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EXPLORATION LICENCE 27/79 (HAMILTON)

ANNUAL REPORT, YEAR 5,

17/4/84 - 16/4/85.

Petrecon Australia Pty. Ltd.

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EXPLORATION LICENCE 27/79 (HAMILTON)

ANNUAL REPORT, YEAR 5

17/4/84 - 16/4/85.

INTRODUCTION

Exploration Licene 27/79 was granted to Capricorn Mining Limited on the 17th of April 1980. The licence area (Fig. 1) originally covered 870km^2 of the middle reaches of the Derwent Valley and to date 290km^2 of non-prospective area have been relinquished.

The report covers all exploration pertaining to EL27/79 during Year 5 and outlines the work programme planned for the following four months, at which time a Retention Licence will be implemented.

As with previous Annual Reports, the policy is to submit the results of exploration for the Fourth Quarter together with a summary of the year's work. Therefore the report should be read in conjunction with the First, Second and Third Quarterly Reports of Year 5.

EXPLORATION IN THE FOURTH QUARTER, YEAR 5 17/1/85 to 16/4/85)

THE LANGLOH PROSPECT.

Work continued towards the development of the Langloh coal deposit.

Due to the continuing difficulties of securing a major industrial customer which would allow the mine to operate at optimum economics with an output of 100,000 - 200,000 tonnes per year, the concept of a much smaller mine, supplying the smaller industrial users in the Hobart region is currently being investigated. Mining engineers, Kinhill Stearns have been commissioned to design and cost an operation on West Hill producing around 10,000 tonnes per year initially but with the potential to rapidly expand to a 100,000 plus tonnes per year operation should a major customer be secured.

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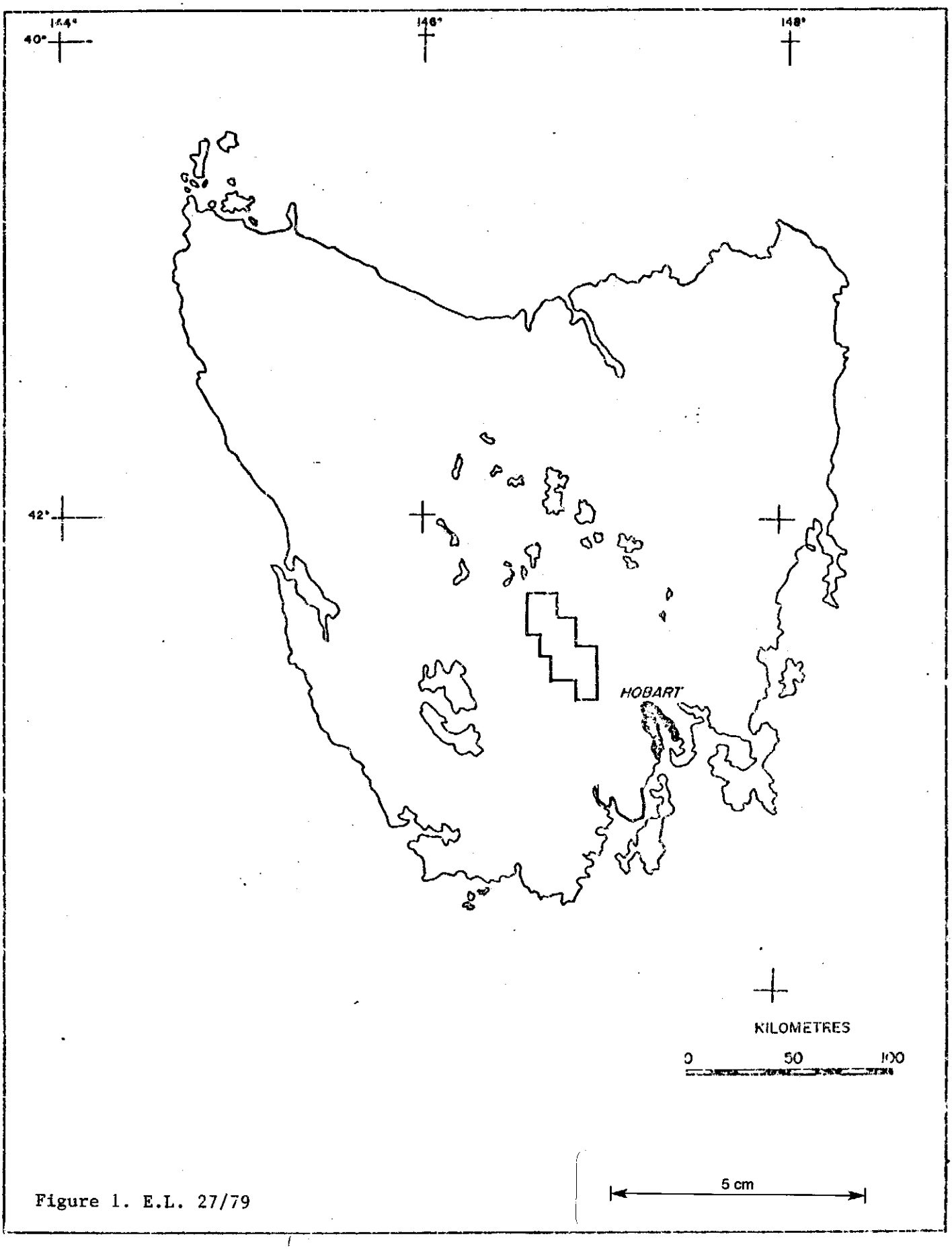

