CONTENTS ENVELOPE 4031

TENEMENT: EXPLORATION LICENCE NO. 743

TENEMENT HOLDER: CARPENTARIA EXPLORATION COMPANY PTY LTD

REPORTS:

PLANS:

REPORT:

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH"

PROGRESS REPORT FOR QUARTER ENDED JANUARY 5, 1981

1. TERMS AND CONDITIONS

Exploration Licence No. 743 covering 400 km^2 was granted on October 6, 1980 for a term of twelve months. The minimum expenditure requirement is $25 000 for the twelve month term.

2. EXPLORATION

A literature search was carried out during the quarter. The area is believed to have potential for gold in three distinct environments.

1. Auriferous quartz reefs within the Mt. Dutton basement inlier.
2. Placer gold within the basal Mesozoic conglomerates onlapping the basement inlier.
3. Alluvial gold within recent sediments derived from the Mesozoic sediments.

A programme of geological mapping and sampling is scheduled to start in the second quarter.

3. EXPENDITURE

An expenditure statement is attached.

.....
D.D. Boyer
District Geologist

004

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH"

STATEMENT OF EXPENDITURE FOR QUARTER ENDED JANUARY 5, 1981

	$
Administration	304
Total This Period	$304

for .....
R.E. Darlington
Administration Manager

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH"

PROGRESS REPORT FOR QUARTER ENDED APRIL 5TH, 1981

1. TERMS AND CONDITIONS

Exploration Licence No. 743 covering 400 km^2 was granted on October 6, 1980 for a term of twelve months. The minimum expenditure requirement is $25 000 for the year.

2. EXPLORATION

During the quarter the area surrounding the Mt. Dutton Inlier was mapped in detail at a scale of 1:25 000. Outcrops of the Jurassic basal conglomerate were sampled and twelve samples were sent to AMDEL for size fractioning and gold assay, and three samples were submitted to the Company's Research Geologist for thin section examination.

Very few quartz veins were found within the Precambrian rocks of the inlier and the area now has a low potential for reef gold deposits.

The scope of future work will depend on the assay results from the reconnaissance sampling of the conglomerate but some bulk sampling is planned.

3. EXPENDITURE

An expenditure statement is attached.

M.D. Lucas

M.D. Lucas
Geologist

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH"

STATEMENT OF EXPENDITURE FOR QUARTER ENDED APRIL 5TH, 1981

	$	$
Administration	385	
Assaying		
Aerial Surveys		
Aircraft Support	304	
Consultant Fees		
Drilling		
Equipment Charges		
Freight		
Outside Services		
Operating Labour	2 294	
Stores	125	
Transport	41	
Travelling Expenses		
TOTAL THIS QUARTER	3 149	3 149
Previously Reported - Current Term		
Quarter Ended 5-01-81		304
Total Project Expenditure to Date		$3 453

D.D. Boyer
District Geologist

007

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

MINING TENEMENT

PROGRESS REPORT

E.L. 743 "MT. DUTTON SOUTH"

PROGRESS REPORT FOR QUARTER ENDED JULY 5, 1981

DATE: JULY 1981

COPY: S.A.D.M.E.

CONTENTS

008

LIST OF DRAWINGS

Drawing No.	Title	Scale
1/5025	Sample Locations	1:25 000
15908	Geology of area adjacent to the Mt. Dutton Inlier	approx 1:25 850
15909	Interpretative geology of area adjacent to Mt. Dutton Inlier	approx 1:25 850

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH"

009

PROGRESS REPORT FOR QUARTER ENDED JULY 5, 1981

1. TERMS AND CONDITIONS

Exploration licence No. 743 covering 400 km^2 was granted on October 6, 1980, for a term of twelve months.

The minimum expenditure requirement is $25 000 for the year.

2. EXPLORATION

No further field work was carried out during the quarter.

Drafting of the geology and geological interpretation maps was completed and they are appended as drawings no. 15908 and no. 15909 respectively. The results of conglomerate assays were received, and gold values were uniformly low, less than 0.05 ppm. AMDEL report GS4548/81 which contains the results and the procedure used in the sample preparation, is appended. (Please note that samples 552179 to 552183 listed in the results are from an area outside EL 743).

The sample locations are shown on the attached Drawing No. 1/5025.

Eight rock specimens, including several volcanics were submitted for petrological study, which confirmed the presence of intermediate lavas of a trachytic composition. Petrology report CMS 81/4/24 is appended.

The volcanics occur on the eastern side of the Mt. Dutton fault, and as a small plug within the sediments of the Duff Creek Formation (see locations on Drawing No. 1/5025).

Geophysical methods are being considered for defining the basement topography. Some drill sampling is also planned for the future, to delineate the distribution of the conglomerate.

3. EXPENDITURE

An expenditure statement is attached.

(for) M.D. Lucas
Geologist

APPENDIX

The Australian
Mineral Development
Laboratories

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

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

012

amdel

12 May 1981

GS3/3/2/0

Carpentaria Exploration Company Pty. Ltd.,
80 Leader Street,
Forestville SA 5035

Attention: P.G. Simpson

REPORT GS4548/81

YOUR REFERENCE:	Letter of 19 March 1981
MATERIAL:	Conglomerate samples
IDENTIFICATION:	552172-552183
DATE RECEIVED:	19 March 1981
WORK REQUIRED:	Evaluate gold content and nature

Investigation and Report by: Dr Keith J. Henley

Manager, Geological Services Division: Dr Keith J. Henley

Keith Henley.

for Norton Jackson
Managing Director

cah

cc The Administration Manager,
Carpentaria Exploration Co. Pty. Ltd.,
GPO Box 1042,
Brisbane, Queensland. 4001

Attention: Mr L. Wall

Pilot Plant: Osman Place
Thebarton S.A.
Telephone 43 8053
Branch Laboratories:
Perth W.A.
Telephone 325 7311
Melbourne Vic.
Telephone 645 3093

EVALUATION OF CONGLOMERATE SAMPLES FOR GOLD

013

1. INTRODUCTION

Following discussion between Carpentaria Exploration Company Pty. Ltd and AMDEL regarding the evaluation of 12 samples of conglomerate for gold content and determination of the nature of the gold present, it was agreed that each sample should initially only be analysed for gold. If any samples were found to contain significant gold, further work would be undertaken to determine the liberation/locking characteristics and form of the gold.

2. PROCEDURE

The whole of each sample was crushed to -6 mm and riffled in half. One half was retained and the other half was crushed to 1.7 mm. Approximately 1 kg was riffled out and roll-crushed to -0.5 mm. Two separate 200 g portions (labelled A and B) were riffled out from the -0.5 mm material and pulverized, and 25 to 30 g was riffled from each pulverized portion and analysed for gold (AMDEL code K4/2).

3. RESULTS

The gold contents of the samples are as follows:

Sample	Au, ppm	
	A	B
552172	0.010	0.010
552173	0.035	0.035
552174	0.010	0.010
552175	0.050	0.050
552176	0.030	0.030
552177	0.020	0.020
552178	0.010	0.010
552179	0.095	0.020
552180	0.005	0.005
552181	0.010	0.010
552182	0.010	0.020
552183	0.010	0.010

On the basis of these results it does not appear worthwhile to proceed with determination of the liberation/locking characteristics of the gold.

REPORT CMS 81/4/24

Rock Samples QS 15804 - QS 15811

Eight rock samples were received for thin-section preparation and petrological examination; offcuts were subjected to K-stain tests or carbonate-stain tests where applicable, and the results incorporated in the descriptions and interpretations. Each rock is briefly described in the accompanying table.

Summary

Most of the rocks are intermediate lavas, some with associated sediments; a sediment occurs, and there is a breccia.

