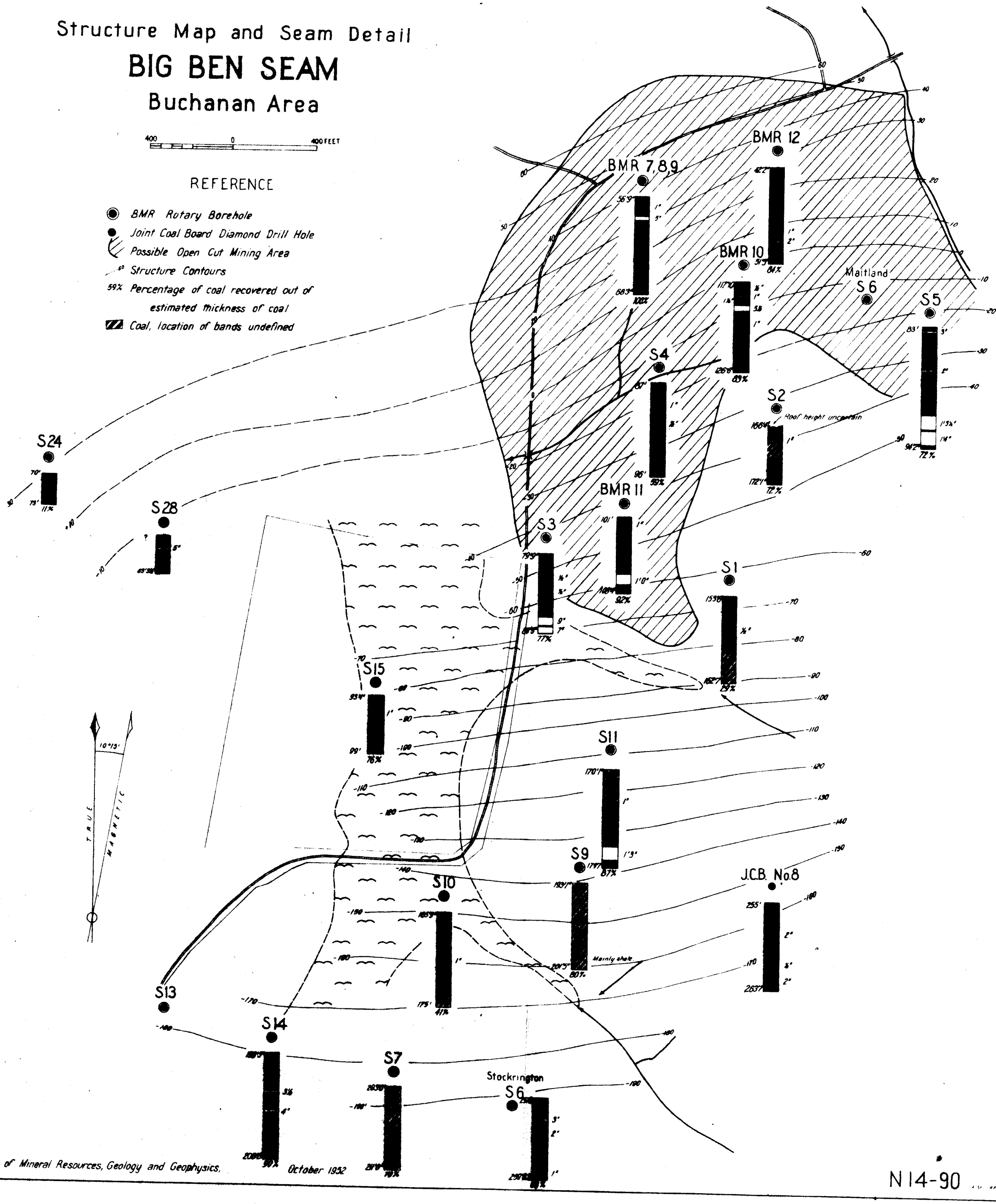
BIG BEN SEAM

Buchanan Area

400 0 400 FEET

REFERENCE

- BMR Rotary Borehole
- Joint Coal Board Diamond Drill Hole
- Possible Open Cut Mining Area
- 60 Structure Contours
- 59% Percentage of coal recovered out of estimated thickness of coal
- Coal, location of bands undefined



Bureau of Mineral Resources, Geology and Geophysics. October 1952

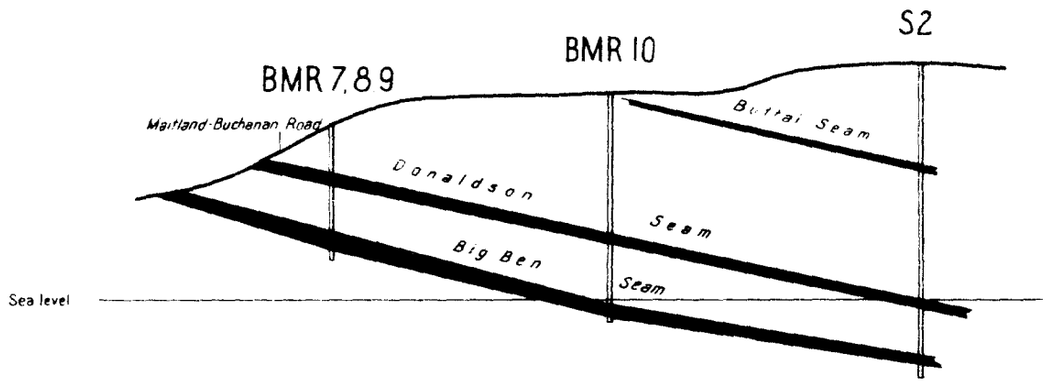
N14-90

SECTIONS AA' AND BB'
Buchanan Area

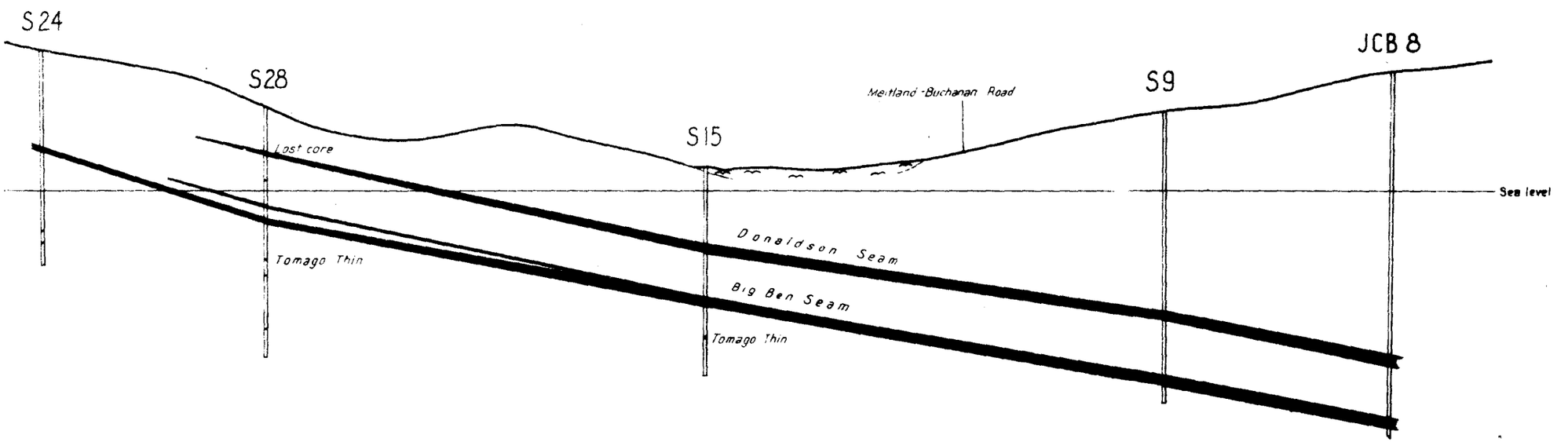
HORIZONTAL SCALE
400 0 400

VERTICAL SCALE
100 0 100

SECTION AA'



SECTION BB'



Bureau of Mineral Resources, Geology and Geophysics, October 1952

N 14-93 A.S.P. 16.10.52

COMMONWEALTH OF AUSTRALIA

Bureau of Mineral Resources, Geology and Geophysics

Area: Buchanan | Hole No: J.C.B. 8 | Elevation: 102.268 ASL

Reference: Plan BMR N14-88, August 1952. | Datum: H.W.B.

