

# OPEN FILE

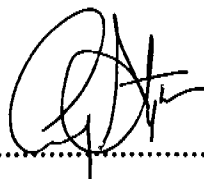
CRA EXPLORATION PTY LIMITED

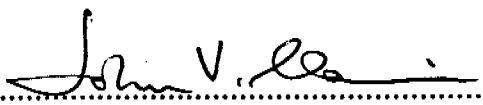
TOOMBA RANGE EL 7311

EXPLORATION REPORT FOR THE PERIOD  
27/2/91 TO 27/12/91, AND FINAL REPORT



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Submitted by :  .....

Accepted by :  .....

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CRAE Report Number 17696

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TOOMBA RANGE EL 7311  
EXPLORATION REPORT FOR THE PERIOD  
27/2/91 TO 27/12/91, AND FINAL REPORT

1. SUMMARY

Exploration Licence 7311 Toomba Range, comprising 144 blocks, was granted to CRA Exploration Pty Limited on 25 February 1991 for a period of six years. This report documents exploration undertaken in the Exploration Lease during the period of tenure ended 27/12/91.

CRA Exploration applied for EL 7311 to allow it to prospect the Toomba fault zone for gold-basemetal mineralization. The Toomba fault zone is a major crustal suture which juxtaposes a north-eastern sequence of Palaeozoic sediments of the Georgina Basin with Proterozoic rocks of the Arunta Complex.

A literature review of prior exploration in EL 7311 revealed that no drainage geochemical surveys had been undertaken in the area prior to CRAE's application. Subsequently CRAE carried out a helicopter-supported reconnaissance stream sediment sampling program in the tenement area. A total of 107 stream sediment samples and 6 rock chip samples were collected during the sampling program. The results from this sampling failed to indicate the presence of any significant gold-basemetal mineralization in the Exploration Licence. As a consequence, no further prospecting is warranted in EL 7311 and, following recommendation for relinquishment, title was surrendered on 27/12/91.

## 2. INTRODUCTION

EL 7311 Toomba Range comprising 144 blocks was granted to CRA Exploration Pty Limited (CRAE) on 25 February 1991 for a period of six years.

EL 7311 is located on the northern edge of the Simpson Desert adjacent to the Queensland-Northern Territory border and is 220 kilometres west-southwest of Boulia and 350 kms south-southwest of Mt Isa. Vehicular access to the EL is via Urandangi to Tobermory Station and thence via Tobermory station tracks south to the Toomba Range.

CRA Exploration applied for EL 7311 to allow it to prospect the north-western portion of the Toomba fault zone for gold-basemetal mineralization. The Toomba fault zone is a major crustal suture which juxtaposes an eastern sequence of Palaeozoic sediments of the Georgina Basin with Proterozoic rocks of the Arunta Complex. During tenure CRAE has undertaken a review of past exploration undertaken in the area and carried out a helicopter-supported reconnaissance stream sediment sampling program.

This report documents the exploration undertaken in the Exploration Licence during its first and final year of tenure to December 1991.

## 3. CONCLUSIONS AND RECOMMENDATIONS

- The stream sediment sampling and associated rock-chip sampling program undertaken within EL 7311 failed to identify any basemetal- anomalous drainage or outcrop areas associated with the Toomba fault zone.
- No further prospecting for basemetal targets is warranted within EL 7311 and

the tenement is recommended for relinquishment.

