MICROFILMED

BAUXITE IN LATERITE IN THE LAUNCESTON AREA

83-1819

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627001

BAUXITE IN LATERITE IN THE LAUNCESTON AREA.

Frank Bardenhagen Enterprises

(A Division of F. C. Bardenhagen Nominees Pty. Ltd.)

Tree - Farmers

TELEPHONES:
Office 95 1299
Workshop 95 1116
Residence 95 1299

P.O. Box 83,
Lilydale,
Tasmania, 7254.

RECEIVED 21 JAN 1981 DEPT. OF MINES TASMANIA

E.L. 1/81

Yes please

28th January, 1981.

D of M	C.O.	GG	CC & M	D.S.M.E.
RECEIVED 2 FEB 1981				Registrar
				E & IL
ANSWERED DEPT. OF MINES REF. No.: 78/81				

Mr. Murchie,
The Acting Director of Mines,
HOBART, Tasmania 7000

Dear Sir,

Further to my letter of the 9th January, 1981 re application for Exploration Licence in the East Tamar area I now enclose herewith details of work planned to be carried out to ensure the success of the bauxite deposits.

As soon as the E.L. for six months is granted backhoes and drills will be used to prove beyond all doubt that sufficient bauxite is available to warrant the establishment of an industry in the Launceston area.

The availability of at least one hundred million tonnes has been mentioned as being necessary for such a venture to become a viable proposition. My partner Mr. R.W. Carter and I believe that with the new deposits found in recent weeks not 100 million but 300 - 400 million tonnes is a definite possibility. Some tests of samples taken gave 56%, easily the best tests Tasmania has ever produced (Weipa is only 57%).

Several large companies connected with Bauxite have been contacted by letter, telephone or personal contact and have expressed great interest in our venture.

Mr. Harry Stacpoole, a Launceston drilling contractor, will be engaged to do the drilling and as already advised in our previous letter the necessary permission from the three main land owners has been obtained both for the taking of samples and the use of their properties for access.

The Mines Department has been kept up to date with the results of tests taken and further such information will be forwarded to them as they come to hand.

Mr. Noldart of the Mines Department is prepared to come to the East Tamar area as soon as the E.L. is granted and as

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promised previously every assistance will be given to him both in any tests he wishes to make and in showing him the new areas in which the bauxite has been discovered.

Enclosed is an A.N.Z. Bank guarantee for $11,500.00 plus copy of area for which the E.L. is requested and two (2) copies of Enviroment Impact - Prospecting.

Finally I am the Managing Director of F.C. Bardenhagen Nominees Pty. Ltd. a company which provides work for approximately 100 people engaged mainly in hardwood, radiata pine and wood chipping and am also a tree farmer having planted many hectares of both hardwood and pines on property owned by me.

Should any further details be required they will immediately be forwarded on request.

Yours faithfully,

FRANK BARDENHAGEN.

Encls.

SUBMITTED AND RECOMMENDED
AT $ 30-00
UNTIL 30-9-81
A/ DIRECTOR OF MINES

APPROVED
MINISTER FOR MINES
DATE 9 . 4 . 81

627003

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION OFFICE
152 Macquarie Street, Hobart

Telegraphic Address:
"HEMATITE" HOBART
TELEX: 58023

Postal Address: G.P.O. BOX 1140 L
HOBART, 7001

Telephone: 23 7208
or
23 2986

YOUR REF.

OUR REF.

13th May, 1981

Mr. F. Bardenhagen,
Bardenhagen Enterprises
Main Road
LILYDALE TAS 7254

Dear Mr. Bardenhagen,

Please find enclosed a copy of the results of samples collected on our visit to the Launceston area of 25th February. I trust the results will be of some use to you.

The material appears to be too low is Al_2O_3 and too high in Fe_2O_3 (total iron) and other impurities to make a deposit that would measure up to our Company's criteria for extraction. We would have to look at a large tonnage, long term operation which would involve the disturbance (albeit temporary) of large tracts of prime grazing land in close proximity to a major population centre. Consideration of the environmental factors alone would severly affect the economics of any mining operation in the area.

I thank you for the opportunity to inspect the prospects and regret that the Company can be of no further assistance in this regard.

