ICI AUSTRALIA LIMITED - AUSTRALIAN FERTILIZERS LIMITED

EXPLORATION LICENCE 1081 - ALROY - ALEXANDRIA

ANNUAL REPORT 1976

Mount Isa
February 1977.

D. O'N. Hackett

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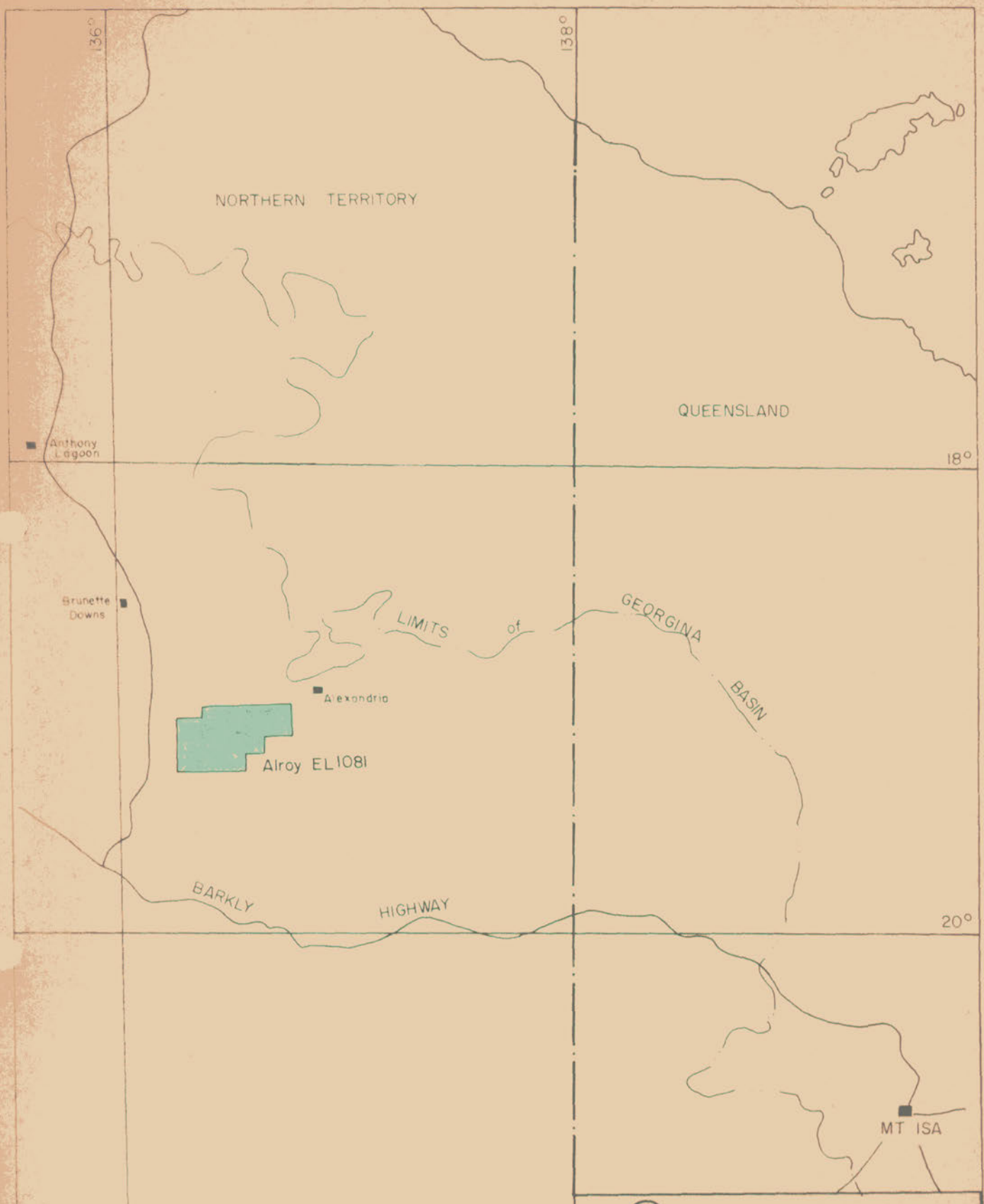
PLANS



ICI Australia Limited

PROJECT: F.L. - ICI PHOSPHATE JOINT VENTURE -

TITLE: LOCALITY PLAN

Alroy EL 1081

SURVEY	SCALE	PLAN NO	CHECKED
ACO	1:2,500,000		
DRAWN	DATE		DATE
EM	17-2-77		

1. INTRODUCTION

Exploration Licence 1081 was granted to ICI Australia Limited and Australian Fertilizers Limited for a twelve month term commencing 6th May 1976.

