7.4
7.5

SARACEN MINERALS N.L.
TIMBARRA MINES N.L.
R.T. GARDINER AND ASSOCIATES

EXPLORATION LICENCE 5147 - "HUCKITTA SOUTH"

(1:250 000 Sheet SF 53-11 Huckitta)

Report for the 12 months 29 January 1987 to 28 January 1988

Saracen Minerals N.L. (Operator)
Brisbane
February 1988

R.J. Virtue

ABSTRACT

Exploration Licence 4147 "Huckitta South" was examined with the aim of detecting possible platinum-group element mineralization similar to that detected in BMR Hay River 11A. The prospect can be compared with platinum-group element mineralization in the basal black shales of the Zechstein Deposit in Poland.

A drilling program, to test the base of the Hay River Formation and its equivalents, was carried out with a total of 253 m in 5 rotary/percussion holes.

Results from the analysis of the drill cuttings, for Pt, Pd and Au were all below the limits of detection.

Possible explanations for the low results are; erosion or non-deposition of mineralized horizon and underlying rocks, geochemical and environmental differences, absence of favourable post depositional environments.

Further exploration is recommended, especially in the untested area of Exploration Licence 5146. Drilling should be carried out by a rig suitable for sandy environments.

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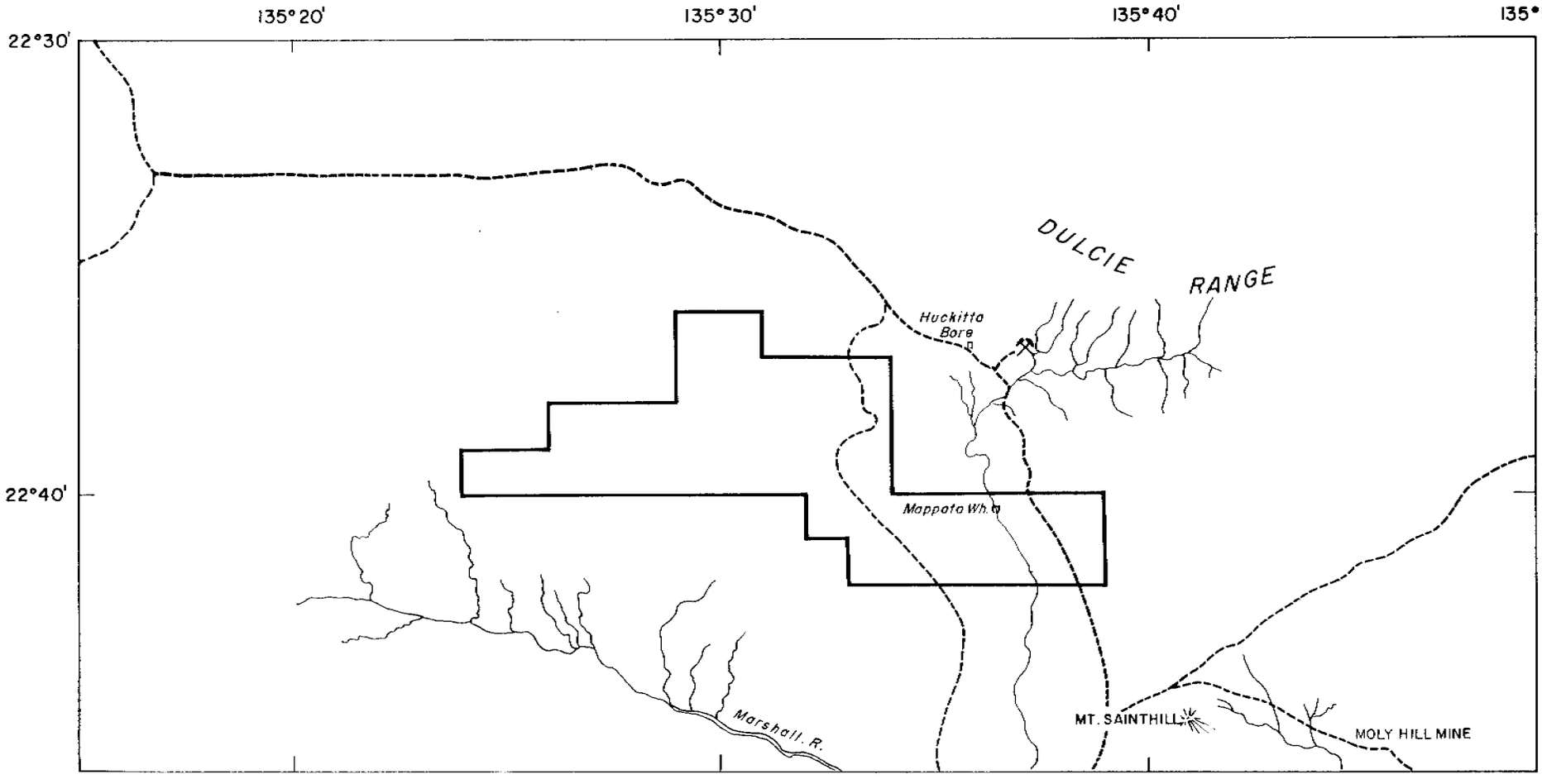
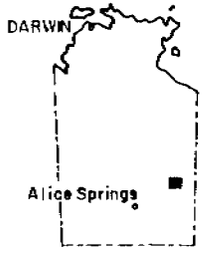
1. INTRODUCTION