Yours faithfully,

Rick Hine
Geologist

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SAMPLE:	LOCATION - DESCRIPTION
TH1	"Thorpe" property (Hudson's), hard red mottled laterite
TH2	" " " " " "
TH3	" " " " " "
ECC1	Eccleston Road, near claypit, cream to red modular laterite
SR1	Magazine Road area (quarry near railway) as for MAGR 1
WT1	West Tamar area (Monkhouses)
MAGR1	Magazine Road area (quarry near railway) clayey surficial deposit.

627005

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CONSULTING CHEMISTS & ANALYSTS

OFFICE & LABORATORY
44 BALACLAVA STREET,
WOOLLOONGABBA . Q 4102
Ph 07 3916799
TELEX AUSEV 42344

LABORATORY REPORT

Batch No.: C096 Client: BHP COMPANY LIMITED, Area Contact: DR. R. HINE
Address: P.O. BOX 559 Address: G.P.O. BOX 1140 L,
Date Received 13/03/81 CAMBERWELL HOBART TAS. 7001
Date Completed 07/05/81 VIC

Order No.: T600 - 000640 Sample Type: ROCK No. of Samples: 7

SAMPLE NO.	Al2O3 % 117-A	Fe2O3 % 110-C	SiO2 % 156
TH 1 THORPE	36.2	36.7	5.81
TH 2 "	29.5	45.4	3.51
TH 3 "	31.0	43.5	18.9
ECC 1 Fraser's - Claypit	37.2	26.7	7.61
SR 1 J. Lees	9.35	37.9	34.5
WT 1 Monkloan	33.5	31.5	6.51
MAGR 1 J Lees Quarry	36.2	9.68	37.3

ELEMENTS
UNITS
METHODS

UNITS LEGEND ----- M - Parts per million b - Parts per billion % - percent
g - Grams a - Absorbance

Signature: A.J. Finlayson

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ALCOA OF AUSTRALIA LIMITED
INCORPORATED IN VICTORIA
Exploration Division
MURDOCH HOUSE, 5 THE ESPLANADE, MOUNT PLEASANT, 6153
P.O BOX 291, APPLECROSS, 6153. TELEPHONE 364 8222

ALCOA AUSTRALIA

1 May 1981

Mr F. Bardenhagen,
Main Road,
LILYDALE 7254.

Dear Frank,

The results of the bomb digestions done on the laterite samples that we collected from your areas are tabulated on the attached sheet.

The assays show that the available alumina values are both low and very variable. A few samples (notably 4B, 5A, 6A) are definitely bauxitic but their grade is marginal and the occurrences are too small to be regarded as an economic bauxite deposit. We are therefore not interested in doing any further investigations.

For your information, the analytical results are explained in more detail below :

A. Alumina

The assays show that the alumina in the samples is present in three forms -

1) Alumina as free oxide, $Al_2O_3.3H_2O$

This alumina, which is termed available alumina, is soluble in caustic soda (Bayer process) and can be extracted at a digestion temperature of 150°C. The figure for available alumina is the most important parameter in the evaluation of potentially bauxitic material; at most geographic locations, this value should be at least 35% before the material can be considered as a possible commercial bauxite.

We also digested the samples at 230°C to test for the presence of the monohydrate form ($Al_2O_3.H_2O$) of the free oxide but results were negative.

2) Alumina combined in clays

When the lateritic leaching process is incomplete, the laterite can contain significant amounts of kaolin clay. Alumina is present in the kaolin but it cannot be extracted by the Bayer process because during digestion it is locked up in a chemical compound formed by a reaction between caustic soda and the clay minerals.

The values in the second column of my tabulation, headed 'reactive silica,' are approximately equivalent to the alumina present in clay minerals.

3) Alumina combined in iron oxides

Some alumina is present in chemical combination with iron oxides and cannot be extracted at normal Bayer process temperatures.

The amount of alumina present in this form in a particular sample can be determined by adding the figures in columns one and two of my tabulation and subtracting that figure from the total alumina figure in column three. In some of your better samples, there is no alumina present in this form.

B. Reactive Silica

The reactive silica, which is the silica in the clay minerals, is a very important factor in assessing bauxite deposits. It reacts with both caustic soda and the alumina that is present in the clay to form an insoluble compound from which neither alumina nor caustic can be recovered.

