C.R.A. EXPLORATION PTY LIMITED

E.L. 2054 WOOLNER EAST, N.T.

FINAL REPORT

PERIOD ENDING 20.8.80

Submitted by: A.A. Snelling & G.I. Sherren .....

Accepted by: W.H. Johnston

.....

Date: July 1980

Copy to: N.T. Dept of Mines and Energy

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13 NT W5

28th October 1980.

The Director,
Department of Mines and Energy,
Government of the Northern
Territory,
P.O. Box 2901,
DARWIN. N.T. 5794

Dear Sir,

EL 2054 - Woolner East, N.T.
Final Report

Please find enclosed report 10146 by A.A. Snelling and G.I. Sherren entitled "EL 2054 - Woolner East, N.T. - Final Report Period Ending 20 August 1980".

Final expenditure amounted to $9,085 comprising:

Salaries and Wages	3,512
General Supplies	576
Vehicles	565
Travel and Accommodation	556
Contractors	1,463
General Overheads	2,413
	$9,085

Yours faithfully,

for J. Collier
General Manager

enc.
SAF:smb

noted

Noted
Pcb
3.11.80

CONTENTS

1. SUMMARY

A programme of geological reconnaissance mapping and application of available geological and geophysical data covering the area has ruled out potential for uranium in either a Rum Jungle or an East Alligator setting.

2. INTRODUCTION

EL 2054 Woolner East of 87.69 sq. miles was applied for on 20th March, 1979 and granted on 21st August, 1979 by the Northern Territory Government. Plan NTd 1007 shows the location of the EL which is situated 20 km ~~east~~ west of Point Stuart. The EL area occurs within the Point Stuart (5273) and Mary River (5272) 1:100 000 map sheets.

The area was acquired on the basis of an interpretation of BMR gravity data which indicated the southern granite-metasediment contact in the Woolner EL 1642 area may have extended eastward from Woolner through Reserve 1604 and into Woolner East. It was also envisaged that the most prospective chloritic metasediments which flank the western margin of the Woolner granite may also be developed around the margins of the postulated granite in the Woolner East area.

3. CONCLUSIONS

Geological mapping and interpretation aided by all available geophysical data covering the EL implies that the area is <u>not</u> prospective for uranium in either a Rum Jungle or an East Alligator setting, as neither of these geological settings are present. Furthermore since Masson Formation black shales are absent any base metal potential is likewise greatly diminished.

4. GEOLOGY

The geology of the EL area is shown on Plan NTd 1158.

Outcrop of Lower Proterozoic rocks is sparse, the EL area being predominantly covered in the north by Quaternary muds and silts with intertidal mangrove swamps and coastal mud pans, and in the south by Tertiary black and ferruginous sands. Six outcrops of Lower Proterozoic rocks were investigated and are shown on the accompanying geological map (Plan NTd 1158).

1. Alligator Head (location a)

   Clean quartzites bearing a prominent jointing parallel to the strike of bedding but with a vertical dip. Matrix content increases towards the eastern end of the outcrop and sericite is noticeable.

2. Flood Mark Island (location b)

   Dirty quartzites in which the cross bedding indicates that the sequence faces west and is not overturned. Current directions are variable but commonly from the south. Ironstones occur around the western rim of the outcrop but it is suspected they continue to occur right around the outcrop. It is thus believed that these ironstones have formed by more recent lateritisation, and are not part of the Lower Proterozoic sequence. Jointing in the quartzites is parallel to the strike of bedding, but it is almost vertical.

3. Bamboo Point (location c)

   Finer grained quartzites with evidence of a weak foliation in some samples. Ripple marks give facings to the east. Jointing is common but irregular. Lateritic ironstones are common.

4. 2 km south east of Bamboo Point (location d)

   Here the sequence is similar to that found at Bamboo Point (location c).

5. 2.5 km south of Shady Camp Billabong (location e)

   Quartzites with grain size up to 0.5mm in a continuous outcrop of beds with an extremely regular jointing

pattern consisting of two joint sets:-

set 1: parallel to strike of bedding and dipping steeply to the east.

set 2: perpendicular to strike of bedding with near vertical dips.

6. 2.5. km east of Alligator Lagoon (location f)

Minor outcrop of yellow-stained quartzites.

Using this field data in conjunction with air photo interpretation and reference to the BMR 1:500 000 1979 solid geology map of the Pine Creek Geosyncline, the following geological interpretation may be inferred (see Plan NTd 1158):-

(a) The quartzites at all the localities visited probably correlate with the Lower Proterozoic Mount Hooper Sandstone or Wildman Siltstone of the Mount Partridge Group. Reasonable outcrop in the Bamboo Point area indicates the relatively tightly folded nature of these Lower Proterozoic quartzites (compare strikes and dips at locations c and d). The fold axis in the Bamboo Point region trends in a north easterly direction.