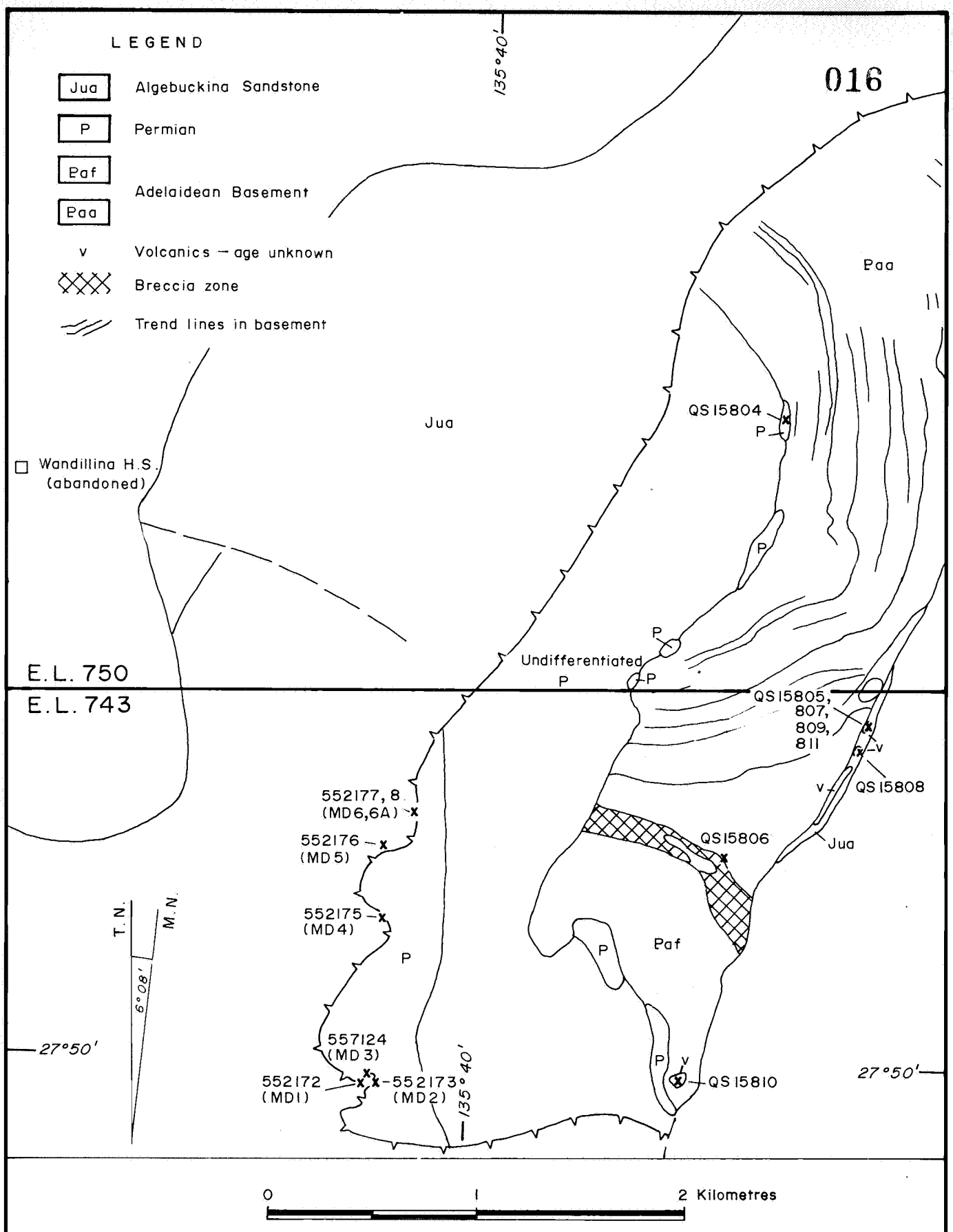
The sediment (QS 15804) shows none of the petrographic evidence of a glacial or fluvioglacial rock; all the framework grains are exceptionally well-rounded; if striated pebbles are present, they must be reworked, i.e. not in situ, but derived frompre-existing glaical deposits.

The breccia could well be of diapiric formation; its component fragments are of a possible metasomatic rock of uncertain origin.

The melatrachytes are clearly genetically related (and include a microsyenite); they are associated with older ferruginous sandstones which are regarded as xenoliths, judging from petrographic evidence; the melatrachytes are strongly reminiscent of the Wooltana, Roopena and Depot Creek lavas. It is quite possible for the melatrachytes to occur as both flows and minor intrusives.

H.W. Fander, M. Sc.

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
QS 15804 (T.S. 36729)	Dolomitised, Lithic, Feldspathic, Pebbly Sandstone. Well-rounded grains of chert, quartz, dolostone, rhyolite, feldspars, agate, siltstone; subrounded quartz matrix; replacive dolomite cement.	Moderately/poorly-sorted/sized, (pebble-grit-sand); no bedding.	Dolomite ooliths (whole and partial). Rounded tourmaline. Quartz overgrowths.	All components too well-rounded for fluvioglacial origin. Dolomitisation was diagenetic. Mixed provenances.
QS 15805	Ferruginous Sandstone/Melatrachyte. Rounded quartz and a few feldspar grains, hematite cement; trachyte is of sanidine laths in quench-textured hematitic groundmass.	Sandstone very well-sorted/sized. Trachyte has extrusive fabric or quench fabric.	At contact, hematite cement replaced by quartz, feldspar from trachyte. Carbonate vein.	Trachyte is extrusive or minor intrusive, younger than sandstone; not unlike Wooltana lava, Depot Cree. Roopena lava.
QS 15806	Dolomitised Breccia. Angular fragments of fine-grained quartz-K-feldspar rocks (feldspathised sediments?) heavily impregnated and cemented with dolomite.	Typical tectonic breccia fabric; some relict sedimentary features in fragments.	Fine euhedral (oxidised) pyrite in places.	Fragments variable; some are entirely K-feldspar/dolomite, others contain quartz. Nature of original rock uncertain.
QS 15807	Amygdaloidal Melatrachyte. Random sanidine laths set in semi-opaque, ultrafine hematitic groundmass with dendritic K-feldspar; many small amygdales.	Marked quench textures, but no flow-features. Very fine-grained.	Amygdales contain pale chlorite, quartz, dolomite and adularia.	Correlatable with melatrachyte in 15805. Very probably extrusive. Compositionally similar to Wooltana, Roopena Lavas.
QS 15808	Melatrachyte with Xenoliths. Probably two flows, withintercalated feldspathic sandstone and flow-top breccia features; composition as for QS 15807.	Complex relationships - sandstone extensively penetrated by lava.	Pale green amygdales are chloritic, others contain quartz, dolomite, adularia.	Apparently xenoliths of older feldspathic sandstone (cp. 15805) included in flow-breccias, in between successive flows.
QS15809	Amygdaloidal Melatrachyte. Random sanidine laths set in quench-textured ultrafine hematite-K-feldspar groundmass. Small and large amygdales.	Amygdaleshave irregular shapes; no flow features. Very fine-grained.	Small amygdales are chloritic, larger ones contain quartz, chlorite, dolomite, adularia.	Closely resembles the other melatrachytes; regarded as extrusive despite lack of flow features.
QS 15810	Silicified Melatrachyte. Scattered sanidine laths in quench-textured groundmass of hematite, replacive quartz and siderite; xenolithic rounded quartz grains.	Scoriaceous, vesicular fabric, fine-grained, with flow-brecciation.	A few quartz-filled amygdales. Limonite patches.	Correlatable with the other melatrachytes; fabric differs slightly, and subsequent alteration has changed appearance of rock.
QS 15811 (T.S. 36736)	Amygdaloidal Microsyenite. Small random prismatic crystals of partly altered K-feldspar; interstitial chlorite, siderite, limonite, conspicuous leucoxene.	Medium-grained, random fabric. Scattered ovoid amygdales.	Chlorite, quartz, carbonate filling amygdales. VEins of fibrous quartz.	Clearly petrogenetically related to the melatrachytes, but more coarsely-crystalline; possibly from interior of thicker flow.



