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REPORT: CAP 704/22

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CAPRICORN MINING LIMITED

RELINQUISHMENT REPORT

COAL EXPLORATION LICENCE No. 29/79

CYGNET, TASMANIA

82-1747.

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AMG REFERENCE POINTS ADDED

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April, 1982

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1. INTRODUCTION

This report accompanies a submission (letter attached) by Capricorn Mining Limited to the Tasmanian Director of Mines requesting approval for relinquishment of Exploration Licence No. 29/79 (Cygnet).

Previous notice of the company's intention to relinquish part of the licence area was given by the renewal application (16 October, 1981), in which it was proposed that the entire area covering 360 km<sup>2</sup> would be dropped.

The report outlines the exploration philosophy, the results of the regional geological appraisal including a combined scout-drilling and borehole-logging programme, field completion details, the evaluation of the coal resources, and the reasons for relinquishing the licence area. In order to avoid unnecessary duplication, detailed data already adequately treated in previous reports will not be presented again. In particular, reference should be made to the last six-monthly progress report (Report CAP 704/20: December, 1981).

2. EXPLORATION PHILOSOPHY AND PROGRAMME

An exploration programme for E.L. 29/79 was planned in conjunction with three other coal licences granted to Capricorn Mining Limited in southern Tasmania. The scope and direction of the exploration proposed in the initial programme were to be progressively updated as results were obtained during work carried out simultaneously in all the licence areas. From the outset, an integrated work schedule was obviously desirable from technical and financial viewpoints, and the proposed joint exploration programme for the four areas met with the approval of the Department of Mines.

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The work programme originally proposed (Reports CAP 704/1: September, 1979; CAP 704/2: October, 1979; and CAP 704/3: December, 1979) contained four stages; the first stage being a regional geological appraisal which was planned in three parts to include (A) preliminary reconnaissance, (B) detailed geological mapping and sampling, and (C) geophysical and scout-drilling programme.

The main objective of the regional appraisal was to provide reliable assessments of a set of parameters governing the existence of economic coal deposits in the licence area. Another objective was to establish simple models for the depositional environments of the coal units in order to assist in understanding the existing distribution pattern of the deposits and to support new predictions of coal occurrences.

Estimated expenditure for the regional appraisal and the planned follow-on evaluation programmes and related studies is shown in Table 1 below.

Table 1: Estimated Expenditure - E.L. 29/79

<u>Stage 1</u>	Regional Geological Appraisal		\$25,000
Part A	Preliminary reconnaissance	)	\$11,000
Part B	Detailed geological mapping & sampling	)	
Part C	Geophysical survey & scout-drilling		\$14,000
<u>Stage 2</u>	Engineering & Reverse Economic Studies		\$ 5,000
<u>Stage 3</u>	Detailed Evaluation of Coal Deposits	)	\$50,000
		)	
<u>Stage 4</u>	Feasibility Studies	)	
			<hr/>
	<u>Total Proposed Expenditure</u>		<u>\$80,000</u>

A suggested time schedule for completion of the above listed work and study programmes was Stages 1 and 2 in Year One and Stages 3 and 4 in Year Two.

Initial geological reconnaissance and drillhole site selection in the licence area were made according to three orders of investigation.

- (1) Areas around abandoned coal workings - with a view to delineation of "indicated" and "inferred" reserves
- (2) Areas of outcrop and shallow subcrop of Permian and Triassic coal measures - with an aim of finding "prognostic" reserves
- (3) Regional survey to assist interpretation of overall depositional environment - in order to establish basinal sedimentation patterns when correlated with the results from the other licence areas

The drilling programme thus aimed primarily at verifying early records of coal seams in adits and drillhole intersections at Mt. Cygnet, where several mines operated intermittently on a small scale from 1881 to 1922. The secondary aim was to discover significant new coal occurrences by means of exploratory drilling in favourable Permian and Triassic rock units, that is the Cygnet Coal Measures and the Kaoota Coal Measures respectively. The former unit occurs as a narrow outcropping belt on the north-western flanks of Mt. Cygnet and Heeney's Bluff near the Woodbridge Hill Road and as exposures at Burnett's Hill and Echo SL near the Randall's Bay Road; it also outcrops at the headwaters of Nicholls Rivulet and on the coast between Gordon and Middleton. No occurrences of the latter unit are known in the licence area.