Begun: 1949 | Finished: 1949 | Depth: 312'

STRATIGRAPHIC LOG (1"-20')

Clay and Sst.	18' 0"
Mudstone & shale	13' 0"
Sandy shale & coal band	10' 3"
Sst. & shale	11' 9"
Sandy shale & shale	8' 6"
Shale	8' 0"
Coal	6"
Shale & sandy shale	31'10"
Coal	6"
Sandy shale	9' 6"
Coal	2"
Coal	6"
Coal	9"
Mudstone	3' 2"
Sandy shale & sst.	22'11"
Coal	6"
Sandy shale	13' 4"
Coal & shale	2' 3"
Sandy shale	7'11"
Coal	4"
Sandy shale & Ironstone	6' 4"
Coal	3' 4"
Sandy shale & sst.	8' 1"
Coal	1' 0"
Sandy shale	10' 8"
	4"
Sandy shale & mudstone	15' 0"
Sandy shale & sst.	4' 4"
Coal	7' 3"
Mudstone & Sandy shale	11' 9"
Black shale	5' 6"
Fine sst.	17'10"
Sandy shale	2'10"
Coal	3' 7"
Sandy shale & Sst.	5' 5"
Blue shale	8' 0"
Coal	2' 7"
Blue shale	7' 3"
Mudstone	3'11"
Blue shale	7' 5"
Coal	1' 2"
Sandy shale & black shale	13'10"
Coal	8"

COAL DETAIL (1"-1')

HM	V	FC	Ash	BThU
1.7	27.1	36.3	35.0	9018

Coal
Shale
Coal
Mudstone
Coal
Coal

167'11" – 171' 3"

7"
2"
11"
4"
2"
2"
1' 0"

2.0	34.2	47.6	16.2	12042

Coal
Shale
Coal
Shale
Coal
Band
Coal

210' 8" – 217'11"

1'11"
1"
2"
1½"
1
5½"
1½"
4' 3"

Coal

255' 0" – 263' 7"

3' 1"
Band
2"
Coal
2'10"
Band
½"
Coal
1' 5½"
Shale
2"
Shale & coal
6"
Coal
4"

AFTER J.C.B. Plan

DN66 - A

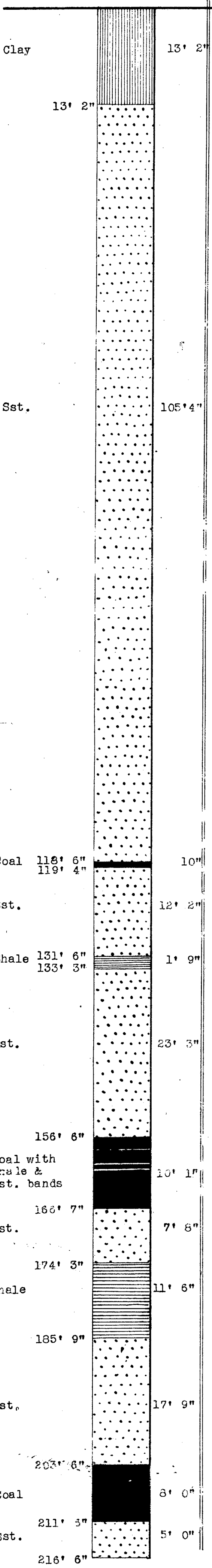
COMMONWEALTH OF AUSTRALIA

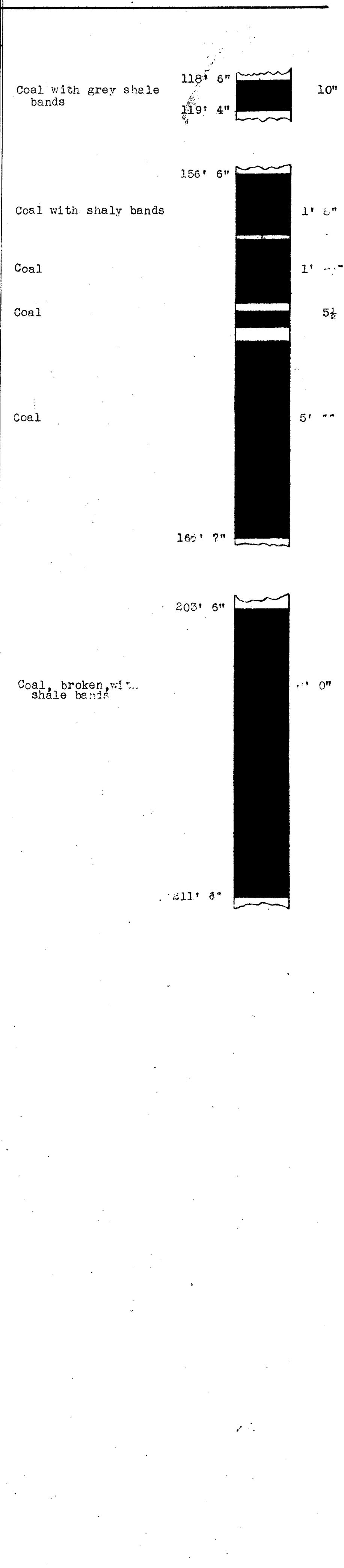
Bureau of Mineral Resources, Geology and Geophysics

Area: Stockrington | Hole No: S7 | Elevation: 24.2' ASL

Reference: Plan BMR N14/88, September 1952 | Datum: H.W.B.

Begun: 29.8.1951 | Finished: 17.9.1951 | Depth: 216'6"





COMMONWEALTH OF AUSTRALIA

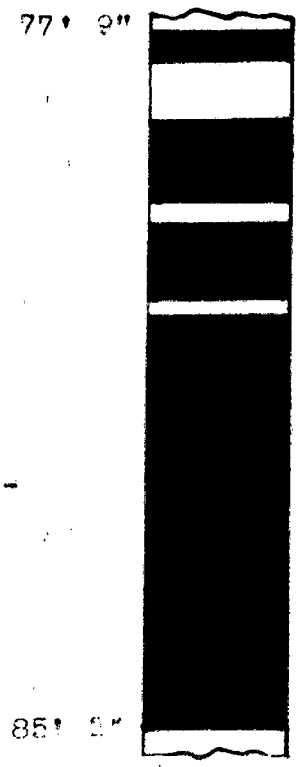
Bureau of Mineral Resources, Geology and Geophysics

Area: Buchanan	Hole No: BMR 10	Elevation:	116.7' ASL
Reference: BMR Plan N14/88, September 52		Datum:	H.W.B.
Begun: 10.6.52	Finished: 11..52	Depth:	128'6"

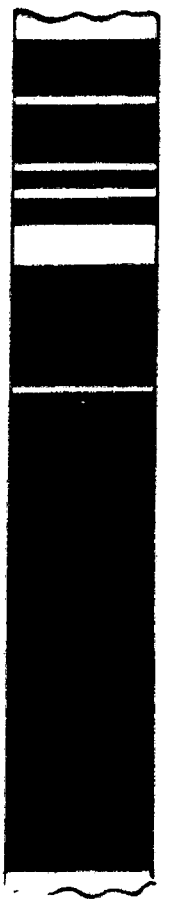
STRATIGRAPHIC LOG (1"-10')

Conglomerate, fine.		26' 6"
	26' 6"	
Shale		9' 0"
	35' 6"	
Sst.		2' 0"
	37' 6"	
Shale		1' 0"
	38' 6"	
Sst.		2' 6"
	41' 0"	
Shale		1' 5"
	42' 5"	
Sst.		1' 4"
	73' 9"	
Shale		4' 0"
	77' 9"	
Coal with shale & sltst. bds.		7' 5"
	85' 2"	
Shale with sltst. sst. clay bds.		32' 8"
	117'10"	
Coal with shale & claystone bds.		8' 8"
	126' 6"	
Shale with sst.bd.	128' 6"	2' 0"

COAL DETAIL (1"-2')



	77' 9"	
Coal, shaly		4"
Coal, bright, shattered		10½"
Coal, mostly bright, shattered		10"
Coal, bright, shattered, weathered, pyritiferous		4' 4"
	85' 2"	



	117'10"	
Coal, bright, fragmentary		1"
Coal, bright, shattered, soft, weathered		7"
Coal, bright, shattered		2½" 3"
Coal, bright, weathered, shattered, soft		1' 3"
Coal, dull & bright, soft, weathered, shattered		4' 2"
	126' 6"	

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S1 MAITLAND.

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 LOCATION APPROX. SWCnr.Ptn9/89°/2240'

Surveyed by G.M.Burton etc. Survey Method Tel.Alidade Elevation 91.3' ASL Ref. Map B.M.R. Plan N14/88

Logged by N.H.Hoyling etc. Cased Not Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by J.McD.Royle Ltd. Type of Drill Mindrill E1000 Depth 163'6" Date Begun/Finished 27.9.51/2.10.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
6	9	6	9	Clay, pinkish brown & white												
22	9	16	0	Sandstone, grey fine to medium grained micaceous partly weathered												
56	9	34	0	Shale, grey & siltstone with thin bands of coal and some micaceous sandstone												
79	9	23	0	Sandstone, grey & light grey fine & medium grained ; micaceous												
101	9	22	0	Shale & siltstone grey micaceous with thin bands of coal												
119	4	17	7	Sandstone, grey & light grey fine & medium grained with bands of siltstone & shale												
125	6	6	2	COAL	4	6	Ref. BMR Records 1952/49 for Coal Analyses					DONALDSONS (GMB)				
141	9	16	3	Sandstone grey fine to very fine grained & some siltstone												
153	6	11	9	Sandstone light grey, medium grained												
156	9	3	3	COAL		9						BIG BEN (GMB)				
156	9½		½	Sandstone, grey, fine grained		½										
162	7	5	2½	COAL, with at least 1½",1",1", and one other band, shale or siltstone, in lower 3'	1	10½										
163	6		11	Sandstone dark grey shaly fine grained.												
				Hole completed												typed 8.10.52

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S2 MAITLAND

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 APPROX. LOCATION SWCnr. Ptn9/69°/2480'