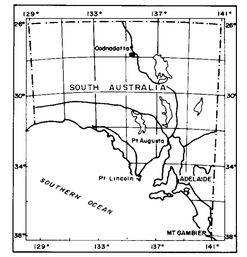
REVISION		SCALE: 1:25,000	CARPENTARIA EXPLORATION COMPANY PTY. LTD.
		GEO M.D.L.	E.L. 743 – "MT. DUTTON SOUTH"
		DRAFT: I.B.	SOUTH AUSTRALIA
		CHECKED:	SAMPLE LOCATIONS
		DATE: July, 1981	
		MICROFILMED:	
		ROLL No.:	
		MINING FIELD OR DISTRICT:	DRG No.: 1/5025

LEGEND

CAINOZOIC	Quaternary	Recent	Qrs	Alluvium
				Seif Dunes
			Qrt	Gibber Plain : Silcrete pebbles lying on sand
			Qs	Scree slope
			Qp	Quartz pebble surface derived from weathered conglomerate
		Pleistocene	Qt	Travertine : deposited from artesian waters
			Qpw	WONDILLINA LIMESTONE :— Fine grained buff to pink limestone, grading laterally into calcareous sandstone and conglomerate
	Tertiary ?		T	Laterised capping over Algebuckina Sandstone
MESOZOIC	Cretaceous		K	Undifferetiated Cretaceous sediments including sandstone, siltstone and shale with rare gypsum and limestone interbeds.
	Jurassic ?		Jua	ALGEBUCKINA SANDSTONE :— White, medium grained kaolinitic sandstone, with grit interbeds and basal conglomerate
PALAEOZOIC	Permian		Pb	'Boulder field' : striated and faceted boulders in a sandy to silty matrix.
			Pm	Ferruginised tillite
PROTEROZOIC	Adelaide System	Torrensian or Wilpouran	Paa	MURRANA BEDS :— Ripple marked siltstones and sandstones, with thick quartzite interbeds.
			Paf	DUFF CREEK BEDS :— Brown and green siltstones, with orange laminated dolomite and minor quartzite interbeds. Becomes sandy toward top of formation.
Age unknown			V	Un-named volcanics : Grey amygdaloidal lava with minor quartzite interbeds.

- Bedding
- Bedding (vertical)
- Cleavage
- Plunge of small fold
- Breccia Zone
- Fault
- Dolomitic breccia
- Fold trend
- Road
- Railway (3'6")
- Triangulation station
- Swamp
- Artesian Spring
- Ephemeral Stream
- River with waterhole
- Pit

LOCALITY



INDEX TO ADJOINING SHEETS

ABMINGA	DALHOUSIE	POOLWANNIA
WINTINNA	OODNADATTA E L 743 MAP	NOOLYEANA
MURLOOCOPPIE	WARRINA	LAKE EYRE

T N
M N
6°08'

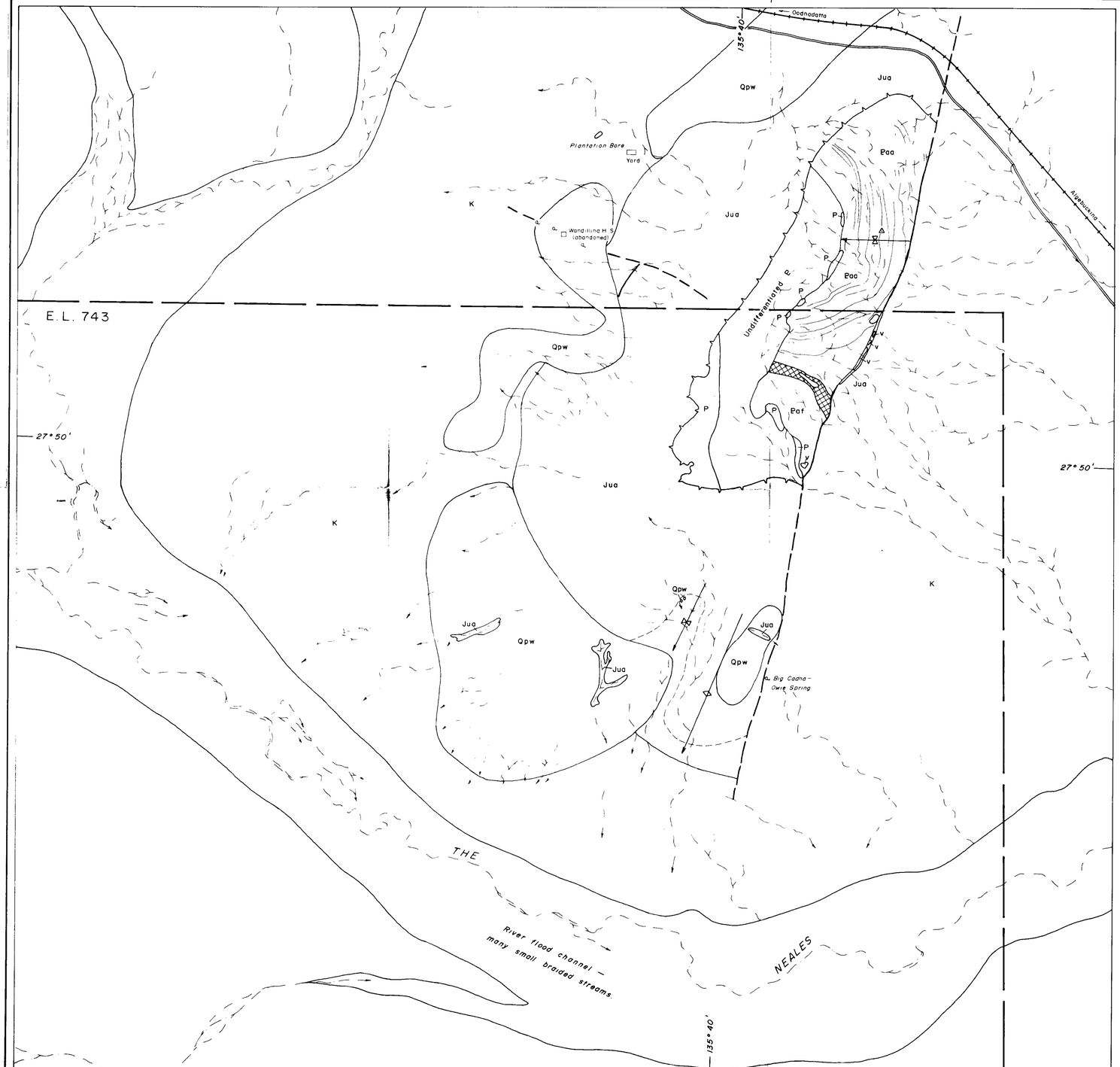
N. B.

Symbols used on this map generally conform with those used on the Oodnadatta 1:250,000 sheet, with the exception of the Adelaidean sediments, which are classified by the symbols used by Ambrose and Flint (1979).