Thus, a high reactive silica value has two serious effects :

i) it reduces the amount of alumina that is available to the Bayer process, and

ii) it consumes caustic soda - an expensive raw material.

You will note from the table that the reactive silica in most of your samples is very high. For a low grade bauxite (35-40% available alumina) the reactive silica should preferably not be more than 3%.

C. Iron Oxide

The iron oxide content is not critical but for processing reasons is is preferable that the iron is below 20%.

If you want any further information about bauxite, please do not hestiate to drop me a line. I enjoyed my visit to your prospects and I wish you luck with your prospecting.

Yours sincerely,

Peter Rix.

LATERITE SAMPLES - TASMANIA

Sample number	Location	Description	Available Al_2O_3 (150°C)	Reactive silica	Total Al_2O_3	Total Fe_2O_3
1A	Launceston Quarry	white, faintly pisolitic laterite	19.2	10.5	29.9	23.6
1B	Launceston Quarry	red, pisolitic laterite	10.8	8.0	21.3	45.7
1C	Launceston Quarry	khaki clay	5.9	17.1	28.7	24.2
2	Rocherlea Hill	massive earthy laterite	16.8	15.8	37.4	19.4
3A	Dilston Quarry	iron-rich hardcap 3' thick	23.6	5.6	33.0	40.0
3B	Dilston Quarry	soft khaki-yellow clay 15' thick	4.4	21.3	29.7	17.7
3C	Dilston Quarry	red-green clay (weathered dolerite)	0.3	19.0	12.2	15.3
4A	Thorpe	red vesicular laterite	24.0	2.7	30.0	44.3
4B	Thorpe	red vesicular laterite	28.0	3.5	30.0	38.6
5A	Atkins (Eccleston Road)	pisolitic laterite (float)	32.0	3.5	32.9	29.0
5B	Atkins (Eccleston Road)	red pisolitic laterite	18.0	2.6	24.0	41.5
6A	Lindsays	vermicular laterite	31.9	3.7	32.4	20.0
6B	Lindsays	pisolitic limonite-rich laterite	1.6	2.6	8.6	50.0

