CRA EXPLORATION PTY Limited

BUCHANAN DAM EL 3536, N. T.

GEORGINA BASIN
ANNUAL and FINAL REPORT, 1982

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N. T. Department of Mines and Energy

Map reference
SE 53-15 (Alroy)

Report number
11929

CONTENTS

1.0 Summary

Percussion drilling of the limestone sequence in the Alroy area indicated that the black shale intersected by Conoco-Minoil in drillhole A-2-71 has only limited extent. Assays showed no significant base metal, gold, or uranium mineralization.

Detailed gravity and ground magnetics surveys failed to delineate the mineralized shale but a basement high was indicated and its flank was drilled for phosphate. Although phosphate was present, assays were too low to warrant any further investigation.

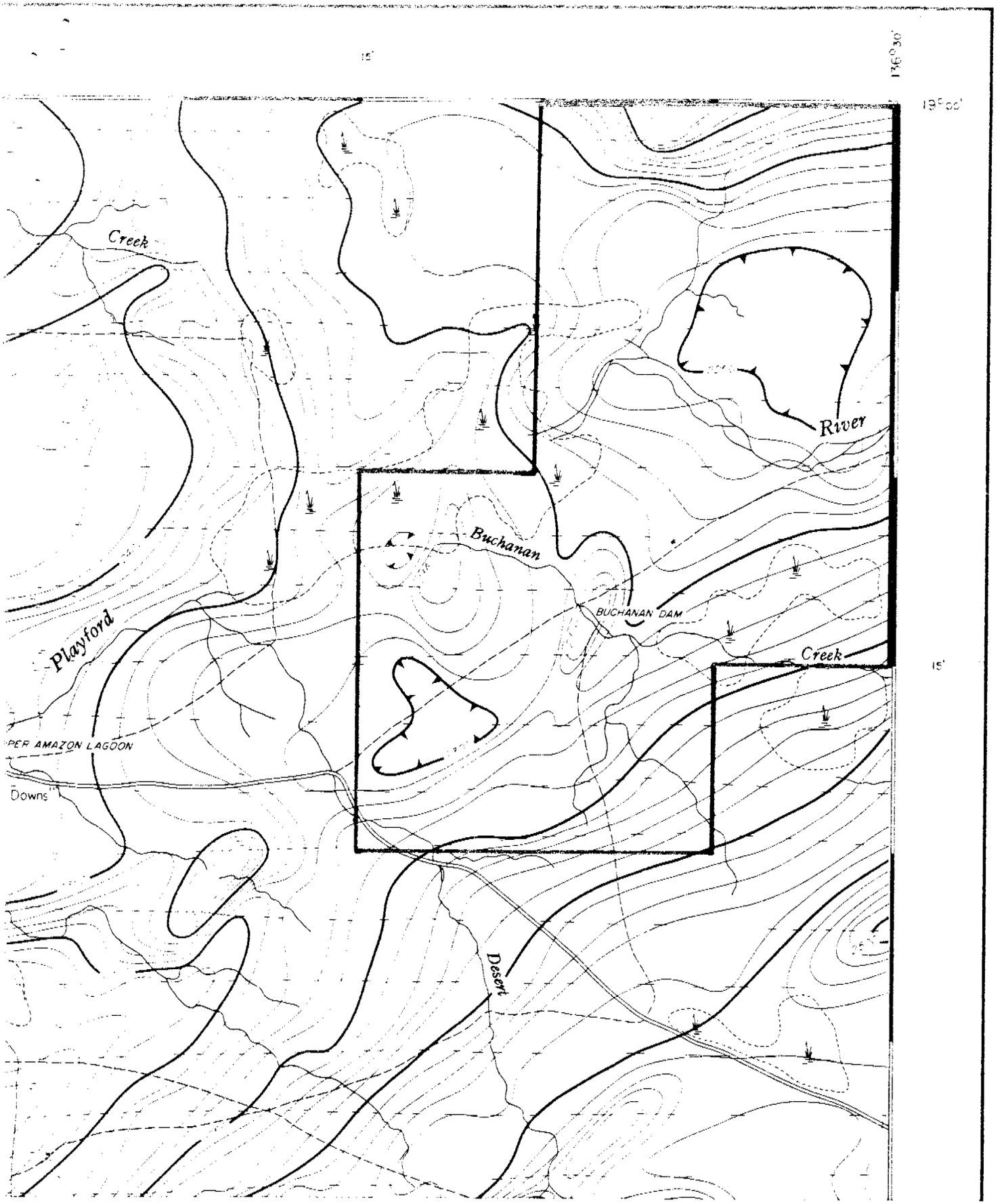
2.0 Introduction

During the 1971 phosphate exploration programme on A-P-1874 in the Alroy Downs area, Conoco-Minoil intersected a dark shale from 12.8 to 16.2 metres in drill hole A-2-71 (See NT Mines Department Report CR 71/12). Lead, zinc, and copper were anomalous over the interval from 13.7 to 17.1 metres while the interval from 14.0 to 15.5 metres assayed 0.19 % Co, 0.03 % Ni, 70 ppm Mo, 11.8 % Mn, 0.11 % Cu, 0.74 % Pb, 0.55 % Zn plus anomalous Cd, As, and U by emission spectroscopy.

Drill hole A-2-71 was situated approximately 2.3 km north of Buchanan Dam and lies on the flank of a small aeromagnetic response (Figure 1) and on the axis of a regional gravity high as defined by the BMR survey on an 11 km grid (Figure 2). The termination of the gravity and magnetic features coincides with a major N-S Landsat lineament which is possibly related to a southern extension of the Emu Fault System in the McArthur Basin (see CRAE report no. 10738).

The coincidence of high base metal values with anomalous gravity and magnetic responses was regarded as prospective for shale hosted stratiform lead - zinc deposits and an EL application was lodged on 26 January 1982 to cover drill hole A-2-71 and the strike extensions of the gravity high.

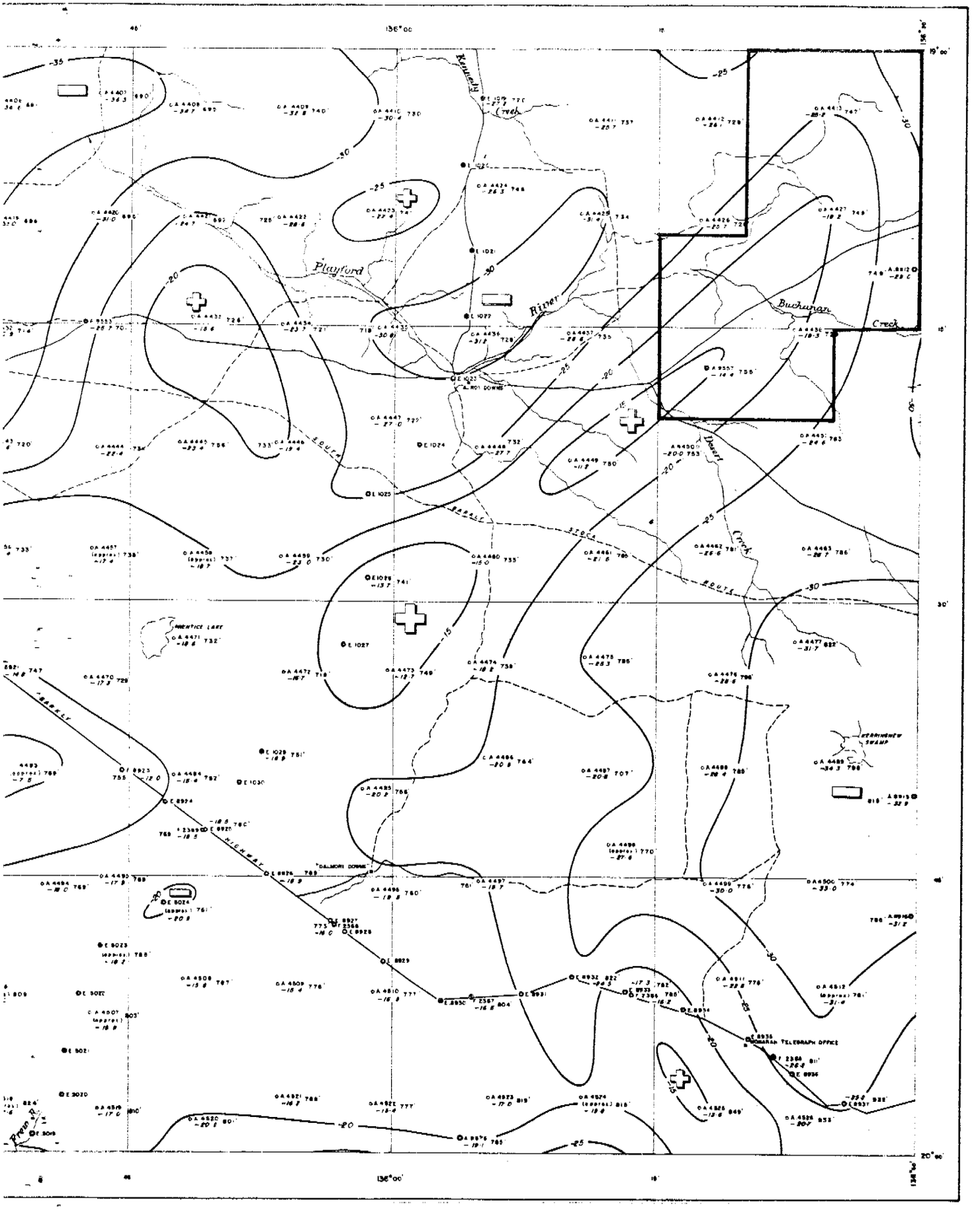
Buchanan Dam EL 3536 was granted over an area of 728.61 km2 on the Alroy 1:250000 sheet, Georgina Basin, for a period of 12 months from 20 April 1982 (Plan No. NTa 421).



BMR REGIONAL AEROMAGNETIC CONTOURS

FIGURE 1

ALROY



BMR REGIONAL GRAVITY CONTOURS

FIGURE 2

3.0 Conclusions

Percussion drilling intersected 2.3 metres of a black shale unit within a limestone sequence at the approximate location of the 1971 Conoco-Minoil drill hole A-2-71.

Subsequent drilling indicated that the black shale was only of very limited extent, and base metal, gold, and uranium assays were too low to create further interest. Phosphate assays are similarly too low to be of economic interest.

No target for further work was generated by the drilling programme.

4.0 Regional Geology

The area covered by EL 3536 is part of the Cambrian Georgina Basin and the BMR explanatory notes for Alroy 1:250000 sheet describe fossiliferous siltstone, chert, silicified shale, and oolitic limestone of the Middle Cambrian Wonarah Beds as outcropping between the South Barkley Stock Route and the Barkley Highway.

There is no outcrop in the immediate vicinity of drill hole A-2-71 although a brecciated, silicified, iron stained carbonate outcrops approximately 1.5 km to the north. Samples 964482 and 964483 were taken from this outcrop and assayed for Pb, Zn, Cu, Ni, Co, Cr, Mn, Ag, Au, Sn, and W but yielded uniformly low values (see Appendix 1).

5.0 Aerial Photography

To provide a base for mapping and an aid for navigation, black and white 1:50 000 aerial photography was flown over the area (Figure 3).

6.0 Geophysical Investigations

6.1 Objectives

Prior to drilling, detailed gravity and ground magnetic surveys were done over a 5 km by 4 km area surrounding the discovery intersection at drill hole A-2-71. It was hoped that the survey would aid in the delineation of the mineralized shale and give additional information on buried Cambrian units.