#### 4. GEOLOGY

EL 7311 straddles the northern northwest trending portion of the Toomba fault zone. The Toomba fault zone is interpreted from seismic data to be a high-angle (40-70 degrees) west-dipping thrust along which the Proterozoic Arunta Block has been thrust eastwards over the Palaeozoic Georgina Basin. This overthrusting is considered to be a result of the Late Devonian-Early Carboniferous Alice Springs Orogeny. Numerous low-angle splays off the main thrust dissect both the hanging and footwall sequences. As well high-angle faults normal to the thrust offset the footwall stratigraphy. Hangingwall to the thrust comprises a sequence of diamictite, shale, siltstone and sandstone of the Late Proterozoic Black Stump Arkose and Yardida Tillite. These rock-types are believed to be unconformably underlain by the Mt Dobbie Granite which has been K/Ar dated at  $1662 \pm 25$ ma. A large stock of this granite crops out to the west of the EL. The footwall to the thrust comprises a shallow east-dipping sequence of basal dolomites and limestones of the Late Cambrian Arrinthrunga Formation and Cambro-Ordovician Ninmaroo Formation; limestone, sandstone, siltstone and shale of the Ordovician Coolibah, Nora and Mithaka Formations and Carlo Sandstone and sandstone and conglomerate of the Devonian Craven Peak Beds.

Remnant outliers of shale, sandstone and conglomerate of the Mesozoic Eromanga Basin are preserved through the Exploration Licence. As well, outliers of Tertiary Austral Downs Limestone form small mesas and knolls west of the Toomba fault zone. Quaternary longitudinal sand dunes obscure much of the Toomba fault zone and surrounding Proterozoic and Palaeozoic rock-types in the south of the EL. Aeolian sands are prevalent in much of the low-lying areas and commonly choke the relatively poorly developed drainages.

No mineralization has been recorded from EL 7311. Minor quartz veining has been mapped in the centre of the EL, southwest of the Toomba fault zone associated with weak silicification and lateritization. Minor quartz veining has also been mapped to the south of the EL associated with subsidiary thrusts in the hangingwall to the Toomba fault zone.

#### 5. PREVIOUS WORK

The area covered by EL 7311 was mapped by BMR geologists during 1959-60 as part of their Tobermory and Hay River 1:250 000 Sheets mapping program. Smith (1965) reported the presence of small amounts of galena in outcrops of the Nimaroo Formation but gave no location for the occurrence. The area was subsequently remapped in a joint BMR-GSQ mapping project during 1975-78 with the results published as the Hay River- Mt Whelan Area 1:250 000 Sheet (1985). The BMR also carried out regional aeromagnetic and gravity surveys of the area.

Fimiston prospected an area immediately to the west of EL 7311 in 1970-71 (EL 1228) and located minor lead-zinc mineralization in carbonate facies of the Arrinthrunga Formation (max. 1350 ppm Zn). Subsequently during 1976-77 Carpentaria Exploration prospected the same area to the west of EL 7311, conducting stream sediment surveys, geological mapping and rockchip sampling and soil sampling. CEC obtained anomalous lead-zinc stream sediment values (max. 651 ppm Pb and 760 ppm Zn in -10+80# samples) from creeks draining carbonate facies of the Ninmaroo Formation, but were unable to locate any outcropping lead-zinc mineralization. These anomalies were attributed to iron-manganese oxide scavenging during weathering. Agip re-evaluated these drainage anomalies during 1982-84 with further rock chip sampling and geological mapping. They drilled 15 drill holes in the Boat Hill area (1084m diamond and 142m percussion) and concluded that anomalous lead, zinc and silver values obtained from the carbonate

facies of the Arrinthrunga and Ninmaroo Formations represent carbonate-replacement style mineralization associated with thrust-faulting along the Toomba fault zone. This mineralization was not considered to be of economic significance.

In 1980-81 BHP prospected the southern Toomba Ranges to the east of Toomba Range EL 7311 for diamonds and to a lesser extent basemetals (A's to P 2349 & 2350). BHP undertook a detailed airborne magnetic and radiometric survey with follow-up ground magnetics to locate magnetic anomalies on the ground. Twelve percussion drillholes (total 495m) were drilled to test these anomalies. This drilling failed to locate any diamond indicators or basemetal anomalies. BHP/Jones Mining NL in 1984 subsequently re-interpreted the aeromagnetic and government gravity data over EL 7311 for Roxby Downs copper-gold-uranium- type mineralization (A to P 3979; ELs 4320 & 4321) but concluded that no target areas were present.