The area consists of 1278 sq. km situated between Alroy and Alexandria Stations on the Barkly Tableland in eastern Northern Territory.

The area was taken up to further explore the phosphate mineralisation discovered in 1967 by Conaus - Pickands Mather. A programme of rotary/percussion drilling has provided further information about the mineralisation. The target areas will be further tested in 1977.

Total expenditure at E.L. 1081 to the end of 1976 was $10,365.

2. TOPOGRAPHY AND ACCESS

The area consists of gently rolling downs country covered by dark grey to black pedocalcic soils and is bisected by the Playford River and Buchanan Creeks of the Barkly Internal Drainage System.

The downs are typically grass-covered and tree growth is largely restricted to the drainage courses.

Access is gained from the Barkly Stock Route using station tracks of Alexandria and Alroy Stations.

3. PREVIOUS INFORMATION

The regional geology of the area is covered by the 1:250,000 Geological Series Sheet SE/53-15 - ALROY, produced by the B.M.R. (1966).

The regional stratigraphy is described in B.M.R. Bulletin No. 111 - 'Stratigraphy of the Georgina Basin', K.G. Smith (1972).

Between 1968 and 1970 Continental Oil Corporation and Pickands Mather drilled 22 holes in the area for 2332 feet (710 metres) as part of a regional exploration programme under Prospecting Authority 1874 - "Alroy".

The reconnaissance programme resulted in discovery of phosphate in Hole 2-2A with assay values up to 21.3% P_2O_5 over a 1' interval at 10% P_2O_5 over 21 feet.

Follow up drilling in 1970 indicated two areas in which reserves were indicated; Forrest - "Northern Territory Phosphate 1970 Drilling Programme. Prospecting Authority 1874." - concluded that reserves of 100 x 10^6 short tons of 15.3% P_2O_5 could be inferred from one area, and 88 x 10^6 short tons at 25% P_2O_5 from the other.

The phosphatic intersections were logged as calcilutite but no mineralogical examination appears to have been undertaken.

The best intersections obtained in the second stage drilling are:

Hole A-10-70	32% P_2O_5	64 to 65 feet
Hole A-12-70	32.6% P_2O_5	45 to 49 feet
	31.2% P_2O_5	51-to 53 feet
	31.1% P_2O_5	57 to 59 feet

4. GEOLOGY

No Pre-Cainozoic outcrops occur in the E.L. which is totally covered by pedo-calcic black/grey soils, with alluvium in the seasonal swamps associated with the Playford and Buchanan Rivers.

The under lying rocks are siltstones, shales, cherts, limestone and dolomite, probably the Lower Middle Cambrian Burton Beds - a stratigraphic equivalent of the Wonarah Beds to the South and the Beetle Creek Formation in Queensland both of which are phosphatic in parts.

No information is available about rocks below the Middle Cambrian.

5.0. EXPLORATION PROGRAMME

The initial exploration programme under E.L. 1081 was designed to test around the main phosphate indications from Pickands Mather drill holes A-10-70 and A-12-70, then to reassess the prospects on the lithological, chemical and mineralogical data obtained.

5.1. Drilling and Sampling

Nine rotary/percussion drill holes A-16-76 to A-24-76 for a total of 219.5 metres were sunk. The drilling was done by Rotary Drilling Pty. Ltd. using a drill rig of their own design.

The drill data is summarised below:-

Hole No.	Total Depth metres	Finished in	Main Phosphatic Section	
			From	To
A-16-76	20	Dolomite	8	13.5
17-76	27	Dolomite	11	19
18-76	20	Limestone	10	13
19-76	16	Limestone	9.5	15
20-76	28.5	Calcilutite	21	25
21-76	46	Dolomite	20	43
22-76	25	Calcilutite	18	23
23-76	25	Limestone	11	22
24-76	12	Limestone	5	10

Samples taken over one metre intervals were spot-tested for phosphate using an acid solution of ammonium vanado-molybdate (AVM). When a positive reaction with AVM was obtained the sample interval was reduced to 0.5 metres.

All samples showing a positive reaction with AVM were analysed in the field for phosphorus using a mini spectrophotometer following digestion of the sample in concentrated nitric acid and treatment with ammonium vanado-molybdate.