6.2 Survey Details

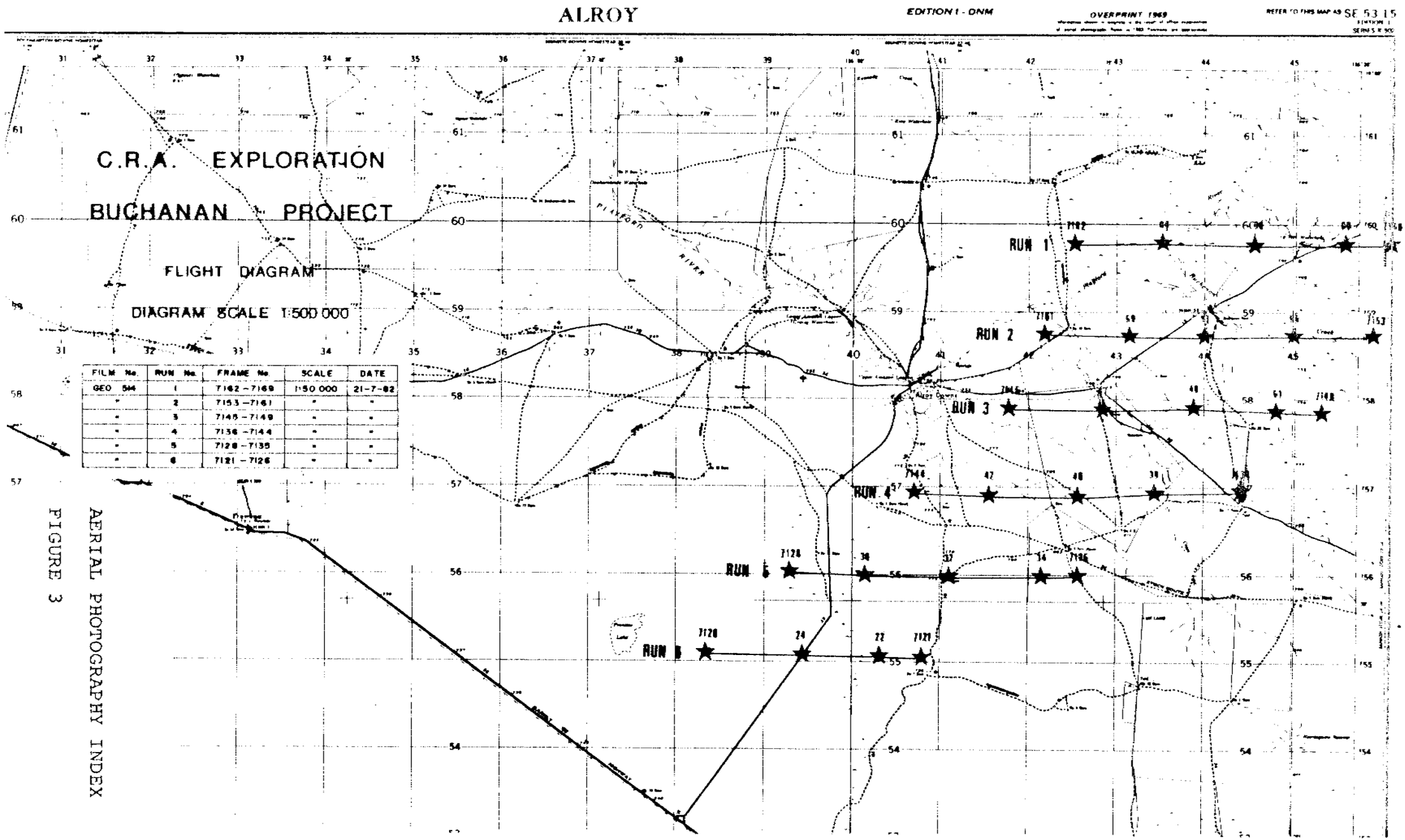
A base line bearing true north was pegged from an origin on the western end of the earth wall of Buchanan Dam (10 000 mE 10 000 mN) from 9000 mN to 14 000 mN and east-west traverse lines 1000 m apart were pegged from 10 000 mN to 14 000 mN. Along these lines, stations were pegged at 100 m intervals using an EDM surveying instrument and optically levelled, and permanent steel pegs were placed at 1000 m intervals. The inferred position of drill hole A-2-71 was at 10 000 mE, 12 500 mN.

Gravity readings were taken at 50 metre intervals along the base line and at 100 metre intervals on other lines, giving 351 gravity stations in total. Only relative gravity values and relative elevations were calculated for the grid. A Lacoste and Rombers gravity meter was used with an expected overall station accuracy of 0.01 mGal (Plan Nos NTd 2052, 2053).

Total magnetic intensity was measured at 20 metre intervals along the lines. The detector was held at 3 metres above ground level. The instrument used was a Scintrex MP-2 proton precession magnetometer and a base station magnetometer was set up to record diurnal fluctuations (Plan No NTd 2085).

6.3 Discussion

The gravity profiles show a broad 2 mGal high trending north, centred at 9000 mE on the grid. This probably



FILM No.	RUN No.	FRAME No.	SCALE	DATE
GEO 544	1	7162 – 7169	1:50 000	21-7-82
"	2	7153 – 7161	"	"
"	3	7145 – 7149	"	"
"	4	7136 – 7144	"	"
"	5	7128 – 7135	"	"
"	6	7121 – 7126	"	"

FIGURE 3 AERIAL PHOTOGRAPHY INDEX

reflects a basement high and may be part of the large regional high evident from the BMR gravity data. A 0.5 mGal step in gravity at about 10000 mE seen on each of the east-west lines is probably caused by a fault or similar basement structure.

A narrower 0.5 msal gravity high is seen on most lines (except 12000 mN) trending north at about 11000 mE and this coincides with a 100 nT magnetic anomaly. Modelling of the magnetic anomaly suggests that the causative body is a noncontinuous flat lying ribbon about 400 to 500 metres in width, at about 50 metres depth, and of high susceptability and density (Figure 40. This model is consistent with a basaltic flow. The coincidence of this magnetic anomaly and a gravity high suggests a local basement high.

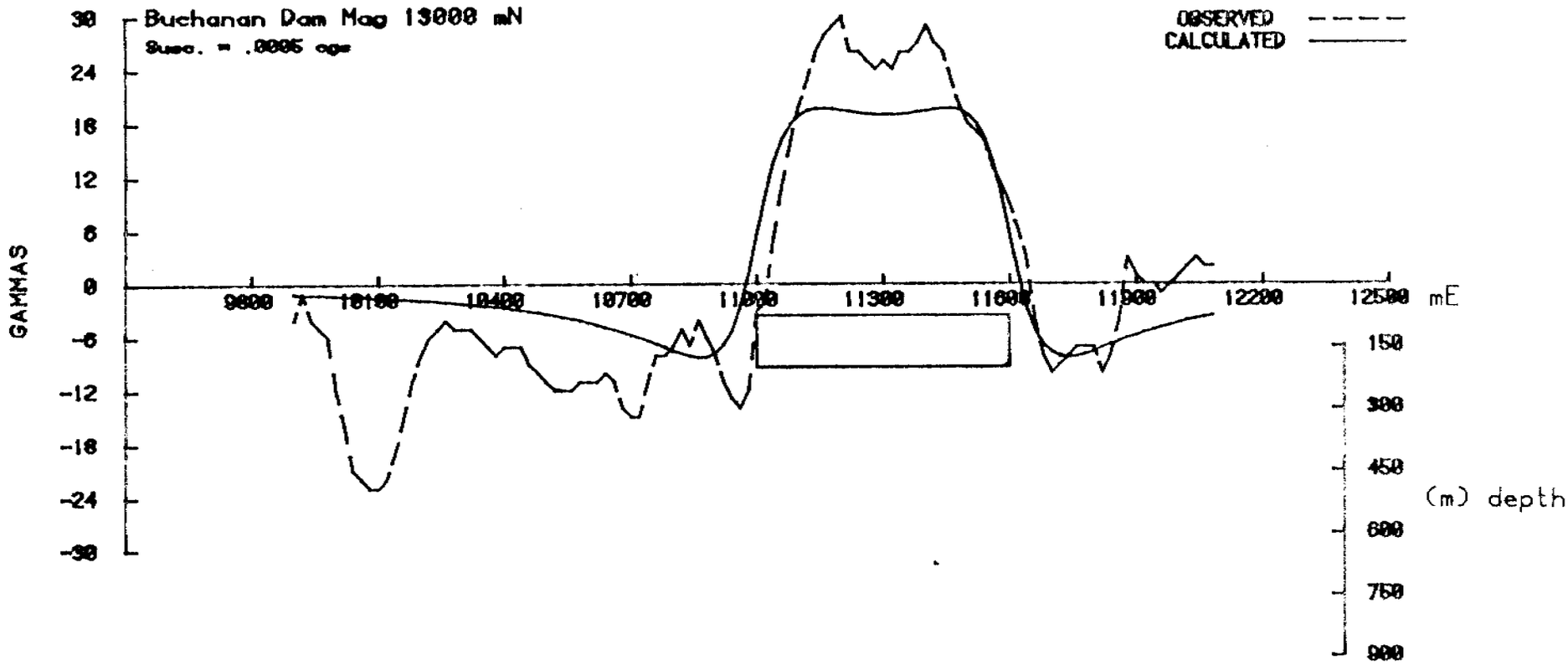
A small -20 nT magnetic anomaly also occurs near the drill hole intersection of mineralized shale at 10000 mE, 13000 mN. Some expression of this anomaly is seen on the lines to the north (14000 mN) and to the south (12000 mS). This is unlikely to be related to the non-magnetic mineralized shale but may reflect a basement structure.

7.0 Drilling

Fourteen percussion drill holes totalling 304 metres were drilled on a pattern (see Plan Ntd 2005) , concentrating mainly on the area to the north of A-2-71 as the 1971 Conoco-Minoil programme had extensively drilled the region to the south. Detailed drill logs and assays are appended.

CRAE drill hole PD82BD1 was drilled at the approximate location of A-2-71 and intersected 2.3 metres of black shale at 11.7 metres depth. PD82BD 2,3,4,5,6 and 9 were drilled on approximately 500 metre centres about PD82BD1, but failed to intersect black shale. Prominent chert marker horizons intersected within the limestone indicate that the stratigraphy is flat lying, and so PD82BD 10, 11, 12, 13, and 14 were drilled closer to PD82BD1. These infill drill holes failed to intersect black shale except for PD82BD13 which intersected a few centimetres of black shale.

Grades obtained for base metals were generally lower than those obtained by Conoco-Minoil in 1971 and far too low to be of economic interest. PD82BD1 was anomalous in base metals over the interval 10.5 to 15 metres depth with the one metre interval from 12.0 to 13.0 metres assaying 1880 ppm Pb, 1810 ppm Zn, 975 ppm Cu, 110 ppm Ni, 225 ppm Co, 80 ppm Cr, 1.4 % Mn, 14 ppm U, and 7 ppm Th. Gold assay values



Susceptibility 0.0005 (CGS)

Modelling of Ground Magnetics

line 13000 mN

Buchanan Dam EL 3536, N. T.

FIGURE 4

were below detection limits. Base metal values obtained for PD82BD13 were anomalous from 10.5 to 15.0 metres but considerably lower than values for PD82BD1.

The flanks of the basement high indicated by the geophysical data were regarded as prospective for phosphate, by analogy with the geological setting of the Wonarah phosphate deposit (see Howard and Perrino, 1973). Furthermore, the best phosphate intersection of the 1971 Conoco-Minoil drilling program was obtained in A-3-71, also situated near the basement high. Hence, PD82BD 7 and 8 were drilled on the flank of the basement high, south and north of A-3-71.

All cuttings were tested for phosphate using ammonium molybdate solution (see Appendix 3). Most drill holes contained traces of phosphate, with hole PD82BD7 having the most significant intersection of 18 metres, and cuttings from this hole were assayed for P2O5. Grades obtained were low, with the highest assay being 7.30 % P2O5 for the 1.5 metre interval from 25.5 to 27.0 metres.

8.0 References

Conner, A. G. 1980. Cobalt Commodity Study - Exploration in Australasia. CRAE Report No. 10738

Howard, P. F. and Perrino, F. A. 1973. Wonarah Phosphate Deposit, Georgina Basin, Northern Territory. Aus. I. M. M. Econ. Geol. of Aust. and Papua New Guinea. Book 4 pp. 273 - 277

Kennedy, T. J. 1971. A-P 1874, Alroy, N. T. Report on 1971 drilling programme. N. T. Department of Minerals and Energy report CR 71/12.

Randal, M. A. 1966. Alroy, N. T. - 1:250 000 Geological Series. Bureau of Mineral Resources, Australia. Explanatory notes SE 53/15.

9.0 Keywords

Cobalt, lead, phosphate, zinc, black shale, limestone, basin, stratabound, Cambrian, assay-drill, drill-percussion, geophys-mag., geophys-grav.

10.0 Location

Alroy SE 53-15
Alroy 6159

11.0 List of Plans

Plan No	Title	Scale
NTa 421	Buchanan Dam EL Application	1:250 000
NTd 2005	Location of Percussion Drill Holes	1:20 000
NTd 2053	Gravity Profiles	1:20 000
NTd 2052	Gravity Contours	1:20 000
NTd 2085	Ground Magnetic Profiles	1:20 000

Appendix 1

Drill Logs and Assay Results

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PERCUSSION DRILL CORE LOG

PROJECT: BUCHANAN DAM EL3536

CO-ORDINATES: 642800mE 7876110mN AZIMUTH: ______ INCLINATION: VERT

RL COLLAR: ______

DRILLERS: WHITE DRILLING LTD DRILL TYPE: JACRO 200

COMMENCED: 17/8/82 COMPLETED: 17/8/82 DEPTH: 21 m CASING LEFT: ______

HOLE No. PD 82 BD 1 BPO No(s). 21269, 21270

DEPTH FROM (M)	DEPTH TO (M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES (WEATH., ALTERATION, FRACTURING, VEINING, MINERALIZATION)	SAMPLE No.	FROM (M)	TO (M)	REC (M)	Pb	Zn	[illegible]	Ni	Co	Cr	Mn	Ag
0	1.5				light brown clay	micaceous												
1.5	7.5				limestone, light brown, some ferruginous clay pellets	minor chert												
7.5	9				limestone, very white	minor chert												
9	11.7				limestone, light brown	minor chert												
							65894	10.5	12.0		[illegible]	620	[illegible]	60	150	55	6350	<0.05
11.7	14				black shale	manganiferous	895	12.0	13.0		1170	1170	475	70	130	75	740	-
							896	13.0	14.0		1800	1910	725	110	225	80	1492	-
14	21				limestone, light brown, mildly ferruginous, chert very common especially from 19.5 → 21 m	phosphatic from 18 – 21m	897	14.0	15.0		1600	755	[illegible]	70	40	110	890	-
											U	Th						
							894				19	10						
					E.O.H		895				11	7						
							896				10	7						
							897				17	9						

SUMMARY AND SPECIAL COMMENTS: Hole terminated as recovery became difficult/impossible due to high moisture content. Black shale unit located.