In 1987 EZ evaluated the southern Toomba Range area for Carlin- style precious metal replacement deposits associated with the Toomba fault zone (A to P 4359). EZ surveyed 29 one kilometre spaced east-west oriented soil lines across the trace of the Toomba fault zone. These soil lines were approximately 500m long and were soil sampled at 50m intervals. This sampling failed to return any anomalous results.

## 6. EXPLORATION UNDERTAKEN BY CRAE

CRAE carried out a helicopter- supported stream sediment sampling program over the entire EL. This sampling was hindered by poor drainage development and the presence of widespread aeolian sand deposits in the drainages. The stream sediments were sieved to -20+40# in an attempt to remove the aeolian component of the sediment. A total of 111 stream sediment samples, 4 BLEG samples and 6 rock-chip samples were collected and despatched to Classic Laboratories in Adelaide for assay. The stream sediment and rockchip samples were assayed for Cu, Pb, Zn,

As, Fe, Mn and Ag by ICP analysis and Au by fire assay. In addition the stream sediments were assayed for Ni, Co, Cr, and Nb by ICP. The BLEG samples were assayed for Au only. Sample numbers are plotted on Plan NTm 2 and the assays are compiled in Appendix 1.

The drainage sampling outlined three anomalous drainage areas:

- (i) Northern EL area which returned stream sediment assays in the range 95-600 ppm copper and 0.34-0.50 ppm silver from an area of approximately five square kilometres. Two check -80# stream sediment samples failed to repeat the anomaly, returning a maximum value of only 37 ppm copper, casting doubt on the validity of the original assays. As a further check the -20+40# fractions of the follow-up samples and the -80# fractions of the original samples were re-assayed. These samples also returned low copper (max. 13 ppm) and silver (max. 0.02 ppm) assays confirming the spurious nature of the original anomaly.
- (ii) Central western EL area - a single value of 0.68 ppm silver from a catchment of less than two square kilometres. A follow-up -80# stream sediment sample failed to validate this anomaly returning a value of only 0.03 ppm silver. The follow-up sample returned a high copper assay (107 ppm Cu) which on re-assay also failed to repeat (36 ppm Cu).
- (iii) Southern EL area - 0.10-0.76 ppm gold in drainages scattered over an area of approximately 20 square kilometres. Repeat BLEG sampling of four of the anomalous drainages failed to return assays in excess of 0.6 ppb gold.

It would appear that these anomalies were the product of laboratory errors or contamination. These errors were brought to the attention of the Laboratory and



no satisfactory explanation could be offered.

Six rock samples of goethitic-jasperoidal breccia were collected from the vicinity of the Toomba Range fault in the north of the Exploration Licence. These samples were weakly anomalous in basemetals (max 120 ppm lead and 560 ppm zinc).

Even though the above-mentioned laboratory errors cast doubt on the reliability of the stream sediment survey, there seems to be little potential for significant basemetal/gold mineralization cropping out within Toomba Range EL 7311. As a consequence no further work is warranted in this tenement.

LOCATION

Hay River SF 53-16 1:250 000 Sheet

KEYWORDS

Devonian, Carboniferous, Cambrian, Proterozoic, lead, zinc, geochem-drainage, geochem-rockchip, Toomba fault zone.

LIST OF DPO'S

50956 72305 72306 72324

LIST OF APPENDICES

Appendix 1 Toomba Range EL 7311, Geochemical Sample Ledger

LIST OF PLANS

NTm 33	Toomba Range EL 7311 Location Plan	1:250 000
NTm 2	Toomba Range EL 7311 Sample Locations	1:100 000

APPENDIX 1

Toomba Range EL 7311, Geochemical Sample Ledger

CRA EXPLORATION PTY LTD ----- GEOCHEMICAL SAMPLE LEDGER

TENEMENT: TOOMBA RANGE EL 7311.

MAP REF: HAY RIVER SF 53-16.

DATE: MAY 1991.