The following is the report on the exploration activities carried out under EXPLORATION LICENCE 5147 during the first 12 month period 29 January 1987 to 28 January 1988.

EXPLORATION LICENCE 5147 was granted to Saracen Minerals N.L. (45 shares), Timbarra Mines N.L. (45 shares), and Rhys Thomas Gardiner (10 shares) on 29 January 1987 for a period of 6 years.

Exploration was carried out by Saracen Minerals N.L. with the aim of detecting a "Zechstein Type" (Kucha, 1982) platinum deposit in the lower black shale horizons of the Hay River Formation, and its equivalents, in the Georgina Basin.





SARACEN MINERALS N.L.

NORTHERN TERRITORY

EL 5147-HUCKITTA SOUTH

LOCATION MAP

SCALE

5 0 5 10Km.

DRAWN : January, 1988

A4 1111

2. LOCATION ACCESS AND TENURE

2.1 Location

EXPLORATION LICENCE 5147 consists of 38 blocks and lies between 22° 36' and 22° 42' South, and 135° 24' and 135° 39' East, approximately 200 km NE of Alice Springs. The maximum dimensions are 26 km E-W 11 km N-S, with a total area of 122 sq. km.

2.2 Access

Access to the area is by graded track from the Huckitta Homestead in the south, on the Plenty Highway, which runs from the Stuart Highway 70 km north of Alice Springs, to Urandangi in Queensland. Access within the area is by numerous graded tracks, suitable for four-wheel-drive vehicles. These tracks are impassable for several days after rain.

2.3 Tenure

Exploration Licence 5147 was granted to Saracen Minerals N.L. (45 shares), Timbarra Mines N.L. (45 shares) an Rhys Thomas Gardiner (10 shares) on 29 January 1987, for a period of six (6) years. The minimum expenditure required for the first year was $12,000.00.

Exploration Licence 5147 is defined as follows on 1:250 000 Mining Tenure Southern Mineral Field Map 71, Huckitta:-

71/4	47/40
	48/40
	49/37 - 49/40 inclusive
	50/35 - 50/40 inclusive
71/5	47/11
	48/11 - 48/14 inclusive
	49/11 - 49/14 inclusive
	50/11 - 50/14 inclusive
	51/13 - 51/19 inclusive
	52/14 - 52/19 inclusive

3. GEOLOGY

3.1 Regional Geology

Exploration Licences 5145, 5146, 5147 and 5149 lie on the south western margin of the Georgina Basin.