LOGGED BY: KRA DATE: 17/8/82

SHEET 1 OF 1

C.R.A. EXPLORATION PTY. LIMITED

PERCUSSION DRILL CORE LOG

PROJECT BUCHANAN DAM EL3536

CO-ORDINATES 643300mE 7876110mN AZIMUTH — DRILLERS WHITE DRILLING LTD COMMENCED 17/8/82 DEPTH 25m HOLE No PD82BD2

RL COLLAR — INCLINATION VERT DRILL TYPE JACKBO 200 COMPLETED 17/8/82 CASING LEFT — DPO No(s) 21269, 21270

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	3				brown clay	micaceous weakly phosphatic from 0→1.5m					
3	13.5				limestone, yellow to dark yellow or brown, mildly ferruginous, minor chert						
13.5	16.5				limestone, white with minor chert						
16.5	18				limestone, yellow in colour - weakly ferruginous						
18	22.5				limestone, white → grey, chert minor						
22.5	25				limestone, white → grey, chert very abundant	22.5 → 25m. phosphatic					
					E.O.H.						

SUMMARY AND SPECIFICATIONS: Hole terminated, no further recovery being obtained

LOGGED BY KRA DATE 17/8/82

SHEET 1 of 1

C.R.A. EXPLORATION PTY LIMITED

PERCUSSION DRILL CORE LOG

PROJECT BUCHANAN DAM EL 3536

CO-ORDINATES 642300mE 7876[illegible]mN AZIMUTH ____ DRILLERS WHITE DRILLING LTD COMMENCED 17/8/82 DEPTH 25m HOLE No. PD82BD3

RL COLLAR ____ INCLINATION VERT DRILL TYPE JACKSON 200 COMPLETED 17/8/82 CASING LEFT ____ DPO No(s) 2/269, 2127

DEPTH FROM(M)	DEPTH TO(M)	CORE REC (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	1·7				red-brown clay	micaceous					
1·7	9				limestone, mostly white to grey, mildly ferruginous in places with minor Fe-clay pellets	4·5→6m weakly phosphatic					
						6→25m phosphatic					
9	13·5				limestone, yellow to brown						
13·5	25				limestone, mostly white → grey with minor yellow ferruginous regions. Chert very common						
					E.O.H.						

SUMMARY AND SPECIAL COMMENTS Hole terminated at 25m as required

LOGGED BY KRA DATE 17/8/82

C.R.A. EXPLORATION PTY. LIMITED

PERCUSSION DRILL CORE LOG

PROJECT BUCHANAN DAM EL3536

CO-ORDINATES 642300mE 7876610mN AZIMUTH ____ DRILLERS WHITE DRILLING LTD COMMENCED 18/8/82 DEPTH 25m HOLE No. PD 82 BD 4

RL COLLAR ____ INCLINATION VERT DRILL TYPE JACKARO 200 COMPLETED 18/8/82 CASING LEFT ____ DPD No(s). 21269, 21270

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2.8				brown → red clay	micaceous					
2.8	4.5				limestone, yellow → brown, mildly ferruginous due to Fe-clay pellets, chert common						
4.5	7.5				limestone, white chert common						
7.5	12				limestone mildly ferruginous, yellow to brown, ' Chert common	10.5 → 25m phosphatic					
12	15				limestone white, chert minor to absent						
15	25				limestone generally yellow to light brown, minor chert						
					E.O.H.						

SUMMARY AND Hole terminated at 25m as required

LOGGED BY KRA DATE 18/8/82

CRAE 117

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PERCUSSION DRILL CORE LOG

PROJECT BUCHANAN DAM EL 3536

CO-ORDINATES 642900mE 7876610mN AZIMUTH _____ DRILLERS WHITE DRILLING LTD COMMENCED 18/8/82 DEPTH 24m HOLE No. PD82BD5

RL COLLAR _____ INCLINATION VERT DRILL TYPE JACK 200 COMPLETED 18/8/82 CASING LEFT _____ DPO No(s) 21269, 21270

DEPTH FROM (M)	DEPTH TO (M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	3				clay, brown to red	micaceous					
3	4·5				limestone, mildly ferruginous, yellow, chert abundant						
4·5	9				limestone, white, chert very common						
9	21				limestone, mostly white, very weakly ferruginous in places, chert common	13·5 → 22·5m interval is phosphatic					
21	24				limestone, yellow-brown, more strongly ferruginous						
					E.O.H.						

CRAE MT PLAN No 81-496

SUMMARY AND SPECIAL COMMENTS Hole terminated 1 metre short due to loss of circulation

LOGGED BY KRA DATE 18/8/82

SHEET 1 OF 1

PERCUSSION

C.R.A. EXPLORATION PTY. LIMITED

DRILL CORE LOG

PROJECT BUCHANAN DAM EL3536

CO-ORDINATES 642800mE 7875610mN AZIMUTH ____ DRILLERS WHITE DRILLING LTD COMMENCED 18/8/82 DEPTH 25m HOLE No PD 82 BD 6

RL COLLAR ____ INCLINATION VERT DRILL TYPE JACKRO 200 COMPLETED 18/8/82 CASING LEFT ____ DPO No(s) 21269, 21270

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2·7				dark brown to reddish clay	micaceous					
2·7	7·5				yellow to light brown limestone abundant chert fragments						
7·5	22·5				generally white → grey limestone with minor light brown sections, chert generally minor	19·5m to 25m interval is phosphatic					
22·5	25				limestone, dark → yellow to brown, ferruginous nodules, minor chert						
					E.O.H						

CRAE 117
PLAN No 39-404

SUMMARY AND SPECIAL COMMENTS Hole was ended at 25m as required. Problems with recovery for 2·47

LOGGED BY KRA DATE 18/8/82

C.R.A. EXPLORATION PTY. LIMITED

PERCUSSION DRILL CORE LOG

PROJECT: BUCHANAN DAM EL 3536

CO-ORDINATES: 644300 mE 7875610 mN AZIMUTH: ____ DRILLERS: WHITE DRILLING LTD COMMENCED: 19/8/82 DEPTH: 27 m HOLE No.: PO82 BD7

RL COLLAR: ____ INCLINATION: VERT DRILL TYPE: JACKRO 2000 COMPLETED: 19/8/82 CASING LEFT: ____ DPO No(s): 21269. 21270

DEPTH FROM (M)	DEPTH TO (M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES (WEATH., ALTERATION, FRACTURING, VEINING, MINERALIZATION)	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES P_2O_5
0	3.5				Brown to red-brown clay	micaceous	64321	0	1.5		0.07
						0→1.5m weakly phosphatic	641322	1.5	3		0.42
3.5	10.5			[limestone symbol]	Limestone, yellow-brown, quite ferruginous		641323	3	4.5		0.34
					with Fe-rich clay pellets, minor		641324	4.5	6		0.09
					chert		641325	6	7.5		0.46
10.5	16.5				Limestone, mostly white with only	9→27m phosphatic	64326	7.5	9		0.15
					a few very minor ferruginous		641327	9	10.5		0.46
					yellow-brown sections, minor chert		641328	10.5	12.0		0.64
							641329	12	13.5		5.20
16.5	27				Limestone, continuous white		64330	13.5	15.0		0.54
					unit with minor chert		641331	15	16.5		0.17
							641332	16.5	18.0		1.62
							641333	18	19.5		0.32
							641334	19.5	21.0		0.25
					E.O.H.		64335	21	22.5		2.80
							641336	22.5	24.0		3.10
							641337	24	25.5		6.30
							641338	25.5	27.0		7.20

SUMMARY AND SPECIAL COMMENTS: Hole ended without any recovery problems

LOGGED BY: KRA DATE: 19/8/82

SHEET 1 OF 1

CRAE NT PLAN No M486

C.R.A. EXPLORATION PTY LIMITED

PERCUSSION DRILL CORE LOG

PROJECT BUCHANAN DAM EL 3536

CO-ORDINATES 44550 mE 78766 mN AZIMUTH — DRILLERS WHITE DRILLING LTD COMMENCED 19/8/82 DEPTH 25.5 HOLE No PD82BD8

RL COLLAR — INCLINATION VERT DRILL TYPE JACKRO 2000 COMPLETED 19/8/82 CASING LEFT — DPO No(s) 21269, 21270

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	4.2				red-brown clay	micaceous					
4.2	12				limestone beige to light yellow in colour, very mildly ferruginous, chert common especially at 4.5→6m and 9→12m.	4.5→6m locally phosphatic					
12	18				limestone, white→grey minor chert. Limestone is very fine & powdery and soft						
18	22.5				limestone, light yellow, very mildly ferruginous, abundant chert	16.5→25.5m interval is phosphatic					
22.5	25.5				limestone, white to grey in colour.						
					E.O.H.						

CRAE HT PLAN No M-496

SUMMARY AND SPECIAL COMMENTS hole terminated at 25m as required

LOGGED BY KRA DATE 19/8/82

SHEET 1 OF 1

PERCUSSION C.R.A. EXPLORATION PTY LIMITED

DRILL CORE LOG

PROJECT BUCHANAN DAM EL 3536

CO-ORDINATES 643400mE 7876610mN AZIMUTH ___ DRILLERS WHITE DRILLING LTD COMMENCED 19/8/82 DEPTH 24m HOLE No PD82 BO 9

RL COLLAR ___ INCLINATION VERT DRILL TYPE JACKRO 200 COMPLETED 19/8/82 CASING LEFT ___ DPO No(s) 21269, 21270

DEPTH FROM (M)	DEPTH TO (M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES (WEATH., ALTERATION, FRACTURING, VEINING, MINERALIZATION)	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	3				red-brown clay	micaceous					
3	10.5				limestone, yellow to light brown with ferruginous clay nodules, minor chert						
10.5	22.5				limestone, white → grey with very occasional yellow, mildly ferruginous horizons, chert abundant from 16.5 to 18.						
						12 → 24m is phosphatic					
22.5	24				limestone, yellow to light brown, mildly ferruginous, abundant chert.						

SUMMARY AND SPECIAL COMMENTS: Hole terminated at 24m as black shale not intersected

LOGGED BY KRA DATE 19/8/82

SHEET 1 OF 1

CRAE 117 PLAN No

C.R.A. EXPLORATION PTY. LIMITED

PERCUSSION DRILL CORE LOG

PROJECT: BUCHANAN DAM EL3536

CO-ORDINATES: 642900 mE 7876210 m N AZIMUTH: ______ DRILLERS: WHITE DRILLING LTD COMMENCED: 20/8/82 DEPTH: 22.5 HOLE No: PD 82 BD 10

RL COLLAR: ______ INCLINATION: VERT DRILL TYPE: JACKRO 200 COMPLETED: 20/8/82 CASING LEFT: ______ DPO No(s): 21269, 2127C

DEPTH FROM (M)	DEPTH TO (M)	CORE REC (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES (WEATH., ALTERATION, FRACTURING, VEINING, MINERALIZATION)	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				red-brown clay	micaceous					
2	9				limestone, light yellow, mildly ferruginous, chert common						
9	19.5				limestone, white, chert common	13.5 → 22.5m interval is phosphatic					
19.5	22.5				limestone, yellow to light brown, quite ferruginous in places, chert common						
					E.O.H.						

SUMMARY AND SPECIAL COMMENTS: Hole terminated short of 25m as black shale not intersected

LOGGED BY: KRA DATE: 20/8/82

CRAE 117
PLAN No

C.R.A. EXPLORATION PTY LIMITED

PERCUSSION DRILL CORE LOG

PROJECT BUCHANAN DAM EL3536

CO-ORDINATES 642800mE 7876010mN AZIMUTH ____ DRILLERS WHITE DRILLING LTD COMMENCED 20/8/82 DEPTH 21m HOLE No. PD 82 BD11

RL COLLAR ____ INCLINATION VERT DRILL TYPE JACKRO 200 COMPLETED 20/8/82 CASING LEFT ____ DPO No(s) 21269,2127

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	3.5				brown clay	micaceous					
3.5	12				limestone yellow-brown in colour, mildly ferruginous, minor chert						
12	19.5				limestone, white to grey, minor chert						
19.5	21				limestone, dark yellow to brown, quite ferruginous						
					E.O.H.						