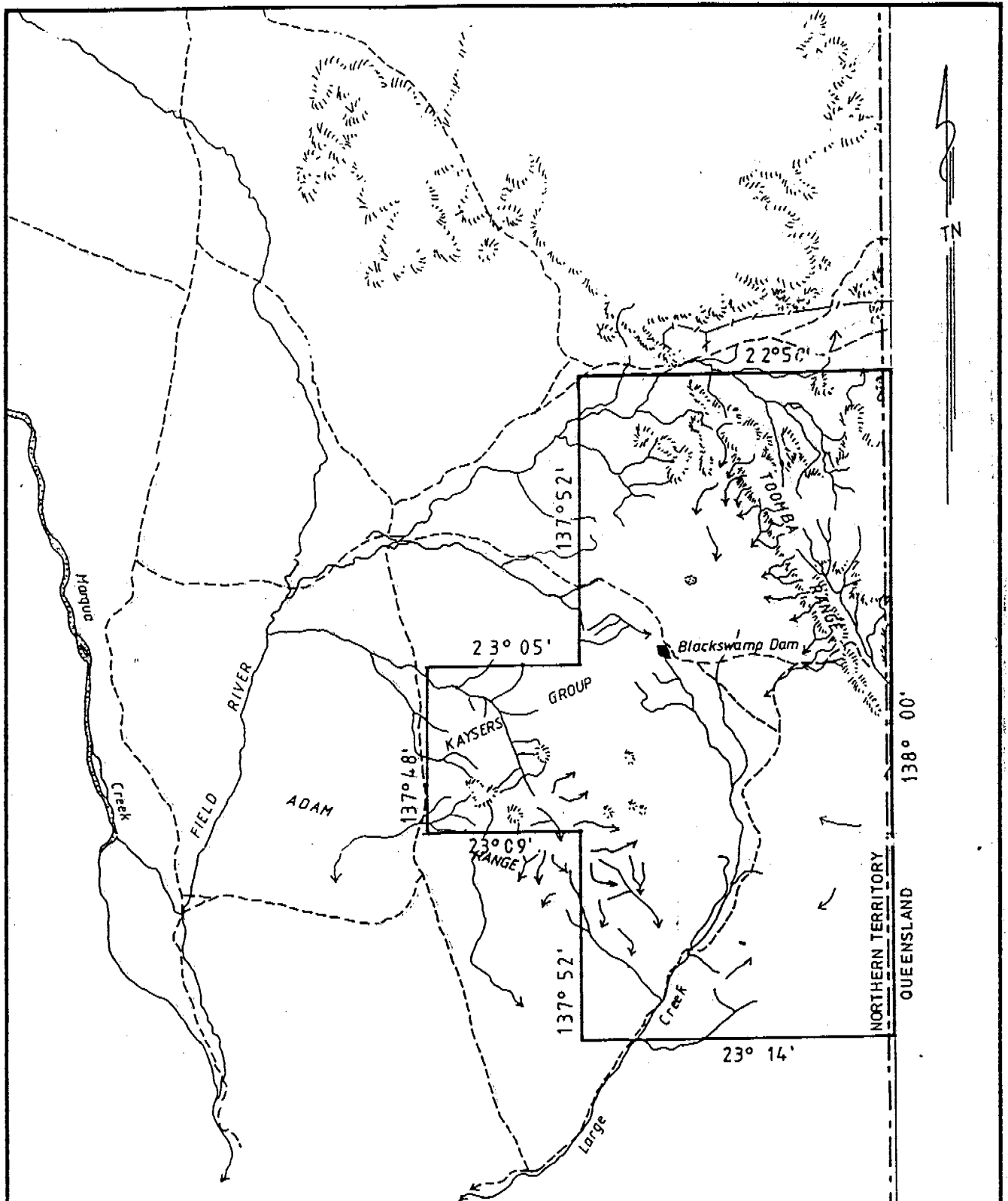
LABORATORY: CLASSIC.

SAMPLED: MH & CLS.

