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BUREAU OF MINERAL RESOURCES,
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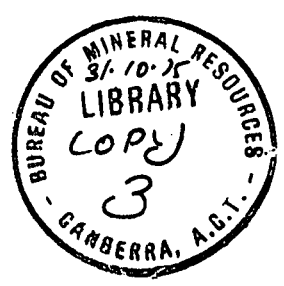
Record 1945/74

Coal in the Northern Territory

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by

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DEPARTMENT OF SUPPLY AND SHIPPING

MINERAL RESOURCES SURVEY

COAL IN THE NORTHERN TERRITORY

Report No. 1945/74

1. INTRODUCTION

In Australia, coal seams occur in stratified rocks of Permo-Carboniferous, Triassic, Jurassic and Tertiary systems. Black coal occurs in the rocks of the first three systems, and brown coal in the Tertiary.

In the Northern Territory, Permo-Carboniferous, Jurassic (and/or Cretaceous) and Tertiary rocks are present. The Permo-Carboniferous rocks are restricted to the coastal belts in the north-western and north-eastern parts. Small areas in the extreme southern parts have been doubtfully referred to the Permo-Carboniferous system. Jurassic and/or Cretaceous rocks occur in the northern regions and possibly also in the extreme southern. Thin deposits of Tertiary to Recent age occur at numerous places.

Coal has been found in the Northern Territory, but none of the occurrences are of commercial importance. When Permo-Carboniferous rocks were known to occur in north-western regions, recommendations for testing by drilling were made. Ten drill holes were put down between 1905 and 1912 but revealed only thin seams. Because rocks of probable Permo-Carboniferous age were found on the northern and eastern coast and because pieces of black shale were found in a few places, drilling was recommended in 1908. Three holes were drilled in 1912 and 1913, but no coal was intersected. No coal has been found in the Jurassic and/or Cretaceous rocks. A 12-foot seam of clay and lignite was found in a well sunk through the alluvial deposits of the Hale River, but a sample proved it to be of poor quality.

2. PORT KEATS - CLIFF HEAD DISTRICT

This district is situated to the south-west of Darwin and includes the coastal region between the mouths of the Daly and Fitzmaurice Rivers. On David's map an area of Permo-Carboniferous rocks is shown with a length of 80 miles along the coast and a width of 20 miles.

Permo-Carboniferous fossils were found in 1894 and drilling recommended in 1895 by Brown.

1. Port Keats Area: Boring was started at Port Keats in 1905. The Port Keats No. 1 Bore was put down in November and December, 1905 and abandoned at 395 feet because the tools stuck (Brown, 1906).

Brown or black shale with small veins of coal was reported between 360 and 362 feet. Analyses of the shale and coal (A) and of the coal (B) were:-

	A	B
Moisture	6.6	13.60
Fixed carbon	23.3	37.48
Volatile Hydrocarbons	29.2	40.40
Ash and sand	40.9	8.52

The Port Keats No. 2 bore (Brown 1906 and 1907) was discontinued at a depth of 735 feet owing to mechanical difficulties. The boring was in sandstone and blue shale, micaceous and carbonaceous in places. The Port Keats No. 3 bore (Brown, 1907) was started on 10th March, 1906, and on 6th August, 1906, was stopped at 1,142 feet because further boring was impossible. The results were unsatisfactory because very little core was obtained. Only evidence of

coal was 1/16 inch at 1,040 feet. Bore was in Permo-Carboniferous rocks as far as the depth reached (1,142 feet).

The No. 4 bore (Brown, 1908) was started 150 yards, from No. 3 and was put down between September, 1906 and March, 1907. Special precautions taken to obtain core and was continued to 1,505 feet - the limit of the plant. No payable seams of coal were disclosed but the cores from 927,996, 1,055 and 1,096 feet contained thin streaks of coal and disseminated coaly matter. An analysis was:-

Moisture	6.66	per cent
Fixed carbon	26.26	" "
Volatile Hydrocarbons	15.34	" "
Sand and ash	51.75	" "

(N.Y.L. Brown, Recent Mineral Discoveries and Further Record of Northern Territory Boring Operations, 1908.)