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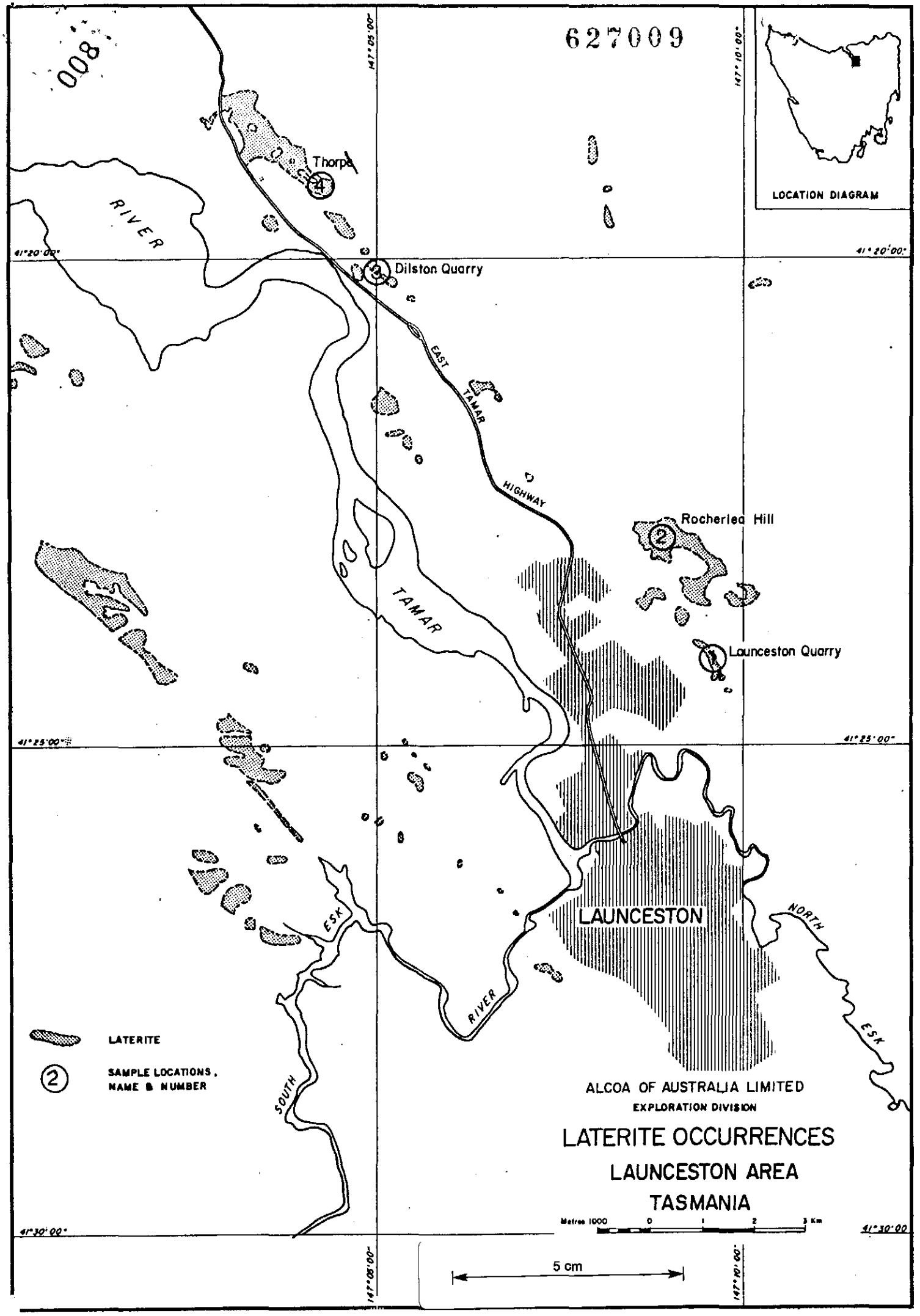
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LOCATION DIAGRAM
Thorpe
Dilston Quarry
Rocherlea Hill
Launceston Quarry
LAUNCESTON
RIVER
EAST TAMAR HIGHWAY
TAMAR
ESK
RIVER
SOUTH
NORTH ESK
147°05'00"
147°10'00"
41°20'00"
41°25'00"
41°30'00"
LATERITE
SAMPLE LOCATIONS, NAME & NUMBER
ALCOA OF AUSTRALIA LIMITED
EXPLORATION DIVISION
LATERITE OCCURRENCES
LAUNCESTON AREA
TASMANIA
Metres 1000 0 1 2 3 Km
5 cm

627010

009

UNION CORPORATION (AUSTRALIA) PTY. LIMITED

A SUBSIDIARY OF UNION CORPORATION LIMITED

TELEPHONE: 241-3534
TELEX: AA 22860
TELEGRAMS: "UNISERVICES" SYDNEY

65 Forest Road,
TREVALLYN TAS. 7250

23rd March, 1981

Mr. F. Bardenhagen,
Box 83,
LILYDALE TAS. 7254

Dear Mr. Bardenhagen,

E.L. 1/81 - BAUXITE

Please be advised that we do not wish to pursue the matter of a joint venture on the abovementioned prospect.

We thank you for allowing us to view the prospect and for your interest the highest chemical analytical values were at Thorpe where the rocks had been blown. The sample collected there contained 23.4% Al and 3.83% Si.

We are looking for sound joint venture opportunities and would be interested in discussing any other areas that may be prospective.

Yours faithfully,
UNION CORPORATION (AUSTRALIA) PTY. LIMITED.

N.J. WINNALL
(Regional Geologist (Tas)).

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RENISON LIMITED

№ 1064

ANALYTICAL REPORT SHEET

Sample No.	Sample Identification	Al	Si	Fe							
1	Thorpe 2	56·0	14·2	27·8							
2	Ecclestone Road	48·1	15·6	29·2							
3	Dilston area (behind school)	22·7	43·4	21·5							
4	Rocherlea area	22·2	26·6	36·6							
5	Mt. Direction	10·6	33·9	33·1							
6	Dilston area	40·9	24·5	27·2							
7	Thorpe 1	45·5	17·0	32·8							
8	Dilston (above river line)	35·4	39·3	15·0							

Analyst: G. Taylor Chief Chemist: _____ Date: 31/12/1980

All results in percent unless otherwise indicated.