The basement rocks in the area are the amphibolite and granulite facies metamorphic rocks, and granite and gabbroic intrusive rocks of the Arunta Orogenic Domain.

The basement is overlain by the sediments of the Upper Proterozoic to Devonain Georgina Basin. The Upper Proterozoic section is dominated by arkosic sandstones, conglomerates and siltstones with some glacigene sediments.

The Cambrian section consists of a series of unconformable carbonate rich sediments, including limestones, dolostones, black shales, siltstones and minor arenite beds. Similar units were deposited in the Upper Cambrian to Lower Ordovician.

These units are unconformably overlain by Ordovician sediments with limestones at the base giving way to sandstones at the top. The Ordovician sediments are unconformably overlain by Devonian sandstones which mark the top of the Georgina Basin sequence.

The Georgina Basin sediments are unconformably overlain by various Mesozoic sandstone units including those of the Eromanga Basin. (Shergold 1985, Freeman and Woyzbun 1986).

Silcretes and ferricretes have developed over many units, especially the Arthur Creek Formation, probably in the Tertiary. Much of the area has been covered by Quaternary alluvial and aeolian deposits including the extensive sand sheet and dune systems of the Simpson Desert in the south.

3.2 Local Geology

The following units crop out within Exploration Leases 5147 and 5149.

AGE	UNIT	LITHOLOGY
	GEORGINA BASIN	
U Cambrian	Arrinthrunga Formation	Dolostone and limestone, stromatolitic; minor silt or quartz arenite interbeds. Dominantly even bedded.
M Cambrian (Ordian)	Arthur Creek Formation	Calcareous siltstone, fossiliferous, poorly exposed; limestone interbeds and quartz-arenaceous limestone at top.
L Cambrian	Errarra Formation	Dolostone, silty to clean, laminated to thick bedded, fossiliferous; quartz siltstone to pebble conglomerate in east.
	Mount Baldwin Formation	Quartz arenite, medium to course-grained thin to thick-bedded.

U Proterozoic (Adelaidian)	Elkera Formation	Siltstone to sandstone, micaceous; some stromatolitic dolostone horizons.
	Grant Bluff Formation	Quartz arenite to quartz wacke, fine grained laminated.
	Elyuah Formation	Shale with interbeds of silty sandstone and a basal conglomerate.

ARUNTA OROGENIC DOMAIN

L Proterozoic		Various amphibolite and granulite facies metamorphics, and granitic and gabbroic intrusive rocks.

The main units of interest are the Mount Baldwin, Errarra and Arthur Creek Formations.

The Mount Baldwin Formation is a prominent ridge forming unit consisting of grey to dark red-brown quartz arenite to sub-litharenite, with common pebble conglomerate beds. Bedding tends to extremes of fissile thin bedding or resistant thick sandstone beds (Freeman and Woyzbun, 1986).

The Errarra Formation consists of a basal granule conglomerate and siltstone, overlain by a sequence of vughy white to red dolostone, overlain by green-grey silty sandstone. The uppermost unit consists of pale grey dolostone, limestone and quartz arenite. (Freeman and Woyzbun 1986). The Errarra Formation is irregular in extent and is absent in much of EL 5149, where the Arthur Creek Formation directly overlies the Mount Baldwin Formation.

The Arthur Creek Formation consists of a basal unit of grey to black, laminated, calcareous, pyritic siltstone with thin black interlaminated organic clay, overlain by a unit consisting of siltstone similar to the underlying unit, but interbedded with grey limestone. These two units are overlain by an upper unit of calcareous quartz arenite. Freeman (1986) has equated the Arthur Creek Formation with the Marqua Beds. It is likely that the lower black shale unit of the Arthur Creek Beds could be better equated with the Hay River Formation on the basis of the similar black shale lithology and relationship to the Mount Baldwin Formation.