Samples showing significant amounts of phosphorus (usually >4% P_2O_5) were accurately assayed for P_2O_5, Fe_2O_3, Al_2O_3 and CO_2 by Australian Fertilizers Ltd. at their Port Kembla Laboratories.

Detailed Drill Logs with assay values are in Appendix I.

..4.

5.2. Drill Results

The four holes A-16-76 to A-19-76 drilled to test the area around A-12-70 and located one kilometre from it, all failed to intersect phosphorite of a grade resembling that found in the previous holes. The depths from surface to the top of the phosphatic section were similar but the thickness of the phosphorite was generally thinner and the grades markedly lower. Lithologies are apparently similar in all cases, the phosphorite being associated with slightly calcareous cherty siltstones.

The failure to reproduce grades anywhere close to those found in A-12-70 suggests either (a) the high grade material formed in very small depositional basins; or (b) the high grade material developed in narrow but presently undefined, possible inter-reefal, channels 0.5-1 kilometre wide; or (c) that diagenetic concentration has led to local high grade patches, following general leaching from the surrounding siltstones.

Petrographic examination (see Appendix II) of samples from A-16-76, A-17-76 and A-19-76 show that the phosphorite is a mixture of the collophane and pelletal forms in A-16 and A-17, whilst in A-19 the phosphorite is mainly secondary. Cuttings from A-12-70 are not available for study.

The second group of four holes A-20-76 to A-23-76 were sunk to test the area around A-10-70. These holes intersected variable thicknesses of medium and low grade phosphorite but these occurred at differing levels in the holes and correlations between holes is difficult. The phosphorite is a mixture of the pelletal and collophane varieties in a matrix of siltstones, calcite, clays and iron oxides. Generally the Fe_2O_3 and Al_2O_3 values are high.

Hole A-24-76 was drilled to test a gap west of Alexandria Station basin-ward from a Lower Proterozoic ridge flanked by Middle Cambrian Burton Beds - only very low values of phosphate in a thin siltstone chert section were indicated.

APPENDIX I

DRILL HOLE LOGS AND ASSAY DATA

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DRILLING DATA SHEET

HOLE No A16 - 76

Area EL 1081 ALEXANDRA DOWNS (ALROY)

Project Code NT 15

Plan Ref .....

Contractor ROTARY DRILLING P/L

Started 1 - 8 - 76

Drill DRILLMATIC

Method ROTARY 0-9½. HAMMER 9½-20

Finished 1 - 8 - 76

Petrographic Rep .....

Total Depth 20 metres

Assay Rep .....

Logged by D. Hackett

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	SHAPIRO FIELD TEST (% P_2O_5) 0-2	2-5	5-10	10-20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	AL_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	2·5	Cz	Black soil and clay											
2·5	4·5		Silty clay and ferrug.											
			calcrete											
4·5	8	Em (s)	Siltstone and 30% brown											Mod carbonate (L/C)
			chert.											-ve AVM.
8	9		Siltstone and chert bands.				12·3		11·95	0·97	2·81			-ve AVM.
9	9·5						15·5		14·45	1·95	1·89			
9·5	10		Chert with siltstone			9·2			7·6	1·17	1·45	2·73		
10	10·5		Siltstone & trace chert			9·5			6·6	0·89	1·28			Moderately Calcareous
10·5	11		Siltstone with 30% chert				10·0		8·55	0·66	1·36			
11	11·5						12·5		11·05	0·90	1·09			
11·5	12						10·6		9·8	0·72	1·17			
12	12·5					7·2			7·8	1·77	0·77	3·35		
12·5	13						10·8							
13	13·5					8·2			7·1	0·84	0·94			
13·5	14				2·8									
14	14·5	Em (L)	Calcareous siltstone	1·03										Weak +ve AVM.
14·5	15		and 20-25% broken	1·19										
15	15·5		chert.	1·4										
15·5	16		Dolomitic limestone	1·31										
16	16·5		and chert.	1·40										
16·5	17			1·19										
17	17·5													
17·5	18													
18	18·5													
18·5	19													
19	19·5													
19·5	20		Dolomite and trace											V. weak +ve AVM.
			chert.											