Figure 1. E.L. 27/79

Petrecon Australia Pty. Ltd.

Permission has been obtained from the Kimbolton landowners, J. and G. Whelan, to leave the West Hill test pit open until end June 1985 so that additional bulk samples could be obtained.

As part of this small mine concept markets in the Hobart area are being tested. Apart from the coal using industries in the 3000 to 8000 tonnes per year category, there are a number of smaller users and a greater number of potential small users who are the targets of our present marketing negotiations. In addition to the coal there is considerable interest in the interburden mudstone as a brick making material.

Costing of the proposed mine will be completed in early May and if we can compete with the existing supplier, then firm offers for price, tonnage and starting times will be made to the coal users.

During the Quarter, Savage River Mines approached Petrecon requesting all available data on the low volatile (heat affected) coal which forms part of the East Hill deposit. They also requested a quote for a 100 tonne bulk sample of this coal. Kinhill Stearns have costed a test pit and an operation on East Hill based on the supply of 20,000 to 25,000 tonnes per year, trucked from Langloh to Port Lattah.

A tender for the supply of this coal will be forwarded to Savage River Mines by the end of April.

SHALLOW SEISMIC INVESTIGATIONS

The Geology Department, University of Tasmania, is continuing research into shallow seismic methods for coal seam and structure detection using the Langloh coal field as a test area. Capricorn Mining has given permission and will be supplying exploration data to a second B.Sc. Honours student from the Department who will work on this project during 1985.

RELINQUISHMENT AND TENEMENT STATUS

Discussions were held with the Department of Mines regarding the

need to commence mining at Langloh before further exploration on the EL is justified. The outcome of these discussions is that a Retention Licence has been applied for and that a four month extension on the existing EL has been requested, to allow relinquishment of acreage down to 250km^2 prior to the Retention Licence being granted. The Retention Licene will allow exploration funds to be spent on developing the Langloh deposit in the short term, and will protect Capricorn's interest in the remainder of the licence area, which can be properly explored after the Langloh area has been converted to Coal Leases.

EXPENDITURE FOR THE QUARTER

The following statement covers exploration expenditure for the quarter ending 16/4/1985.