011

627012

CSR

Minerals Division

CSR LIMITED
MINERALS DIVISION
1 O'CONNELL STREET
SYDNEY AUSTRALIA
BOX 483 GPO
SYDNEY AUSTRALIA 2001
TELEPHONE (02) 237 5111
TELEX AA20285
CABLE 'CSRMINDIV' SYDNEY

RWG/vf/028

3rd April, 1981

Mr. F. Bardenhagen
Bardenhagen Enterprises Ltd.
Main Road
Lilydale
TASMANIA 7254

Dear Mr. Bardenhagen,

TAMAR BAUXITE DEPOSITS

After due consideration of the various aspects relating to the above deposits I regret that **CSR cannot proceed** any further **with this matter.**

Mr. Carter's kind note bringing these occurrences to our attention and your guided tour of the areas of interest were very much appreciated.

The results of my sampling from various localities together with locality map are enclosed for your information. Please note that a rough guide to the "available alumina" (the amount of alumina that can be extracted) can be obtained by subtracting the "reactive silica" content from the total alumina content.

Yours faithfully,

R.W. GERSTELING
Principal Geologist

Encls.

AUSTRALIAN LABORATORY SERVICES PTY. LTD.

CONSULTING CHEMISTS & ANALYSTS

OFFICE & LABORATORY
44 BALACLAVA STREET,
WOOLLOONGABBA, Q 4102
Ph 07 3916799
TELEX ALSEV 42344

LABORATORY REPORT

Batch No.: B154 Client: C.S.R. LIMITED, Area Contact: MR. S. CHAMBERS
Address: G.P.O. BOX 483, Address:
Date Received 19/02/81 SYDNEY,
Date Completed 03/04/81 N.S.W.

Order No.: 10257/23269 Sample Type: BAUXITE No. of Samples: 9

SAMPLE NO.	Al2O3 % 117	SiO2 % React.	Fe2O3 % 110-C	TiO2 % 115	L.O.I % 602	SiO2 % Total	LOCATION.
A 73576	26.2	5.15	47.5	3.33	18.0	6.39	East of Launceston rock quarry.
A 73577	28.0	9.79	41.2	1.46	18.7	12.1	Top of ridge – ROCHERLEA
A 73578	31.1	35.9	10.1	3.12	14.8	37.7	Lower slopes – ROCHERLEA
A 73579	26.6	7.60	43.1	2.50	19.0	9.91	Outcrops South-West – DILLSTON QUARRY.
A 73580	23.2	28.9	21.6	2.50	14.0	37.7	Channel sample of rock below pisolite – DILLSTON QUARRY.
A 73581	29.2	5.56	45.8	1.25	17.1	6.16	Outcrops from ridge – SOUTH THORPE AREA.
A 73582	19.3	12.55	53.9	1.87	15.2	12.7	Lateritic soil – ROSEVALE
A 73583	25.5	6.00	47.0	1.87	19.2	6.28	ECCLESTONE ROAD FINNEYS PROPERTY
A 73584	8.58	5.00	62.1	0.41	12.8	19.8	Lease – HAGAZINE ROAD.

ELEMENTS
UNITS
METHODS

UNITS LEGEND ----- n = Parts per million b = Parts per billion % = percent
g = Grams a = Absorbance

Signature: A. Finlayson

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COMALCO

COMALCO ALUMINIUM LIMITED

RAW MATERIALS DIVISION
EXPLORATION DEPARTMENT

Mr. F. Bardenhagen
Bardenhagen Enterprises
PO Box 83
LILYDALE
7254

17.8.81

Dear Frank:

Re: Tamar Valley Bauxites

I have at long last received the analyses of the bauxite samples which we collected and also of those you later sent us. I have also carefully estimated the areas which might be covered by bauxite, based on what you showed us in the field. The following are my comments on the results:

Analyses: The analyses prove that, as we expected, the laterites which we sampled are bauxite, but the grades are very low.

The total alumina content is very low - average only 28.25% Al_2O_3. By comparison Alcoa's bauxite, which is very low grade by world standards, contains 35% Al_2O_3, and the bauxite we export from Weipa contains 55% Al_2O_3. The combined silica is also high-average 7.9% SiO_2. Alcoa can get away with their low Al_2O_3 content because their silica is also very low - less than 3%. Weipa bauxite contains around 5.5% - 6% SiO_2.