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DRILLING DATA SHEET

HOLE No. A-17-76

Area E.L. 1081 ALEXANDRIA DOWNS (ALROY) Project Code N.T. 15

Plan Ref ..... Contractor ROTARY DRILLING Started 1-8-76

Drill DRILLMATIC Method Blade / Percussion Finished 1-8-76

Petrographic Rep ..... Total Depth 27 metres

Assay Rep ..... Logged by D. HACKETT

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	SHAPIRO FIELD TEST (% P_2O_5) 0-2	2-5	5-10	10-20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	AL_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	3	Cz	Black soil, clay and gypsum.											
3	5·5	Cz and T(?)	Sand and gravel.											
5·5	9·5	E^2_{Tm} (s) ?	Siltstone with brown chert.											-ve AVM
9½	10		Pallid siltstone + chert											
10	11	Em (s)	White siltstone + chert			7·0			6·9	1·18	0·94			+ve AVM
11	11·5					7·1			7·8	0·79	1·36			
11·5	12			SLD										
12	12·5				3·2									
12·5	13						17·4		14·0	3·22	2·70	2·95		
13	13·5		Calcareous, phosphatic			5·3			5·0	3·95	1·28			+ve AVM
13·5	14		siltstone and 50%		4·4				3·0	1·14	1·17			
14	14·5		brown chert.			7·3			6·95	0·68	1·28			
14·5	15					7·3			6·6	0·8	1·09			
15	15·5						12·4		10·8	0·87	1·74	3·00		
15·5	16					6·6			6·4	0·79	0·87			
16	16·5					5·5			5·0	0·82	0·51			
16·5	17				4·1									
17	17·5				2·8									
17·5	18				3·3									
18	18·5				3·3									
18·5	19				4·0									
19	19·5													
19·5	20													
20	20·5													
20·5	21													
21	21·5	Em (L)	Limestone											weak +ve AVM
21·5	22													
22	22·5													
22·5	23													
23	23·5													
23·5	24													
24	24·5													
24·5	25		Brown calc. siltstone											
25	25·5		and chert.											
25·5	26													
26	27		Dolomite.											v. weak. +ve AVM.

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DRILLING DATA SHEET

HOLE No. A-18-76

Area E.L. 1081 ALEXANDRIA DOWNS (ALROY)

Plan Ref .....

Drill DRILLMATIC

Contractor ROTARY DRILLING

Method DRAG/PERCUSSION

Petrographic Rep .....

Assay Rep .....

Project Code NT 15

Started 1-8-76

Finished 1-8-76

Total Depth 20 metres

Logged by D. HACKETT

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	SHAPIRO FIELD TEST (% P_2O_5) 0-2	2-5	5-10	10-20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	Al_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	5.5	Cz	Blacksoil and clay.											
5.5	7		Sand, silt and chert conglomerate.											
7	10	Tb.	Calcrete and siltstone.											weak +ve AVM
10	10.5	Em(s)	Siltstone and chert				10.0		8.75	3.57	1.19			+ve AVM
10.5	11						10.0		8.55	1.65	1.05			
11	11.5	Em(L)	Calcilutite.				8.0		6.9	0.62	0.92		16.9	
11.5	12						8.5		7.15	0.60	0.92			
12	12.5		Limestone				4.6		3.2	0.65	0.92			+ve AVM
12.5	13						2.3		1.8	0.44	0.37			
13	13.5													
13.5	14													weak +ve AVM.
14	14.5													
14.5	15													
15	15.5													
15.5	16													
16	16.5													
16.5	17													
17	17.5													
17.5	18													
18	18.5													
18.5	19													
19	20		Dolomite.											v. weak +ve AVM.

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DRILLING DATA SHEET

HOLE No. A-19-76

Area E.L. 1081 ALEXANDRIA DOWNS (ALROY) Project Code NT 15

Plan Ref ..... Contractor ROTARY DRILLING P/L Started 1-8-76

Drill DRILLMATIC Method DRAG 0-14 HAMMER 14-16 Finished 1-8-76

Petrographic Rep ..... Total Depth 16 metres

Assay Rep ..... Logged by D.O'N. HACKETT

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	~~SHAPLRG~~ FIELD TEST (% P_2O_5) 0-2	2-5	5-10	10-20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	AL_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	2	Cz	Black soil and clay											
2	2.75		Pallid clays + gypsum											
2.75	8	Tb	Limestone, marl, gravel											v. weak +ve AVM
8	9	Em(s)	Siltstone, 50% brown			5.2								+ve AVM
9	9.5		chert											(sample missing)
9.5	10					9.7			8.9	1.77	0.81			
10	10.5					7.4			6.6	0.76	0.17	3.13		
10.5	11		Brown siltstone			7.6			6.4	1.3	1.36			Weak +ve AVM
11	11.5				3.1									
11.5	12		Cream siltstone and chert		4.8									
12	12.5		Black chert and siltstone		2.7									
12.5	13		Calcareous siltstone and			8.9			7.8	1.62	1.36			
13	13.5		chert			6.1			4.8	2.35	1.04			
13.5	14					6.7			5.55	0.80	1.10	3.53		
14	14.5						15.6		12.45	1.13	1.36			
14.5	15					6.7			4.1	1.06	0.62			
15	15.5	Em(L)	Limestone/dolomite											v. weak +ve AVM
15.5	16													