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PETCON AA57229
ALBERS AA33427

TLX : 393
DATE : 12.4.1985

ATTENTION : KEN MORRISON

RE : CAPRICORN MINING LIMITED
STATEMENT OF EXPLORATION EXPENDITURE
COAL EXPLORATION LICENCE EL 2779

4TH QUARTER ENDED 16.4.1985

PETRECON AUST.	GENERAL GEOLOGICAL	2412
COMPANY ADMINISTRATION OVERHEAD AND TRAVELLING		6002
		$ 8414

CAPRICORN MINING LIMITED
D.B.HILL
SECRETARY

*
PETCON AA57229
ALBERS AA33427

WORK PLANNED FOR THE QUARTER ENDING 16/7/1985

1/. Submission of tender for East Hill coal to Savage River Mines.
2/. Completion of costing by Kinhill Stearns for small mine on West Hill.
3/. Negotiations with coal users and potential new coal users if results of 2/. are favourable.
4/. Negotiations with Kimbolton landowners prior to 30/6/1985 and associated decision to develop West Hill, take additional bulk samples or refill the test pit.
5/. Relinquish less prospective areas of the EL.
6/. Implement Retention Licence.

SUMMARY OF EXPLORATION YEAR 5 (17/4/84 to 16/4/85).

The following summary indicates the main projects conducted and the Quarterly Report in which the results of each was reported.

REPORT FOR THE 1ST QUARTER, YEAR 5

- Burning trials of Langloh coal by two Tasmanian industries (see Appendix 1).
- Costing of a 100,000 tonnes/year operation by Kinhill Stearns
- Brick making trials by the Hobart Brick Company using mudstone from the coal seam interburden.

Expenditure for the Quarter = $29,192.00

REPORT FOR THE 2ND QUARTER YEAR 5

- Negotiations with Northwest coast coal users regarding the potential supply of Langloh coal.
- Negotiations with the Transport Commission, Australian National Rail, Hazell Bros., Australian Paper Pulp Manufacturers and Tioxide regarding alternatives for the transport of coal from Langloh to the Northwest coast.
- Research into shallow seismic methods by the University of Tasmania.

Expenditure for the Quarter = $23,024.00

REPORT FOR THE 3RD QUARTER YEAR 5

- Review of mining and transport economics to Australian Newsprint Mills.
- Review of economic geology and mining plans to Robertson Research for the Hydro Electric Commission.

Expenditure for the Quarter = $9,468.00

REPORT FOR THE 4TH QUARTER YEAR 5

- Review of geology and mining plans to Savage River Mines
- Costing and design of test pit on East Hill for Savage River Mines.
- Costing the mine design for a 10,000 tonnes per year operation on West Hill.
- Negotiations with smaller industrial users in the Hobart region.
- Application for Retention Licence and four month extension for Exploration Licence to allow relinquishment down to 250km^2 (see Appendix 2).

Expenditure for the quarter = $8,424.00

Total Expenditure Year 5 = $70,098.00

APPENDIX ONE

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199009 85-2367

Associated Pulp and Paper Mills Limited

(INC. IN VICTORIA)

BURNIE MILL

Marine Terrace, Burnie, Tas.
P.O. Box 201, Burnie 7320

Telephone 31 1222 Telex 59062
Telegraphic 'Aspulpaco' Burnie

25th June, 1984

Messrs. Petrecon Australia
Pty. Ltd.,
Petroleum Exploration Consultants,
192 Macquarie Street,
HOBART, TAS. 7000

Attention:
MR. K. MORRISON

Dear Sirs,

In reply to your letter to Mr. Morgan dated June 6th, 1984, please find enclosed a copy of the report on the test-firing of Langloh coal prepared by our Steam Engineer, Mr. R. Scott-Young.

It is considered the report is self-explanatory, however, should there be parts you feel need clarification, please do not hesitate to contact us.

Please accept our apologies forthe delay in forwarding the above report, however, the delay incurred was due to factors outside our control.

Yours faithfully,
ASSOCIATED PULP AND PAPER MILLS LIMITED

P. Weedon,
ENGINEERING SUPERINTENDENT

Enc:
PW/lvd

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File

199010

ASSOCIATED PULP AND PAPER MILLS LIMITED
Engineering Department - Burnie

13th June, 1984

MEMORANDUM

TO: P. WEEDON

FROM: R. SCOTT-YOUNG

re: Langloh Coal Trial

Please find attached, a report on the test firing of Langloh coal.