2. Cape Ford Ages (Brown, 1908): The Cape Ford No. 1 Bore was put down to 474.75 feet and abandoned in October, 1907 because the casing jammed (an alternative explanation given is that sand refilled the hole).

The Cape Ford No. 2 Bore was 13 feet from No. 1. It was put down between October, 1907 and February, 1908 to 1,506 feet - the limit of the plant. The log shows dark and black shale at several depths and the following references to coal:-

<u>Feet</u>	
1,074 to 1,095	Soft sandstone and shale, coal splash at 1,073 feet.
1,151 to 1,173	Coal splash, 1,150, 1,167 and 1,168 feet.
1,204 to 1,211	Dark shale, 1/2 inch vein of coal matter at 1,209.5 feet.
1,300 to 1,321	Sandstone, with little shale, coal veins 1,317 feet.
1,326 to 1,350	Sandstone, coal matter 1,329 to 1,330 feet.
1,363 to 1,375	Course friable sandstone, coal matter 1,374 feet.
1,395 to 1,397	Soft sandstone and shale, coal matter 1,395, 1,395 feet

The 1/2 inch vein of coal matter at 1,209 showed on analysis:-

Moisture	7.98	per cent
Fixed carbon	44.00	" "
Volatile Hydrocarbons	31.22	" "
Ash	17.20	" "

3. Cliff Head Area: The Cliff Head Bore (Report, 1912) was put down during 1908 and it is reported that granite was encountered at 720 feet.

4. Between Cliff Head and Cape Ford: A Bore (Report 1912) was put down in 1909 between Cape Ford and Cliff Head. It reached a depth of 1,136 feet and was abandoned because the rods jammed.

Another bore (Reports, 1910, 1912) was put down in 1910 to 1,316/8 feet at which depth it was abandoned.

5. Anson Bay Area: A bore was put down at Anson Bay in 1911. It had a depth of 1,506.75 feet and is reported to have passed through 3 inches of lignite at 339 feet, 2 inches at 504 feet and 2 inches at 926 feet. (Reports 1911, 1912).

6. Conclusion: The general conclusion reached as the result of the above drilling was that no payable coal would be found in the rocks of the district (Report, 1912).

3. NORTH AND EAST COASTS.

Report 1912 and Jensen 1914.

Rocks probably of Permo-Carboniferous age have been reported to occur at intervals around the northern and eastern coasts of Arnhem Land and to the south-east along the shores of the Gulf of Carpentaria.

In 1908, N.Y.L. Brown recommended boring for coal and suggested as convenient sites Ballison Island at the entrance to Arnhem Bay and Booroloola.

Three holes were put down near Booroloola under contract by the Goldfields Drilling Company in 1912 and 1913 on sites selected by Dr H.I. Jensen. No. 1 hole was 517 feet deep and at 60 feet black shale was cut and continued with a few inter-calations of sandstone to 396 feet after which sandstones were passed through. The No. 2 hole was commenced in sandstones and shales were encountered at 195 and predominated to the bottom. The No. 3 hole was commenced in sandstone but from 35 to 480 feet sandstone and shale alternated.

No coal or "kerosene shale" were intersected and the results were so disappointing that no further testing was arranged.

4. HALE RIVER

In the alluvial plain of the Hale River, 7 miles north-westwards from Mount Gordon which is 55 miles north-north-east from Alice Springs, a well was reported by Brown (1902, 1903) to have exposed lignite. The well was sunk to 56 feet through alluvial deposits and between 34 and 46 feet cut a bed of carbonaceous clay and lignite. A sample was analysed with the following results:-

Mositure at 110 deg. C.	6.43	per cent
Fixed carbon	19.13	" "
Volutile Hydrocarbons	33.22	" "
Ash	41.22	2 2
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It was reported that the bed contained much clay and pyrite and that the sample contained much sulphur.

Canberra.
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