0 1 2 3 Kilometres

4031-1

REVISION		CARPENTARIA EXPLORATION COMPANY PTY. LTD.
	SCALE 1:25,850	
	GEO M D L	E.L.743 — "MT. DUTTON SOUTH"
	DRAFT I B	SOUTH AUSTRALIA
	CHECKED	GEOLOGY OF THE AREA ADJACENT TO THE MT. DUTTON INLIER
	DATE July, 1981	
	MICROFILMED	
	ROLL No	
	MINING FIELD OR DISTRICT	DRG No 15908

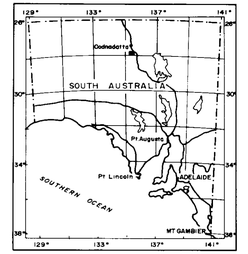


LEGEND

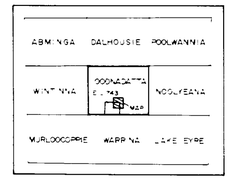
CAINOZOIC	Quaternary Pleistocene	Qpw	WANDILLINA LIMESTONE :– Fine grained buff to pink limestone, grades laterally into calcereous sandstone and conglomerate.
MESOZOIC	Cretaceous	K	Undifferentiated Cretaceous sediments
MESOZOIC	Jurassic?	Jua	ALGEBUCKINA SANDSTONE :– White, medium grained kaolinitic sandstone, grit interbeds and basal conglomerate.
PALEOZOIC	Permian	P	Fluvio–glacial sediments : 'Boulder beds' overlying white and green gypsiferous clays In places ferruginised tillite occurs
PROTEROZOIC	Adelaide System. Torrensian or Willouran	Paa	MURRANA BEDS :– Ripple marked siltstones and sandstones with thick quartzite interbeds
		Paf	DUFF CREEK BEDS : – Brown and green siltstones with orange, laminated dolomite and minor quartzite interbeds. Becomes sandy toward top of formation
Age Unknown		v	Grey, amygdaloidal lava with minor quartzite interbeds

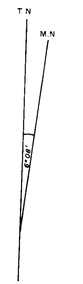
- Fault observed
- Fault inferred
- Breccia Zone
- Unconformity at base of Algebuckina Sandstone
- Trend of bedding
- Plunging Syncline
- Plunging Anticline
- Railway – 3'6"
- Road
- River and waterhole

LOCALITY



INDEX TO ADJOINING SHEETS





N.B. This interpretative map is based on : —

1. Field reconnaissance mapping.
2. The Oodnadatta 1:250,000 geology sheet (for the location of the Wandillina Limestone to the west of the inlier.)
3. Mapping by G.R. Heath (1963). (which confirmed the folding which is present in the Algebuckina Sandstone to the south of the inlier.)

0 1 2 3 Kilometres

4031-2

REVISION		SCALE 1" = 1 25,850	CARPENTARIA EXPLORATION COMPANY PTY. LTD.
		GEO M D L	E.L.743 – "MT. DUTTON SOUTH" SOUTH AUSTRALIA INTERPRETATIVE GEOLOGY OF THE AREA ADJACENT TO THE MT. DUTTON INLIER
		DRAFT : B	
		CHECKED	
		DATE July, 98	
		MICROFILMED	
		ROLL No	
		MINING FIELD OR DISTRICT	DRG No 5909

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH"

PROGRESS REPORT FOR QUARTER ENDED OCTOBER 5, 1981

017

1. TERMS AND CONDITIONS

Exploration Licence No. 743 covering 400km^2 was granted on October 6, 1980, for a period of one year.

The minimum expenditure requirement is $25 000 for the term.

2. EXPLORATION

A visit was made to the prospect area in August by the company's senior geochemist and two geologists from the Adelaide office.

Examination and sampling of the exposures of the target basal conglomerate of the Algebuckina Sandstone confirmed the results of earlier fieldwork, i.e. that very little of this conglomerate is to be found exposed or likely to be found at near-surface depths.

Eighteen samples of the conglomerate collected during the visit were assayed. The highest gold assay was 0.1 ppm Au, and the results averaged 0.04 ppm Au.

In the light of the findings made during the above visit and from previous mapping, it has been decided to surrender this Exploration Licence. A full summary report of this company's work in EL 743 will be presented on relinquishment of the Licence.

.../3. EXPENDITURE

018

3. EXPENDITURE

An expenditure statement is attached.

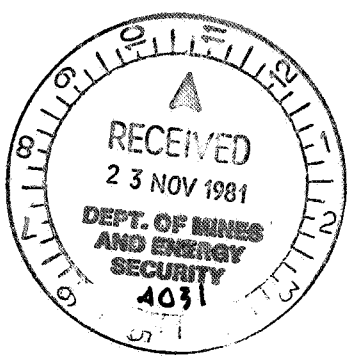
P.G. Simpson
Geologist

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

EXPLORATION LICENCE NO.743 - "MT. DUTTON SOUTH"

STATEMENT OF EXPENDITURE FOR QUARTER ENDED OCTOBER 5, 1981

	$	$
Administration	876	
Assaying	874	
Equipment Charges	11	
Outside Services	158	
Operating Labour	1 955	
Stores	356	
Travelling Expenses	1 711	
Total This Period		5 941
Already Reported - Current Term		
Quarter Ended January 5, 1981	304	
Quarter Ended April 5, 1981	3 149	
Quarter Ended July 5, 1981	5 795	
		9 248
TOTAL CURRENT TERM		15 189



R.E. Darlington
Administration Manager

020 OPEN FILE

Carpentaria Exploration Company Pty. Ltd.

(A MEMBER OF THE M.I.M. HOLDINGS GROUP OF COMPANIES)

REGISTERED OFFICE: M.I.M. BUILDING, 160 ANN STREET, BRISBANE, Q. 4000.
POSTAL ADDRESS: G.P.O. BOX 1042, BRISBANE, Q. 4001.

TELEX: AA 40160
TELEGRAMS: "MINESEARCH"
VOCADEX: (07) 221 8939

TELEPHONE: (07) 228 1122
DIRECT ENQUIRIES: (08) 297 9066

P.O. Box 3,
GOODWOOD, S.A. 5034

ENV. 4031.

March 10, 1982

The Director-General,
Department of Mines and Energy,
P.O. Box 151,
EASTWOOD, S.A. 5063

Dear Sir,

EXPLORATION LICENCE NO. 743 - "MT. DUTTON SOUTH"
FINAL REPORT ON RELINQUISHMENT ON NOVEMBER 18, 1981

Enclosed is our Final Report on exploration in the above Exploration Licence which was surrendered on November 18, 1981, together with a Data Transmission Sheet and transparencies of drawings.

Sent to AMT

Yours faithfully,
CARPENTARIA EXPLORATION COMPANY PTY. LTD.

P.J. Binks
District Geologist

CARPENTARIA EXPLORATION COMPANY PTY. LTD.

MINING TENEMENT

PROGRESS REPORT

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH"

FINAL REPORT

DATE: MARCH 1982

COPY: S.A.D.M.E.

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH" - SOUTH AUSTRALIA

FINAL REPORT

CONTENTS

LIST OF DRAWINGS

Drawing No	Name	Scale
1/5050	Regional Geological Setting	1:8 500 000
1/5025	Sample Locations	1:25 000
15909	Interpreted Geology	∿1:25 850

EXPLORATION LICENCE NO. 743 "MT. DUTTON SOUTH" - SOUTH AUTRALIA

FINAL REPORT

1. INTRODUCTION

Mt. Dutton is located in the north of South Australia, approximately 800km NNW from Adelaide. The geological target model for exploration was a fossil placer gold deposit at the base of the Mesozoic cover rocks. Secondary targets were vein quartz and Recent alluvial deposits.

2. Location

The area of interest lies 40km south east of Oodnadatta, centred about latitude 27°48' South, longitude 135°41' East (see Drawing 1/5050).