Surveyed by T.H. Rodger etc. Survey Method Tel. Alidade Elevation 133.1' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling etc. Cased Not Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by B.M.R. Type of Drill Failing 2500 Depth 175'10" Date Begun/Finished 3.10.51/8.10.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
27	6	27	6	Sandstone, white and brown, fine & medium grained with bands white siltstone & shale												
28	9		2	COAL, shaly with vertical limonitic joint.		2										
29	2		5	Shale, dark grey		5										
29	8		6	COAL		6										
29	10		2	Shale		2										
30	1		3	Claystone, white with carbonaceous laminae		3										
49	10	19	9	Sandstone, light grey, fine grained with bands coal & siltstone all weathered slightly in parts												
56	10	7	0	Sandstone, grey friable very coarse grain.												
60	10	4	0	COAL with shale bands	1	6	Ref. BMR Records 1952/49 for Coal Analyses					BUTTAI (GMB)				
97	10	37	0	Sandstone dark grey fine grained												
114	10	17	0	Sandstone, dark grey, fine grained with many bands black shale and coal												
119	10	5	0	Sandstone, light grey and grey fine grain. friable												
133	8	13	10	Sandstone, light grey and grey fine grain.												
138	10	5	2	COAL fragmentary		8										
149	10	11	0	Sandstone, grey, fine grained								DONALDSONS (GMB)				
155	10	6	0	Siltstone, grey and dark grey												
156	10	1	0	Sandstone, light grey, friable, medium grained												
166	4	9	6	Sandstone, light grey, fine grained with bands of dark grey shale & grey clay												
167	11	1	7	COAL fragmentary & shattered		11										
168	0		1	Shale		1						BIG BEN (GMB)				
169	7	1	7	COAL, fragmentary & shattered with grey cly.	1	1½										
172	1	2	6	COAL, fragmentary & shattered in part	2	0½										
175	10	3	9	Shale, dark grey, some coal & fine grain. grey sandstone.												
				Hole completed												

BUREAU OF MINERAL RESOURCES

Name and No. of Bore: S3 MAITLAND

DISTRICT: Newcastle | COUNTY: Northumberland | PARISH: Maitland | PORTION: 9 | LOCATION: SWCnr.Ptn9/87°/1340'

Surveyed by: B.M.R. N. Hoyling et al | Survey Method: Tel. Alidade --- | Elevation: 36.8' ASL | Ref. Map: BMR Plan N14/88

Logged by: J.McD.Royle Ltd | Cased: | Datum: H.W.B. | Ref. Report: BMR Records 1952/49

Sunk by: | Type of Drill: Mindrill E1000 | Depth: 90ft | Date Begun/Finished: 19.10.51/25.10.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
~~39~~	~~9~~	~~39~~	~~9~~	~~Sandstone, grey, fine to coarse grained, weathered brown in top 25ft. and with bands dark grey shale~~												
40	3½		6½	COAL shaly		3½						DONALDSONS (GMB)				
40	6½		3	Shale		3										
40	8½		2	COAL		2										
40	10½		2	Siltstone		2										
41	3½		5	COAL		5										
41	10		5½	COAL broken		3½	Refer BMR Records 1952/49 for Coal Analysis.									
42	0		2	Shale		2										
42	9		9	COAL		2										
42	10		1	Siltstone		1										
43	2½		4½	COAL		2½										
43	7		4½	COAL		4½										
43	9½		2½	Sandstone		2										
44	3½		6	COAL		4½										
45	6½	1	3	COAL fragmentary		4										
47	3	1	8½	COAL	1	0										
49	0	1	9	COAL		10										
79	9	30	9	Sandstone, grey, fine to medium grained with darker bands of shale & siltstone												
80	6		9	COAL, shaly in middle		9						BIG BEN (GMB)				
81	0		6	COAL broken		5½										
82	1	1	1	COAL, fragmentary		8										
82	1½		½	Sandstone, light grey fine grained, carbon streaks		½										
83	0		10½	COAL		7										
83	4½		4½	COAL		5½										
83	5		½	Siltstone, grey		½										
84	0		7	COAL shattered in last 2"		7										
85	6	1	6	COAL		9½										
86	0		6	COAL, pyritiferous, broken		6										
90	0	4	0	Shale & siltstone grey to black with two 1" coal bands.												
				Hole completed												

typed 11.2.52

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S4 MAITLAND.

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 APPROX LOCATION SWCnr.Ptn9/60°/1980'

Surveyed by B.M.R. Survey Method Tel. Alidade Elevation 73.0' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling et al Cased --- Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by J. McD. Royle Ltd. Type of Drill Mindrill E1000 Depth 100ft. Date Begun/Finished 26.10.51/7.11.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
30	0	30	0	Sandstone, grey, banded fine grain weathered brown in parts												
51	6	21	6	Sandstone, grey, fine to medium grained with bands of grey shale and a very little coal												
52	4		10	COAL		8						DAWSONS (GMB)				
53	1		9	COAL, broken		4										
53	7		6	Shale		6										
54	1		6	COAL, fragmentary		3½										
54	4		3	Shale		3										
55	0		8	COAL, fragmentary		1										
55	7		7	Shale		7										
56	2½		7½	COAL fragmentary		2										
56	3		½	Shale		½										
59	1	2	10	COAL	1	1½	Refer BMR Records 1952/49 for Coal Analyses.									
60	0		11	COAL fragmentary		8										
71	5	11	5	Sandstone, light grey to grey, coarse grained												
75	0	3	7	Shale dark grey												
87	0	12	0	Sandstone, light grey, fine to coarse grained												
88	5	1	5	COAL												
89	1		8	COAL broken		8						BIG BEN (GMB)				
89	2		1	Siltstone, brassy grey very pyritiferous		1										
89	5		3	COAL		3										
90	5	1	0	COAL, broken	1	0										
90	10½		5½	COAL, fragmentary		3½										
90	11		½	Shale, light grey		½										
91	3		4	COAL, fragmentary & broken		4										
91	4		1	COAL, shaly		1										
91	6		2	COAL		2										
92	6	1	0	COAL	1											
93	8	1	2	COAL broken		10										

Name and No. of Bore S4 MAITLAND.

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
94	8	1	0	COAL fragmentary	5											
95	9	1	1	COAL												
96	0		3	COAL fragmentary	1½											
100	0	4	0	Siltstone, grey & fine grained grey sandstone												
				Hole completed												
														typed	11.9.52	

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S5 MAITLAND.

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 LOCATION APPROX. SWCnr.Ptn9/63°/3310'

Surveyed by Bur.Min.Res. Survey Method Tel.Alidade Elevation 61.0' ASL Ref. Map BMR Plan N14/88

Logged by M.C.Konecki Cased --- Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by J.McD.Royle Ltd. Type of Drill Mindrill E1000 Depth 100'6" Date Begun/Finished 4.12.51/15.12.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
20	0	20	0	Sandstone, v.clayey, soft, yellow weathered												
21	9	1	9	Sandstone, as before		1½										
21	9½		½	Conglomerate, fine reddish-brown		½										
22	5½		8	Siltstone, grey, carb. with plant remains		5½										
22	6½		1	Shale, carb. dk.grey with coal laminae		1										
23	0½		6	Shale, carb. l.grey with plant remains		6										
24	0		11½	Coal, weathered		2										
24	10		10	Sandstone, grey to l.grey, carb. f.gr. passing into m.gr. in the power portion		10										
25	3½		5½	Conglomerate, fine, l.grey		5½										
25	6½		3	Siltstone, grey, carb.		3										
25	11½		5	Sandstone, grey f.grd.		5										
30	0	4	0½	Sandstone, grey, c.gr.		1										
40	3	10	3	Sandstone, as before												
40	4		1	Sandstone, l.grey, carb. banded		1										
41	2½		10½	Siltstone, dk.grey, carb.		10½										
42	8	1	5½	Sandstone, f. to m.gr. grey, carb. banded	1	5½										
43	8	1	0	Very hard, dense, dk.grey rock (clay-ironst?)		3½										
43	11		3	As before		3										
44	0½		1½	COAL, shaly		1½	Refer BMR Records 1952/49 for Coal Analyses					DONALDSONS (GMB)				
44	1½		1	Shale, carb.		1										
45	10	1	10½	COAL		8										
46	0½		2½	COAL		2½										
46	1½		1	Shale, carb.		1										
46	2½		1	COAL		1										
47	0		9½	Siltstone, dk.grey, carb.		3½										
47	1		1	Siltstone as before		1										
49	7	2	6	COAL		1½										
50	10	1	3	COAL												
52	7½	1	9½	COAL, bright		2½										
54	11	2	3½	Sandstone, grey, carb. f.gr. micac. m.hard	1	7										
60	0	5	1	Sandstone grey, carb. f.gr. micac. m.hard	3	5										

Name and No. of Bore S5 MAITLAND.

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
62	2	2	2	Sandstone as before but banded carb. sltst.	2	2										
64	6	2	4	As before	2	4										
65	0		6	Siltstone dk.grey, carb.		3										
68	4	3	4	Siltstone as before but banded l.grey. & dk.grey	3	4										
68	9½		5½	Sandstone m. to c.gr. l.grey slightly bdd.		5½										
73	8	4	10½	Sandstone f.gr. to m.gr. l.grey, carb.fri.	3	5										
74	8½	1	0½	Sandstone as before	1	0½										
76	5½	1	9	Sandstone. l.grey f.gr. banded with carb. shale	1	9										
82	5	5	11½	Sandstone m. to c.gr. l.grey friable m.hd.	5	0½										
82	9		4	COAL, bright		4										
83	0		3	Clayshale dirty off-white with plant remains.		3										
84	2	1	2	COAL, bright	1	1½										
86	5	2	3	COAL, mostly bright	1	9										
86	6		1	COAL, bright		1										
86	8		2	Siltstone, black, carb.		2										
87	6		10	COAL, mostly bright		9½										
88	3½		9½	COAL as before		6										
89	11	1	7½	COAL, as before	1	3										
90	10		11	COAL as before		11										
90	11½		1½	COAL as before		1½										
91	6½		7	Sandstone, l.grey, carb. f.gr.friable		7										
92	4		9½	Siltstone, dk.grey & grey banded with sst. v.f.gr.		8½										
92	6		2	COAL		2										
93	10.	1	4	Mudstone dk.grey. carb. with plant remains	1	4										
94	2		4	COAL		4										
95	5	1	3	Siltstone to v.f.gr.sst. dk.grey	1	3										
100	6	5	1	Sandstone l.grey f. to m.gr. banded in places with dk.grey. carb shale	2	11½										
				Hole completed												

BIG BEN (GMB)

typed 7.10.52

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S6 MAITLAND.