R. Scott-Young,
STEAM ENGINEER.

c.c. JEM

RSY/mac

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199011

ASSOCIATED PULP AND PAPER MILLS LIMITED
ENGINEERING DEPARTMENT - BURNIE

MEMORANDUM: 13th June, 1984

TO: File

FROM: R.E. Scott-Young

RE: Test Firing of Langloh Coal

Approximately 30 t of coal from the Langloh mine near Hamilton in Southern Tasmania was railed to Burnie and fired in No. 038 boiler. The test was carried out on 1st March, 1984 and was observed by Messrs. K. Morrison of Petrecon and R. Scott-Young from APPM. A sample of coal was taken for analysis.

1. Description of Trial

The coal was unloaded at the unloading station and conveyed directly into the northern end of boiler 038's bunker. The southern end of the bunker contained approximately 30 t of Cornwall coal thus the boiler was fired with Langloh coal on the northern grate and Cornwall coal on the southern grate. A direct comparison could be made of the two fuels and their respective ash characteristics.

2. Comments on the Trials

2.1 Coal Preparation

Mr. Morrison stated that the coal had been dug out from an area having a minimum of overburden and had been crushed and screened in a mobile crusher. It was not washed.

The coal was well sized and contained almost nothing outside the range 3 mm to 25 mm. It was not determined whether the same sizing could be achieved from normal operation as large quantities of fines would have to be disposed of.

2.2 Dust Problem

High levels of dust were produced from unloading and conveying the coal. Action would be required to prevent this if a long term intake was contemplated. The action would have to be taken at the mine in order to prevent the unloading station filling with dust during the unloading operation. It was impossible to see in the unloading station for one to two minutes after dumping the 30 tonnes. The dust suppression system was not working at the time but it is doubtful if it would have made much of an impression.

2.3 Combustion

The coal appeared to ignite easily and good burnout was achieved. The good sizing allowed better air distribution and more even burning than was achieved with the Cornwall coal.

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2.4 Ash

The ash was not as friable as that from Cornwall coal and it tended to clinker slightly. While the degree of clinkering was still acceptable in boiler 038, this may not prove to be the case in boiler 035 with its overfeed stoker.

3. Analysis

A sample of the coal was analysed by ACIRL and the results are listed in the attached table beside values for Cornwall coal received during the same period.

As may be seen, Langloh coal is very similar to Cornwall coal in every respect except for the ash. The Langloh coal is not washed but contains slightly less ash than the washed coal from Cornwall. The Langloh ash contains about 8.8% calcium oxide compared with 2.0% for Cornwall. It is believed that the additional calcium oxide would have the following significant effects

- reduced slag softening temperature
- substantially lower the sintered strength of flyash

Thus on one hand the reduced slag temperature could lead to increased slagging while on the other hand the lower strength would make the slag easier to remove if it did form.

Overseas experience has shown that it is almost impossible to predict the fouling characteristics of a coal and a three or four week trial is usually necessary to see if fouling will occur.

Experiments in the U.S. have indicated that sodium is the most important single factor affecting ash fouling. It was noted that fouling of the superheater tubes significantly increased about the time we started firing salt water contaminated bark from Tamar.

4. Conclusion & Recommendation

The trial indicated that Langloh coal can be burnt in boilers such as 037 and 038 and that its net specific energy is very similar to that of Cornwall coal.

Before any firm commitments are made, it is recommended that the dust problem be overcome and a 6 week trial be carried out to test its slagging characteristics and its behaviour in No. 035 boiler.

R Scott-Young

RSY:cjd
Att.

R.E. Scott-Young,
STEAM ENGINEER.