FORM #7
PLAN No N 494

SUMMARY AND SPECIAL COMMENTS Hole terminated short of 21m as black shale not

LOGGED BY KRA DATE 20/8/82

SHEET 1 of 1

C.R.A. EXPLORATION PTY. LIMITED

PERCUSSION DRILL CORE LOG

PROJECT BUCHANAN DAM EL3536

CO-ORDINATES 642700mE 7876110mN AZIMUTH _____ DRILLERS WHITE DRILLING LTD COMMENCED 20/8/82 DEPTH 3m HOLE No. PD 82 BD 12

RL COLLAR _____ INCLINATION VERT DRILL TYPE JACKAROO 200 COMPLETED 20/8/82 CASING LEFT _____ DPD No(s) 21269

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	0.5				brown clay	0→3m interval weakly phosphatic					
0.5	1.5				limestone, yellow-brown, abundant chert						
1.5	3				limestone, white to grey, abundant chert						
					E.O.H.						

CRAE H7
PLAN No M 496

SUMMARY AND SPECIAL COMMENTS Hole abandoned - core in S behind bumper prevent drilling

LOGGED BY KRA DATE 20/8/82

SHEET 1 OF 1

C.R.A. EXPLORATION PTY. LIMITED

PERCUSSION DRILL CORE LOG

PROJECT BUCHANAN DAM EL 3536

CO-ORDINATES 642900mE 7876100mN AZIMUTH ____ DRILLERS WHITE DRILLING LTD COMMENCED 20/8/82 DEPTH 21m HOLE No. PD82BD13

RL COLLAR ____ INCLINATION VERT DRILL TYPE JACKRO 200 COMPLETED 20/8/82 CASING LEFT ____ DPO No(s) 21269, 21270

DEPTH FROM(M)	DEPTH TO(M)	CORE REC (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES Pb	Zn	Cu	Ni	Co	Cr	Mn	Au
0	2·5				brown-red clay	micaceous												
2·5	4·5				limestone, yellow-brown, ferruginous clay nodules responsible for yellow-brown colour.													
4·5	10·5				limestone mostly white with very minor yellow ferruginous horizons, chert minor													
10·5	15				limestone, white with minor yellow ferruginous regions, also minor very thin black shale sections, chert minor		965898	10·5	12·0		40	460	30	55	40	20	2160	<0·01
							965899	12·0	12·5		35	425	30	50	40	20	2270	·
							965900	12·5	15·0		40	720	80	95	125	20	4320	·
15	21				limestone, white → grey, chart minor	18→21m interval phosphatic					U	Th						
							898		·		8	6						
							899				7	5						
							900				14	7						
					E.O.H.													

CRAE HT PLAN No M 496

SUMMARY AND SPECIAL COMMENTS Hole terminated at 21m in black shale unit

LOGGED BY KRA DATE 20/8/82

SHEET 1 OF 1

C.R.A. EXPLORATION PTY. LIMITED

PERCUSSION DRILL CORE LOG

PROJECT SUCHANAN DAM EJ 3536

CO-ORDINATES 64275mE 78760mN ZIMUTH — DRILLERS WHITE DRILLING LTD — COMMENCED 20/8/82 — DEPTH 16.5m — HOLE No PD 82 BD 14

RL COLLAR — INCLINATION VERT — DRILL TYPE JACKRO 200 — COMPLETED 20/8/82 — CASING LEFT — DPC No(s) 21269, 21270

DEPTH FROM(M)	DEPTH TO(M)	CORE REC. (M)	CORE SIZE	GRAPHIC LOG	CORE DESCRIPTION	SPECIAL FEATURES WEATH., ALTERATION, FRACTURING VEINING, MINERALIZATION	SAMPLE No.	FROM (M)	TO (M)	REC (M)	ASSAY VALUES
0	2				Brown clay	micaceous					
2	9				limestone overall colour yellow due to ferruginous clay pellets, some white → grey regions, chert abundant	7.5 → 9m weakly phosphatic					
9	16.5				limestone, generally dark brown in colour, quite ferruginous in places, chert very common						
					E.O.H						

SUMMARY AND SPECIAL COMMENTS: Hole terminated early at 16.5 as black shale not

LOGGED BY KRA — DATE 20/8/82

SHEET 1 OF 1

Appendix 2

Gravity Survey Data

Buchanan Dam, Alrow, Gravity Survey 1982; ORAE
Density used = 2.0 g.cm^-3. (Elevations and observed gravity are relative only)

Grid m East	Grid m N	AMG m E	AMG m N	Long (deg)	Lat (deg)	Elev (m)	Gravity : Obs (mGal)	-Lat (mGal)	Boug (mGal)
10000	10000	642195	7873686	136.35275	-19.22529	228.675	6.365	4.462	5.868
10000	10100	642195	7873786	136.35276	-19.22439	226.148	6.970	5.118	5.956
10000	10200	642195	7873886	136.35276	-19.22348	225.778	6.959	5.157	5.912
10000	10300	642195	7873986	136.35277	-19.22258	225.360	7.004	5.253	5.914
10000	10400	642195	7874086	136.35278	-19.22168	225.825	6.931	5.231	5.996
10000	10500	642195	7874186	136.35279	-19.22077	226.311	7.016	5.367	6.241
10000	10600	642195	7874286	136.35279	-19.21987	227.542	6.418	4.819	5.971
10000	10700	642195	7874386	136.35280	-19.21896	227.253	6.622	5.074	6.160
10000	10800	642195	7874486	136.35281	-19.21806	226.276	6.949	5.452	6.318
10000	10900	642195	7874586	136.35282	-19.21716	226.703	6.627	5.180	6.143
10000	11000	642195	7874686	136.35282	-19.21625	226.983	6.357	4.961	5.987
10000	11100	642195	7874786	136.35283	-19.21535	226.702	6.366	5.021	5.983
10000	11200	642195	7874886	136.35284	-19.21445	226.980	6.193	4.898	5.923
10000	11300	642195	7874986	136.35285	-19.21354	227.717	6.089	4.845	6.036
10000	11400	642195	7875086	136.35285	-19.21264	228.115	6.026	4.833	6.113
10000	11500	642195	7875186	136.35286	-19.21173	228.572	6.069	4.926	6.309
10000	11600	642195	7875286	136.35287	-19.21083	228.951	5.875	4.783	6.251
10000	11700	642195	7875386	136.35287	-19.20993	229.194	5.707	4.666	6.188
10000	11800	642195	7875486	136.35288	-19.20902	229.414	5.234	4.243	5.815
10000	11900	642195	7875586	136.35289	-19.20812	229.694	5.027	4.087	5.722
10000	12000	642195	7875686	136.35290	-19.20722	230.000	5.000	4.110	5.814
10000	12100	642195	7875786	136.35290	-19.20631	230.230	5.025	4.186	5.942
10000	12200	642195	7875886	136.35291	-19.20541	230.410	4.850	4.062	5.858
10000	12300	642195	7875986	136.35292	-19.20451	230.557	4.507	3.769	5.599
10000	12400	642195	7876086	136.35293	-19.20360	230.677	4.483	3.796	5.652
10000	12500	642195	7876186	136.35293	-19.20270	230.821	4.431	3.795	5.683
10000	12600	642195	7876286	136.35294	-19.20179	230.893	4.417	3.831	5.736
10000	12700	642195	7876386	136.35295	-19.20089	230.916	4.204	3.669	5.579
10000	12800	642195	7876486	136.35296	-19.19999	230.920	3.894	3.410	5.320
10000	12900	642195	7876586	136.35296	-19.19908	230.825	3.775	3.341	5.231
10000	13000	642195	7876686	136.35297	-19.19818	230.731	3.589	3.206	5.074
10000	13100	642195	7876786	136.35298	-19.19728	230.649	3.589	3.256	5.106
10000	13200	642195	7876886	136.35298	-19.19637	230.530	3.138	2.856	4.679
10000	13300	642195	7876986	136.35299	-19.19547	230.367	2.957	2.726	4.512
10000	13400	642195	7877086	136.35300	-19.19457	230.190	2.658	2.477	4.224
10000	13500	642195	7877186	136.35301	-19.19366	230.143	2.398	2.268	4.004
10000	13600	642195	7877286	136.35301	-19.19276	230.082	1.856	1.777	3.499
10000	13700	642195	7877386	136.35302	-19.19185	229.910	1.400	1.371	3.055
10000	13800	642195	7877486	136.35303	-19.19095	229.630	1.590	1.612	3.233
10000	13900	642195	7877586	136.35304	-19.19005	229.536	1.531	1.603	3.203
10000	14000	642195	7877686	136.35304	-19.18914	229.451	1.089	1.212	2.793
8000	10000	640195	7873686	136.33373	-19.22514	228.592	6.428	4.533	5.921
8050	10000	640245	7873686	136.33421	-19.22515	228.553	6.300	4.405	5.784
8100	10000	640295	7873686	136.33468	-19.22515	228.522	6.405	4.510	5.882
8150	10000	640345	7873686	136.33516	-19.22515	228.369	6.377	4.482	5.819
8200	10000	640395	7873686	136.33563	-19.22516	228.380	6.370	4.475	5.814
8250	10000	640445	7873686	136.33611	-19.22516	228.366	6.359	4.463	5.800
8300	10000	640495	7873686	136.33658	-19.22517	228.331	6.413	4.517	5.846
8350	10000	640545	7873686	136.33706	-19.22517	228.348	6.407	4.511	5.844
8400	10000	640595	7873686	136.33753	-19.22517	228.402	6.368	4.472	5.816
8450	10000	640645	7873686	136.33801	-19.22518	228.397	6.410	4.513	5.857
8500	10000	640695	7873686	136.33849	-19.22518	228.488	6.403	4.506	5.870
8550	10000	640745	7873686	136.33896	-19.22518	228.525	6.311	4.414	5.787
8600	10000	640795	7873686	136.33944	-19.22519	228.629	6.386	4.489	5.885
8650	10000	640845	7873686	136.33991	-19.22519	228.664	6.331	4.434	5.837

