THIS REPORT WAS RE-TYPED FOR MICROFICHING PURPOSES

ORIGINAL LETTER AND MAPS WERE KEPT

CR 1968-0070

REPORT ON COAL EXPLORATION IN COAL LICENCE
172 PORT KEATS AREA NORTHERN TERRITORY

NORTHERN TERRITORY GEOLOGICAL SURVEY
CR 1968-0070
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21st February, 1968.

Mr. O. F. Anderson,
Thiess Bros. Pty. Limited,
Private Mail Bag Service,
MOORVALE, S.4., QUEENSLAND.

Dear Sir,

The report on Coal Exploration in Coal License 172 Port Keats Area Northern Territory shows that the Port Keats area can no longer be regarded as having any significance with respect to possible commercial coal deposits.

Yours faithfully,
GEOTECHNICS (AUST.) PTY. LTD.

[Signature]

HECTOR J. WARD,
Managing Director.

C.C. J. Redpath, W.A.
L.C. Thiess, Qld.
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Mines Department, N.T. (2)
REPORT ON COAL EXPLORATION IN COAL
LICENSE 172 PORT KEATS AREA
NORTHERN TERRITORY

SUMMARY

The known coal-bearing strata in the Port Keats area were tested for economic coal deposits by 2654 feet of drilling during September-October 1967.

The coal intersected was in partings, thin lenses or seams less than 2 feet thick.

The Shale Member and the Sandstone Member of the Sugarloaf Formation both contain coal but neither member contains thick seams of good quality coal of any lateral extent.

Four of the five holes drilled intersected carbonaceous material. Hole Kuriyippi 4 (fig. 1) intersected a seam of shaley, poor quality coal 2 feet thick at 548 feet. This coal seam correlates with a seam recorded at 1300 feet in oil bore Kulshill 2 and appears to be the only coal seam of any lateral extent in the sediments.

The Permian sediments have now been drilled over a large area by the old government coal bores, the oil bores, and by the 1967 Thiess Bros coal bores. The failure of these bores to find substantial coal deposits indicates that Port Keats can no longer be regarded as an important coal potential area.

CONCLUSIONS

1. Coal occurs as partings, small fragments, interspersed grains, thin lenses and beds less than 2 feet thick in both the Upper and Lower Coal Measures.

2. Thick coal seams of wide lateral extent do not occur in the area investigated at Port Keats within 600 feet or over 3000 feet of the surface.

RECOMMENDATIONS

Exploratory drilling should be terminated and the Prospecting Area for coal can be relinquished.
INTRODUCTION

In October-December 1966 Geotechnics (Aust) Pty Ltd on behalf of Thiess Bros Pty Ltd, investigated the possible economic occurrence of coal in the Port Keats area, N T Field work indicated that the Lower Permian Sugarloaf Sandstone containing the "Lower Coal Measures" should be tested by drilling target.

Coal was reported in the 1905 government coal bores and in the 1965-1966 oil bores. The thickness and lateral extent of the coal seams was unknown.

A drilling programme of five holes, each about 600 feet deep was outlined from the 1966 investigations to prove the value of the coal occurrence.

Drilling began on September 14th, 1967 and was completed on October 9th, 1967.

DRILLING

The drilling contractor was United Geophysical Corporation who supplied a Mayhew 1000 rotary drill. Drilling was done with air above water table and water below water table. Core was then taken with a standard Mayhew NX core-barrel. The contractor was to supply a Treyfus N.H.L.S. - type core-barrel with a bottom discharge bit but it was unavailable at the time of drilling.

Five holes were drilled for a total of 2654 feet including 100 feet of coring. Core recovery varied from nil to 96 percent.

Coal recovery in the core was poor because the design of the core bit was such that the drilling water tended to wash the coal away before it entered the core barrel. However the coal was recovered in the core cuttings. Seam thicknesses were estimated from the cuttings and by the drilling rate.

The five holes were drilled across strike to intersect the Sugarloaf Sandstone at varying depths (figs. 1 and 2). It was hoped to intersect the thin coal seams that were recorded at about 1300 feet in both Kulshill 1 and Kulshill 2 oil bores, nearer to the surface on the edge of a syncline in which the coal seams may have been thicker.

DRILLING RESULTS

Coal was intersected in four of the five holes drilled. The thickest seam (2 feet thick) intersected in Kuriyippi 4 from 548-550 feet is apparently equivalent to the seam intersected at 1300 feet in Kulshill 2 oil bore. However the coal is shaley and contains thin interbeds of sandstone.

Elsewhere, coal is in thin streaks, lenses and seams less than 9 inches in thickness. The coal in in most places bright, black, bituminous and in some place pyritic.
Coal was intersected in both the Sugar loaf Shale, (the Upper Coal Measures) and in the Sugarloaf Sandstone (the Lower Coal Measures). In the Sugarloaf Shale the coal was interbedded with black clay, shale or fine to coarse-grained grey sandstone.

In the Sugarloaf Sandstone the coal was usually in medium to coarse-grained, friable, porous sandstones. Most commonly, the coal was in thin streaks about 2 inches long by ¼ inch thick.

Proof that the coal occurs as thin lenses was found in Kuriyippi 3 where 6 inches of coal was intersected at 260 feet and a redrilled hole 6 feet away failed to intersect coal. The only continuous coal seam was that intersected in Kuriyippi 4 between 458 feet - 550 feet.

The work evidences that thick coal seams of any lateral extent do not occur in the Port Keats area within 600 feet of the surface. Any possible thick seams would be in small isolated pockets which would require extensive drilling to isolated pockets which would require extensive drilling to locate. On present knowledge such a programme is not warranted.