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DRILLING DATA SHEET

HOLE No. A-20-76

Area E.L. 1081 ALEXANDRIA DOWNS / ALROY

Project Code NT 15

Plan Ref

Contractor ROTARY DRILLING P/L

Started 2-8-76

Drill DRILL MATIC

Method ROTARY / PERCUSSION

Finished 2-8-76

Petrographic Rep

Total Depth 28.5 metres

Assay Rep

Logged by D. HACKETT

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	SHAPIRO FIELD TEST (% P_2O_5) 0 2 5 10 20 / 2 5 10 20 +	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	AL_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	2	Cz	Blacksoil and clay							
2	4		Yellow, brown clay							
4	5·5		Chert gravel and clay							
5·5	8	E (?)	White siltstone & chert							-ve AVM.
8	19		White calcareous siltstone.							-ve AVM
19	21		White sill stone and 25% brown chert							-ve AVM
21	21·5	Em(6)	Pallid siltstone and 10% chert	14·5	13·3	3·29	2·06			+ve AVM
21·5	22			20	26·86	4·00	0·93			
22	22·5			20+	22·95	6·7	0·98			
22·5	23			7·2	5·7	1·65	0·57	1·01		
23	23·5			6·8	5·35	0·90	0·47			
23·5	24			5·7	4·1	0·77	0·57			
24	24·5			6·4	4·8	2·72	1·49			
24·5	25			4·9	4·6	2·32	1·88			
25	25·5			4·9	3·0	1·14	0·95	23·58		
25·5	26			2·9	1·6	1·20	0·60			
26	26·5	Em(1)	Calcareous siltstones	1·8	1·1	1·47	0·41			mod +ve AVM.
26·5	26			5·8	2·7	0·84	0·60			
27	27·5									
27·5	28									
28	28·5		Calcil. Silt							weak +ve AVM.

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DRILLING DATA SHEET

HOLE No. A-21-76

Sheet 1.

Area E.L. 1081 ALEXANDRIA DOWNS, CAMROK

Project Code NT 15

Plan Ref

Contractor ROTARY DRILLING P/L.

Started 2-8-76

Drill DRILL MATIC

Method ROTARY

Finished 2-8-76

Petrographic Rep

Total Depth 46 metres

Assay Rep

Logged by D. HACKETT

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	~~SHAPIRO~~ FIELD TEST (% P_2O_5) 0–2	2–5	5–10	10–20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	AL_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	2.5	Cz	Black soil and clays											
2.5	3		Pallid clays.											
3	5		Calcrete and sandy silt.											
5	12.5	Em(s)	Siltstone and brown chert											= Inca Formation?
12.5	13		Siltstone + yellow chert											- ve AVM
13	16		Calcilutite and chert											- ve AVM
20	20.5	Em(s)	Siltstone + trace chert		2.3									+ ve MM. Calcareous.
20.5	21		" + 10% chert			5.1			3.65	0.74	1.72			
21	21.5		" + 20% chert			5.3			3.65	0.77	1.74			
21.5	22		5 % chert		3.9				3.0	0.29	1.42		2.76	
22	22.5		trace chert			8.0			5.75	5.75	3.80			
22.5	23						11.2		9.15	0.64	3.85			
23	23.5						16.4		11.7	0.90	4.75			
23.5	24						19.7		18.35	4.45	3.60			
24	24.5						19.7		15.35	4.7	3.45			
24.5	25		5% chert.				14.6		11.0	0.80	2.36		5.49	
25	25.5						13.7		9.85	1.17	2.20			
25.5	26		Siltstone + trace chert				14.1		10.55	0.61	3.65			
26	26.5						10.9		9.85	1.17	2.22			
26.5	27						11.8		10.55	0.61	3.65			
27	27.5						12.6		11.0	0.54	3.85			
27.5	28					9.2			7.8	0.30	2.63		5.45	
28	28.5		Cream siltstone and 5% chert				13.3		12.16	0.92	3.17			
28.5	29						14.6		13.05	0.90	3.59			
29	29.5						19.7		20.65	1.43	3.21			
29.5	30							20.1	22.95	1.29	2.17			
30	30.5		Calcareous siltstones.		4.9				3.65	1.27	2.93			
30.5	31				4.5				3.2	1.13	3.40		3.38	
31	31.5						10.9		8.25	0.54	2.74			
31.5	32					8.0			5.5	0.43	2.08			
32	32.5				4.2				5.05	0.31	1.79			
32.5	33				2.9									
33	33.5			1.3										
33.5	34			1.1										
34	34.5			1.9										

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DRILLING DATA SHEET

HOLE No. A-21-76 (Sheet 2)

Area .....