Tertiary ferricrete and silcrete caps are common throughout the area especially over the Arthur Creek Formation. Nearly all of outcrop of Arthur Creek Formation rocks within EL 5147 have been silicified into a banded white cherty rock, visible on air photos as white patches.

4. PREVIOUS EXPLORATION

As the reported occurrence of platinum in the Hay River Formation is relatively recent there has been no prior exploration for platinum group elements in the Georgina basin.

Mineral exploration within the Georgina Basin has been mostly limited to exploration for base metals in the Arrinthrunga and Marqua Formations to the north and west of Exploration Licences 5145, 5146, 5147 and 5149.

Drilling was carried out, within the area presently covered by EL 5145, by Agip Australia Pty. Ltd. under EL 3263 from 1981 to 1983 whilst exploring for uranium and base metals, using "roll front" and "Mississipi Valley" type models.

The Agip drilling results did not indicate mineralization of economic grade, and the target units were those other than the Hay River Formation. Other previous exploration is reported in Freeman and Woyzburn (1986).

5. EXPLORATION ACTIVITIES DURING THE PERIOD

5.1 Exploraton Rationale

The exploration model used during the period was based on the idea that a 1.5 ppm platinum result, reported from the stratigraphic drill hole BMR HAY RIVER 11 A (Shergold, 1985), was due to platinum group element enrichment in black shales, similar to that which has occurred in the Zechstein Shales in Poland (Kucha, 1982).

The platinum in Hay River 11 A occurs in carbonaceous mudstone and skeletal pellet wackestone. The rock is vughy, stylolitic and phosphatic with quartz crystals, manganese dendrites and pyrobitumen (Shergold 1985, Shergold & Walter 1979).

The genesis and characteristics of the Zechstein deposit are summarised by Kucha (1982) as follows:

"Au and platinum-group elements are concentrated by a process of autooxidation and desulfurization of organic matter. Platinum-group elements, acting as catalysts of the autooxidation process, are concentrated at the border between oxic-anoxic conditions, i.e. between kerogen and calcite, thucholite and calcite, black shale and white sandstone, etc. The gamma radiation accelerated and enhanced the process of autooxidation, and phosphates and borates coagulated noble metals from solution. For these two reasons the highest Au and platinum-group-element-bearing contents (Au, up 3,000 ppm; Pt, 10-370 ppm; and Pd, 10-120 but sometimes up to 1,000 ppm) are present in a layer a few centimeters thick at the bottom of the black shale (platinum-group-element-bearing shale) when this shale is overlain by phosphates, borates, and thucholite-bearing shale."

The similarities with the Hay River 11 A platinum occurrence are:

1. Platinum occurring in organic-rich black shales at the base of a sequence of black, silty pyritic shales, black pyritic fetid grainstone, wackestone and calcareous siltstone (Shergold & Walter 1979)

2. The black shales overly oxidizing dolostones and sandstones, of the Adam Shale, Red Heart Dolomite and Grant Bluff Formation (Shergold, 1985).

3. The Platinum anomaly in Hay River 11 A corresponds with an increase in phosphate content (2.15% compared with < 0.5% $P_2 O_5$ background) and base metal content (220 ppm Pb compared with < 50 ppm Pb background).

These characteristics suggest that similar platinum values may occur at the base of the Hay River Formation, and its equivalents such as the Arthur Creek Formation, for substantial distances along strike, as is the case in the the Zechstein deposits.

Since the poor outcrop of the Hay River Formation makes surface sampling unreliable, due to the narrow nature of the suspected platinum mineralization, it was decided to drill a series of shallow percussion holes, in lines running across strike, along as much of the strike length of the Hay River and Arthur Creek Formations as possible.

5.2 DRILLING PROGRAMME

5.2.1 Introduction

Following preliminary field reconnaissance, 3 drilling traverses were designed to intersect the base of the Arthur Creek Formation at depths of less than 60 metres.