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ASSOCIATED PULP AND PAPER MILLS LIMITED
ENGINEERING DEPARTMENT - BURNIE

13th June, 1984

	Langloh	Cornwall
Proximate Analysis:		
Moisture	4.8	4.8
Ash	20.3	23.6
Volatiles	24.5	24.8
Fixed Carbon	50.4	46.7
Sulphur	0.3	0.4
Chlorine	0.02	Trace
Phosphorous	0.003	.003
Gross Specific Energy (as analysed)	23.6	23.6
Ultimate Analysis: (Dry ash free)		
Carbon	80.4	81.4
Hydrogen	4.45	4.49
Nitrogen	1.50	1.0
Sulphur	0.4	0.5
Oxygen	13.25	12.4
Ash Fusibility:		
Deformation ^{o}C	1310	1520
Ash Analysis:		
SiO_2	54.1	61.6
Al_2O_3	25.3	27.8
Fe_2O_3	4.81	4.13
CaO	8.79	1.97
MgO	1.4	1.01
TiO_2	1.01	0.96
Na_2O	0.18	0.21
K_2O	0.53	0.81
P_2O_5	0.03	0.04
Mn_3O_4	0.19	0.07
SO_3	2.90	0.51

RSY:cjd

85-2367

199014

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Cadbury Schweppes Pty. Ltd.

INCORPORATED IN VICTORIA

Confectionery Division

KMW/PO

Claremont. Tas. 7011.
P.O. Box 690G, Hobart 7001.
Telephone 491011.
Telegrams & Cables to Telex AA58094

2nd March, 1984.

Mr. K. Morrison,
Petrecon Australia Pty. Ltd.,
192 Macquarie Street,
HOBART,
Tasmania. 7000.

Dear Mr. Morrison,

Please find enclosed our report covering the test firing of approximately 2 tonnes of Langloh coal which were supplied to us recently.

We do thank your Company for the opportunity to conduct this test and we were pleased with the result, as the report shows.

We would be happy to discuss further trials if you should be interested. Naturally, a much larger quantity of coal would be more appropriate. Under these circumstances, we see no reason why we could not negotiate an appropriate price with you if you keep your operation viable.

We look forward to hearing further from your Company and wish you every success in your proposed venture.

Yours truly,
CADBURY SCHWEPPES PTY. LTD.

K.M. Wells.

K.M.Wells, F.I.E. Aus.
Senior Engineer.

Encl.

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199015

1st March, 1984.

COAL TEST FIRING CADBURY'S, CLAREMONT

Coal Sample Origin: ex Langloh Mine, Hamilton
Open cut sample, West Hill

(Refer to Mr. Ken Morrison, Geologist, Petrecon Aus.)

QUANTITY: Approx. 2 tonnes
Cadbury feed system indicated 1.75 tonnes.

GRADING: Crushed and screened
Min. 7 mm Max. 30 mm

One sugar bag of "less than 7 mm" was supplied for inspection as the discharge from the mine screens.

This very small quantity was mixed with the larger sample for the test firing.

INDICATED ANALYSIS PREVIOUSLY ADVISED.

Relative density	1.54 tonnes per cubic metre (in ground)
Moisture	3.92%
Ash	23.36%
Volatiles	21.29%
Specific energy	23.26 Megajoules per kg
Sulphur	0.30%

COMMENTS ON TEST FIRING

Date: 28/2/84

Time: 0830 to 1100 hrs.

Boiler: Babcock and Wilcox W.I.F. type water tube, chain grate, nominal capacity 6 400 kg/hr. of steam

Coal depth on grate: 12.7 mm

Grate speed: 75% to 100% maximum speed (70 mm/min. to 90 mm/min.)
Factory demand varied during the test which required adjustments to the fire to meet the changes.

This test was not of sufficient length of time to allow maximum capacity to be established. Thus there was not a "full grate" fire at any time during the test.

Output: Feedwater meter readings during the test gave an average rate of approximately 3 700 kg/hr. (58% of nominal maximum).

Quality of fire: More open than the coal normally used. This may well have been due to the lesser quantity of fines in the sample than normally received. The size range was good, allowing excellent air passage without any blow holes or dead patches.