Plan Ref ..... Contractor .....

Drill ..... Method .....

Petrographic Rep .....

Assay Rep .....

Project Code .....

Started .....

Finished .....

Total Depth 46 metres

Logged by .....

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	SHAPIRO FIELD TEST (% P_2O_5) 0–2	2–5	5–10	10–20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	AL_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
34·5	35	€	Phosphatic siltstones.		4·9				3·65	0·93	1·88			+ve AVH. Calcareous.
35	35·5					5·6			5·05	0·54	1·72			
35·5	36					9·5			8·0	0·54	1·93	1·65		
36	36·5					9·5			7·8	0·64	1·79			
36·5	37				4·7				4·1	0·57	1·32			
37	37·5		Siltstone + 15% chert			8·7			7·8	0·43	1·91			
37·5	38		20% chert				11·8		10·55	0·57	2·46			
38	38·5					9·2			11·0	0·56	1·66			
38·5	39					8·0			3·85	0·61	1·61	1·52		
39	39·5		15% chert			7·2			9·15	0·81	1·32			
39·5	40					9·0			12·35	0·86	1·92			
40	40·5					8·0			11·7	2·65	2·28			
40·5	41					8·4			13·75	1·64	1·75			
41	41·5		20% chert				15·5		23·4	1·64	1·36			
41·5	42		15% chert				10·8		8·0	0·46	0·53	3·47		
42	42·5						10·0		12·6	1·29	1·60			
42·5	43	€ m (L)	Calcilutite + chert			5·7			7·1	0·84	1·17			weak +ve AVH
43	43·5				4·0									
43·5	44			1·9										
44	44·5													v. weak +ve AVH.
44·5	46	€ m (L)	Dolomite + chert											
45	45·5													
45·5	46													

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DRILLING DATA SHEET

HOLE No. A-22-76

Area E.L. 1081 ALEXANDRIA DOWNS (ALROY) Project Code N.T. 15

Plan Ref ..... Contractor ROTARY DRILLING P/L Started 2-8-76

Drill DRILLMATIC Method ROTARY Finished 2-8-76

Petrographic Rep ..... Total Depth 25 metres

Assay Rep ..... Logged by D. HACKETT

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	SHAPIRO FIELD TEST (% P_2O_5) 0-2	2-5	5-10	10-20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	Al_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	2.5	Cz	Black soil and clay.											
2.5	4.5		Pallid clays.											
4.5	5.5		Pallid clay + brown chert nubbles.											
5.5	6		Calcrete + chert nubbles.											-ve AVM
6	6.5	Em(s)	Siltstone + brown chert.	1.7										+ve AVM
6.5	7			BLD										
7.5	7.5			BLD										
7.5	8			BLD										
8	8.5			BLD										
8.5	9			BLD										
9	9.5			BLD										
9.5	10			BLD										
10	10.5			BLD										
10.5	11			BLD										
11	11.5			<0.5										
11.5	12			<0.5										
12	12.5			<0.5										
12.5	13													
13	18		Siltstone + trace chert.											-ve AVM
18	19		Phosphatic siltstone +				18.2		16.8	1.37	1.28			+ve AVM
19	20		50% grey chert.				17.8		16.95	7.15	0.87			
20	21						10.5		10.5	87.15	0.93	7.96		
21	22						3.9		2.7	8.45	0.57			
22	23		Siltstone + trace chert				4.8		3.9	6.15	0.59			Weak +v AVM
23	24	Em(L)	Limestone/calcilutite											
24	25													