GEOTECHNICS (AUST) PTY LTD

signed by ROGER MICHEAL LALOR BSc.

6th January, 1968
APPENDIX

LOGS OF DRILL HOLES

KURIYIPPI 1

Location Shot point 344, seismic traverse K12
Total depth 564'
Date drilled 14.9.67 to 18.9.67

0 - 50' Sandy clay, red, yellow and brown; some gravel

50' - 100' Clay, black, with thin sandstone interbeds.

100' - 124' Interbedded pink, fine-grained sandstone, grey siltstone and brown clay-shale

124' - 184' Sandstone, white, pink and yellow, fine-grained, micaceous, kaolinite with thin interbeds of yellow shale and grey siltstone

184' - 244' Sandstone, white, pink, yellow, fine to medium-grained, micaceous, kaolinite; some coarse quartz particles

244' - 269' Clay, black, rare shell fragments, pyritic near 269'

269' - 569' Quartz sandstone, white, pink, fine to medium-grained, well sorted, porous, friable, pyritic, feldspathic, micaceous; garnet: as common rounded grains.

Coal: Streaks 528'-540', 3/16" thick by 1½" long. One interbed 2" thick.

Coal: 334'5" - 344'5" (recovery 9'6")
514' - 524' (recovery 7'6")
536' - 546' (recovery 9'0")
554' - 564' (recovery 4'6")

Water: Fresh artesian source at 101' (800 gph); blackish artesian source at 470' (500 gph)

Hole plugged at 180', and 90' casing cemented in to control flow at 800 gph. Bore capped with control valve.
KURIYIPPI 2

Location  Shot point 220, seismic traverse K12
Total depth  580'
Date drilled  20.9.67 to 27.9.67

0 - 35'  Sandy clays, red-brown.
35' - 105'  Silty clay, white, grey and yellow, micaceous 52'; one very thin bed of brown shale.
105' - 135'  Interbedded black, brown clay and white, pink and brown, micaceous, pyritic siltstone.
135' - 210'  Siltstone, grey and black, micaceous, with thin interbeds of black clay. Shell fragments 180'-200'.
210' - 230'  Clay, black, with thin interbeds of grey siltstone.
230' - 300'  Siltstone, grey with thin interbeds of black, pyritic clay.
300' - 335'  Clay, black.
335' - 546'  Sandstone, grey, fine to medium-grained, micaceous in parts, with thin (up to 1" thick) interbeds of black, micaceous siltstone and carbonaceous shale.
546' - 580'  Shale, black, with interbedded black siltstone and grey sandstone.

Coal:  As thin (up to 1" thick) interbeds, streaks and spots. Bright, black.

Core:  
484' - 494'  (recovery 9'0")
516' - 526'  (recovery 6'8")
526' - 536'  (recovery 8'10")
536' - 546'  (recovery 6'0")

Coal was being washed out of the core but recovered in core cuttings.

KURIYIPPI 3

Location  4450 yards at 124° true bearing from Kuriyippi 1.
Total depth  570'
Date Drilled  28.9.67 to 1.10.67

0 - 20'  Sandy clay, black, yellow and brown.
20' - 70'  Clayey sand, yellow-brown, fine to medium-grained; some coarse particles.
70' - 178' Sandstone, white, brown and pink, fine to medium-grained, friable, porous, well sorted, feldspathic, micaceous; some hard, thin, brown shale and clay beds 150'-175'.

178' - 210' Sandy clay, blue-grey.

210' - 270' Finely interbedded dark grey, silty, micaceous shale and grey, fine-grained, friable, micaceous sandstone; rare pyrite.

270' - 455' Sandy clay, white-grey, plastic with rare thin interbeds of dark brown carbonaceous shale; some mica; rare green mineral.

455' - 475' Sandy clay, grey, medium to coarse-grained sand with thin interbeds of grey clay-shale.

475' - 490' Clay, grey.

490' - 570' Sandy clay, grey, fine to coarse-grained sand with rare carbonaceous shale.

Coal:
260' - 270' one 6" lens, and coal streaks.
380' - 385' coal streaks.

Core:
250' - 260' (recovery nil)
260' - 270' (recovery 9'8")

KURIYIPPI 4

Location 1496 yards at 107½° true bearing from Kuriyippi 1.

Total depth 615'

Date drilled 5.10.67 to 8.10.67

0 - 25' Sandy clay, red-brown.

25' - 280' Sandstone, white, yellow and pink, medium to coarse-grained, micaceous, feldspathic, porous, friable, well sorted, subrounded grains; rare thin clay bands.

280' - 312' Interbedded grey sandstone, grey shale and sandy clay, with some carbonaceous shale and some hard, thin levels.

312' - 340' Sandstone as for 25'-280' but grey and red with thin bands of grey clay.

340' - 515' Sandstone as for 25'-280' but with coal streaks.

515' - 550' Sandstone, grey with some sandy clay and thin interbeds of brown clay; common coal streaks and thin coal interbeds.
550' - 615' Sandstone, grey, medium-grained with interbedded grey clay and shale; coal streaks.

Coal:
495' - 500' about 4" total thickness ) bright, black,
500' - 505' about 2" total thickness ) bituminous.
505' - 510' about 9" total thickness )
510' - 515' about 6" total thickness ) shaley
515' - 520' about 2" total thickness.
548' - 550' about 2" interbed, shaley.

KURIYIPPI 5

Location Shot point 120', seismic traverse PP9.
Total depth 315'
Date drilled 9.10.67

0 - 85' Sandy clays, red-brown.
85' - 120' Clay, grey-brown.
120' - 315' Black clay with interbeds of black shale, siltstone and grey sandstone; some mica.