Ignition — The coal ignited without oil boost at grate speed of 70 mm/min.

At 90 mm/min. the fire gradually moved away from the ignition arch and a very small quantity of oil was needed occasionally. 2 kg to 4 kg of oil at a rate of 4 kg per 10 minutes every 30 minutes seemed to be the order of need. This represents an approximate oil to coal ratio of 1 : 150 (by weight). This is considered very good at maximum firing rate.

Burn out: — There was no difficulty in achieving complete combustion under normal fire conditions.

Ash: — No problems with clinkering at all. A good friable ash with no dust carryover occurred.

CONCLUSIONS

1. A larger sample to allow, say, at least 2 days operation would be more desirable. That is approximately 20 tonnes, if this could be negotiated.

2. This coal is at least as good as our present supply and may be slightly better.

3. We could consider a modification to the particle size range subject to appropriate tests.

K.M. Wells.

K.M. Wells
Senior Engineer

APPENDIX TWO

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199018

PETRECON AUSTRALIA PTY. LTD.

Petroleum Exploration Consultants

192 Macquarie Street
Hobart 7000 Australia
PH: (002) 31 0122
Telex AA57229

CAPRICORN MINING LIMITED.

26th February, 1985.

Mr. F. R. Groom,
Hon. Minister for Mines,
Executive Building, Franklin Square,
HOBART .. TAS .. 7000.

Dear Sir,

RE: Exploration Licence 27/79 (Hamilton Coal Deposit),
Retention Licence.

I am writing to apply for a Retention Licence over EL27/79 on the grounds that at the present time no market exists for the proven coal deposit at Hamilton. The licence is due for renewal on 16/4/85 which is the end of the Permit Year 5 and although there are several other areas within the permit which require thorough exploration, there is no incentive or economic rationale to do so until the Hamilton deposit can be developed as a viable operation.

Similarly, the relinquishment of acreage, which under normal Exploration Licence conditions should be down to a maximum of 250km^2 by the end of Year 5, is affected. We need to thoroughly assess the prospectivity of each portion of the permit prior to relinquishment, however we cannot justify further exploration expenditure until the Hamilton problem is resolved.

I would like to outline the sequence of events dating from February 1982, when Petrecon Australia Pty. Ltd. took over the exploration of EL27/79 for Capricorn Mining Ltd., to the present day. This period has seen the proving of a deposit of good quality steaming coal which is clearly the cheapest to mine of any deposit or potential deposit in Tasmania, being located 50km from one of the major coal users in the state; yet still no market demand for the coal exists.

In May-June 1982 we completed a drilling programme which inferred reserves of coal at a depth suitable for open cut mining and of a quality which would match the coal currently available to Tasmanian industrial users. It was apparent that Australian Newsprint Mills at Boyer were ideally located to be interested in such a deposit so we approached them in September 1982 and gave them a review of our work and indicated to them that if the potential of this apparent deposit was realised then a successful mine could be operated

for the mutual benefit of both ANM and Capricorn. ANM employed John Bryan, a consultant coal geologist from McElroy Bryan, Sydney, to independantly assess our work. We provided him with all our data and gave him permission to examine our drill core.

In January-February, 1983 we conducted a second drilling programme, confirming the results of the initial drilling and thus brought the deposit to proven status. We informed ANM of these results and on their request sent the data to John Bryan. We had no reply from ANM.

During 1983, Kinhill Stearns designed a mine plan suitable for our deposit and costed the operation. In October 1983 we again approached ANM and arranged a meeting at which we offered to sell them the coal for $40 per tonne maximum or the whole deposit for $5 million. $40 per tonne was arrived at by taking our mining and transport costs at approximately $30 per tonne and ANM's existing cost of approximately $50 per tonne for Fingal Valley coal. This equates to a cost saving of $10 per tonne ($800,000 per year at their present consumption level), and a profit of $10 per tonne for Capricorn. The $5 million outright sale would result in savings of approximately $1.6 milllion per year to ANM, and therefore they could write off the cost in under three and a half years. Proven recoverable reserves at Hamilton equate to approximately 25 years current consumption rates at ANM, with additional unspecified quantities indicated.