Grid m East	Grid m N	AMG m E	AMG m N	Long (deg)	Lat (deg)	Elev (m)	Gravity : Obs (mGal)	-Lat (mGal)	Boug (mGal)
8700	10000	640895	7873686	136.34039	-19.22519	228.741	6.360	4.462	5.863
8750	10000	640945	7873686	136.34086	-19.22520	228.726	6.343	4.445	5.863
8800	10000	640995	7873686	136.34134	-19.22520	228.702	6.220	4.322	5.734
8850	10000	641045	7873686	136.34181	-19.22521	228.616	6.183	4.285	5.678
8900	10000	641095	7873686	136.34229	-19.22521	228.638	6.113	4.215	5.612
8950	10000	641145	7873686	136.34276	-19.22521	228.569	6.021	4.122	5.505
9000	10000	641195	7873686	136.34324	-19.22522	228.565	6.102	4.203	5.585
9050	10000	641245	7873686	136.34372	-19.22522	228.423	6.246	4.347	5.697
9100	10000	641295	7873686	136.34419	-19.22522	228.384	5.891	3.992	5.333
9150	10000	641345	7873686	136.34467	-19.22523	228.303	6.031	4.132	5.454
9200	10000	641395	7873686	136.34514	-19.22523	228.151	6.173	4.273	5.562
9250	10000	641445	7873686	136.34562	-19.22524	227.994	6.284	4.384	5.637
9300	10000	641495	7873686	136.34609	-19.22524	227.739	6.285	4.385	5.581
9350	10000	641545	7873686	136.34657	-19.22524	227.610	6.979	5.079	6.246
9400	10000	641595	7873686	136.34704	-19.22525	227.099	6.430	4.530	5.581
9450	10000	641645	7873686	136.34752	-19.22525	226.440	6.684	4.783	5.687
9500	10000	641695	7873686	136.34800	-19.22525	226.934	6.338	4.437	5.452
9550	10000	641745	7873686	136.34847	-19.22526	226.947	6.378	4.477	5.495
9600	10000	641795	7873686	136.34895	-19.22526	226.915	6.443	4.542	5.552
9650	10000	641845	7873686	136.34942	-19.22526	226.702	6.495	4.594	5.556
9700	10000	641895	7873686	136.34990	-19.22527	226.574	6.652	4.750	5.684
9750	10000	641945	7873686	136.35037	-19.22527	226.367	6.712	4.810	5.697
9800	10000	641995	7873686	136.35085	-19.22528	226.283	6.645	4.743	5.611
9850	10000	642045	7873686	136.35132	-19.22528	225.963	6.845	4.943	5.739
9900	10000	642095	7873686	136.35180	-19.22528	225.632	7.117	5.215	5.937
9950	10000	642145	7873686	136.35227	-19.22529	225.214	7.151	5.248	5.876
10000	10000	642195	7873686	136.35275	-19.22529	228.675	6.395	4.492	5.898
10050	10000	642245	7873686	136.35323	-19.22529	228.740	6.350	4.447	5.868
10100	10000	642295	7873686	136.35370	-19.22530	228.793	6.300	4.397	5.829
10150	10000	642345	7873686	136.35418	-19.22530	227.400	6.239	4.336	5.455
10200	10000	642395	7873686	136.35465	-19.22530	226.855	6.765	4.861	5.858
10250	10000	642445	7873686	136.35513	-19.22531	227.656	6.782	4.878	6.055
10300	10000	642495	7873686	136.35560	-19.22531	223.599	7.978	6.074	6.339
10350	10000	642545	7873686	136.35608	-19.22532	227.658	7.041	5.137	6.314
10400	10000	642595	7873686	136.35655	-19.22532	227.508	6.948	5.043	6.187
10450	10000	642645	7873686	136.35703	-19.22532	227.506	7.105	5.200	6.344
10500	10000	642695	7873686	136.35751	-19.22533	227.303	7.098	5.193	6.291
10550	10000	642745	7873686	136.35798	-19.22533	226.850	7.076	5.171	6.167
10600	10000	642795	7873686	136.35846	-19.22533	226.439	7.268	5.363	6.266
10650	10000	642845	7873686	136.35893	-19.22534	226.287	7.314	5.408	6.278
10700	10000	642895	7873686	136.35941	-19.22534	226.008	7.458	5.552	6.359
10750	10000	642945	7873686	136.35988	-19.22534	226.393	7.434	5.528	6.421
10800	10000	642995	7873686	136.36036	-19.22535	226.524	7.429	5.523	6.445
10850	10000	643045	7873686	136.36083	-19.22535	226.554	6.164	4.258	5.187
10900	10000	643095	7873686	136.36131	-19.22536	227.184	6.328	4.421	5.492
10950	10000	643145	7873686	136.36178	-19.22536	227.354	6.499	4.592	5.701
11000	10000	643195	7873686	136.36226	-19.22536	227.280	6.713	4.806	5.899
11050	10000	643245	7873686	136.36274	-19.22537	227.140	6.968	5.061	6.122
11100	10000	643295	7873686	136.36321	-19.22537	227.013	7.118	5.211	6.243
11150	10000	643345	7873686	136.36369	-19.22537	226.967	7.034	5.126	6.149
11200	10000	643395	7873686	136.36416	-19.22538	227.382	7.003	5.095	6.211
11250	10000	643445	7873686	136.36464	-19.22538	227.491	7.012	5.104	6.244
11300	10000	643495	7873686	136.36511	-19.22539	227.434	6.926	5.018	6.145
11350	10000	643545	7873686	136.36559	-19.22539	227.402	6.865	4.957	6.077
11400	10000	643595	7873686	136.36606	-19.22539	227.122	6.912	5.003	6.060
11450	10000	643645	7873686	136.36654	-19.22540	227.421	6.860	4.951	6.075

Grid m East	Grid m N	AMG m E	AMG m N	Long (deg)	Lat (deg)	Gravity : Elev (m)	Obs (mGal)	-Lat (mGal)	Bous (mGal)
11500	10000	643695	7873686	136.36702	-19.22540	227.433	6.886	4.977	6.104
11550	10000	643745	7873686	136.36749	-19.22540	227.721	6.747	4.838	6.029
11600	10000	643795	7873686	136.36797	-19.22541	227.693	6.696	4.787	5.972
11650	10000	643845	7873686	136.36844	-19.22541	227.795	6.641	4.731	5.940
11700	10000	643895	7873686	136.36892	-19.22541	227.688	6.463	4.553	5.737
11750	10000	643945	7873686	136.36939	-19.22542	227.865	6.474	4.564	5.788
11800	10000	643995	7873686	136.36987	-19.22542	228.289	6.346	4.436	5.755
11850	10000	644045	7873686	136.37034	-19.22543	228.423	6.437	4.527	5.876
11900	10000	644095	7873686	136.37082	-19.22543	228.683	6.281	4.370	5.778
11950	10000	644145	7873686	136.37129	-19.22543	228.854	6.122	4.211	5.657
12000	10000	644195	7873686	136.37177	-19.22544	229.043	5.847	3.936	5.425
12050	10000	644245	7873686	136.37225	-19.22544	229.246	5.585	3.674	5.208
12100	10000	644295	7873686	136.37272	-19.22544	229.446	5.323	3.411	4.991
12150	10000	644345	7873686	136.37320	-19.22545	229.643	5.346	3.434	5.058
12200	10000	644395	7873686	136.37367	-19.22545	229.801	5.244	3.332	4.991
12250	10000	644445	7873686	136.37415	-19.22545	229.953	5.225	3.313	5.006
12300	10000	644495	7873686	136.37462	-19.22546	230.125	4.999	3.087	4.819
12350	10000	644545	7873686	136.37510	-19.22546	230.280	4.874	2.961	4.728
12400	10000	644595	7873686	136.37557	-19.22547	230.469	4.573	2.660	4.470
12450	10000	644645	7873686	136.37605	-19.22547	230.694	4.347	2.434	4.294
12500	10000	644695	7873686	136.37653	-19.22547	230.810	3.999	2.086	3.972
12550	10000	644745	7873686	136.37700	-19.22548	230.948	3.768	1.855	3.772
12600	10000	644795	7873686	136.37748	-19.22548	230.979	3.619	1.705	3.630
12650	10000	644845	7873686	136.37795	-19.22548	231.083	3.341	1.427	3.375
12700	10000	644895	7873686	136.37843	-19.22549	231.214	3.192	1.278	3.255
12750	10000	644945	7873686	136.37890	-19.22549	231.314	3.022	1.108	3.107
12800	10000	644995	7873686	136.37938	-19.22550	231.373	2.910	0.996	3.008
12850	10000	645045	7873686	136.37985	-19.22550	231.342	2.716	0.801	2.807
12900	10000	645095	7873686	136.38033	-19.22550	231.362	2.640	0.725	2.735
12950	10000	645145	7873686	136.38080	-19.22551	231.345	2.420	0.505	2.511
13000	10000	645195	7873686	136.38128	-19.22551	231.344	2.158	0.243	2.249
8000	11000	640195	7874686	136.33380	-19.21611	226.488	6.087	4.699	5.614
8100	11000	640295	7874686	136.33475	-19.21611	225.972	6.461	5.073	5.871
8200	11000	640395	7874686	136.33571	-19.21612	225.955	6.510	5.121	5.916
8300	11000	640495	7874686	136.33666	-19.21613	226.287	6.506	5.117	5.986
8400	11000	640595	7874686	136.33761	-19.21614	226.837	6.501	5.111	6.104
8500	11000	640695	7874686	136.33856	-19.21614	227.201	6.635	5.245	6.320
8600	11000	640795	7874686	136.33951	-19.21615	227.535	6.729	5.339	6.489
8700	11000	640895	7874686	136.34046	-19.21616	226.547	6.893	5.502	6.430
8800	11000	640995	7874686	136.34141	-19.21617	225.370	7.107	5.716	6.379
8900	11000	641095	7874686	136.34236	-19.21617	225.836	7.439	6.047	6.815
9000	11000	641195	7874686	136.34331	-19.21618	226.478	6.965	5.573	6.485
9100	11000	641295	7874686	136.34426	-19.21619	227.061	6.595	5.203	6.246
9200	11000	641395	7874686	136.34522	-19.21619	227.018	6.556	5.163	6.197
9300	11000	641495	7874686	136.34617	-19.21620	226.333	6.813	5.420	6.299
9400	11000	641595	7874686	136.34712	-19.21621	226.072	7.091	5.697	6.518
9500	11000	641695	7874686	136.34807	-19.21622	225.328	7.407	6.013	6.667
9600	11000	641795	7874686	136.34902	-19.21622	226.515	6.951	5.557	6.477
9700	11000	641895	7874686	136.34997	-19.21623	225.057	7.167	5.772	6.365
9800	11000	641995	7874686	136.35092	-19.21624	226.135	6.809	5.414	6.249
9900	11000	642095	7874686	136.35187	-19.21625	226.521	6.824	5.428	6.350
10000	11000	642195	7874686	136.35282	-19.21625	226.983	6.627	5.231	6.257
10100	11000	642295	7874686	136.35377	-19.21626	226.988	6.726	5.329	6.356
10200	11000	642395	7874686	136.35473	-19.21627	227.348	6.093	4.696	5.804
10300	11000	642495	7874686	136.35568	-19.21628	227.830	6.096	4.699	5.915
10400	11000	642595	7874686	136.35663	-19.21628	228.366	5.919	4.521	5.858

Grid m East	Grid m N	AMG m E	AMG m N	Long (deg)	Lat (deg)	Elev (m)	Gravity : Obs (mGal)	-Lat (mGal)	Boug (mGal)
10500	11000	642695	7874686	136.35758	-19.21629	228.820	5.585	4.187	5.626
10600	11000	642795	7874686	136.35853	-19.21630	229.185	5.763	4.364	5.885
10700	11000	642895	7874686	136.35948	-19.21630	229.476	5.619	4.220	5.806
10800	11000	642995	7874686	136.36043	-19.21631	229.800	5.574	4.175	5.834
10900	11000	643095	7874686	136.36138	-19.21632	230.109	5.485	4.085	5.814
11000	11000	643195	7874686	136.36233	-19.21633	230.347	5.519	4.119	5.901
11100	11000	643295	7874686	136.36328	-19.21633	230.587	5.682	4.281	6.117
11200	11000	643395	7874686	136.36424	-19.21634	230.630	5.635	4.234	6.080
11300	11000	643495	7874686	136.36519	-19.21635	230.629	5.754	4.353	6.198
11400	11000	643595	7874686	136.36614	-19.21636	230.407	5.918	4.516	6.312
11500	11000	643695	7874686	136.36709	-19.21636	230.040	6.087	4.685	6.398
11600	11000	643795	7874686	136.36804	-19.21637	229.855	6.141	4.738	6.410
11700	11000	643895	7874686	136.36899	-19.21638	229.654	5.996	4.593	6.219
11800	11000	643995	7874686	136.36994	-19.21639	229.839	5.996	4.592	6.260
11900	11000	644095	7874686	136.37089	-19.21639	230.097	5.593	4.189	5.915
12000	11000	644195	7874686	136.37184	-19.21640	230.397	5.607	4.203	5.996
12100	11000	644295	7874686	136.37279	-19.21641	230.711	5.410	4.005	5.869
12200	11000	644395	7874686	136.37375	-19.21641	230.860	5.117	3.712	5.609
12300	11000	644495	7874686	136.37470	-19.21642	230.933	4.889	3.483	5.397
12400	11000	644595	7874686	136.37565	-19.21643	230.823	4.661	3.255	5.144
12500	11000	644695	7874686	136.37660	-19.21644	230.647	4.467	3.061	4.910
12600	11000	644795	7874686	136.37755	-19.21644	231.019	4.119	2.712	4.645
12700	11000	644895	7874686	136.37850	-19.21645	231.767	3.897	2.490	4.591
12800	11000	644995	7874686	136.37945	-19.21646	232.164	3.545	2.137	4.328
12900	11000	645095	7874686	136.38040	-19.21647	232.524	3.149	1.741	4.012
13000	11000	645195	7874686	136.38135	-19.21647	232.855	2.789	1.381	3.726
8000	12000	640195	7875686	136.33388	-19.20707	226.651	4.901	4.020	4.971
8100	12000	640295	7875686	136.33483	-19.20708	226.108	5.035	4.153	4.982
8200	12000	640395	7875686	136.33578	-19.20708	225.607	5.675	4.793	5.509
8300	12000	640495	7875686	136.33673	-19.20709	225.541	5.744	4.861	5.563
8400	12000	640595	7875686	136.33768	-19.20710	225.707	5.918	5.035	5.774
8500	12000	640695	7875686	136.33863	-19.20711	225.588	6.127	5.244	5.956
8600	12000	640795	7875686	136.33958	-19.20711	225.484	6.183	5.299	5.988
8700	12000	640895	7875686	136.34053	-19.20712	224.615	6.602	5.718	6.211
8800	12000	640995	7875686	136.34148	-19.20713	225.220	6.399	5.514	6.144
8900	12000	641095	7875686	136.34244	-19.20714	226.072	6.179	5.294	6.115
9000	12000	641195	7875686	136.34339	-19.20714	227.345	6.038	5.153	6.260
9100	12000	641295	7875686	136.34430	-19.20715	228.339	5.600	4.714	6.045
9200	12000	641395	7875686	136.34529	-19.20716	229.064	5.446	4.560	6.053
9300	12000	641495	7875686	136.34624	-19.20717	229.296	5.438	4.551	6.097
9400	12000	641595	7875686	136.34719	-19.20717	228.815	5.263	4.376	5.814
9500	12000	641695	7875686	136.34814	-19.20718	228.825	5.465	4.578	6.017
9600	12000	641795	7875686	136.34909	-19.20719	228.862	5.426	4.538	5.986
9700	12000	641895	7875686	136.35004	-19.20719	229.363	5.250	4.362	5.922
9800	12000	641995	7875686	136.35099	-19.20720	229.739	5.373	4.484	6.130
9900	12000	642095	7875686	136.35195	-19.20721	229.924	5.148	4.259	5.946
10000	12000	642195	7875686	136.35290	-19.20722	230.000	5.000	4.110	5.814
10100	12000	642295	7875686	136.35385	-19.20722	230.111	4.639	3.749	5.478
10200	12000	642395	7875686	136.35480	-19.20723	230.013	4.781	3.891	5.598
10300	12000	642495	7875686	136.35575	-19.20724	229.929	4.723	3.832	5.520
10400	12000	642595	7875686	136.35670	-19.20725	229.814	4.516	3.625	5.287
10500	12000	642695	7875686	136.35765	-19.20725	229.729	4.586	3.694	5.337
10600	12000	642795	7875686	136.35860	-19.20726	229.647	4.311	3.419	5.044
10700	12000	642895	7875686	136.35955	-19.20727	229.361	4.246	3.354	4.914
10800	12000	642995	7875686	136.36050	-19.20728	229.161	4.420	3.527	5.043
10900	12000	643095	7875686	136.36146	-19.20728	229.538	3.968	3.075	4.675