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 LOCATION APPROX. SWCnr/Ptn9/61°/3040'

Surveyed by Bur.Min.Res. Survey Method Tel.Alidade Elevation 88.0' ASL Ref. Map BMR Plan N14/88

Logged by D.K.Malcolm Cased --- Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by J.McD.Royle Ltd. Type of Drill Mindrill E1000 Depth 77'6" Date Begun/Finished 3.1.52/9.1.52

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
20	2	20	2	Clay & sandstone												
20	5		3	Grit, ferruginous		3										
20	6		1	Sandstone		1										
20	9 1/2		3 1/2	Grit		3 1/2										
21	0 1/2		3	Sandstone		3										
22	6 1/2	1	6	Grit & coarse sandstone	1	6										
22	10		3 1/2	Shale, grey		3 1/2										
23	2 1/2		4 1/2	Sandstone, with non-oxide bands		4 1/2										
26	11	3	9	Shale, grey with plant remains		9										
27	11	1	0	Shale, grey, sandy		5 1/2										
28	7		8	Shale, carbonaceous		1										
28	11 1/2		4 1/2	Shale, grey		4 1/2										
29	1 1/2		2	COAL, hard bright		2										
30	7 1/2	1	6	Sandstone, fine g.shaly	1	6										
36	6	5	10	Sandstone, sandy shale	4	1										
36	7		1	COAL, bright		1										
38	2	1	7	Shale, grey, sandy, with thin vitrain bands up to 1/4"	1	7	Refer BMR Records 1952/49 for Coal Analyses									
38	8		6	Grit		6										
38	9 1/2		1 1/2	Shale, carbonaceous		1 1/2										
39	0 1/2		3	Sandstone, coarse		3										
40	6 1/2	1	6	Siltstone, grey with plant remains		7										
42	7 1/2	2	1	Siltstone, grey with plant remains	1	2										
44	9	2	1	Sandstone, grey, shaly with plant remains	2	1										
45	1		4	Siltstone, grey		4										
45	3 1/2		2 1/2	Shale, carbonaceous		2 1/2										
46	5	1	1 1/2	Siltstone, grey		10										
46	7		2	Siltstone, grey		2										
46	10 1/2		3 1/2	COAL, generally dull with fine bands of vitrain & pyrites		3 1/2										
47	3 1/2		5	Shale, grey sandy		5										
52	3 1/2	5	0	Siltstone, grey	4	0										

Name and No. of Bore S6 MAITLAND.

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
54	3½	2	0	Sandstone, fine grained, grey	1	1										
54	6		2½	Siltstone, grey		2½										
55	4		10	Sandstone, f. grained, grey, shaly		10										
56	7	1	3	Siltstone, grey with plant remains	1	3										
59	3	2	8	Sandstone, f.grd. grey, shaly with fine coal bands and lenses	2	8										
60	5	1	2	Shale, black, abundant plant remains	1	2										
62	9	2	4	Siltstone, coarse grd. grey	2	4										
64	4	1	7	Sandstone, coarse grd. grey	1	7										
65	4	1	0	Shale, carbonaceous, plant remains	1	0										
65	7		3	Shale, carbonaceous, vitrain bands up to ¼"		3										
66	1		6	COAL, dull & hard with thin bands carb.sh. & pyrites		6						DONALDSONS (GMB)				
67	4	1	3	COAL, generally dull, vitrain bands up to ¼"		10										
67	6		2	Shale, carbonaceous		2										
68	4		10	COAL, dull dirty with fine vitrain & pyr. bands		7										
68	5		1	Shale, carbonaceous												
68	5½		½	COAL, bright		½										
68	10		4½	Shale, black, sandy		4½										
69	1		3	COAL		3										
69	4		3	Shale, carbonaceous		3										
73	4	4	0	COAL												
73	10		6	COAL, hard, bright		6										
74	3		5	Shale, grey, sandy		5										
74	7		4	Siltstone, black, plant remains		4										
77	6	2	11	Siltstone, grey	2	6										
				Hole completed									typed 9.10.52			

BUREAU OF MINERAL RESOURCES

Name and No. of Bore BMR 7,8 & 9 BUCHANAN

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 LOCATION APPROX. SWCon. Por9/39°/2370'

Surveyed by T.H.Rodger etc. Survey Method Tel.Alidade Elevation 98' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling Cased Not Datum BMR HWB Ref. Report BMR Records 1952/49

Sunk by BMR Type of Drill Failing 750/290 Depth BMR 7 76'8" 8 71'1" 9 66'2" Date Begun/Finished 2.6.52/6.6.52

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
22	9	22	9	Sandstone, grey and ferruginous, fine to medium grain.												
24	0½	1	3½	COAL, bright shattered		6										
24	1½		1	Claystone, dark grey, very soft		1										
24	2		½	COAL, bright		½										
25	1		11	Shale, grey, soft, harder in last 3"		7										
												DONALDSONS (GMB)				
26	8	1	7	COAL, bright		8	1/BMR9									
27	6		10	COAL, bright, mostly shattered		10										
27	9		3	Claystone, dark grey, soft		3										
28	4½		7½	COAL, mostly bright		4	2/BMR9									
28	10½		6	Shale, dark grey to black, soft		4				6						
28	11½		1	COAL, dull soft		1										
29	0		½	Shale, dark grey, soft		½										
30	9	1	9	COAL, bright, fragmentary		6	3/BMR9									
31	1		4	COAL, bright, finely divided		2										
31	11		10	Claystone, brownish-black, soft, with diss. pwdry bright coal (probably represents weathered coal)		10	4/BMR9									
37	9	5	10	Shale, grey, soft, micaceious with contorted micaceous carbonaceous bands and concretions	5	10										
56	9	19	0	Sandstone, grey, fine-grained, clayey, micaceous												
												BIG BEN (GMB)				
57	6		9	COAL, bright, shattered		9	5/BMR9									

All Samples sent to J.C.B. for special Examination.

Name and No. of Bore BMR 7,8, & 9 BUCHANAN

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
57	9		3	COAL, brownish-black, soft, very weathered		3	6/BMR9									
57	10		1	Shale, black, soft, with yellow copperas on joint planes		1											
58	7		9	COAL, bright, finely divided, ?weathered		9											
58	9		2	Claystone, black, soft, ?weathered coal		2	7/BMR9										
59	0		3	Claystone, brownish-black with disseminated bright coal and copperas (may represent weathered coal		3											
59	9		9	COAL, brownish-black, bright friable, weath.		9	8/BMR9									
59	9½		½	COAL, black, soft												
59	9½		½	COAL, black, soft, ?weathered		½										
60	0½		3	COAL, bright		3	9/BMR9									
60	9		8½	COAL, brownish-black & bright, soft, probably weathered		8½										
61	1		4	COAL, bright, fragmentary		4										
62	0		11	COAL, bright, fragmentary		11	10/BMR9									
66	3	4	3	COAL, bright, finely divided, soft, weathd.	4	3	11/BMR9 12/BMR9	to 63'4" to 66'3"								
66	4		1	Shale, light, grey, soft		1										
67	0½		8½	Sandstone, light grey, fine grained		8½										
68	5½	1	5	Shale, dark grey, very carbonaceous, soft	1	5										
71	5½	3	0	Claystone, dark grey, soft, with abundant carbonised leaves	3	0										
71	8½		3	Dant, bright		3										
75	8	3	11½	Sandstone, light grey, medium-grained	2	0										
76	2		6	Shale, dark grey		6										
76	8		6	Shale, dark grey		6										
				Hole completed										typed 15.10.52		
				Stratigraphical details from 22'9" to 66'4" are derived from BMR9, remainder from BMR7, BMR8 is 4' NE of BMR7 ' BMR9 is 4' NW. of BMR 7												

BUREAU OF MINERAL RESOURCES

Name and No. of Bore BMR 10 BUCHANAN

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 LOCATION SWCnr Ptn 9/53° APPROX./2550'

Surveyed by T.H.Rodger etc. Survey Method Tel.Alidade Elevation 116.7' Ref. Map B.M.R Plan N14/88

Logged by N.Hoyling Cased Not Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by BMR Type of Dril BMR's Fail 750/290 Depth 128'6" Date Begun/Finished 10.6.52/11.6.52

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
26	6	26	6	Conglomerate, light grey, ferruginous, fine, poorly sorted with some medium grained sandstone bands												
35	6	9	0	Shale, grey, medium soft												
37	6	2	0	Sandstone, grey, medium to coarse grained slightly ferruginous												
38	6	1	0	Shale, grey, soft												
41	0	2	6	Sandstone, grey, medium-grained, medium-hard												
41	6		6	Shale, black and coal shaly												
42	5		11	Shale, light grey		9										
48	2	5	9	Sandstone, brownish-grey, medium to fine grained, carbonaceous, shaly, soft, pyrt. concretionary	5	6										
73	9	25	7	Sandstone, shaly & interbedded siltstone & shale, all grey.												
77	9	4	0	Shale, grey												
78	1		4	COAL, shaly												
78	5		4	Shale, black		4										
78	8½		3½	Shale, dark grey, silty, soft		3½										
79	1		4½	COAL, bright shattered		2	1/BMR10				5	DONALDSONS (GMB)				
79	7		6	COAL, bright shattered		5										
79	10		3	Shale, dark grey to black, soft		3										
80	1		3	COAL, bright, shattered		2½										
80	8		7	COAL, mostly bright, fragmentary to shattered		6½										
80	10		2	Siltstone, greyish-black, soft		2										
81	1		3	COAL, bright, shattered		nil										