3. TENURE

Exploration licence No. 743 which covers an area of 400km^2 was granted to CEC on October 6, 1980 for a period of twelve months. This was extended to twenty four months on September 2, 1981, with a commitment of $50 000 over the two year period. The licence was surrendered on November 18 1981. There is a proviso that no exploration be carried out within 100m of any mound spring. The boundary of the exploration licence is as follows:

> "Commencing at a point being the intersection of latitude 27°49'S and longitude 135°30'E, thence east to longitude 135°42'E, south to latitude 28°00'S, west to longitude 135°30'E and north to the point of commencement."

4. SERVICES AND ACCESS

Access to Oodnadatta from Adelaide is either by light plane or by road. The Adelaide-Alice Springs railway line passing through Oodnadatta and Mt. Dutton Siding is no longer in use.

Field supplies and fuel can be obtained from the Oodnadatta General Store. Facilities at Oodnadatta include a modern school, hospital and an all-weather aerodrome.

Good quality drinking water is available from rainwater tanks at the old Mt. Dutton railway siding, and in larger quantities from the nearby dam. Aquifers exist within the Mesozoic sediments, and these may yield sufficient water for drilling requirements. The main aquifer is the Algebuckina Sandstone which occurs at the base of the Mesozoic cover rocks.

The area around Oodnadatta is currently being explored for oil and gas.

5. WORK CARRIED OUT BY CEC

Work carried out by CEC consisted of mapping, sampling and some thin section studies.

5.1. Geology

The geology was mapped at a scale of 1:25 850 on an enlargement of a 1:80 000 airphoto. An area of 169km^2 was covered and an interpreted geology map produced (Drawing No. 15909).

5.2. Geochemistry

Twenty-five conglomerate samples were taken for gold assay. Sample locations are shown on Drawing No. 1/5025. Initially seven samples were taken, each weighing about four kilograms. The samples were crushed to -6mm and halved. One half was retained and the other was crushed to -1.7mm. Approximately 1kg of the latter was split out and roller-crushed to -0.5mm. Two separate 200g portions were then split out and pulverised, and 25 to 30g portions analysed for gold. The assay results are given in Appendix 1.

Later, eighteen more samples were taken, sieved in the field to remove material larger than 12mm, and then quartered to give samples weighing about 2kg. These were sieved in the laboratory to give two fractions, -20+30# and -30#. Both fractions were then pulverised, and then fire assayed. Gold was determined by AAS.

5.3. Petrology

Eight rock samples collected during mapping were described in thin section. The petrologist's report is given in Appendix 2, and the sample locations appear on Drawing No. 1/5025.

6. GEOLOGY

6.1. Regional Geology

Mt. Dutton lies at the northern end of the Peake and Denison Ranges which are a NNW trending chain of Precambrian inliers.

The basement rocks in the Ranges can be divided into lower Proterozoic and Adelaidean. The Lower Proterozoic rocks are quartzites, schists, gneisses, migmatites, volcanics (ranging from felsic to mafic), calc-silicates, granulites and amphibolites. The Adelaidean rocks include siltstones, shales, dolomite, quartzites, conglomerate, tillite and felsic to basic volcanics. A stratigraphic column is shown in Table No. 1.

Scattered outcrops of Permian sediments (Boorthanna Formation) are found down the western side of the ranges.

The Jurassic Algebuckina Sandstone, a white kaolinitic sandstone, overlies both the Precambrian and Permian rocks. This is overlain by the Cretaceous Cadna-owie Formation, a sequence of marine silts and sands with minor limestone units.

The Precambrian rocks of the ranges have been subjected to at least six periods of tectonism (Ambrose and Flint, 1979). They are cross folded about north-south and east-west striking axial planes, forming open basins and tight domes in the Adelaidean sediments.

According to Ambrose and Flint (1979) there have been three phases of metamorphism:

1. Amphibolite facies metamorphism of the Peake metamorphics (Carpentarian c. 1600my).

2. Greenschist facies metamorphism during the Musgravian Orogeny (c. 1050my).

3. Lower greenshist facies metamorphism during the Cambro-Ordovician Delamarian Orogeny.

The Adelaidean sediments have been disrupted by diapiric activity. It is postulated that this activity took place during the Delamarian Orogeny.

Throughout the Ranges there are many small copper prospects, and minor alluvial gold has been found. The copper mineralization occurs in hydrothermal quartz-haematite veins, which generally occur within the volcanic sequences (i.e. Tidnamurkuna and Cadlareena Volcanics). The veins occur near the contact between the basalts and the overlying meta-sediments. Production figures are low, with most prospects producing less than 200 tons of ore.

6.2. Local Geology

The Mt. Dutton inlier is a north-south trending range of hills which is bounded on the eastern side by a normal fault. The inlier covers an area of approximately 5km^2.

6.2.1. Stratigraphy

In the Mt. Dutton area the basement is Adelaidean in age, and has been divided into two formations.

The older rocks belong to the Duff Creek Formation, which occurs at the southern end of the inlier. Lithologies present include shale, siltstone, quartzite and dolomite which weathers to a yellow or orange colour. This formation is bounded to the north by an east-west trending shear zone.

The stratigraphically younger Marranna Beds occur to the north of the shear zone and are composed of shallow-water shales, siltstones and quartzite interbeds each up to 5m thick.

The fault zone bounding the inlier to the east contains intermediate volcanics ranging from meta-trachyte to microsyenite. Some of the volcanics have flow textures, and Ambrose and Flint (1979) have correlated them with the Adelaidean Cadlareena Volcanics of the lower Peake and Denison Ranges. Results of petrological study done on the volcanics is included in Appendix 2. However the dyke-like nature of the volcanic outcrop suggests that they may be younger intrusives which have moved up through the fault zone.

On the western margin of the inlier there are areas covered with Permian glacial erratics, showing striations and gouge marks. These have been left from eroded Permian sediments which occur in the area, but rarely exposed because of a poorly consolidated sand-silt matrix. The Permian sediments are only exposed where they have been lateritised. The sediments have been correlated with the Boorthanna Formation (Ambrose and Flint, 1979) which occurs in the Permian Boorthanna Trough to the west.

The Jurassic Algebuckina Sandstone overlies both the basement and Permian sediments. This formation is up to 50m in thickness and a pebble conglomerate is developed on the unconformity. The conglomerate has a maximum

thickness of 25cm and contains well rounded pebbles of quartz with minor quartzite, jasper and porphyry. The sandstone is medium grained and kaolinitic, with well rounded grains. It is characterised by large scale cross-bedding, up to 1m in amplitude. The bedding is generally gently dipping, usually between 2° and 5°.

The sandstone is overlain by the Cretaceous sandstones and siltstones of the Cadna-owie Formation, which outcrop poorly throughout the area.

6.2.2. Structure

The Marranna Beds have been folded to form a syncline, plunging at about 60° to the west. The rocks of the Duff Creek Formation have also been folded about an east-west trending fold axis. Previous work by the S.A.D.M.E. suggested that the boundary between the two formations was diapiric, but mapping by the author shows little evidence of diapirism and the boundary appears to be a shear zone. Movement in Mesozoic time along the shear zone has offset the Algebuckina Sandstone to the west.

There is evidence that the Mesozoic sediments have been folded about north-south trending axes parallel to the major fault. The folding may have occurred in response to fault movement during the Mesozoic era.

7. GEOCHEMISTRY

The gold assay results are discouraging with all values being less than 0.1ppm and averaging about 0.03ppm.

MB for M. Lucas.

8. REFERENCES

Western Mining Corporation, 1975.
Final Report on Exploration Licence 192, Peake and Denison Ranges. S.A.D.M.E. Open File.

Ambrose, G.J. and Flint, R.B. 1979
Precambrian and Palaeozoic Geology of the Peake and Denison Ranges. Report Book 79/19 S.A.D.M.E.