The two-fold thrust of the drilling programme as outlined above was based on combining short-term economic priorities with an exploration policy of long duration. It embraced the well-tried exploration concept of extending investigation from the area of proven resource occurrence to areas of unknown potential. An essential part of this concept was to drill a deep stratigraphic hole in order to obtain a basic reference column for all rock units of interest in the region. A difficulty in E.L. 29/79 was realized to be the apparent lack of continuity of the target rock units throughout the licence area because of structural complexity

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and extensive dolerite cover. It was nonetheless hoped that an early success in locating and indicating an economically viable deposit would result from the proposed work programme, and that this would strengthen the company's desire to continue its existing licence renewals.

3. EXPLORATION ACTIVITIES AND RESULTS

The last six-monthly progress report (Report CAP 704/20: December 1981) provides a final compilation of all data gained by Capricorn Mining during the three successive licence periods. In particular, the exploration activities and results are detailed and the depositories are given. The report also covers the three other coal licence areas held by Capricorn Mining Limited. Details of all other work planned and carried out in E.L. 29/79 have already been presented in the previous twenty-four reports. A summary of the most relevant information on E.L. 29/79 is set out below.

A scout-drilling programme was supervised by the consulting group, General Geological Services, commencing on 4th March 1981 and being completed on 20th March 1981. Four holes were sited in the Mt. Cygnet (including Heeney's Bluff) area, and two on the coastal belt in the Middleton area. Six holes were drilled for a total of 274 metres, of which 69 metres were cored for a 89% recovery. Only two holes (C-04 and C-05) were cored. One hole (C-06) was sited without reference to known exposures of target stratigraphic units. Other sites initially selected at Burnett's Hill, Gordon, Deep Bay, and Cradoc were not drilled.

The results of the drilling were very disappointing. Significant seams (i.e. exceeding 1 metre thick) were detected only from the density response of geophysical logs, and one drillhole (C-01) failed to intersect any coal. The thickest seam intersected was 1.6 metres in drillhole C-02 at 14.70 - 16.30 metres depth, and 1.0 metre seams are indicated at 20.80 - 21.80 metres in C-05 and possibly at 5.00 - 6.00 metres in C-06. No coal was recorded in the lithologic logs, but its apparent absence in the intervals indicated by the density logs can mostly be accounted for by core losses.

A suite of geophysical logs was obtained from the six drillholes (i.e. C-01, C-02, C-03, C-04, C-05, C-06).

No coal analyses were obtained from the drilling programme although some samples from adits and outcrop in the licence area were analysed. Weighted averages of coal analyses derived from earlier records indicate low ash and high fixed carbon contents.

All data are presented in metric units and maps drawn at metric scales.

4. PROGRAMME COMPLETION AND EVALUATION

The initial scout-drilling programme envisaged the drilling of several exploratory holes in the Mt. Cygnet area at sites selected stratigraphically above the Cygnet Coal Measures. However, field reconnaissance and inspection with the drilling contractor indicated that access into the desired locations would be impossible without substantial improvement to existing tracks and the construction of new tracks. Thick dolerite cappings, widely spread talus deposits and heavily timbered slopes also restricted the choice of drilling sites. After four holes had been drilled it was decided that further prospecting in this area could not be carried out within the framework of the budget available for exploration in E.L. 29/79. None of the drillholes encountered the 2 metre seam recorded in the Mines Department hole at the old Mt. Cygnet Mine workings (Farmer, 1979).

Following completion of the four drillholes at Mt. Cygnet, reassessment of the coal seams in terms of depth, thickness, continuity, attitude and quality strongly suggested that additional drilling and reserve studies were not justified. The results confirm the conclusions of previous investigations in the vicinity of the Mt. Cygnet and Heaney Coal Mines in which further mining required much additional exploration and testing owing to limited seam thickness (averaging less than 1 metre) and serious faulting, although seams were apparently of good quality and with stable roof and floor (Twelvetrees, 1902; Hills et al, 1922).