All samples except one sent to J.C.B. for special Examination

Name and No. of Bore BMR 10 BUCHANAN

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
			9	COAL, bright shattered		6										
													DONALDSONS (GMB)			
83	1	1	3	COAL, bright, soft, very weathered, pyrt.		7½	2/BMR10									
84	10	1	9	COAL, originally bright, now soft, very weathered		8½										
85	2		4	COAL, soft weathered												
85	6		4	Siltstone, dark grey, soft with black laminae		4										
86	6	1	0	Shale, grey, very soft	1	0										
86	10		4	Sandstone, brownish-grey, fine-grained, medium soft.		1										
117	0	30	2	Shale, grey, silty & sandy in bands, sideritic at 104'												
117	6		6	Shale, black												
117	10		4	Claystone, light brownish-grey with a black band, medium soft		4										
													BIG BEN (GMB)			
118	5½		7½	COAL, bright fragmentary		2½	3/BMR10									
118	6		½	Shale, black		½										
118	9		3	COAL, bright shattered		3										
119	1		4	COAL, soft, weathered		4	4/BMR10									
119	2		1	Shale, black soft with a pyrite band		1										
119	4½		2½	COAL, soft weathered		2½										
119	6		1½	Shale, black, soft		1½										
119	9		3	COAL, bright, shattered		2½	CSIRO special examination									
120	2½		5½	Claystone, black, soft		5½										
120	6		3½	COAL, soft, weathered		2										
120	11		5	COAL, bright, fragmentary to shattered		5	5/BMR10									
121	3½		4½	COAL, soft, weathered		4½	6/BMR10									
121	5½		2	COAL, shaly, shattered		2										
121	6½		1	Shale, light brownish-grey, very soft		1										
122	3½		9	COAL, soft, weathered		9				1						

Name and No. of Bore BMR 10 BUCHANAN

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
122	6		2½	COAL, slightly shaly with bright band		2½	7/BMR10									
123	0		6	COAL, dull slightly shaly		6										
123	5		5	COAL, bright, shattered		4½										
123	9		4	COAL, soft, weathered		3½	8/BMR10									
124	1		4	COAL, dull with bright bands		3½	9/BMR10									
124	6		5	COAL soft, weathered		Nil										
124	10		4	COAL, dull with bright bands, fragmentary		4	10/BMR10									
126	6	1	8	COAL, soft and ?weathered	1	5	11/BMR10									
126	10		4	Sandstone, grey, fine-grained		4										
128	6	1	8	Shale, grey		8										

Hole completed.

BUREAU OF MINERAL RESOURCES

Name and No. of Bore BMR 11 BUCHANAN

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 LOCATION APPROX. SW Cnr Ptn 9/80°/1700'

Surveyed by T.Rodger etc. Survey Method Tel.Alidade Elevation 60.1' ASL Ref. Map BMR Plan N14/88

Logged by N.Hoyling Cased Not Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by BMR Type of Drill BMR's Fail 750/290 Depth 113'4" Date Begun/Finished 11.6.52/13.6.52

Estimated Depth Ft.	Estimated Depth Ins.	Estimated Thickness Ft.	Estimated Thickness Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Core Measured Ins.	Coal Sample No.	Min. Bands Included Ft.	Min. Bands Included Ins.	Min. Bands Excluded Ft.	Min. Bands Excluded Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
8	0	8	0	Clay, reddish-brown with ferruginous sandstone fragments												
20	0	12	0	Clay, greyish-brown with some sandstone fragments												
30	3	10	3	Sandstone, grey, fine-grained, shaly, soft with interbedded grey shale bands												
30	7		4	COAL, bright												
30	9		2	Shale, grey, soft		2										
31	7		10	Sandstone, light grey fine-grained		6½										
46	0	14	5	Sandstone, light grey, fine-grained, shaly soft												
56	0	10	0	Shale, grey, medium-hard												
61	0	5	0	Shale, dark grey, very carbonaceous in parts with soft black shale												
65	0	4	0	Sandstone, grey, fined-grained												
65	5		5	COAL, shaly												
67	5	2	0	COAL, probably soft and weathered	Nil											
67	6		1	Shale, grey, medium hard		1										
												DONALDSONS (GMB)				
67	7½		1½	COAL, dull		1½	1/BMR11									
68	1½		6	Shale, grey to black, soft, very carbonaceous in bands		6										
68	5		3½	COAL, dull, with much soft weathered mat.		3½										
68	6½		1½	Sandstone, grey medium-grained		1½				1½						
68	9		2½	COAL, soft, ?weathered with bright frag.		2½										
68	11		2	Sandstone, light grey, fine-grained, medium hard		2										

Name and No. of Bore BMR 11 BUCHANAN

Estimated Depth Ft.	Estimated Depth Ins.	Estimated Thickness Ft.	Estimated Thickness Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Core Measured Ins.	Coal Sample No.	Min. Bands Included Ft.	Min. Bands Included Ins.	Min. Bands Excluded Ft.	Min. Bands Excluded Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
68	11½		½	Shale, black, very soft		½	2/BMR11									
69	5		5½	COAL, soft, ?weathered with bright fragm.		5½										
70	2		9	COAL, as immediately preceeding		9										
70	5		3	Shale, black, soft		3										
72	0	1	7	COAL, soft, weathered, with bright fragm.	1	7	3/BMR11									
72	11		11	COAL, mostly bright, fragmentary to shattered		6	4/BMR11									
74	6	1	7	Sandstone, light grey, fine-grained, soft	1	4½										
92	0	17	6	Sandstone, dark grey, fine-grained, carb.												
101	0	9	0	Shale, grey soft												
101	4		4	COAL, soft, weathered												
												BIG	BEN	(GMB)		
101	6		2	COAL, bright, shattered mostly		2	5/BMR11									
101	10		4	COAL, dull with a pyrites band		3½										
102	4		6	COAL, bright, shattered in top 3"		4½										
102	10½		6½	COAL, dull with bright bands		6½										
103	1		2½	COAL, bright, finely divided, ?partly weathered		2										
103	4		3	COAL, bright		3										
104	2		10	COAL, dull with bright bands, shaly in last 2"		10	6/BMR11									
105	2	1	0	COAL, bright with dull bands, fragmentary to shattered	1	0	7/BMR11									
105	6		4	COAL, dull, shaly		4										
106	6	1	0	COAL, bright, shattered, soft	1	0	8/BMR11									
106	10½		4½	Shale, dark grey, sandy		4½										
107	6		7½	Claystone, black, very soft		7½	9/BMR11									
108	4		10	COAL, soft with many bright fragments ? weathered		10										

Name and No. of Bore BMR 11 BUCHANAN

Estimated Depth Ft.	Estimated Depth Ins.	Estimated Thickness Ft.	Estimated Thickness Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Core Measured Ins.	Coal Sample No.	Min. Bands Included Ft.	Min. Bands Included Ins.	Min. Bands Excluded Ft.	Min. Bands Excluded Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
109	0		8	Shale, grey		8										
109	2½		2½	Shale, black		2½										
109	6		3½	Shale, light grey		3½										
109	10		4	Shale, dark grey		4										
110	0		2	Siltstone, grey, medium, soft		2										
113	4	3	4	Shale, grey, hard, sandy	3	0										
				Hole completed.												

BUREAU OF MINERAL RESOURCES

Name and No. of Bore BMR 12 BUCHANAN

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland PORTION 9 APPROX LOCATION SWCnr.Pt n9/45°/2970'

Surveyed by T.Rodger et al Survey Method Tel.Alidade Elevation 72.3' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling Cased --- Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by B.M.R. Type of Drill Failing 750/290 Depth 85'8" Date Begun/Finished 13.6.52/16.6.52

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
2	0	2	0	Surface soil												
7	0	5	0	Shale, light brownish-grey, soft												
21	0	14	0	Sandstone, ferruginous, medium-grained with light brownish-grey shale bands												
42	2	21	2	Shale, grey soft												
42	5		3	COAL, dull with bright bands									BIG BEN (GMB)			
45	5	3	0	COAL, pyritiferous dull with bright bands, mostly fragmentary, but also broken or shattered	2	7	1/BMR12									
48	2 1/2	2	9 1/2	COAL, as immediately preceding	2	4	2/BMR12									
48	4 1/2		2	COAL, soft, probably weathered		2										
48	5		1/2	Shale, brown		1/2										
48	5 1/2		1/2	Shale, brown												
49	3		9 1/2	COAL, dull with bright bands, fragmentary & shattered		8	3/BMR12									
49	5		2	Claystone, grey, very soft		2										
51	5	2	0	COAL, dull with bright bands, fragmentary & shattered	1	8 1/2	4/BMR12									
52	2		9	Sandstone, grey, coarse-grained with contorted carbonaceous laminae		8 1/2										
52	11		9	Shale, grey, silty		6										
61	0	8	1	Sandstone, grey, fine-grained, friable												
68	9	7	9	Sahel, dark grey, caronaceous with thin coal bands												
69	3		6	COAL, dull												

Samples sent to Joint Coal Board for Special Examination.