Rotary and percussion drilling was carried out by Weston Drilling using a "Bourne 500" rig, commencing on 8 November and finishing on 11 November 1987. A total of 5 holes were drilled, with a total of 253 metres. Samples were collected at one metre intervals, and splits were combined into 3 metre intervals for analysis. Samples were analysed by Australian Laboratory Services, Brisbane, using method PM 217 (samples were crushed to -200 microns and fire assayed using a lead collector). Detection limits quoted by A.L.S. for PM 217 are: PT, 10ppb, Pd 10ppb, Au 0.010 ppm.

5.2.2 Results

The results of analysis for all sample intervals were below the limit of detection for Pt, Pd and Au.

6. DISCUSSION OF RESULTS

6.1 Introduction

Several reasons can be offered for the absence of any platinum-group elements in the drill cuttings analysed from Exploration Licences 5145, 5146, 5147 and 5149.

These are:-

i. Failure of exploration concepts - i.e. Hay River 11A result is anomalous or erroneous, and Zechstein model does not apply in the Georgina Basin.

ii. Sedimentary sequence variations, such as non-deposition or erosion of a relevant unit.

iii. Variation in chemical conditions under which sedimentation took place i.e. oxidizing or reducing environment, phosphate and sulphide content.

iv. Variation in provenance of sediments i.e. no platinum-group elements introduced.

v. No post depositional activity to remobilize and concentrate the platinum-group elements.

6.1.1 Failure of Concept

There has been no published report to indicate that the results published by Shergold (1985) are incorrect or should be disregarded. Analysis of material from Agip drill holes indicated possible anomalous platinum-group elements values.

Kucha's (1982) model has not been disproved. The possible modification that re-circulating connate fluids, rather than a single pass of meteoric water, would be required to deposit the platinum would not necessarily alter the chance of platinum-group element mineralization in the area.

6.1.2 Sedimentary Sequence Variation

The Red Heart Dolomite and Adam Shale, which underlie the Hay River Formation in the type area at Hay River 11A, are absent in all areas drilled in El 5145. It is possible that if mineralization was stratigraphically controlled, then the period of non-deposition or erosion, indicated by the absence of these units, may have extended into the period during which the horizon hosting the platinum-group element mineralization was deposited at Hay River 11A. This is of great significance since the platinum anomaly occurred only a few metres from the base of the Hay River Formation.

6.1.3 Geochemical Variations

There are several geochemical differences between the Ordian section of the Hay River Formation drilled at BMR Hay River 11A and that drilled at Tobermory 14 within EL 5145.

The most notable is the difference in phosphate content and its distribution. The average phosphate content of the Ordian section in Tobermory 14 is 2.72% P_2O_5, wheras in Hay River 11A it is only 0.4% P_2O_5. Anomalous phosphate values of 2.15% and 2.60% occur in the same interval as the platinum-group element anomalies. Metal values are generally higher in Hay River 11A, and a Pb anomaly also corresponds to the Pt anomaly.

The Phosphate variations could reflect a difference depositional environment, or could directly control the concentration of remobilized platinum-group elements. If the mineralizing fluids were in closed convection cells and if several passes of these fluids were required to deposit the platinum then the thickness of phosphate units would control the concentration of platinum. If the platinum is coagulated by phospates (Kucha, 1982) then the amount of platinum concentrated in a horizon less than 1 m thick at Hay River 11A would be spread over the entire 20 m of the phosphate rich Ordian section in Tobermory 14, in which the platinum concentration would be below the limits of detection used during analysis. This is consistent with the Zechstein deposits (Kucha, 1982) in which the highest platinum-group element concentrations occur in the thinnest sections and the lowest values occur where the mineralized horizon is thickest.

In addition there are several other geochemical differences such as organic carbon content and carbonate content that indicate slightly different depositional environments in the two areas mentioned previously.

6.1.4 Provenance

It is possible that the platinum-group elements and other metals introduced into the area around Hay River 11A were not introduced to other areas. This has not been examined.