ICI 5758

ICI Australia Limited

DRILLING DATA SHEET

HOLE No A-23-76

Area E.L 1081 ALEXANDRIA DOWNS CALROY

Plan Ref

Drill DRILLMATIC

Petrographic Rep

Assay Rep

Contractor ROTARY DRILLING P/L

Method ROTARY

Project Code N.T. 15

Started 2-8-76

Finished 2-8-76

Total Depth 25 metres

Logged by D. ON. HACKETT

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	SHAPIRO FIELD TEST (% P_2O_5) 0–2	2–5	5–10	10–20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	AL_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	1·75	Cz	Blacksoil + clay.											
1·75	3		Calcrete											-ve AVM
3	7	Em (S)	siltstones.											-ve AVM
7	11		laminated chert and siltstones.											-ve AVM (Inca ≡)
11	12		White siltstone			6·1			4·6	0·37	0·89			+ve AVM
12	13				3·2				2·1	0·36	0·91			
13	14		Siltstone and brown chert			7·4			6·25	0·67	1·27	1·80		
14	15					8·5			7·35	1·14	1·93			
15	16		Siltstone and black chert.			5·9			5·5	12·7	2·68			
16	17				3·6				3·2	10·7	2·95			
17	18		Pale siltstones.				16·1		15·05	8·15	3·95			
18	19						19·3		18·2	4·6	3·95			
19	20		Siltstone and 10% chert.				11·4		10·5	8·3	3·85	3·26		
20	21					8·2			7·35	2·72	3·25			
21	22		Calcareous siltstones.			6·0			5·7	0·84	0·81			
22	23		Sand(!) with grey chert	1·0					1·4	0·49	0·25			
23	24	Em (L)	Limestone and chert											
24	25		Limestone and chert											

ICI 5758

ICI Australia Limited

DRILLING DATA SHEET

HOLE No A-24-76

Area EL 1081 ALEXANDRIA DOWNS (ALROY) Project Code NT 15

Plan Ref ..... Contractor ROTARY DRILLING P/L. Started 4-8-76

Drill DRILL MATIC. Method ROTARY Finished 4-8-76

Petrographic Rep ..... Total Depth 12 metres

Assay Rep ..... Logged by D. O'N. HACKETT

SAMPLE INTERVAL metres FROM	TO	STRATIGRAPHY	LITHOLOGY	SHAPIRO FIELD TEST (% P_2O_5) 0–2	2–5	5–10	10–20	20+	A.F.L. ASSAYS (%) P_2O_5	Fe_2O_3	AL_2O_3	CO_2		PETROGRAPHY RESULTS AND COMMENTS
0	1	Cz	Black soil.											
1	3		Gypsum clays.											
3	5		Pallid clays.											
5	6	Emb	Siltstone and chert		3·4									+ve AVM
6	7		Limestone		2·8									
7	8				2·4									
8	9	Emb (L)	Interbedded limestone and siltstone		3·0									
9	10				3·8									
10	12		Limestone/dolomite											weak +ve AVM.