(b) Although no outcrop exists, several weathered low-lying pockets now filled with clay deposits are strongly suggestive of sink-holes within a carbonate. Scout drilling within the Woolner EL 1642 not far to the north-west intersected dolomite that was clearly recognisable as Coomalie Dolomite of the Batchelor Group.

(c) Since the Coomalie Dolomite thus immediately underlies the Mount Partridge Group quartzites in the Woolner East area, no perspective Masson Formation black shales of the Namoona Group are present discounting a Rum Jungle setting. The relationship between the Coomalie Dolomite and Mount Partridge Group must also be an unconformable one because of the missing Namoona Group sediments and the time gap indicated thereby. Furthermore the scout drilling in the adjacent Woolner area suggests that the dolomite is fairly flat-lying (since it blankets the eastern half of that EL), a marked contrast to the dips and folding of the overlying quartzites at Woolner East.

5. GEOPHYSICS

Geophysical coverage of the EL and adjacent areas already available include:-

(i) Total magnetic contour maps of P.A. 2930, Lower Mary River (CRAE, Scott, 1972).

(ii) Published BMR magnetic and gravity data.

(iii) Magnetic and gravity survey data over EL 1642 Woolner from Geopeko.

Application of geophysical data from these sources added to the above geological interpretation of the EL area:-

(a) A prominent total magnetic intensity lineation crosses the EL area in its most northern section. This magnetic lineation can be traced south westwards to link up with the Giants Reef Fault in the Rum Jungle area. Almost without doubt, therefore, this magnetic lineation represents a north-easterly extension of the Giants Reef Fault.

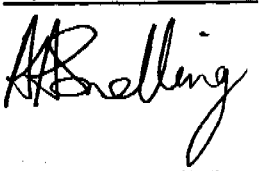
(b) A prominent gravity low, evident in the broad scale BMR survey, has been investigated to the west in EL 1642 Woolner revealing a granitic basement as the cause. Continuation of the BMR gravity low eastwards initially suggested that the granite body continued eastwards at least to, or possibly beyond, the magnetic lineation. If such a granite continued across the lineation, indicated displacement would infer a left lateral wrench component to the Giants Reef Fault in this northern section of the EL area. However, displacement of the Rum Jungle Complex 100km further south indicates the Giants Reef Fault to be right lateral. This inconsistency strongly suggests that any granite present is terminated by this extension of the Giant's Reef Fault.

(c) However, more detailed gravity data collected by Geopeko in EL 1642 Woolner and subsequent scout drilling imply that the granitic basement complex at Woolner does not extend far enough eastwards to be present in the Woolner East EL 2054 area. Instead the data suggests that the flat-lying Coomalie Dolomite extends from the eastern half of the Woolner EL through Reserve 1604 (Plan NTd 1007) to

Woolner East where the Giant's Reef Fault displaces it against itself.

(d) This interpretation is supported by all the magnetic data. At Woolner the most prospective strata for an East Alligator situation, are the chloritic metasediments which have a distinctive magnetic response. No similar response is apparent from aeromagnetic data over Woolner East, and particularly over the northern section of the EL area. Thus without granitic basement and flanking chloritic metasediments an East Alligator setting is also discounted.

A.A. SNELLING



G.I. SHERREN

REFERENCE

Scott, A.K. 1972 P.A. 2930 - Lower Mary River, N.T. Report for year ended 30th September, 1972. CRAE Report No.4625.