Name and No. of Bore BMR 12 BUCHANAN

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
70	10	1	7	Shale, grey, very soft	1	7										
71	1		3	Sandstone, grey, fine-grained, medium-hard		3										
71	6		5	Shale, grey, very soft		5										
72	3		9	COAL, bright		9										
75	9	3	6	Shale, dark grey, carbonaceous, soft	3	2										
77	11	2	2	Shale, dark grey, carbonaceous, soft												
78	2		3	COAL, dull								TOMAGO THIN (GMB)				
78	6		4	COAL, bright with dull bands		4										
78	8		2	Sandstone, greyish-black, medium-grained, pyritiferous, medium-hard		2										
79	1½		5½	COAL, dull with some bright bands		5½										
79	2½		1	Sandstone, greyish-black, medium-grained, pyriteferous, medium-hard		1										
80	2½	1	0	COAL, dull with some bright bands	1	0										
81	2		11½	COAL, mostly bright		11½										
81	5½		3½	COAL, dull		3½										
81	6½		1	Shale, grey, soft		1										
81	10½		4	COAL, dull with bright bands		4										
82			2	Shale, dark brownish-grey, medium soft		2										
82	10		9½	COAL, bright mostly, broken		9½										
83	2		4	Shale, greyish-black with light bands, soft		4										
83	4		2	Shale, greyish-black, medium hard		2										
85	8	2	4	Sandstone, brownish-grey, fine-grained with carbonaceous bands	2	3										
				Hole completed.												

Typed 9.9.52

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S6 STOCKRINGTON

DISTRICT Newcastle COUNTY Northumberland PARISH Stockrington PORTION 16 LOCATION PPROX. NWCnr.Ptn14/147°/3080'

Surveyed by G.M.Burton et al Survey Method Tel. Alidade Elevation 59.3' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling et al Cased --- Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by B.M.R. Type of Drill Failing 2500 Depth 660'8" Date Begun/Finished 21.8.51/11.9.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No:	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
7	8	7	8	Clay, surface soil												
14	8	7	0	Shale, ferruginous, fossiliferous												
64	8	50	0	Sandstone, grey fine-grained, with bands dark grey siltstone and shale, very permeable about 44'8"												
80	8	16	0	Siltstone, dark grey and shale												
88	8	8	0	Sandstone, grey, fine-grained, dark grey to black shale & some thin coal bands												
96	8	8	0	Siltstone, white interbedded, possibly tuffaceous, dark grey shale and grey sandstone												
108	8	12	0	Siltstone dark grey and shale												
144	8	36	0	Siltstone, dark grey and shale with some coal bands and fine-grained grey sandstone near 115-120 and 129'												
161	8	17	0	Shales dark and siltstone, with some thin coal bands												
189	8	28	0	Sandstone, grey and light grey, fine-grained, dark shale and thin coal bands interbedded												
204	5	14	9	Siltstone, grey with bands of dark shale and fine grained sandstone.												
205	3		10	COAL, somewhat shaly		7	Ref BMR Records 1952/49 for Coal Analysis									
205	4		1	Iron Pyrites, with some coal		1										
208	1	2	9	COAL somewhat shaly or pyritiferous, broken to shattered	1	6										
208	5		4	Sandstone		3½										
212	8	4	3	COAL, mainly broken	1	5										
221	8	9	0	Sandstone, grey fine-grained												
232	8	11	0	Siltstone, light and dark grey with some dark grey shale												

DONALDSONS (GMB)

Name and No. of Bore S6 STOCKRINGTON

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
251	8	19	0	Sandstone light grey fine grained with bands of siltstone												
253	8	2	0	COAL	1	6						BIG BEN (GMB)				
253	11		3	Shale		3										
255	0	1	1	COAL with grey shale band at about 254'9"	1	1										
255	1		1	Shale, grey		1										
255	2		1	Shale, black		1										
255	10		8	COAL		8										
256	1½		3½	COAL inferior		3½										
256	3½		2	COAL		2										
256	6		2½	COAL shaly		2½										
256	8		2	COAL		2										
257	0		4	COAL shaly		4										
258	2	1	2	COAL somewhat pyritiferous, shattered in top half	1	2										
258	10½		8½	COAL		7½										
258	11½		1	Shale		1										
259	6½		7	COAL fragmentary		3										
271	8	12	1½	Shale dark grey & black, with grey siltst.	1	1½										
275	8	4	0	Sandstone light grey soft, medium grained												
280	2	4	6	Siltstone dark grey with some black shale & coal												
287	8	7	6	Sandstone grey fine grained with bands of grey clay and black shale												
319	8	32	0	Siltstone dark grey and shale with some thin coal bands												
336	8	17	0	Sandstone grey fine grained with bands of dark grey siltstone & shale												
353	8	17	0	Sandstone grey and light grey medium grained with bands of dark grey shale												
361	8	8	0	Shale, grey and dark grey and siltstone												
364	8	3	0	Sandstone grey fine grained												
399	8	35	0	Sandstone grey to dark grey with some isolated thin bands of coal												
422	8	23	0	Sandstone light grey fine grained soft interbedded with dark grey shale and siltstone and thin coal bands												

Name and No. of Bore S6 STOCKRINGTON

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
439	8	17	0	Sandstone dark grey fine grained with dark grey shale interbeds												
469	8	30	0	Sandstone, light grey fine grained with bands of grey clay and coal												
484	8	15	0	Shale, dark grey to black with some coal bds												
490	8	6	0	Shale dark grey with fine grained sandstone												
499	8	9	0	Shale, greyish black, black and calcitic, with pyritiferous coal bands including one greater than 1'2⅛"												
551	8	52	0	Sandstone (pyritiferous) dark grey, fine grained with siltstone and shale												
553	8	2	0	Siltstone, greyish black, black shale and some coal												
561	8	8	0	Siltstone, grey and shale												
608	8	47	0	Sandstone, light to dark grey, fine to medium grained, dark grey siltstone and minor coal bands												
622	8	14	0	Siltstone, grey interbedded with coal, fine frained, grey sandstone & some light coloured shale												
635	8	13	0	Sandstone, light grey, fine grained with bands of pale shale and coal												
660	8	25	0	Sandstone light grey, fine grained.												
				Hole completed												
														typed 15.9.52		

BUREAU OF MINERAL RESOURCES

Name and No. of Bore: S7 STOCKRINGTON

DISTRICT: Newcastle | COUNTY: Northumberland | PARISH: Stockrington | PORTION: 13 | LOCATION: APPROX NWCnr.Ptn14/157°/2760'

Surveyed by: G.M.Burton | Survey Method: Tel.Alidade | Elevation: 24.2' ASL | Ref. Map: BMR Plan N14/88

Logged by: N. Hoyling et al | Cased: Not | Datum: HWB | Ref. Report: BMR Records 1952/49

Sunk by: J.McD.Royle Ltd | Type of Drill: Mindrill E1000 | Depth: 216'6" | Date Begun/Finished: 29.8.51/17.9.51

Estimated Depth Ft.	Estimated Depth Ins.	Estimated Thickness Ft.	Estimated Thickness Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Core Measured Ins.	Coal Sample No.	Min. Bands Included Ft.	Min. Bands Included Ins.	Min. Bands Excluded Ft.	Min. Bands Excluded Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
13	2	13	2	Clay, sandy brown												
63	1	49	11	Sandstone, light grey, fine to coarse grained, weathered in some of the upper parts												
109	0	45	11	Sandstone, grey to dark grey, fine to medium grained, banded with bands of dark shale and coal												
118	6	9	6	Sandstone, light to dark grey, generally coarse-grained but grading into siltstone and calcareous fine conglomerate												
119	4		10	COAL with grey shale bands												
131	6	12	2	Sandstone light to dark grey fine to coarse grained partly calcareous												
133	3	1	9	Shale black, greyish black siltstone and light grey calcareous clayshale												
156	6	23	3	Sandstone, light grey to black, fine to coarse grained, finely conglomeratic in parts with black shale and thin coal bands in bottom quarter												
158	2	1	8	COAL with shaly bands	1	8	Refer BMR Records 1952/49 for coal analyses					DONALDSONS (GMB)				
158	3½		1½	Shale, dark grey		1½										
159	10	1	6½	COAL		2½										
160	½		2½	COAL		2½										
160	3		2½	Shale, dark grey		2										
160	8½		5½	COAL		4½										
161	1		4½	Sandstone, grey, medium grained		4½										
161	8		7	COAL		4										
163	8	2	0	COAL	1	4										
164	9	1	1	COAL		3										
165	8		11	COAL												
166	7		11	COAL		3										
174	3	7	8	Sandstone, grey fine grained, soft												
185	9	11	6	Shale, dark grey & siltstone												

Name and No. of Bore S7 STOCKRINGTON

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
200	1	14	4	Sandstone, grey, medium to coarse grained calcareous												
203	6	3	5	Sandstone, light grey, fine grained												
208	10	5	4	COAL broken in top third, also contains light grey shale bands	4	6½										
211	6	2	8	COAL and shale band or bands	1	0										
216	6	5	0	Sandstone, grey fine grained												
				Hole completed.												