Ambrose, G.J. Flint, R.B. and Webb, A.W. 1980
Precambrian and Palaeozoic Geology of the Peake and Denison Ranges. Bulletin 50. S.A.D.M.E.

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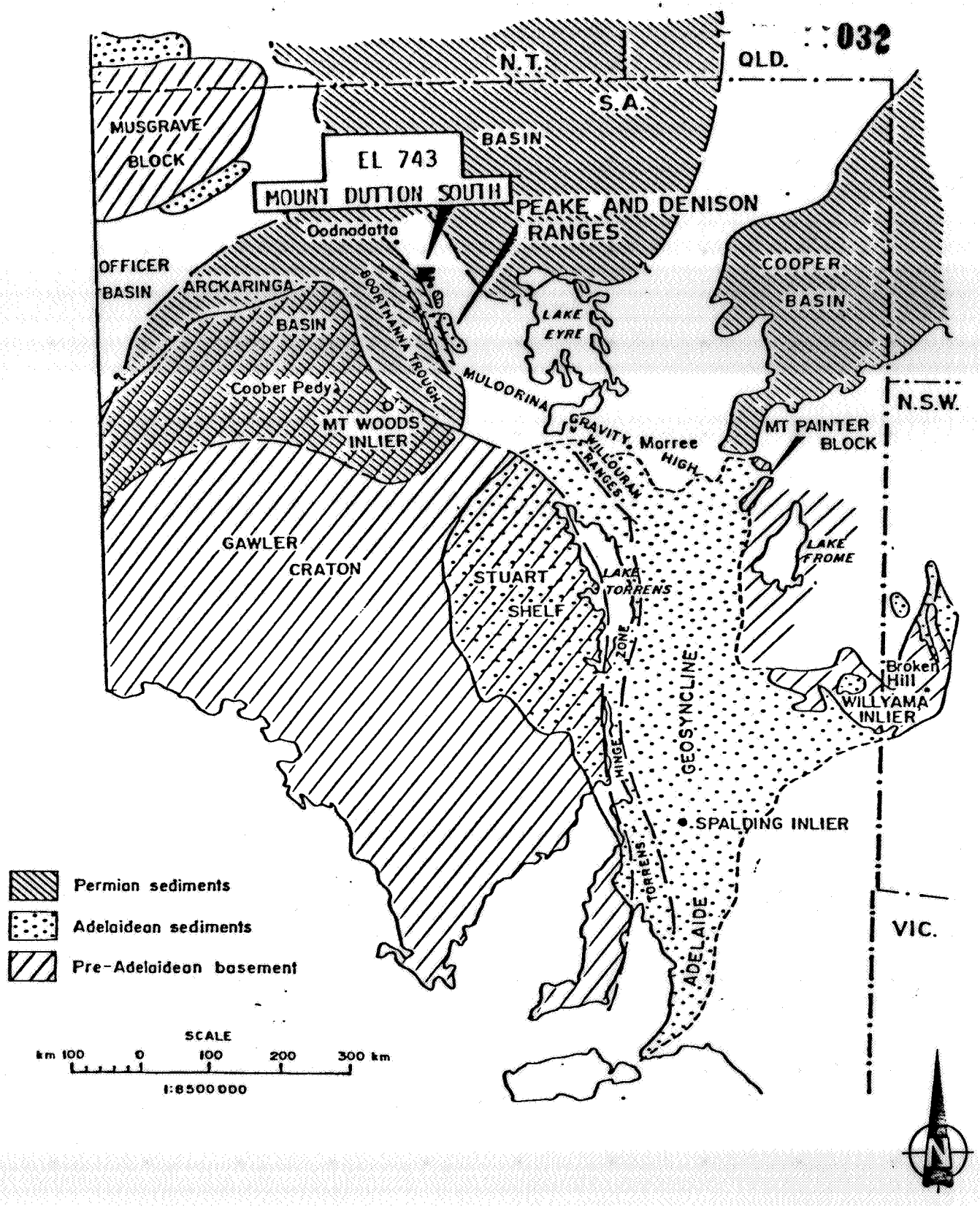

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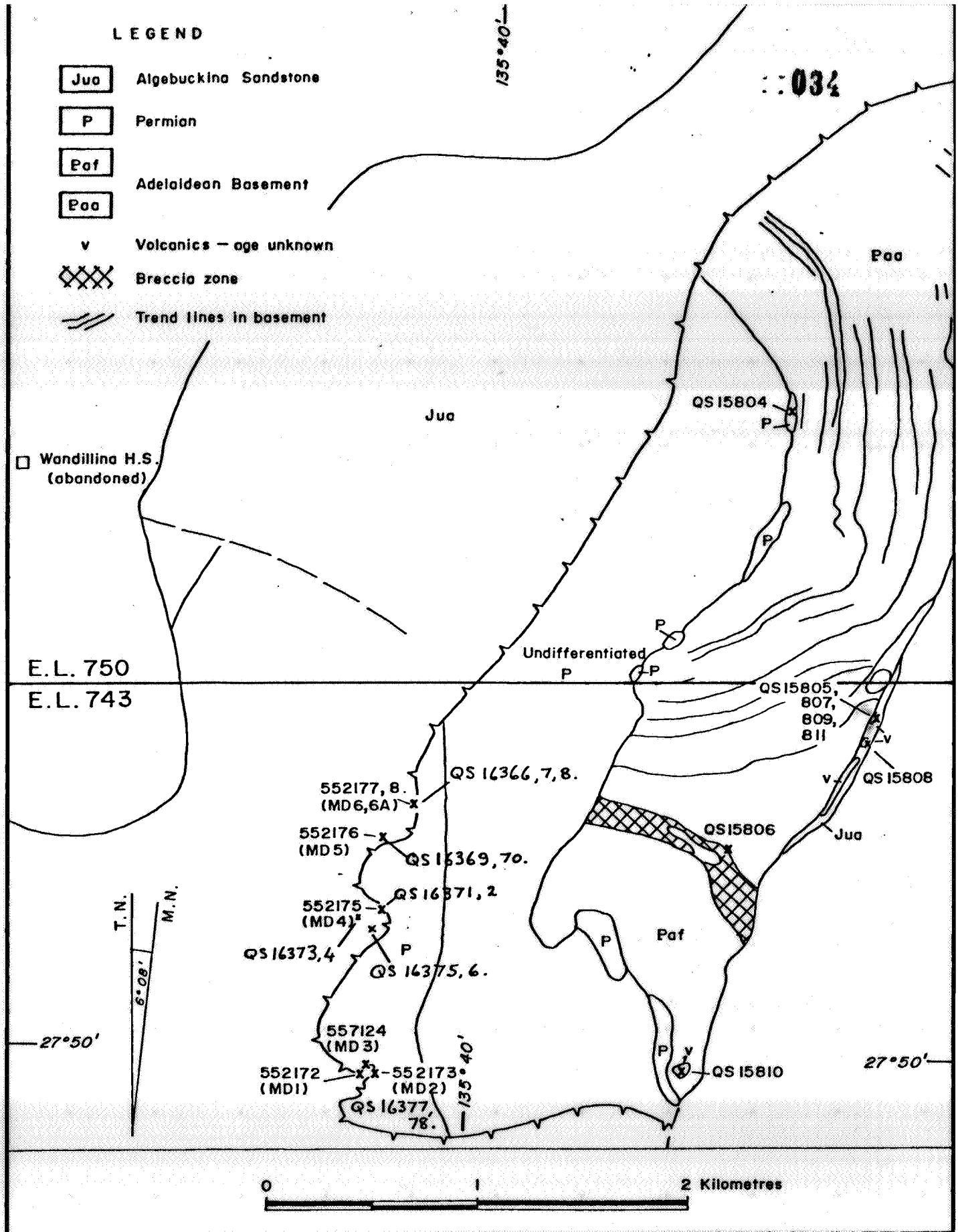
		DRAFT: MDL	SOUTH AUSTRALIA
		CHECKED:	REGIONAL GEOLOGICAL SETTING
		DATE: JAN. '82	
		MICROFILMED:	
		ROLL No.:	
		MINING FIELD OR DISTRICT:	DRG No.: 1/5050