KEYWORDS

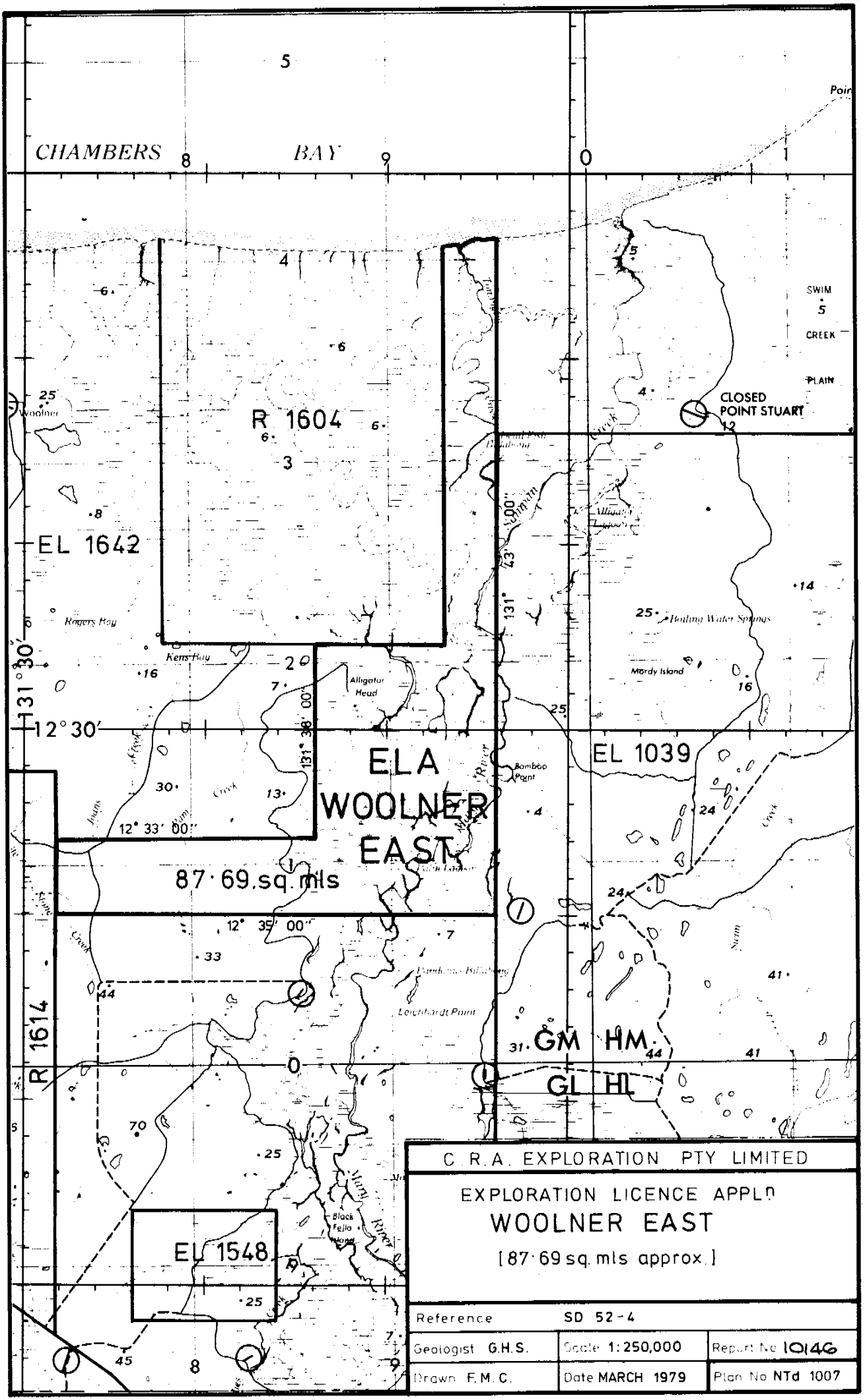
Uranium, Darwin SD 52-4 1:250 000, Proterozoic-Lr, quartzite, dolomite, geol mapping, geophys-grav., geophys-mag.

LOCATION

Darwin SD 52-4 1:250 000 map sheet

LIST OF PLANS

Plan Number	Title	Scale
NTd 1007	Exploration Licence Application Woolner East	1:250 000
NTd 1158	Woolner East EL 2054 Geology	1: 50 000



C. R. A. EXPLORATION PTY LIMITED

EXPLORATION LICENCE APPLN

WOOLNER EAST

[87·69 sq. mls approx.]

Reference SD 52-4		
Geologist G.H.S.	Scale 1:250,000	Report No 10146
Drawn F.M.C.	Date MARCH 1979	Plan No NTd 1007

LEGEND

CAINOZOIC

QUATERNARY

- Qcm — mud, silt; intertidal mangrove swamp
- Qcp — clay, silt, mud; coastal mud pans
- Qa — silt, sand, clay; creek and river alluvium
- Qas — silt, clay; abandoned channel deposits
- Qal — silt, clayey silt; levee deposits
- Qf — black and brown soils and clay deposits

TERTIARY

- Czs — unconsolidated sand; ferruginous and clayey sand

PRECAMBRIAN

LOWER PROTEROZOIC

- Epw — sandstone, quartzite; cross bedded, ripple marked in places - Wildman Siltstone, Mt. Partridge Group
- Ebc — dolomite - Coomalie Dolomite, Batchelor Group

- geological boundary - Cainozoic
- geological boundary - Proterozoic
- anticline showing plunge
- syncline showing plunge
- strike and dip of strata
- trend line / lineament } air photo interpretation
- vertical jointing
- EL boundary
- magnetic lineation (fault)
- reference localities - refer to report

TOMMYCUT CREEK
SWAMP CREEK
ROONEES LAGOON
DEAD FISH BILLABONG
CREEK
ALLIGATOR LAGOON
SAMPAN BILLABONG
SHADY CAMP BILLABONG
BAMBOO POINT
FIRE DREAMING ISLAND
MARY RIVER
PALM LAGOON
FLOOD MARK ISLAND
PANDANAS BILLABONG
ALLIGATOR HEAD
131° 43'
131° 36'
12° 33'
12° 35'

C.R.A. EXPLORATION PTY LIMITED	
WOOLNER EAST EL 2054	
GEOLOGY	
Reference SD 52 - 4	
Geologist G.I.S./A.A.S.	Scale 1:50,000 — Report No. 10146
Drawn S.P.S.	Date JAN. 1980 — Plan No. NTd 1158