Grid m East	Grid m N	AMG m E	AMG m N	Long (deg)	Lat (deg)	Elev (m)	Gravity : Obs (mGal)	-Lat (mGal)	Boug (mGal)
11000	12000	643195	7875686	136.36241	-19.20729	229.838	3.992	3.098	4.766
11100	12000	643295	7875686	136.36336	-19.20730	230.242	3.982	3.089	4.846
11200	12000	643395	7875686	136.36431	-19.20730	230.627	3.702	2.808	4.652
11300	12000	643495	7875686	136.36526	-19.20731	231.040	3.562	2.667	4.605
11400	12000	643595	7875686	136.36621	-19.20732	231.407	3.354	2.459	4.479
11500	12000	643695	7875686	136.36716	-19.20733	231.864	3.020	2.124	4.247
11600	12000	643795	7875686	136.36811	-19.20733	232.206	2.779	1.883	4.083
11700	12000	643895	7875686	136.36906	-19.20734	232.430	2.735	1.838	4.089
11800	12000	643995	7875686	136.37001	-19.20735	232.560	2.563	1.666	3.946
11900	12000	644095	7875686	136.37097	-19.20736	232.747	2.724	1.827	4.148
12000	12000	644195	7875686	136.37192	-19.20736	232.746	2.824	1.926	4.248
12100	12000	644295	7875686	136.37287	-19.20737	232.822	2.921	2.023	4.361
12200	12000	644395	7875686	136.37382	-19.20738	232.887	3.088	2.189	4.542
12300	12000	644495	7875686	136.37477	-19.20739	233.035	3.008	2.109	4.495
12400	12000	644595	7875686	136.37572	-19.20739	233.281	2.900	2.001	4.442
12500	12000	644695	7875686	136.37667	-19.20740	233.363	2.952	2.052	4.512
12600	12000	644795	7875686	136.37762	-19.20741	233.594	3.076	2.176	4.688
12700	12000	644895	7875686	136.37857	-19.20741	233.879	2.654	1.753	4.329
12800	12000	644995	7875686	136.37952	-19.20742	234.140	2.469	1.568	4.203
12900	12000	645095	7875686	136.38048	-19.20743	234.359	2.418	1.517	4.200
13000	12000	645195	7875686	136.38143	-19.20744	234.619	2.495	1.593	4.335
8000	13000	640195	7876686	136.33395	-19.19803	227.623	3.532	3.157	4.327
8100	13000	640295	7876686	136.33490	-19.19804	228.753	3.162	2.787	4.210
8200	13000	640395	7876686	136.33585	-19.19805	229.154	3.278	2.902	4.416
8300	13000	640495	7876686	136.33680	-19.19806	230.023	3.176	2.800	4.509
8400	13000	640595	7876686	136.33775	-19.19806	230.307	3.234	2.857	4.630
8500	13000	640695	7876686	136.33870	-19.19807	230.429	3.154	2.777	4.577
8600	13000	640795	7876686	136.33966	-19.19808	230.167	2.665	2.288	4.029
8700	13000	640895	7876686	136.34061	-19.19808	230.112	3.013	2.635	4.364
8800	13000	640995	7876686	136.34156	-19.19809	230.164	3.059	2.681	4.422
8900	13000	641095	7876686	136.34251	-19.19810	230.087	3.194	2.815	4.539
9000	13000	641195	7876686	136.34346	-19.19811	230.087	3.548	3.169	4.892
9100	13000	641295	7876686	136.34441	-19.19811	230.087	3.715	3.336	5.059
9200	13000	641395	7876686	136.34536	-19.19812	230.089	3.770	3.390	5.114
9300	13000	641495	7876686	136.34631	-19.19813	230.107	3.907	3.527	5.255
9400	13000	641595	7876686	136.34726	-19.19814	230.127	4.038	3.657	5.390
9500	13000	641695	7876686	136.34821	-19.19814	230.185	4.105	3.724	5.469
9600	13000	641795	7876686	136.34917	-19.19815	230.319	3.946	3.564	5.340
9700	13000	641895	7876686	136.35012	-19.19816	230.433	3.922	3.540	5.341
9800	13000	641995	7876686	136.35107	-19.19817	230.517	3.834	3.452	5.272
9900	13000	642095	7876686	136.35202	-19.19817	230.609	3.872	3.489	5.330
10000	13000	642195	7876686	136.35297	-19.19818	230.731	3.775	3.392	5.260
10100	13000	642295	7876686	136.35392	-19.19819	230.870	3.459	3.075	4.975
10200	13000	642395	7876686	136.35487	-19.19819	230.945	3.285	2.901	4.817
10300	13000	642495	7876686	136.35582	-19.19820	231.005	3.126	2.742	4.672
10400	13000	642595	7876686	136.35677	-19.19821	231.161	2.722	2.337	4.302
10500	13000	642695	7876686	136.35772	-19.19822	231.297	2.722	2.337	4.332
10600	13000	642795	7876686	136.35868	-19.19822	231.329	2.484	2.098	4.101
10700	13000	642895	7876686	136.35963	-19.19823	231.448	2.664	2.278	4.307
10800	13000	642995	7876686	136.36058	-19.19824	231.590	2.395	2.009	4.070
10900	13000	643095	7876686	136.36153	-19.19825	231.668	2.398	2.011	4.090
11000	13000	643195	7876686	136.36248	-19.19825	231.838	2.697	2.310	4.427
11100	13000	643295	7876686	136.36343	-19.19826	231.956	2.817	2.429	4.573
11200	13000	643395	7876686	136.36438	-19.19827	232.153	2.600	2.212	4.400
11300	13000	643495	7876686	136.36533	-19.19828	232.380	2.573	2.184	4.424
11400	13000	643595	7876686	136.36628	-19.19828	232.506	2.223	1.834	4.101
11500	13000	643695	7876686	136.36723	-19.19829	232.708	2.185	1.796	4.108

Grid m East	Grid m N	AMG m E	AMG m N	Long (deg)	Lat (deg)	Gravity : Elev (m)	Obs (mGal)	-Lat (mGal)	Bous (mGal)
11600	13000	643795	7876686	136.36819	-19.19830	232.899	1.946	1.556	3.912
11700	13000	643895	7876686	136.36914	-19.19830	233.097	1.831	1.441	3.841
11800	13000	643995	7876686	136.37009	-19.19831	233.271	1.661	1.270	3.710
11900	13000	644095	7876686	136.37104	-19.19832	233.465	1.371	0.980	3.463
12000	13000	644195	7876686	136.37199	-19.19833	233.637	1.262	0.871	3.392
12100	13000	644295	7876686	136.37294	-19.19833	233.857	1.001	0.609	3.180
12200	13000	644395	7876686	136.37389	-19.19834	234.074	0.778	0.386	3.006
12300	13000	644495	7876686	136.37484	-19.19835	234.372	0.391	-0.002	2.685
12400	13000	644595	7876686	136.37579	-19.19836	234.740	0.420	0.027	2.797
12500	13000	644695	7876686	136.37674	-19.19836	235.038	0.272	-0.121	2.715
12600	13000	644795	7876686	136.37770	-19.19837	235.251	0.329	-0.065	2.820
12700	13000	644895	7876686	136.37865	-19.19838	235.374	0.252	-0.142	2.770
12800	13000	644995	7876686	136.37960	-19.19839	235.550	0.142	-0.253	2.699
12900	13000	645095	7876686	136.38055	-19.19839	235.714	-0.135	-0.530	2.458
13000	13000	645195	7876686	136.38150	-19.19840	235.762	0.003	-0.392	2.607
8000	14000	640195	7877686	136.33402	-19.18900	228.622	1.799	1.930	3.324
8100	14000	640295	7877686	136.33497	-19.18900	228.782	1.959	2.090	3.520
8200	14000	640395	7877686	136.33593	-19.18901	228.855	1.967	2.097	3.544
8300	14000	640495	7877686	136.33688	-19.18902	228.975	1.920	2.050	3.524
8400	14000	640595	7877686	136.33783	-19.18903	228.918	1.836	1.966	3.426
8500	14000	640695	7877686	136.33878	-19.18903	228.711	1.806	1.935	3.349
8600	14000	640795	7877686	136.33973	-19.18904	228.487	1.747	1.876	3.240
8700	14000	640895	7877686	136.34068	-19.18905	228.487	1.774	1.902	3.266
8800	14000	640995	7877686	136.34163	-19.18906	228.480	1.757	1.885	3.247
8900	14000	641095	7877686	136.34258	-19.18906	228.405	1.704	1.832	3.177
9000	14000	641195	7877686	136.34353	-19.18907	228.289	1.761	1.888	3.207
9100	14000	641295	7877686	136.34448	-19.18908	228.194	1.674	1.801	3.099
9200	14000	641395	7877686	136.34544	-19.18908	228.118	1.575	1.701	2.982
9300	14000	641495	7877686	136.34639	-19.18909	228.320	1.383	1.509	2.835
9400	14000	641595	7877686	136.34734	-19.18910	228.610	1.305	1.430	2.822
9500	14000	641695	7877686	136.34829	-19.18911	229.124	1.279	1.404	2.911
9600	14000	641795	7877686	136.34924	-19.18911	229.381	1.110	1.235	2.799
9700	14000	641895	7877686	136.35019	-19.18912	229.336	1.072	1.196	2.751
9800	14000	641995	7877686	136.35114	-19.18913	229.226	1.128	1.252	2.782
9900	14000	642095	7877686	136.35209	-19.18914	229.294	0.909	1.032	2.578
10000	14000	642195	7877686	136.35304	-19.18914	229.451	1.089	1.212	2.793
10100	14000	642295	7877686	136.35399	-19.18915	229.597	1.112	1.235	2.848
10200	14000	642395	7877686	136.35495	-19.18916	229.679	1.063	1.185	2.817
10300	14000	642495	7877686	136.35590	-19.18917	229.684	0.937	1.059	2.692
10400	14000	642595	7877686	136.35685	-19.18917	229.897	0.971	1.092	2.773
10500	14000	642695	7877686	136.35780	-19.18918	230.056	0.995	1.116	2.833
10600	14000	642795	7877686	136.35875	-19.18919	230.148	1.084	1.205	2.942
10700	14000	642895	7877686	136.35970	-19.18919	230.276	1.120	1.240	3.006
10800	14000	642995	7877686	136.36065	-19.18920	230.547	1.298	1.418	3.245
10900	14000	643095	7877686	136.36160	-19.18921	230.666	1.158	1.277	3.131
11000	14000	643195	7877686	136.36255	-19.18922	230.939	1.091	1.210	3.125
11100	14000	643295	7877686	136.36350	-19.18922	231.034	1.008	1.126	3.063
11200	14000	643395	7877686	136.36446	-19.18923	231.320	0.945	1.063	3.064
11300	14000	643495	7877686	136.36541	-19.18924	231.489	0.945	1.063	3.101
11400	14000	643595	7877686	136.36636	-19.18925	231.625	0.965	1.082	3.152
11500	14000	643695	7877686	136.36731	-19.18925	231.732	0.787	0.904	2.997
11600	14000	643795	7877686	136.36826	-19.18926	231.812	0.708	0.824	2.936
11700	14000	643895	7877686	136.36921	-19.18927	231.972	0.534	0.650	2.797
11800	14000	643995	7877686	136.37016	-19.18928	232.155	0.436	0.552	2.740
11900	14000	644095	7877686	136.37111	-19.18928	232.335	0.316	0.431	2.660
12000	14000	644195	7877686	136.37206	-19.18929	232.461	0.378	0.493	2.750
12100	14000	644295	7877686	136.37301	-19.18930	232.668	0.246	0.360	2.664