Previous estimates of coal reserves (Hills et al, 1922; General Geological Services, 1980) of less than 1 million tonnes have not been changed by the recent exploratory drilling, and this quantity cannot be regarded as an economic proposition.

The regional geological appraisal (Stage 1) as carried out by Capricorn Mining Limited was originally intended to be accompanied by engineering and reverse economic studies (Stage 2). This latter stage was meant to include a preliminary assessment of the economic potential and mining viability of the coal deposits as regards capital operating and infra-structure costs, extraction technology and environment impact, and it was anticipated to be carried out over a six-month period during the first year. However, the early drilling results did not provide sufficient reasons for undertaking such studies, or indeed to continue with the follow-on third and fourth stages.

Actual expenditure on exploration in the licence area is shown in Table 2.

Table 2: Actual Expenditure - E.L. 29/79

<u>Stage 1</u>	Regional Geological Appraisal	
First Six-monthly Licence Period	(17.4.80 to 16.10.80)	\$12,134
Second Six-monthly Licence Period	(17.10.80 to 16.4.81)	\$50,062
Third Six-monthly Licence Period	(17.4.81 to 16.10.81)	\$ 5,160
	<u>Total Programme Expenditure</u>	<u>\$67,356</u>

Expenditure on the regional geological appraisal to date already exceeds the amount initially proposed and is four-fifths of the budget for the entire exploration programme estimated for E.L. 29/79. This situation cannot in anyway be attributed to uneven distribution of exploration resources, but is the direct result of the difficulties encountered in investigating this area.

All drillholes were abandoned after backfilling and/or following side-wall collapse, then sealed by casing cap or by cement plug. No groundwater problems were encountered. Sites were cleared of debris and restored. One landowner requested compensation for ground disturbance at the site of drillhole C-01 at Mt. Cygnet. This matter was handled through the Mines Department and the site was restored. No other complaints have been received by the company.

5. LICENCE RELINQUISHMENT SUMMARY

Capricorn Mining Limited originally applied for an exploration licence for coal (including peat and shale) covering approximately 360 km<sup>2</sup> in the Cygnet area on the 14th September, 1979. The requested area, designated by a datum point at grid co-ordinates 520 000 mE and 5 230 000 mN was granted without modification by the Minister for Mines as Exploration Licence No. 29/79 on 21st April 1980. Details of the licence schedule and location are presented in Appendices 1 and 2.

The company now requests approval to relinquish the exploration licence for this area on the basis of the information submitted in this report. The reasons for this action are essentially as follows.

- + Exploration difficulties proved to be numerous and of higher degree than expected due to rugged terrain, dolerite cover, fault zones, limited access, wet weather, and private landownership.
- + Mining potential assessed to be poor following field work and office studies because of relatively small mineable reserves, thinness and discontinuity of coal seams, existence of underground mining prospects only, and uncertain coal quality.

Over the eighteen month period in which Capricorn Mining Limited has held the licence, more than \$67,000 has been spent on exploration and this amount represents four-fifths of the total estimated expenditure for the entire project.

6. REFERENCES

Farmer, N., 1979: A diamond drill hole at Mt. Cygnet, Unpublished Report, Department of Mines, Tasmania, 1979/29.

Hills, C.. L. et al, 1922: The coal resources of Tasmania. Mineral Resources, Department of Tasmania, No. 7.

Twelvetrees, W. H., 1902: Report of gold and coal at Port Cygnet, 31 May 1902, Secretary for Mines Report, Tasmania, 1901-1902.