ANM did not reply to our offer, but when approached in November told us they would prefer to buy the deposit outright but that our price was too high. They made no further efforts to negotiate.

In the latter part of 1983 we reviewed the prospect to APPM and Tioxide, both companies showing interest in an alternative domestic source to the Fingal Valley. In February 1984 we employed Hazell Bros. to excavate a test pit at Langloh and crush a 40 tonne sample of coal which we sent by rail to APPM at APPM's request and our cost. In a burning trial over eight hours, Hamilton coal performed well in comparison to Fingal Valley coal, proving that we could produce a competitive coal without the need for washing. In subsequent attempts to secure a NW coast market for the coal it became apparent that transport costs were a major obstacle. The effective subsidy of rail transport for bulk goods, via the "Out of Area Permit Fees" imposed an intolerable cost burden on the transport component of the project, which together with the cost and inconvenience of the miner building and operating his own railway loading station, rendered the project uneconomic.

As the Hamilton deposit has a proven reserve of 3 million tonnes and a maximum of 5 million tonnes recoverable by opencut mining, we never tendered to the HEC to supply coal to a potential coal-fired power station.

In November 1984 we reviewed Hamilton to the Robertson Research consultants employed by the HEC (at their request). They agreed that the project was at the "ready for mining" stage and that it could provide a useful back up deposit for a probable power station after 1990. We told them that we wanted to get the mine started in the near future and that we saw Hamilton as a source of industrial fuel because of its small size and low mining costs.

By December 1984, frustrated at the lack of response from ANM and concerned that they had not appreciated the energy cost savings available to them, we took the unorthodox approach of arranging another meeting and revealing the precise mining costs as calculated by Kinhill Stearns. For the first 15 years of mining, at a rate of 100,000 tonnes per year, the mining cost is $20-$22 per tonne and with transport costs of $7-$8 per tonne the saving over their current cost, is of the order of $20 per tonne, with security of supply guaranteed for 25 years minimum. Since this meeting we have had no response from ANM but we note that they are currently involved in exploration drilling in the Derwent Valley near their plant. We must assume that they are in no way committed to obtaining Hamilton unless they can secure the deposit for little more than our exploration costs.

The only other alternative to develop a mine in the near future, and that is still our main aim, is to have a much smaller operation supplying the small industrial and domestic market in the Hobart region. Currently we are investigating this concept from both the mine economics and the market potential angles. It is likely that if markets for 10,000-20,000 tonnes per year can be confirmed then a viable mine could commence during 1986. Such a mine would need to be designed and operated in a way to allow quick expansion should a larger contract be won, and with a mine in operation, bulk samples for potential customers would always be available . It has been our experience that potential customers require large samples for boiler trials. These samples are expensive and difficult to obtain as part of an exploration programme.

During the past three years we have established a cordial and productive relationship with the landowners. They are in agreement that a small operation should start with small returns to them, their renumeration/compensation increasing to a reasonably agreed level at 100,000 tonnes/year production rate.

In summary we feel that we have made every reasonable effort to develop a market for Hamilton coal and to bring a mine on stream. However, to date we have been unsuccessful. Although we recognise that additional potential exists on EL27/79, for both open cut and underground coal, there is no need to obtain further reserves while Hamilton remains undeveloped. The current study on small market potential is anticipated to be completed by June 30, 1985. At that stage we will make a decision on whether to apply for Mining Leases and develop a mine.

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It is for the reasons outlined above that I am requesting a Retention Licence for EL27/79. Essentially we need some additional time to investigate possibilities for Hamilton and to explore the remainder of the permit without being bound to the expenditure and acreage relinquishment conditions appropriate to the normal Exploration Licence.

I look forward to your response on this matter.

Yours sincerely,

J.K. DAVIDSON,
for E.G. ALBERS.
CHAIRMAN.

C.C. Director of Mines.