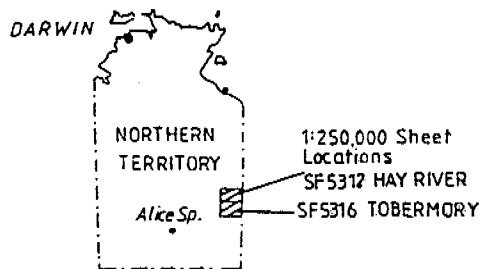
SAMPLE NO.	ZONE	ANG EASTING	ANG NORTHING	SAMPLE TYPE	DPO	Cu PPM	Pb PPM	Zn PPM	As PPM	Fe PPM	Mn PPM	Ni PPM	Co PPM	Cr PPM	Nb PPM	Ag PPM	Au PPM
2617802	53	801311	7432005	BLRG	50956												0.0000
Repeat of 3171170																	
2617803	53	803948	7432213	BLRG	50956												0.0006
Repeat of 3171169																	
2617804	53	806611	7430882	BLRG	50956												0.0000
Repeat of 3171166																	
2617805	53	795993	7427683	BLRG	50956												0.0000
Repeat of 3171068																	
2617806	53	789268	7436931	80#SS	50956	107	10	42									
Repeat of 3171036																	
				SS	72324	36										0.03	
2617807	53	788011	7437777	80#SS	50956	127	8	30									
Repeat of 3171041																	
				SS	72324	26										0.01	
2617808	53	802021	7457042	80#SS	50956	29	9	32									
Repeat of 3171003																	
				SS	72324	6										0.02	
2617809	53	805241	7456713	80#SS	50956	37	10	30									
Repeat of 3171002																	
				SS	72324	13										0.02	
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				80#SS	72324	5											
3171002	53	805241	7456713	SS	72305	600	20	70	0	40800	310	14	10	18	5	0.34	0
				80#SS	72324	5											
3171003	53	802021	7457042	SS	72305	200	5	17	0	8200	130	4	2	150	0	0.34	0.04
				80#SS	72324	6											
3171004	53	800340	7456921	SS	72305	36	40	140	22	153000	1900	34	28	55	5	0.16	0
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3171006	53	798538	7456781	SS	72305	46	5	16	0	11200	340	6	4	150	5	0.14	0
3171007	53	804891	7452266	SS	72305	17	0	6	0	6700	40	6	0	310	0	0.12	0
3171008	53	803455	7452320	SS	72305	24	0	4	0	6800	40	6	0	280	0	0.12	0
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3171030	53	800661	7451494	SS	72305	10	10	50	0	43200	780	16	11	22	0	0	0
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3171033	53	799680	7449367	SS	72305	9	0	6	0	16000	130	5	3	8	0	0.1	0
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3171083	53	802121	7446890	SS	72305	6	25	16	4	19800	470	11	8	24	0	0.08	0





AREA: 144 blocks  
approx. 454 sq. km



CRA EXPLORATION PTY LIMITED	
<b>TOOMBA RANGE EL 7311 LOCATION PLAN</b>	
REFERENCE SF 53-16 HAY RIVER / SF53-12 TOBERMORY	
SCALE 1:250,000	DATE NOVEMBER 1990
AUTHOR CLS	REPORT 17696
DRAWN AVPP	PLAN No NTm 33

137° 45'  
22° 55'

138° 00'  
22° 55'

23° 00'

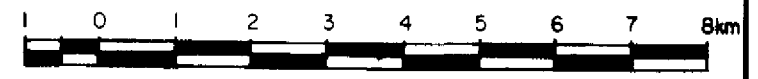
23° 00'

23° 15'  
137° 45'

23° 15'  
138° 00'

**LEGEND**

- 3171102 Stream sediment sample
- X3171178 Rock chip sample - outcrop grab



Scale 1:100 000

**CRA EXPLORATION PTY LIMITED**

**TOOMBA RANGE EL 7311**

**SAMPLE LOCATIONS**

AUTHOR	DRAWN	DATE	SCALE	REPORT
C. Stegman	A. Perry	3-7-91	1:100 000	17696
REF: Hay River SF 53-16			PLAN No: NTm 2	

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