APPENDIX II

PETROGRAPHIC REPORT

TABLE 2

NORTHERN TERRITORY AREA - RESULTS OF PETROGRAPHIC EXAMINATION

Sample No.	Hole No.	Spacing (m)	Phosphatic Material	Non-Phosphatic Material	Chert %
NTP145	A-21-76	23-23½	Argillaceous phosphorite and collophane in calcitic matrix. Some areas of pelletal phosphorite observed. 11.7/0.90/4.75	Chert, calcite and iron oxides. Aluminium silicates and sand size quartz grains.	50-60
NTP146	A-21-76	23½-24	Pelletal, with phosphatized fossil fragments. Collophane in calcite matrix present. 18.35/4.45/3.60	Iron oxides, calcite, yellow siltstone, aluminium silicates, sand size quartz grains and chert.	20-30
NTP147	A-21-76	24-24½	Pelletal and argillaceous phosphorite 60/40. Large number of phosphatized fossil fragments. Pellets appear to be rich in iron oxides. 15.35/4.17/3.45	Iron oxides, chert and siltstone.	20-30
NTP148	A-21-76	24½-25	Mainly pelletal with some argillaceous phosphorite. Collophane in calcite matrix present. Fossil fragments present in matrix with pellets. 11.0/0.80/2.36	Iron oxides present in pellets, calcite, chert and sand size silica.	10
NTP156	A-21-76	28½-29	70/30 mixture collophane in yellow siltstone and calcitic matrix and pelletal phosphorite with fossil fragments. Some ovules present. 13.05/0.70/3.59	Predominantly calcite. Iron oxides, fine siltstone and chert.	< 10
NTP157	A-21-76	29-29½	Pelletal, mainly large ovules with differing amounts of associated iron oxides. Some argillaceous phosphorite. 22.65/1.43/3.21	Iron oxides, sand size silica calcite and chert.	< 5
NTP158	A-21-76	29½-30	Pelletal with a large number of ovules rich in iron oxides. Phosphorite also present. 22.95/1.29/2.17	Calcite, fine siltstone chert and iron oxides.	10
NTP159	A-21-76	30-30½	Mainly secondary phosphorite - argillaceous and collophane. Some pelletal material with fossil fragments. 3.65/1.27/2.93	Fine siltstone, silicates iron oxides and calcite.	< 5
NTP175	A-21-76	40-40½	Low grade collophane in matrix of iron oxides and siltstone. Some pellets and ovules. 11.7/2.65/2.23	Chert, iron oxides, siltstone, fine grains quartz and calcite.	50-60
NTP176	A-21-76	40½-41	Pelletal with fossil fragments. Collophane in matrix of iron oxide and siltstone also present. 13.75/1.64/1.75	Chert, iron oxide and sand size silicates.	30-40
NTP177	A-21-76	41-41½	Mainly pelletal associated with iron oxide. Some collophane present with siltstone and iron oxides. 23.4/1.64/1.36	Chert, aluminium silicates iron oxides and siltstone.	40-50
NTP178	A-21-76	41½-42	Secondary phosphorite argillaceous and collophane. 8.0/0.46/0.53	Chert, aluminium silicates iron oxides, siltstones and sand size quartz.	40-50
NTP181	A-16-76	8-9	Mixture 50/50 Pelletal and collophane. Both varieties present in a matrix of calcite/silica/siltstone/iron oxide. 11.95/0.97/2.81	Chert, aluminium silicates, calcite, silica and siltstone.	30-40
NTP182	A-16-76	9-9½	Pellets in a collophane matrix. Ovules and fossil fragments present. Phosphate present also as a coating on chert particles. 14.45/1.95/1.89	Chert, iron oxides, sand size silica, siltstone and calcite.	30-40
NTP183	A-16-76	9½-10	Mixture of pelletal and collophane varieties. Collophane associated with calcite. 7.6/1.17/1.45	Chert, iron oxides, aluminium silicates and siltstone.	40-50
NTP193	A-17-76	12½-13	Pelletal and collophane varieties in a yellow siltstone matrix. Some ovules and fossil fragments present. 14.0/3.22/2.70	Iron oxides, siltstone, sand size silica, chert and calcite.	20-30
NTP213	A-19-76	14-14½	Secondary phosphorites mainly argillaceous and collophane. 12.45/1.13/1.36	Chert, iron oxides, siltstone and calcite.	30-40

136°15'

136°30'

19°15'

PLAYFORD SWAMP

PLAYFORD RIVER

BUCHANAN RIVER

ALROY DOWNS STATION

ALEXANDRIA STATION

Brunette Downs

Alexandria

Alroy Downs

Buchanan Dam

A-1-70
A-2-70
A-3-70
A-4-70
A-5-70
A-6-70
A-7-70
A-9-70
A-10-70
A-11-70
A-13-70
A-14-70
A-15-70
A-2/2A
A-3
A-12-70
A-16-76
A-17-76
A-18-76
A-19-76
A-20-76
A-21-76
A-22-76
A-23-76
A-24-76

No10
No23
No25
No27
No49
No53
No1

27 m.
20 m.
16 m.
20 m.
28.5 m.
46 m.
25 m.
25 m.
12 m
30 m.

14·0%
8·7%
12·55%
18·2%
26·8%
18·2
16·95
23·4%

KEY

- Tracks
- Fences
- Bores
- Creeks

REFERENCE

CAINOZOIC	RECENT	Cz	Black soil, clay, calcrete, alluvials.
	TERTIARY	T	Siltstone, nodular limestone, chert.
PALAEOZOIC	CAMBRIAN	€	Siltstone, chert, calcareous siltstone.
		€ls	Limestone, dolomite, calcilutite.

DRILLHOLE DATA

A-12-70 ..... Holes drilled prior to E.L. 1081.

Depth, metres 0 20 40 60 80

10 20 % P_2O_5

SCALE 1:85,000 (approx)

0 1 2 3 4 5 6 7 8 9 10 kilometres

ICI Australia Limited

PROJECT: A.F.L. - ICI PHOSPHATE JOINT VENTURE -

TITLE: Exploration Licence 1081 Alroy N.T.

DRILLHOLE LOCATIONS AND GRAPHIC LOGS

SURVEY	SCALE	PLAN NO	CHECKED
D.O'N.H	1:85,000	1081/2	
DRAWN	DATE		DATE
E.M	26-8-76		