BIG BEN (GMB)

Typed 11.9.52

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S9 STOCKRINGTON

DISTRICT Newcastle COUNTY Northumberland PARISH Stockrington PORTION 15 LOCATION APPROX. NWCnr.Ptn14/128°/2270'

Surveyed by G.M.Burton etc. Survey Method Tel. Alidade Elevation 55.9' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling Cased Not Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by B.M.R. Type of Drill Failing 2500 Depth 211'10" Date Begun/Finished 12.9.51/19.9.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
11	10	11	10	Clay, brown with ferruginous sandstone												
72	10	61	0	Sandstone, grey fine to medium grained												
89	10	17	0	Siltstone, grey & shale dark grey												
113	9	23	11	Sandstone, dark grey fine to medium grained with siltstone, dark grey & shale with bands of black shale & coal												
146	1	32	4	Sandstone, grey fine grained with bands of dark shale & siltstone & some coal												
148	4	2	3	COAL, with shaly pyritiferous bands	1	1										
148	7		3	Shale, greyish black		3										
152	7	4	0	COAL	2	7½	Ref. BMR Records 1952/49 for Coal Analyses					DONALDSONS (GMB)				
167	10	15	3	Sandstone, grey fine grained												
182	10	15	0	Sandstone, grey medium grained with thick bands of dark grey siltstone & shale												
193	1	10	3	Sandstone, light & brownish-grey fine grained with some greyish-black siltstone & shale												
201	5	8	4	COAL, pyritiferous with some dark grey shale bands and shaly in the last 1'6"	6	5						BIG BEN (GMB)				
211	10	10	5	Siltstone, grey and sandstone light grey medium grained												
				Hole completed												

typed 12.9.52

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S10 STOCKRINGTON

DISTRICT Newcastle COUNTY Northumberland PARISH Stockrington PORTION 15 APPROX. LOCATION SWCnrPtn14/145°/2030'

Surveyed by G.M.Burton Survey Method Tel.Alidade Elevation 18.7' ASL Ref. Map BMR Plan N14/88

Logged by N.Hoyling etal Cased --- Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by J.McD.Royle Ltd. Type of Drill Mindrill E1000 Depth 178' Date Begun/Finished 18.9.51/ 6.10.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
17	4	17	4	Alluvium												
33	0	15	8	Sandstone grey, fine to medium grained with bands of grey siltstone												
59	0	26	0	Siltstone, grey with bands of fine grained grey sandstone												
73	1	47	1	Sandstone, light to dark grey, fine to coarse grained calcareous in the lighter coloured parts												
110	1	37	0	Sandstone, light to dark grey fine to coarse grained, partly calcareous with shale bands												
111	3	1	2	COAL, fragmentary		4½	Refer BMR Records 1952/49 for Coal Analyses									
119	4	8	1	Sandstone grey to light grey, fine to coarse grained shaly in parts in top half												
119	7		3	COAL		2										
119	10		3	Shale, dark grey to black, silty		3							DONALDSONS (GMB)			
121	0	1	2	COAL, fragmentary, shaly in parts		11										
121	8		8	COAL, broken & fragmentary		10										
123	2	1	6	COAL		5½										
124	8½	1	6½	COAL, fragmentary with a thin grained grey sandstone band & some brown shaly bands		7½										
124	9½		1	Siltstone, grey, pyritiferous		1										
126	2	1	4½	COAL, broken		8½										
127	8	1	6	COAL, fragmentary and with some calcite as a vein near bottom		10½										
132	8	5	0	Sandstone, light grey, fine grained												
147	0	14	4	Siltstone, dark grey												
155	9	8	9	Sandstone, light grey, fine & medium grained												
170	0	4	3	COAL, broken with some shaly bands	1	7							BIG BEN (GMB)			
171	1	1	1	COAL & frag. coal w. a g.sh.bd. about 170'6"		11										
173	10	2	9	COAL, fragmentary in last 5"	1	4										
175	0	1	2	COAL with shale bands & shaly in last 1'												
178	0	3	0	Sandstone, grey, fine & Medium grained												
				Hole completed									typed 9.10.52			

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S11 STOCKRINGTON

DISTRICT Newcastle COUNTY Northumberland PARISH Stockrington PORTION 14 APPROX. LOCATION NWCnr.Ptn14/114°/2000'

Surveyed by G.M.Burton etc. Survey Method Tel.Alidade Elevation 62.1' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling etc. Cased Not Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by B.M.R. Type of Drill Failing 2500 Depth 192'1" Date Begun/Finished c19.9.51/2.10.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
24	10	24	10	Sandstone, ferruginous & grey, fine to medium grained with bands of siltstone and shale												
44	10	20	0	Sandstone, grey & dark grey, fine grained												
54	10	10	0	Sandstone, grey and dark grey, fine grained with black shale & coal bands												
64	10	10	0	Sandstone, grey and dark grey, fine grain.												
79	10	15	0	Sandstone, grey and dark grey, fine grain. with black shale and coal bands with much calcite in last five feet												
108	10	29	0	Sandstone, grey and dark grey, fine grain.												
126	4	17	6	Shale, dark grey interbedded with siltst. and fine to coarse grained sandstone												
132	1	5	9	COAL, broken to shattered with bands of hard black shale in top half									DONALDSONS(GMB)			
154	10	22	9	Siltstone and shale dark grey with some fine grained grey sandstone												
170	1	15	3	Sandstone, grey and brownish grey fine grained with bands of black shale												
170	5		4	COAL and shale bands		1	Refer BMR Records 1952/49 for Coal Analyses						BIG BEN (GMB)			
173	2	2	9	COAL, pyritiferous with some shaly bands broken in last 10"	2	9										
173	3		1	Shale		1										
177	7	4	4	COAL, fragmentary and shattered in part	3	10										
178	10	1	3	Shale, black to greyish black with vitrain bands	1	2½										
179	7		9	COAL, mostly fragmentary												
192	1	12	6	Sandstone, grey fine grain. & dk.gy. sltst												
				Hole completed												

typed 20.10.52

BUREAU OF MINERAL RESOURCES

Name and No. of Bore: S13 STOCKRINGTON

DISTRICT: Newcastle | COUNTY: Northumberland | PARISH: Stockrington | PORTION: 16 | APPROX. LOCATION: SWCnr.Ptn14/181°/2440'

Surveyed by: G.M.Burton etal. | Survey Method: Tel.Alidade | Elevation: 72.2' ASL | Ref. Map: BMR Plan N14/88

Logged by: N.Hoyling | Cased: --- | Datum: H.W.B. | Ref. Report: BMR Records 1952/49

Sunk by: Bur.Min.Res. | Type of Drill: Failing 750 | Depth: 270'10" | Date Begun/Finished: 8.10.51/18.10.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
18	8	18	8	Sandstone, grey & brown micaceous fine grd.												
157	8	139	0	Sandstone, grey & dark grey, Micaceous fine grained, with bands of dark grey mic. siltstone & some shale												
168	8	11	0	Sandstone, grey, medium grained, with bands of micaceous dark grey siltstone												
198	5	29	9	Sandstone, light grey, fine grained and dark grey siltstone												
200	2	1	9	COAL, & black shale												
214	8	14	6	Sandstone, light grey, fine grained and dark grey siltstone												
218	2	3	6	COAL	2½									DONALDSONS (?)		(GMB)
246	2	28	0	Sandstone, light grey, fine to medium grd. with bands of dark grey siltstone & shale												
247	5	1	3	COAL & black shale												
268	8	21	3	Sandstone, grey, fine grained, with a coal band 254'8"												
269	5		9	COAL												
270	10	1	5	Siltstone, dark grey, micaceous												
				Hole completed										9.10.52		

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S14 STOCKRINGTON

DISTRICT Newcastle COUNTY Northumberland PARISH Stockrington PORTION 16 APPROX. LOCATION NWCnr.Por14/169°/2540'

Surveyed by G.M.Burton etc. Survey Method Tel.Alidade Elevation 21.6' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling etc. Cased Not Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by B.M.R. Type of Drill Failing 750 Depth 209'4" Date Begun/Finished 11.10.51/18.10.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
13	8	13	8	Alluvium, sandy brown												
28	8	15	0	Sandstone, light grey, fine grained with some thin weathered coal bands & dark grey shale												
53	8	15	0	Shale, dark grey to black with bands of fine grained grey & dark grey sandstone												
70	8	17	0	Shale dark grey, sandy and micaceous in parts and little fine grained dark grey sandstone												
154	2	83	6	Sandstone, grey to dark grey fine grained with bands of grey or dark grey siltst. and shale												
154	7½		5½	COAL		1½						DONALDSONS (GMB)				
154	10½		3	Shale, black, very pyritiferous		3	Ref BMR Records 1952/49 for Coal Analyses									
155	5		6½	Sandstone dark, grey, fine grained, pyrit.		6½										
157	0½	1	7½	COAL, pyritiferous, fragmentary & shattered	1	1										
157	8		7½	Shale, black pyritiferous		7½										
157	9		1	COAL		1										
157	10½		1½	Shale		1½										
160	8	2	9½	Sandstone, grey, fine grained												
165	4	4	8	COAL, fragmentary & shattered (pyritiferous in upper 1'8" and with calcite veins in 3" near base)	3	8										
198	5	33	1	Sandstone, grey and dark grey, fine grained with siltstone, dark grey bands												
202	0	3	7	COAL, shattered and fragmentary with shale band in top 1'	2	2½						BIG BEN (GMB)				
202	3½		3½	Shale, black		3½										

Name and No. of Bore S14 STOCKRINGTON

Estimated Depth Ft.	Estimated Depth Ins.	Estimated Thickness Ft.	Estimated Thickness Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Core Measured Ins.	Coal Sample No.	Min. Bands Included Ft.	Min. Bands Included Ins.	Min. Bands Excluded Ft.	Min. Bands Excluded Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
203	10 1/10	1	7	COAL, fragmentary	1	5										
204	2 3/10		4	Shale, black		4										
204	11		8 1/10	COAL		8 1/10										
205	8 1/10		9 1/10	COAL, shaly		9 1/10										
208	8	2	11 1/2	COAL, broken, fragmentary	2	7 2/10										
209	4		8	Siltstone, dark grey												
				Hole completed.												
							Ref. BMR Records 1952/49 for Coal Analysis									

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S15 STOCKRINGTON

DISTRICT Newcastle COUNTY Northumberland PARISH Stockringston PORTION 14 LOCATION: APPROX. SWCnrPtn14/137°/960'