Cretaceous	Cadna-owie Formation	
Jurassic	Algebuckina Sandstone	
	~~	unconformity
Marinoan	Wollochra Subgroup	
	Thora Dolomite	
Sturtian	Tapley Hill Formation	
	Calthorinna Tillite	
	~~	unconformity
	Kalachalpa Formation	
	Skillogalee Dolomite	
Torrensian	Mount Margaret Quartzite	
	Fountain Springs Beds	
	Murrana Beds	
Torrensian	Duff Creek Beds	
or	Nilpinna Beds	
Willouran	War Loan Beds	
	Rockwater Beds	
	Cadlareena Volcanics	
Willouran	Coominaree Dolomite	
	Younghusband Conglomerate	
	~~	unconformity
Lower Proterozoic	Peake Metamorphics	

TABLE 1 : STRATIGRAPHIC COLUMN OF PEAKE AND DENISON RANGES AREA, SOUTH AUSTRALIA



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JAN '82	PGS	GEO M.D.L.	E.L. 743 — "MT. DUTTON SOUTH"
		DRAFT: I.B.	SOUTH AUSTRALIA
		CHECKED:	SAMPLE LOCATIONS
		DATE: July, 1981	
		MICROFILMED:	
		ROLL No.:	
		MINING FIELD OR DISTRICT:	DRG No.: 1/5025

APPENDIX 1

ASSAY RESULTS

EVALUATION OF CONGLOMERATE SAMPLES FOR GOLD

1. INTRODUCTION

Following discussion between Carpentaria Exploration Company Pty. Ltd and AMDEL regarding the evaluation of 12 samples of conglomerate for gold content and determination of the nature of the gold present, it was agreed that each sample should initially only be analysed for gold. If any samples were found to contain significant gold, further work would be undertaken to determine the liberation/locking characteristics and form of the gold.

2. PROCEDURE

The whole of each sample was crushed to -6 mm and riffled in half. One half was retained and the other half was crushed to 1.7 mm. Approximately 1 kg was riffled out and roll-crushed to -0.5 mm. Two separate 200 g portions (labelled A and B) were riffled out from the -0.5 mm material and pulverized, and 25 to 30 g was riffled from each pulverized portion and analysed for gold (AMDEL code K4/2).

3. RESULTS

The gold contents of the samples are as follows:

Sample	Au, ppm	
	A	B
552172	0.010	0.010
552173	0.035	0.035
552174	0.010	0.010
552175	0.050	0.050
552176	0.030	0.030
552177	0.020	0.020
552178	0.010	0.010

On the basis of these results it does not appear worthwhile to proceed with determination of the liberation/locking characteristics of the gold.

(FROM AMDEL REPORT GS4548/81)

SAMPLING ANALYTICAL AND MANAGEMENT SERVICES PTY. LTD.
AN A.R.M. LABORATORY

Address: 5 Bishop's Place, Kensington, South Australia 5068
TELEPHONE: 31 8533 Telex: 89856

The Manager,
Carpentaria Exploration Company Pty. Ltd.,
G.P.O. Box 1042,
BRISBANE. QLD. 4001.

25th August, 1981.

Certificate of Assay

We have examined the sample of Alluvial Gold samples,
and report the following to be the result

Sample No	-18mesh +36mesh	-36mesh	
QS16361	<0.02	0.06	
62	<0.02	0.04	
63	0.02	0.02	
64	<0.02	<0.02	
65	0.04	0.02	
66	0.06	0.04	
67	0.04	<0.02	
68	0.04	0.08	
69	0.02	0.04	
70	0.02	0.02	
71	0.02	0.04	
72	0.04	0.08	
73	0.04	0.06	
74	0.04	0.10	
75	0.06	0.02	
76	<0.02	0.02	
77	0.04	0.06	
78	0.02	0.04	
			Standard
79			1.48
80			0.08

For and behalf of
Sampling Analytical and Mangement Services.

Stuart G. Clarke

APPENDIX 2

PETROLOGY

REPORT CMS 81/4/24

Rock Samples QS 15804 - QS 15811

Eight rock samples were received for thin-section preparation and petrological examination; offcuts were subjected to K-stain tests or carbonate-stain tests where applicable, and the results incorporated in the descriptions and interpretations. Each rock is briefly described in the accompanying table.

Summary

Most of the rocks are intermediate lavas, some with associated sediments; a sediment occurs, and there is a breccia.

The sediment (QS 15804) shows none of the petrographic evidence of a glacial or fluvioglacial rock; all the framework grains are exceptionally well-rounded; if striated pebbles are present, they must be reworked, i.e. not in situ, but derived frompre-existing glaical deposits.

The breccia could well be of diapiric formation; its component fragments are of a possible metasomatic rock of uncertain origin.

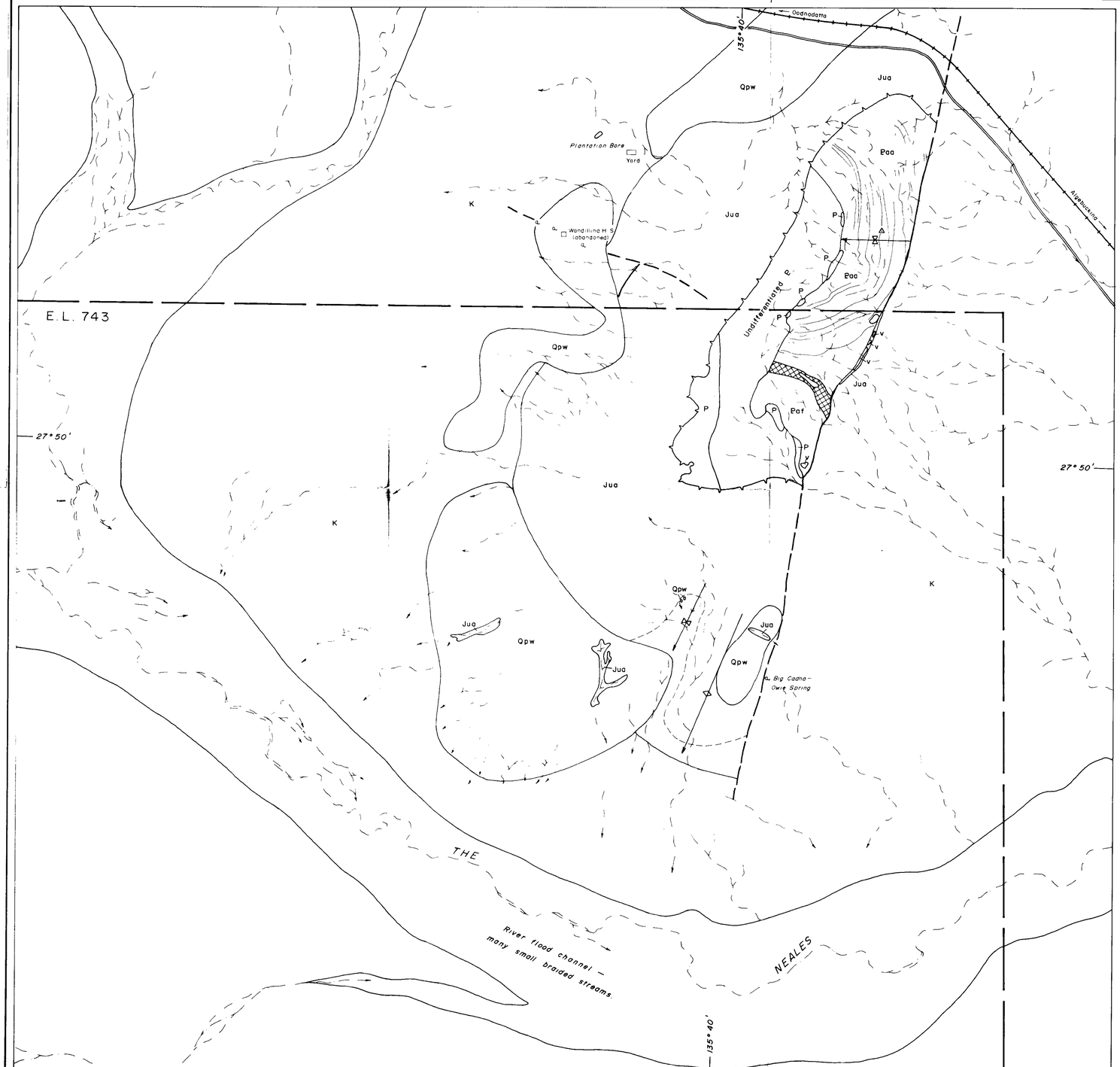
The melatrachytes are clearly genetically related (and include a microsyenite); they are associated with older ferruginous sandstones which are regarded as xenoliths, judging from petrographic evidence; the melatrachytes are strongly reminiscent of the Wooltana, Roopena and Depot Creek lavas. It is quite possible for the melatrachytes to occur as both flows and minor intrusives.