There is potential for something like 30 million tonnes of bauxite in the Tamar Valley, and this is also too small a quantity to justify further work. The minimum size of bauxite deposit required to justify development is about 100 million tonnes, based on the minimum economic life and size of alumina plants.

Therefore, because the Tamar Valley bauxites are too low in alumina, too high in silica and there isn't the potential for sufficient tonnage,

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ADDRESS CORRESPONDENCE TO
PO BOX 246 GLENSIDE SA 5065
TELEX 89509
TELEPHONE 79 9711

INCORPORATED IN QUEENSLAND

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Comalco is not interested in doing any further testing of these bauxites. I'm sorry that the prospect didn't shape up, but that is usually the way in the exploration business.

About the best use I can suggest for the Tamar bauxites is as road gravel - bauxite makes really excellent gravel roads, and this may be of interest to you.

Thank you again for the courtesy and interest you gave us in showing us the bauxite deposits.

With best wishes,

Yours sincerely,

A.H. White
EXPLORATION MANAGER

Encl. Analyses of 11 bauxite samples

cc: Mr. J.M. Stewart
(Gen. Mgr. Operations, Bell Bay)

ANALYSIS

%

SAMPLE MARK	REACTIVE SILICA SiO_2
AW0807-1	16.1
-2	6.50
-3	8.15
-4	5.95
-5	15.4
-6	7.70
-7	1.72
-8	13.9
-9	12.0
-10	7.40
AW0807-11	5.90

Method: F3/4

The Australian
Mineral Development
Laboratories

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide 79 1662
Telex AA 82520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

627017

AHW
GW
EGR
AMB

amdel

3/1/4/0 - AC 5941/81

6 August 1981

NATA CERTIFICATE

Mr. A.H. White,
Commonwealth Aluminium Corp.Ltd.,
P.O. Box 246,
GLENSIDE S.A. 5065

REPORT AC 5941/81

YOUR REFERENCE: AW 08 07 Requisition No. 1636

IDENTIFICATION: As listed

DATE RECEIVED: 11 June 1981

D.K. Rowley
Manager
Analytical Chemistry Division

for Norton Jackson
Managing Director

le

Pilot Plant: Osman Place
Thebarton S.A.
Telephone 43 8053
Branch Laboratory: Perth

This laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full

ANALYSIS

%

SAMPLE MARK	ALUMINIUM Al_2O_3 TOTAL %	LOSS ON IGNITION L.O.I. %
AW 0807-1	29.8	19.9
AW 0807-2	28.4	19.4
AW 0807-3	32.7	19.3
AW 0807-4	37.3	20.4
AW 0807-5	24.0	18.0
AW 0807-6	24.7	19.4
AW 0807-7	26.3	18.3
AW 0807-8	37.8	20.3
AW 0807-9	11.4	9.83
AW 0807-10	36.9	21.8
AW 0807-11	21.6	16.4
Method:	F3/3	F/3/2

ANALYSIS

%

SAMPLE MARK	ALUMINIUM Al_2O_3 TOTAL %	LOSS ON IGNITION L.O.I. %
AW 0807-1	29.8	19.9
AW 0807-2	28.4	19.4
AW 0807-3	32.7	19.3
AW 0807-4	37.3	20.4
AW 0807-5	24.0	18.0
AW 0807-6	24.7	19.4
AW 0807-7	26.3	18.3
AW 0807-8	37.8	20.3
AW 0807-9	11.4	9.83
AW 0807-10	36.9	21.8
AW 0807-11	21.6	16.4
Method:	F3/3	F/3/2

ANALYSIS

%

SAMPLE MARK	ALUMINIUM Al_2O_3 TOTAL %	LOSS ON IGNITION L.O.I. %
AW 0807-1	29.8	19.9
AW 0807-2	28.4	19.4
AW 0807-3	32.7	19.3
AW 0807-4	37.3	20.4
AW 0807-5	24.0	18.0
AW 0807-6	24.7	19.4
AW 0807-7	26.3	18.3
AW 0807-8	37.8	20.3
AW 0807-9	11.4	9.83
AW 0807-10	36.9	21.8
AW 0807-11	21.6	16.4
Method:	F3/3	F/3/2