Surveyed by G.M.Burton et al Survey Method Tel.Alidade Elevation 14.9' ASL Ref. Map BMR Plan N14/88

Logged by N.Hoyling et al Cased --- Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by J.McD.Royle Ltd. Type of Drill Mindrill E1000 Depth 150'7" Date Begun/Finished 8.10.51/16.10.51

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
21	6	21	6	Alluvium, sandy brown												
53	10	32	4	Sandstone, light grey, fine to medium grained												
54	7½		9½	Shale, black with sandy & vitrain bands		9½										
55	1½		6	COAL		3						DONALDSONS (GMB)				
56	2½	1	1	Shale, dark grey to black	1	1										
56	9½		7	COAL, broken		4										
56	11		1½	Shale, greyish black silty		1½										
57	8		9	COAL, fragmentary		3										
58	3½		7½	Sandstone		7½										
61	1½	2	10	COAL	1	8										
61	4		1½	COAL		1½										
71	0	9	8	Sandstone, grey & dark grey fine grained												
78	0	7	0	Shale, greyish-black												
93	4	15	4	Sandstone fine to medium grained												
94	7	1	3	COAL, fragmentary in top 2/3	1	0						BIG BEN (GMB)				
95	0		5	COAL, broken		6										
95	1		1	Shale, brownish-grey		1										
96	8	1	7	COAL	1	7										
99	0	2	4	COAL, broken to fragmentary	1	0½										
122	0	23	0	Sandstone light to dark grey, fine to coarse grained												
124	0	2	0	COAL with some black shale at the top		2						TOMAGO THIN (?) (GMB)				
139	3	15	3	Sandstone light to dark grey fine to coarse grained												
140	6	1	3	COAL												
150	7	10	1	Sandstone & siltstone dark grey fine grained												
				Hole completed								typed 9.10.52				

BUREAU OF MINERAL RESOURCES

Name and No. of Bore S24 STOCKRINGTON APPROX.

DISTRICT Newcastle COUNTY Northumberland PARISH Maitland. PORTION 1 LOCATION SWCnrPtn9/271°/1090'

Surveyed by T.H.Rodger et al Survey Method Tel. Alidade Elevation 104.1' ASL Ref. Map BMR Plan N14/88

Logged by N. Hoyling et al Cased --- Datum H.W.B. Ref. Report BMR Records 1952/49

Sunk by J.McD.Royle Type of Drill Mindrill E1000 Depth 155'6" Date Begun/Finished Nov1951

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
16	0	16	0	Clay, surface												
70	0	54	0	Sandstone, grey fine grained, interbanded with shale												
72	3	2	3	COAL												
73	0		9	COAL, the portion recovered was shaly, frag.		9										
80	2	7	2	Siltstone interbanded with sandstone & shale												
81	1		11	COAL		3½										
95	0	13	11	Sandstone fine grained with shaly bands												
96	8	1	8	COAL, fragmentary in part, bright & dull pyritiferous in part		11½										
99	0	2	4	Sandstone, dark grey, fine grained												
100	9	1	9	COAL	1	0										
155	6	54	9	Sandstone, light to dark grey, fine to medium grained with dark grey shale bands												
				Hole completed.										typed 14.10.52		

BUREAU OF MINERAL RESOURCES

Name and No. of Bore: S28 STOCKRINGTON

DISTRICT: Newcastle | COUNTY: Northumberland | PARISH: Maitland | PORTION: 1 | LOCATION (APPROX.): SWCnr.Ptn9/248°/530'

Surveyed by: M. Crittenden et al | Survey Method: Tel. Alidade | Elevation: 63.5' ASL | Ref. Map: BMR Plan N14/88

Logged by: N. Hoyling et al | Cased: ---- | Datum: H.W.B. | Ref. Report: BMR. Records 1952/49

Sunk by: J.McD. Royle | Type of Drill: Mindrill E1000 | Depth: 146' | Date Begun/Finished: Nov. 1951

Estimated Depth Ft.	Estimated Depth Ins.	Estimated Thickness Ft.	Estimated Thickness Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Core Measured Ins.	Coal Sample No.	Min. Bands Included Ft.	Min. Bands Included Ins.	Min. Bands Excluded Ft.	Min. Bands Excluded Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
12	6	12	6	Clay, grey, partly weathered												
29	9	17	3	Sandstone, siltstone & shale												
34	6	4	9	Coal and sandstone (only 2" coal recovered but lost 4'0" of core may represent coal		9										
51	0	16	6	Sandstone & shale												
51	5½		5½	COAL												
55	6	4	0½	Sandstone & shale												
60	4	4	10	Sandstone f.grained, l.grey, micac. passing into shale, dk.grey, carb.	5	0										
62	3	1	11	Shale, carb. dk.grey with occasional thin coal bands	1	9										
63	7	1	4	Shale, carb. dk.grey	1	0										
63	10		3	Sandstone, grey f.gr. micac. friable		3										
64	3		5	Shale, carb. grey		5										
64	8		5	Sandstone, grey f. grained, micac.		5										
67	11	3	3	Shale, carb. silty, micac. dk.grey	3	3										
68	8		9	Sandstone, f.gr. micac. friable		9										
69	10	1	2	Shale, carb. dk.grey		2										
69	11		1	COAL		1										
70	2		3	Shale, carb. dk.grey		3										
70	6½		4½	COAL		4½										
71	11½	1	5	Shale, carb. dk.grey	1	5										
72	9½		10	Sandstone, grey, carb. f.grained. to m. grained		10										
75	0	2	2½	Shale, carb. silty hard, pyritiferous	1	11										
79	4	4	4	Shale, carb. dk.grey	4	4										
80	4	1	0	COAL, vory shaly, pyritiferous		6										
80	9		5	Shale, coaly		5										
81	0		3	COAL		2½										
83	0	2	0	COAL		9½										
83	3½		3½	COAL		3½										
84	10	1	6½	Shale, coaly		5½										
85	6		8	Shale, black, carb. with thin bands coal		8										

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Name and No. of Bore 328 STOCKRINGTON

Estimated Depth Ft.	Estimated Depth Ins.	Estimated Thickness Ft.	Estimated Thickness Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Core Measured Ins.	Coal Sample No.	Min. Bands Included Ft.	Min. Bands Included Ins.	Min. Bands Excluded Ft.	Min. Bands Excluded Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
85	9		3	COAL		3										
85	11		2	Sandstone, m.grained, carb. grey		2										
86	11	1	0	Sandstone, as before	1	0										
88	9	1	L0	Sandstone, as before	1	10										
90	1	1	4	Sandstone, & carb. shale interbedded	1	4										
95	5	5	4	Sandstone, m.grained, grey, banded with carb. matter, dk.grey in lower 2'	5	1										
98	2	2	9	Sandstone, grey m.grained, carb.	2	9										
100	8	2	6	Shale, carb. silty	2	5										
104	4	3	8	Shale, carb. black, pyritiferous	3	8										
104	8		4	COAL		4										
105	4		8	COAL, shaly		2										
105	10		6	COAL		4										
106	0		2	COAL, shaly		2										
108	2	2	2	Shale, carb. dk.grey	1	8										
109	0		10	Sandstone, grey, v.f.gr. with plant remains		10										
111	5	2	5	Siltstone, grey, banded with sst. l.grey v.f.gr.	2	5										
111	7		2	COAL		2										
111	11½		4½	Siltstone, black, carb. with thin bands of coal		4½										
113	3	1	3½	Siltstone, black, carb. pyritiferous	1	2										
115	2	1	11	Sandstone, f.gr. l.grey, pyritif. with p plants	1	11										
115	9		7	COAL		5										
117	0	1	3	COAL	1	3										
118	0	1	0	Shale, carb. silty, hard, dk.grey		2½										
118	2½		2½	Shale, as before		2½										
120	2	1	11½	Sandstone, f.gr. l.grey, banded with dk. grey shale	1	8½										
120	10		8	Shale, coaly, black with thin coal bands		8										
122	2	1	4	Shale, silty black, carb.	1	4										
125	0	2	10	Siltstone, banded grey to black v.carb. & pyritiferous	2	10										
125	5		5	Sandstone, f. to m.gr. v.carb. & pyritif.		5										
126	6	1	1	COAL, shaly in parts	1	1										
126	9		3	Shale, carb. black		3										
128	11	2	2	Sandstone, f.gr. banded v.carb. & pyritif.	2	2										

Name and No. of Bore S28 STOCKRINGTON

Estimated Depth Ft.	Ins.	Estimated Thickness Ft.	Ins.	GEOLOGICAL DESCRIPTION OF STRATA	Core Measured Ft.	Ins.	Coal Sample No.	Min. Bands Included Ft.	Ins.	Min. Bands Excluded Ft.	Ins.	PROXIMATE ANALYSIS H.M.	V.	F.C.	ASH	B.TH.U/LB
129	11	1	0	Sandstone, f.gr. l.grey, pyritif.non-carb.		7										
134	5½	4	6½	Sandstone, as before	4	6½										
135	5½	1	0	Shale, silty black, pyritif	1	0										
137	4½	1	11	Sandstone, l.grey, clayey	1	11										
137	9		4½	Shale, black, pyritiferous		1										
139	1	1	4	Shale, as before	1	4										
140	4	1	3	COAL, shaly in parts	1	3										
140	5½		1½	Shale, carb.		1½										
140	7½		2	COAL		2										
143	11½	3	4	Sandstone, banded l.grey & dk.grey f. to m.gr.	3	4										
144	1½		2	Siltstone, dk.grey v.hard pyritiferous & carb. with impressions of leaves		2										
146	0	1	10½	Lost: 144'1½"-146' unidentified												
				Hole completed												

typed 20.10.52