Grid m East	Grid m N	AMG m E	AMG m N	Long (deg)	Lat (deg)	Elev (m)	Gravity : Obs (mGal)	-Lat (mGal)	Boug (mGal)
12200	14000	644395	7877686	136.37397	-19.18930	232.647	0.042	0.156	2.455
12300	14000	644495	7877686	136.37492	-19.18931	232.741	0.093	0.207	2.527
12400	14000	644595	7877686	136.37587	-19.18932	232.697	-0.157	-0.044	2.266
12500	14000	644695	7877686	136.37682	-19.18933	232.672	-0.190	-0.077	2.227
12600	14000	644795	7877686	136.37777	-19.18933	232.586	-0.226	-0.114	2.172
12700	14000	644895	7877686	136.37872	-19.18934	232.420	-0.251	-0.139	2.109
12800	14000	644995	7877686	136.37967	-19.18935	232.613	-0.378	-0.266	2.025
12900	14000	645095	7877686	136.38062	-19.18936	232.904	-0.450	-0.339	2.018
13000	14000	645195	7877686	136.38157	-19.18936	233.174	-0.479	-0.368	2.049

APPENDIX 3

CHEMICAL TEST FOR PHOSPHATE

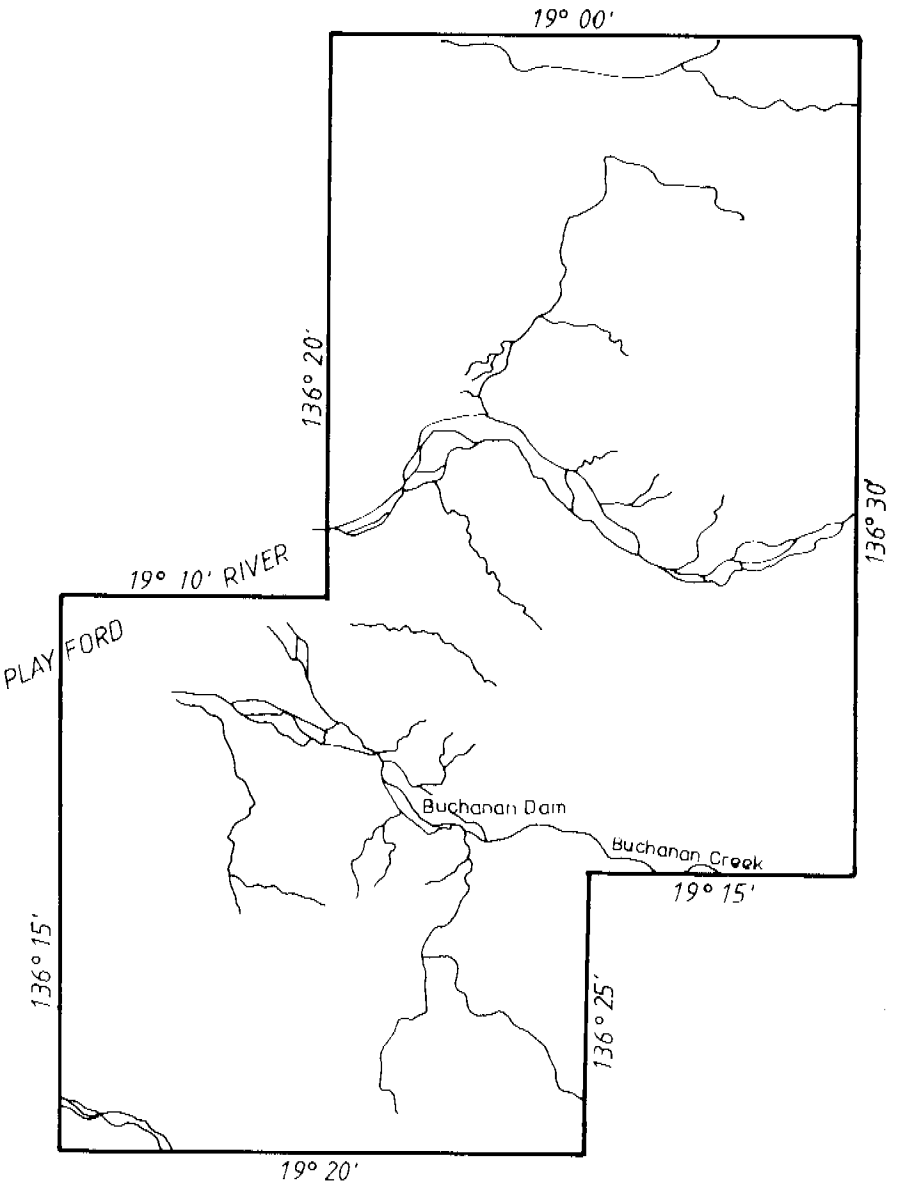
The followins is a simple and reliable test for the presence of phosphate:

Reagent - Solution A - Disolve 1.25gm of ammonium meta vanadate NH_4VO_3 in 400ml of 8M HNO_3

Solution B - Dissolve 50gm ammonium molybdate $(NH_4)_2MoO_4$ in 400ml of water.

Mix solutions A and B, dilute to one litre.

Procedure - Apply the reagent to the surface, a yellow colour indicates the presence of phosphate.



AREA: 280·98 sq miles
727·65 sq kilometres

C.R.A. EXPLORATION PTY LIMITED

EL APPLICATION

BUCHANAN DAM

Reference Alroy SE 53-15		
Geologist	Scale 1:250 000	Report No. 11929
Drawn SRJ/JFC	Date JAN 1982	Plan No. NTA 421

C.R.A. EXPLORATION PTY. LIMITED

GEOCHEMICAL SOIL SAMPLING LEDGER

D.P.O. No. 21268

DATE 24.5.82

AREA BUCHANAN DAM EL 3536

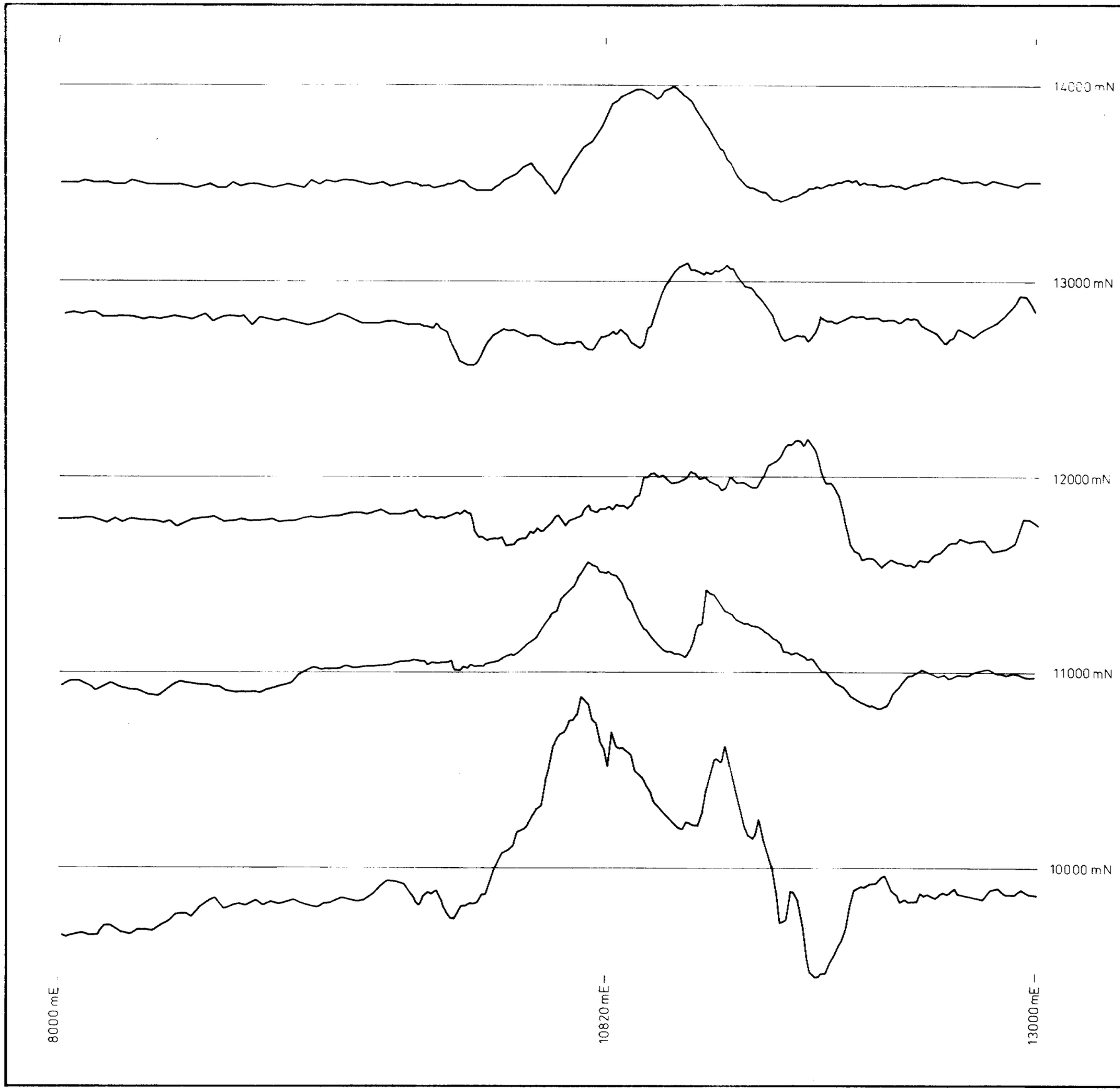
SAMPLE Nos. 964482-483

COLLECTED BY WHJ

MAP OR PHOTO REFERENCE

ANALYSED BY ANALABS (DARWIN)

Grid Co-ordinate	Sample No.	Soil composition					Soil horizon	Sample			Bedrock			Metal content, p. p. m.										Geological observations
		Rock %	Laterite %	Sand %	Silt %	Clay %		Depth (inches)	Colour (Munsell) Chart No.	pH	Outcrop	Concealed	Est. Depth to	Pb	Zn	Cu	Ni	Co	Cr	Mn	Ag	Mo	As			
	964482													<5	35	5	10	< 5	175	80	0.5		<0.008	<3	<4	Brecciated Fe stained ? silicified carbonate
	483													5	15	7	20	< 5	200	205	"		"	"	"	" " " " "