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APPENDIX 1 - LICENCE AREA SCHEDULE

Exploration Licence No. 29/79 (Cygnet - Area 4)

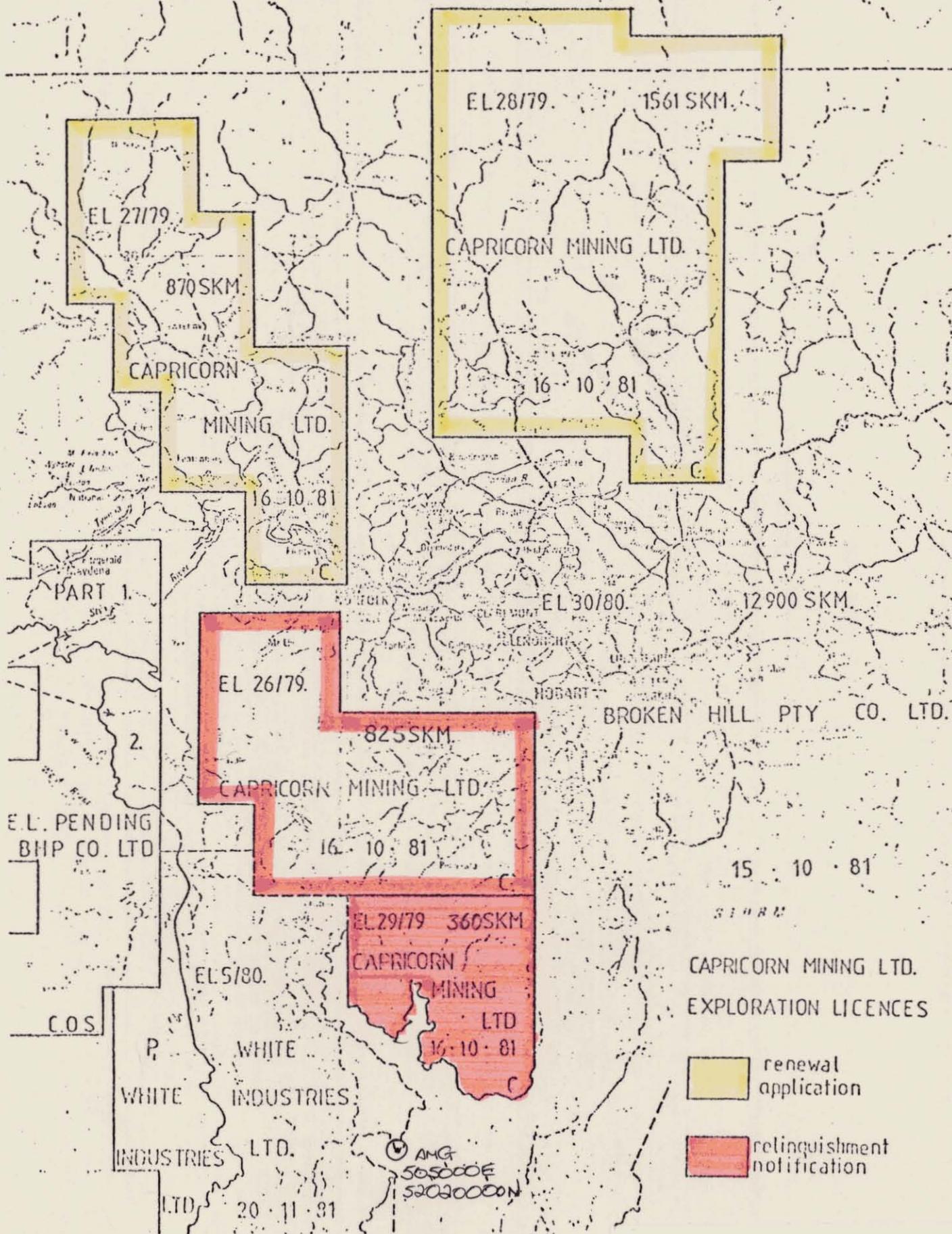
The total area is submitted for relinquishment. Grid co-ordinates defining this area are detailed below.

Area relinquished: commencing at the grid co-ordinates 520 000 metres E. 5 230 000 metres N. thence grid west to 500 000 metres E. 5 230 000 metres N. thence grid south to 500 000 metres E. 5 217 000 metres N. thence grid eastwards along the coast to 520 000 metres E. 5 218 400 metres N. thence grid north to the point of commencement. Area is 360 square kilometres.

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APPENDIX 2 - LICENCE AREA LOCATION

21.11.81



- CAPRICORN MINING LTD.
- EXPLORATION LICENCES
- renewal application
- relinquishment notification

AMG REFERENCE POINTS ADDED