6.1.5 Post Depositional Activity

Although there is evidence for hydrothermal activity in the Hay River Formation in the areas around Hay River 11A and Tobermory 14 and in much of the Arthur Creek Formation, it is not known if the fluids had the same source or composition, i.e. connate, meteoric or magmatic. The direction and rate of flow of the fluids are also unknown. Therefore it is possible that, although hydrothermal activity occurred in many of the areas drilled, the conditions present were different to those which were responsible for the platinum-group element enrichment in the Hay River Formation at BMR Hay River 11A.

6.2 Conclusions

Platinum-group element enrichment may be present within EL's 5145, 5146, 5147 and 5149 at stratigraphic levels not yet tested.

Mineralization may require the Hay River Formatio to overly the Red Heart Dolomite. The EL 5146 area is closest, in stratigraphy, to the type area at Hay River 11A, as the Red Heart Dolomite is absent in El 5145.

6.3 Recommendations

Two alternatives are possible:-

(i) Relinquish all of the Exploration Licences on the assumption that mineralization does not occur in the areas. This is not recommended as the geochemical differences noted are based on Hay River 11A and one drillhole in EL 5145 only (Tobermory 14). No comparison can safely be made with the other areas in the absence of any other geochemical data.

(ii) Further exploration of sequences above the horizons already drilled, i.e. those above the bottom 60 m of the Hay River and Arthur Creek Formations. Any further drilling should include testing of the total thickness of the Arthur Creek and Hay River Formations and the base of the Marqua Formation.

It is also recommended that surface mapping and drilling of Exploration Licence 5146 be carried out as soon as possible.

A light weight rig suitable for sandy desert conditions should be used for any further drilling, to minimise access problems.

REFERENCES

Agip Aust. Ltd., 1983 Final Report to Department of Mines and Energy (Exploration Licence No. 3263). Northern Territory Department of Mines and Energy, Company Report, CR83/.

Freeman, M.J. and Woyzbun, P., 1986. Huckitt & SF53-11 Northern Territory Department of Mines and Energy, 1:250 000 (Geological Map Series Explanatory Notes.

Kucha, H., 1982. Platinum-Group Metals in the Zechstein Copper Deposits, Poland. Economic Geology., 77: 1578-1591.

Shergold, J.H., 1985. Notes to Accompany The Hay River - Mount Whelan Special 1:250 000 Geological Sheet, Southern Georgina Basin. Bureau of Mineral Resources, Australia, Report., 251.

Shergold, J.H. and Walter, M.R., 1979. BMR Stratigraphic Drilling in the Georgina Basin, 1977 to 1978. Bureau of Mineral Resources, Australia, Record., 1979/36.

Walter, M.R., Shergold, J.H., Muir, M.D., Kruse, P.D., 1979. Early Cambrian and Latest Proterozoic Stratigraphy, Desert Syncline, Southern Georgina Basin. J. Geol. Soc. Aust., 26: 305-312.

APPENDIX 1 EL 5147 DRILL LOGS

NORTHERN TERRITORY GEOLOGICAL SURVEY
DRILLING SAMPLE RECORD
(see over for explanatory notes)

NAME & ADDRESS OF DRILLING PROJECT SPONSOR (USUALLY LICENSEE)

SARACEN MINERALS N.L.
G.P.O. BOX 703, BRISBANE QLD 4001 Phone: 07-229.7916

NAME & ADDRESS OF STORAGE SITE FOR CORE

Phone:

CATEGORY A. DEEP HOLES

LOCALITY NAME
WELL OR HOLE NAME & NO.
TENEMENT NO
DEPTH OF HOLE (m)
DRILLING COMPLETION DATE
COMMENTS (if any e.g. driller's)