H.W. Fander, M. Sc.

040

Central Mineralogical Services

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
QS 15804 (T.S. 36729)	Dolomitised, Lithic, Feldspathic, Pebbly Sandstone. Well-rounded grains of chert, quartz, dolostone, rhyolite, feldspars, agate, siltstone; subrounded quartz matrix; replacive dolomite cement.	Moderately/poorly-sorted/sized, (pebble-grit-sand); no bedding.	Dolomite ooliths (whole and partial). Rounded tourmaline. Quartz overgrowths.	All components too well-rounded for fluvioglacial origin. Dolomitisation was diagenetic. Mixed provenances.
QS 15805	Ferruginous Sandstone/Melatrachyte. Rounded quartz and a few feldspar grains, hematite cement; trachyte is of sanidine laths in quench-textured hematitic groundmass.	Sandstone very well-sorted/sized. Trachyte has extrusive fabric or quench fabric.	At contact, hematite cement replaced by quartz, feldspar from trachyte. Carbonate vein.	Trachyte is extrusive or minor intrusive, younger than sandstone; not unlike Wooltana lava, Depot Cree, Roopena lava.
QS 15806	Dolomitised Breccia. Angular fragments of fine-grained quartz-K-feldspar rocks (feldspathised sediments?) heavily impregnated and cemented with dolomite.	Typical tectonic breccia fabric; some relict sedimentary features in fragments.	Fine euhedral (oxidised) pyrite in places.	Fragments variable; some are entirely K-feldspar/dolomite, others contain quartz. Nature of original rock uncertain.
QS 15807	Amygdaloidal Melatrachyte. Random sanidine laths set in semi-opaque, ultrafine hematitic groundmass with dendritic K-feldspar; many small amygdales.	Marked quench textures, but no flow-features. Very fine-grained.	Amygdales contain pale chlorite, quartz, dolomite and adularia.	Correlatable with melatrachyte in 15805. Very probably extrusive. Compositionally similar to Wooltana, Roopena Lavas.
QS 15808	Melatrachyte with Xenoliths. Probably two flows, with intercalated feldspathic sandstone and flow-top breccia features; composition as for QS 15807.	Complex relationships - sandstone extensively penetrated by lava.	Pale green amygdales are chloritic, others contain quartz, dolomite, adularia.	Apparently xenoliths of older feldspathic sandstone (cp. 15805) included in flow-breccias, in between successive flows.
QS15809	Amygdaloidal Melatrachyte. Random sanidine laths set in quench-textured ultrafine hematite-K-feldspar groundmass. Small and large amygdales.	Amygdaleshave irregular shapes; no flow features. Very fine-grained.	Small amygdales are chloritic, larger ones contain quartz, chlorite, dolomite, adularia.	Closely resembles the other melatrachytes; regarded as extrusive despite lack of flow features.
QS 15810	Silicified Melatrachyte. Scattered sanidine laths in quench-textured groundmass of hematite, replacive quartz and siderite; xenolithic rounded quartz grains.	Scoriaceous, vesicular fabric, fine-grained, with flow-brecciation.	A few quartz-filled amygdales. Limonite patches.	Correlatable with the other melatrachytes; fabric differs slightly, and subsequent alteration has changed appearance of rock.
QS 15811 (T.S. 36736)	Amygdaloidal Microsyenite. Small random prismatic crystals of partly altered K-feldspar; interstitial chlorite, siderite, limonite, conspicuous leucoxene.	Medium-grained, random fabric. Scattered ovoid amygdales.	Chlorite, quartz, carbonate filling amygdales. VEins of fibrous quartz.	Clearly petrogenetically related to the melatrachytes, but more coarsely-crystalline; possibly from interior of thicker flow.

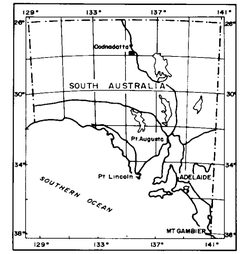


LEGEND

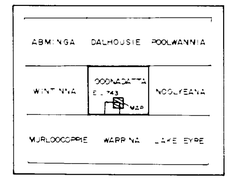
CAINOZOIC	Quaternary Pleistocene	Qpw	WANDILLINA LIMESTONE :– Fine grained buff to pink limestone, grades laterally into calcereous sandstone and conglomerate.
MESOZOIC	Cretaceous	K	Undifferentiated Cretaceous sediments
MESOZOIC	Jurassic?	Jua	ALGEBUCKINA SANDSTONE :– White, medium grained kaolinitic sandstone, grit interbeds and basal conglomerate.
PALEOZOIC	Permian	P	Fluvio–glacial sediments : 'Boulder beds' overlying white and green gypsiferous clays In places ferruginised tillite occurs
PROTEROZOIC	Adelaide System. Torrensian or Willouran	Paa	MURRANA BEDS :– Ripple marked siltstones and sandstones with thick quartzite interbeds
		Paf	DUFF CREEK BEDS : – Brown and green siltstones with orange, laminated dolomite and minor quartzite interbeds. Becomes sandy toward top of formation
Age Unknown		v	Grey, amygdaloidal lava with minor quartzite interbeds

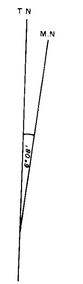
- Fault observed
- Fault inferred
- Breccia Zone
- Unconformity at base of Algebuckina Sandstone
- Trend of bedding
- Plunging Syncline
- Plunging Anticline
- Railway – 3'6"
- Road
- River and waterhole

LOCALITY



INDEX TO ADJOINING SHEETS





N.B. This interpretative map is based on : —

1. Field reconnaissance mapping.
2. The Oodnadatta 1:250,000 geology sheet (for the location of the Wandillina Limestone to the west of the inlier.)
3. Mapping by G.R. Heath (1963). (which confirmed the folding which is present in the Algebuckina Sandstone to the south of the inlier.)

0 1 2 3 Kilometres

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REVISION		SCALE 1" = 1 25,850	CARPENTARIA EXPLORATION COMPANY PTY. LTD.
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		CHECKED	
		DATE July, 98	
		MICROFILMED	
		ROLL No	
		MINING FIELD OR DISTRICT	DRG No 5909