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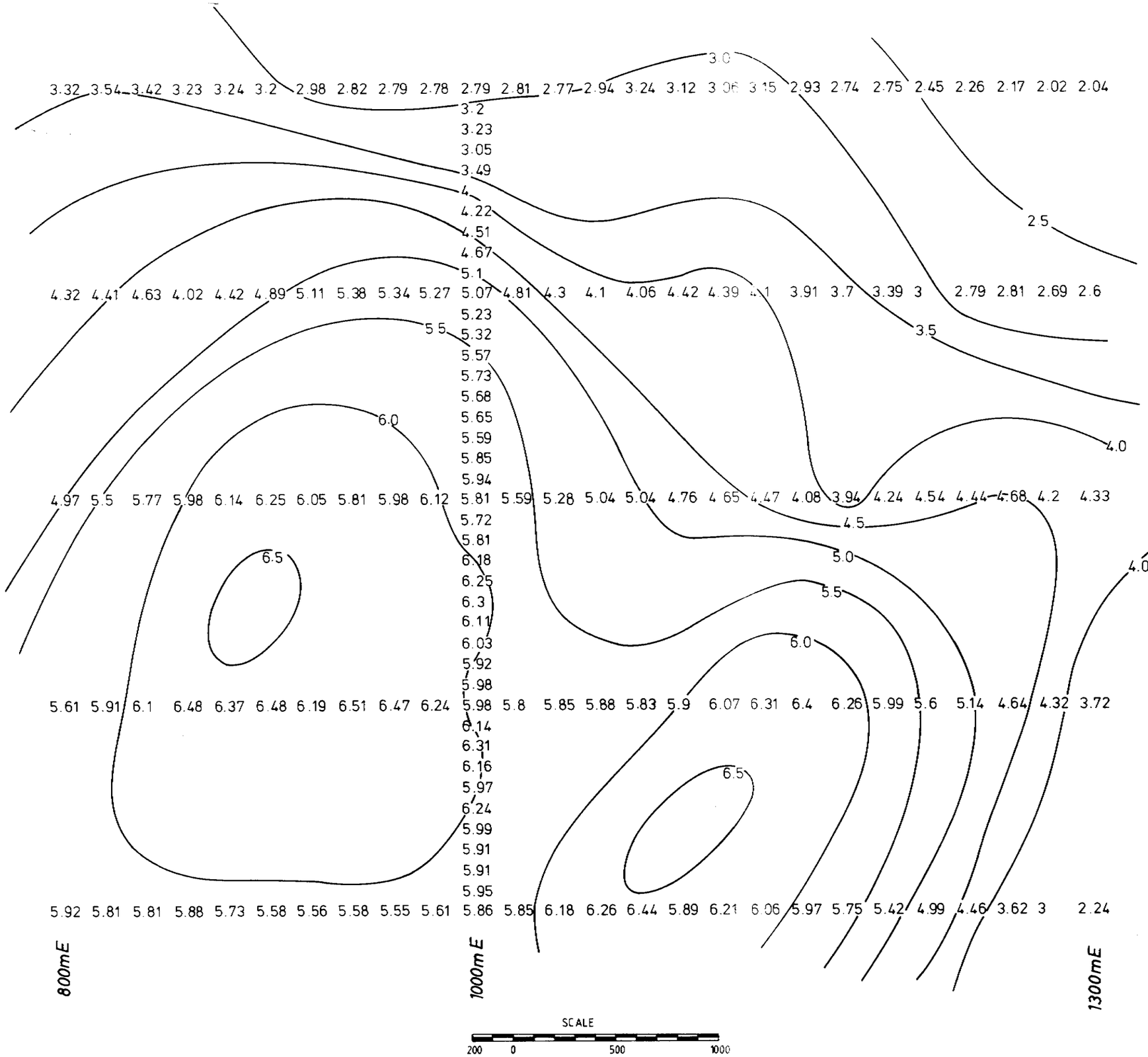
BUCHANAN DAM · EL 3536

GROUND MAG. PROFILES

REFERENCE SE 53-15 ALROY	
SCALE 1 20,000	DATE NOV. 1982
AUTHOR JBC	REPORT 11929
DRAWN SRJ	PLAN No NTd 2085



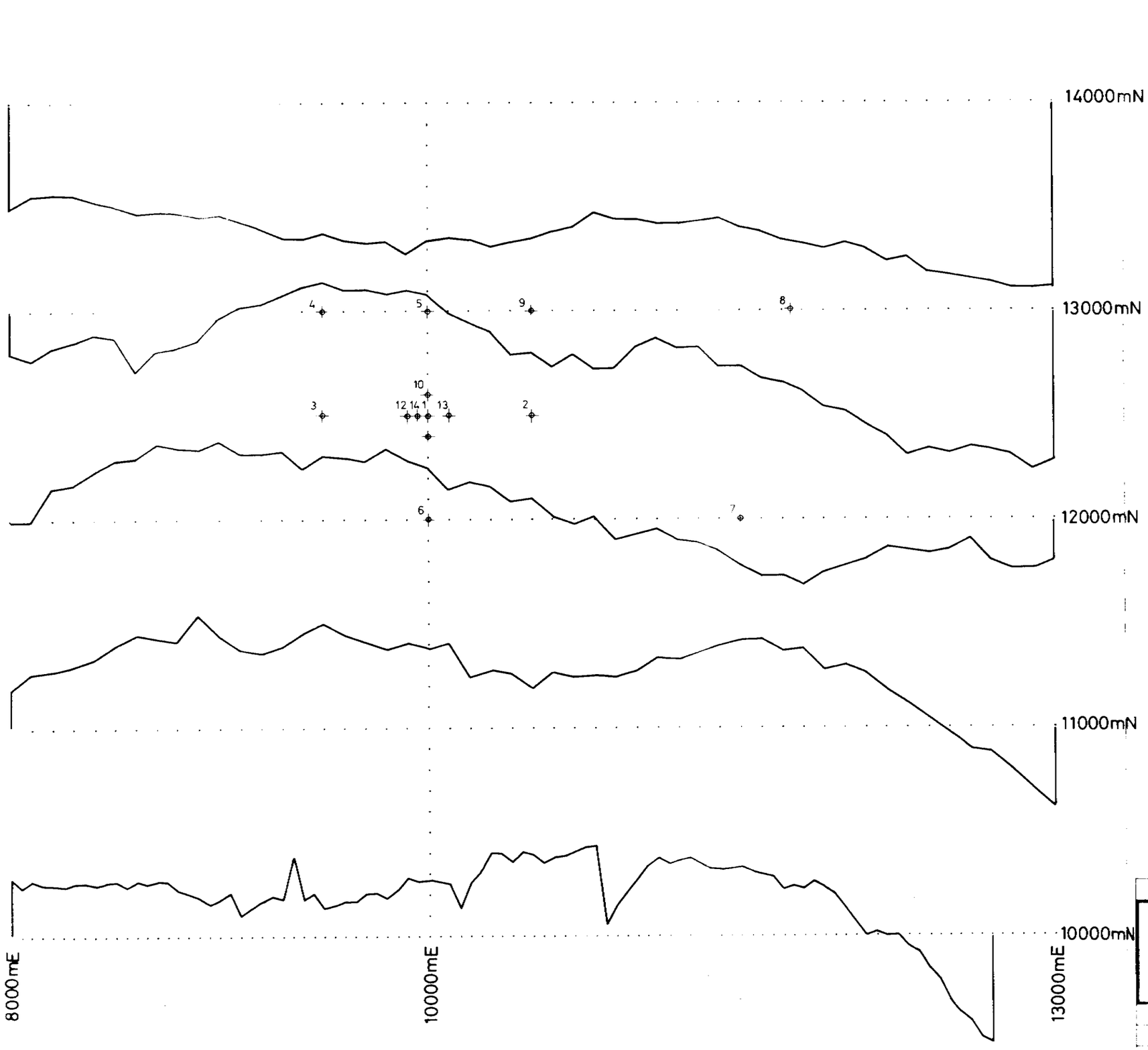
C R A EXPLORATION PTY LIMITED

BUCHANAN DAM

EL 3536 , ALROY

GRAVITY CONTOURS

REFERENCE SE53-15 ALROY	
SCALE 1 : 20,000	DATE JAN. 1983
AUTHOR JBC	REPORT 11929
DRAWN SEA	PLAN No 2052

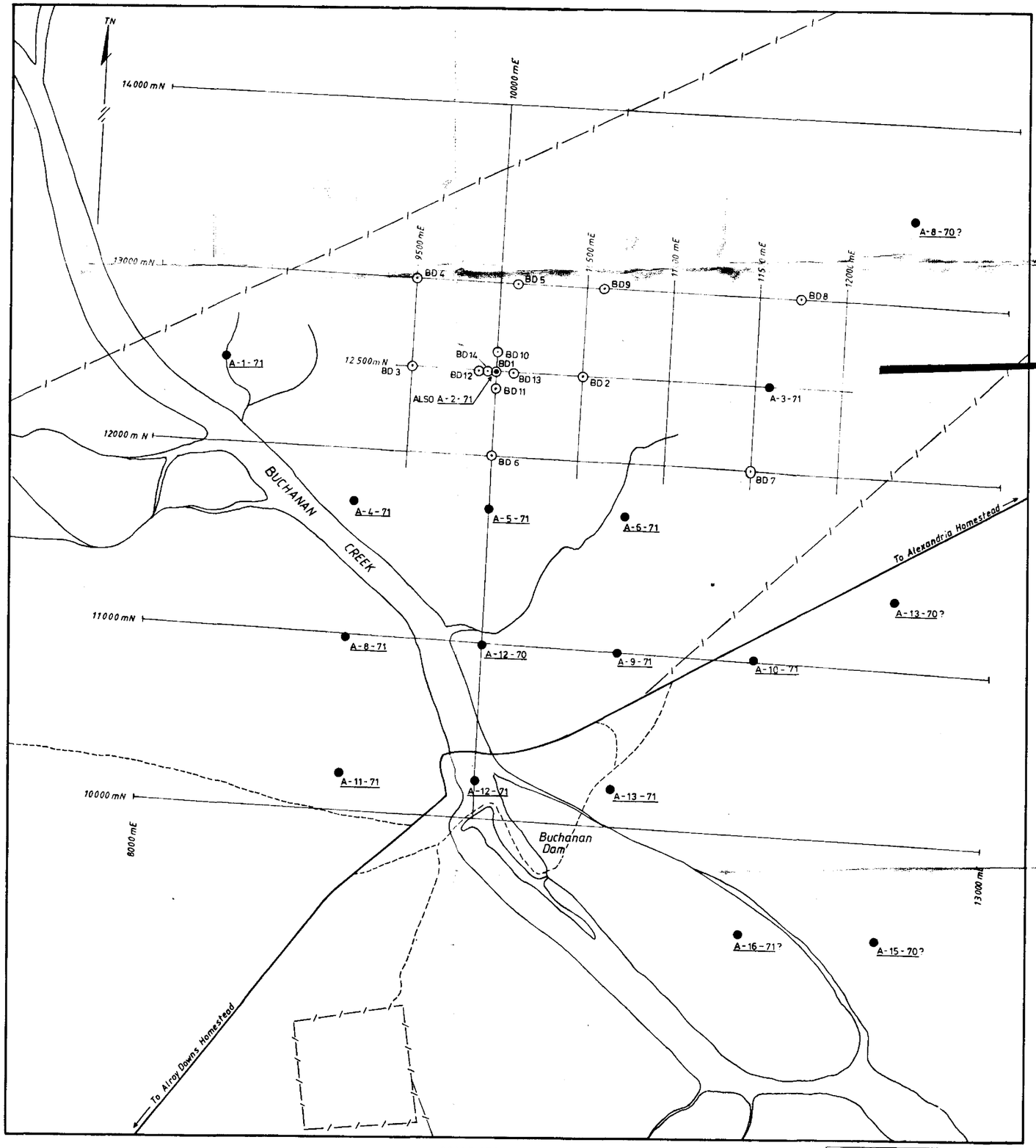


C R A EXPLORATION PTY LIMITED

BUCHANAN DAM EL 3536

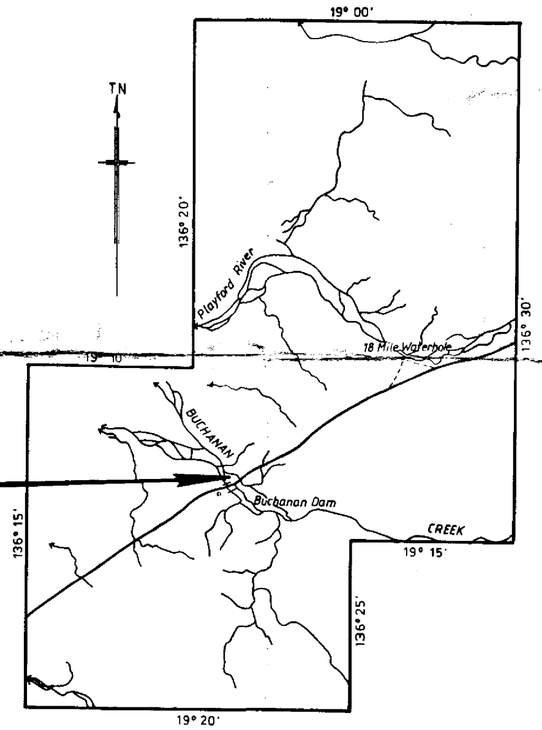
GRAVITY PROFILES

REFERENCE SE53-15 ALROY	
SCALE 1:20000	DATE JANUARY 1983
AUTHOR JBC	REPORT 11929
DRAWN SRJ	PLAN No NTd 2053



SCALE APPROX 1:20000

Adapted from enlargements of
BUCHANAN PROJECT aerial photography
RUN 1 7165
RUN 2 7157



0 5 10 15 20 Kilometres

SCALE 1:250000

LEGEND:

- BD5 — PERCUSSION DRILL HOLE (CRAE)
- YARD
- FENCE
- ROAD
- TRACK
- A-9-71 — CONOCO-MINOIL DRILL HOLES (estimated position only)

NOTE:

12500 mN is approx. AMG 7876110 mN
10000 mE is approx. AMG 642800 mE

CR 83/151

CRA EXPLORATION PTY LIMITED

BUCHANAN DAM EL 3536
LOCATION OF PERCUSSION DRILL HOLES

REFERENCE SE53-15 ALROY	
SCALE APPROX. 1:20000	DATE NOVEMBER 1983
AUTHOR KRA	REPORT 11929
DRAWN SRJ	PLAN No NTd 2005