INTERVALS DRILLED(m) INTERVALS RETAINED(m)
CORE
CUTTINGS
NO OF CORE TRAYS
NO OF CUTTINGS SAMPLES

CATEGORY B. SHALLOW HOLES

LOCALITY NAME HUCKITTA SOUTH SITE 1
TOTAL NO. OF HOLES 2
PROGRAM IDENTIFICATION (hole prefix)

TYPE OF DRILLING (specify) rotary/percussion
TOTAL NO. OF RETAINED SAMPLES 88
HI1 - HI2

LOCATION INFORMATION 1:250 000 MAP SHEET NAME HUCKITTA SF53/11 ZONE NQ

1:100 000 SHEET NAME DNEIPER 1:100 000 SHEET NO. (circle) 5952

1:50 000 SHEET NO. (circle)

1:25 000 SHEET NO. (circle)

(Latitude - Longitude and (where possible) Aust. Map Grid Coordinates)
LAT 22° 39' 3" S LONG 135° 29' 50" E: 551100 m EAST 7495000 m NORTH

TECTONIC UNIT (Basin, Block, etc) GEORGINA BASIN

TITLE NUMBER (Usually E.L. number) EL 5147

Name: R.J. VIRTUE Signature:
Position: GEOLOGIST Date:

NTGS USE ONLY

SECURITY
REPORT NUMBER
ORG - PLACE CODE
DARWIN CORE LOCATION
DATE RECEIVED

RADIOACTIVE MINERALS PRESENT (circle) YES/NO
IF YES, SPECIFY:
(1) Interval(s)
(2) Concentration(s)

SARACEN MINERALS N.L.

DRILL HOLE No. HI 1

PAGE 1 of 1

PROJECT AREA: GEORGINA BASIN N.T PROJECT: HUCKITTA SOUTH E.L. 5147

SPUDDED: COMPLETED:

LOCATION: SF 53-11 HUCKITTA 1:250000 ZONE N.Q. CO ORDS: X:- 511 Y:- 950

ELEVATION: m. AZIMUTH: INCLINATION VERTICAL TOTAL DEPTH: 36m

HOLE TYPE: HAMMER/BLADE DRILLING CONTRACTOR: WESTON DRILLER: M. WESTON

LOGGED BY: R.J.V DATE: BIT SIZE: 120mm TO: T.D. TO: TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (ppm) Pt	Pd	Au
		0-1m Silcrete		0	295777				BLD
		1-2m Lime siltstone and chert.							
		2-4m Light green-grey siltstone							
		4-7m Hard red-brown silicified dolomitic siltstone.		5					
		7-9m Brown silicified siltstone.							
		9-10m Sandstone	Ele	10					
		10-13m Banded grey-brown dolomitic siltstone common Fe nodules.							
		13-20m Grey-brown chert.		15					
		20-21m Dark grey chert		20					
		21-28m Mottled light to dark grey to brown chert and dolomite.		25					
		28-30m Light grey chert							
		30-31m Light brown chert		30					
		31-							
		31-36m Pink-brown and grey dolomite and chert some siltstone							
		EOH 36m (loss of circulation)		35					
				36	295812				

SARACEN MINERALS N.L.

DRILL HOLE No. HI 2

PROJECT AREA: GEORGINA BASIN N.T. PROJECT: HUCKITTA SOUTH EL 5147

SPUDDED: COMPLETED:

LOCATION: SF53-11 HUCKITTA 1:250 000 ZONE N.Q CO ORDS: X:- 511 Y:- 950

ELEVATION: m. AZIMUTH: INCLINATION VERTICAL TOTAL DEPTH: 52m

HOLE TYPE: HAMMER / BLADE DRILLING CONTRACTOR: WESTON DRILLER: M. WESTON

LOGGED BY: R.J.V. DATE: BIT SIZE: 120mm TO: T.D. TO: TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (ppm) Pt	Pt	Au
		0-3m Green-grey dolostone.		0	295813				
		3-4m Green-grey dolostone and ironstone.							
		4-7m Yellow-brown dolomite		5					
		7-10m Yellow-brown dolomite and chert.							
		10-11m Yellow-brown and Pink-brown chert, some Mn staining.		10					
		11-20m Yellow-brown Mn stained chert / silicified dolomite		15					
		20-21m Light Yellow-brown silicified dolomite with mottled grey patches.		20					
		21-27m Grey-yellow-brown silicified dolomite.		25					
		27-28m Yellow-brown chert, siltstone and dolomite. Numerous caverns in porous dolomite.							
		28-32m Porous yellow-brown dolomite, chert and silty sandstone.		30					
		32-38m Pink-yellow-brown to cream dolomite and chert.		35					
		38-40m Pink-grey to grey-brown chert.		40	295852				

SARACEN MINERALS N.L.

DRILL HOLE No. HI 2

PROJECT AREA: GEORGINA BASIN N.T. PROJECT: HUCKITTA SOUTH EL 5147.

SPUDDED: COMPLETED:

LOCATION: CO ORDS: X:- Y:-

ELEVATION: m. AZIMUTH: INCLINATION TOTAL DEPTH: 52m

HOLE TYPE: DRILLING CONTRACTOR: DRILLER:

LOGGED BY: R.J.V DATE: BIT SIZE: TO: TO: TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (ppm) Pt	Pd	Au		
									BLD		
		40-43m Pink-grey to grey-brown chert.		40	295853						
		43-49m Grey chert and silicified dolomite	Ele	45							
		49-52m Grey-brown chert and silicified dolomite. Brown clay at base.		50							
		EOH 52m (loss of circulation).		52	295864						

NORTHERN TERRITORY GEOLOGICAL SURVEY

DRILLING SAMPLE RECORD

(see over for explanatory notes)

NAME & ADDRESS OF DRILLING PROJECT SPONSOR (USUALLY LICENSEE)

SARACEN MINERALS N.L.

G.P.O. BOX 703, BRISBANE QLD 4001 Phone: 07-229.7916

NAME & ADDRESS OF STORAGE SITE FOR CORE

Phone:

CATEGORY A. DEEP HOLES

LOCALITY NAME

WELL OR HOLE NAME & NO.

TENEMENT NO

DEPTH OF HOLE (m)

DRILLING COMPLETION DATE

COMMENTS (if any e.g. driller's)

INTERVALS DRILLED(m) INTERVALS RETAINED(m)

CORE

CUTTINGS

NO OF CORE TRAYS

NO OF CUTTINGS SAMPLES

CATEGORY B. SHALLOW HOLES

LOCALITY NAME HUCKITTA SOUTH SITE 2

TOTAL NO. OF HOLES 2

PROGRAM IDENTIFICATION (hole prefix) HI3 - HI4

TYPE OF DRILLING (specify) rotary/percussion

TOTAL NO. OF RETAINED SAMPLES 104

LOCATION INFORMATION 1:250 000 MAP SHEET NAME HUCKITTA SF53/11 ZONE NQ

1:100 000 SHEET NAME JINKA 1:100 000 SHEET NO. 6052 (circle)

1:50 000 SHEET NO. (circle)

1:25 000 SHEET NO. (circle)

(Latitude - Longitude and (where possible) Aust. Map Grid Coordinates)

LAT 22° 37' 41" S LONG 135° 31' 28" E: 553900 m EAST 7497500 m NORTH

TECTONIC UNIT (Basin, Block, etc) GEORGINA BASIN

TITLE NUMBER (Usually E.L. number) EL 5147

Name: R.J. VIRTUE Signature:

Position: GEOLOGIST Date:

NTGS USE ONLY

SECURITY

REPORT NUMBER

ORG - PLACE CODE

DARWIN CORE LOCATION

DATE RECEIVED

RADIOACTIVE MINERALS PRESENT (circle) YES/NO

IF YES, SPECIFY:

(1) Interval(s)

(2) Concentration(s)

SARACEN MINERALS N.L.

DRILL HOLE No. HI 3

PROJECT AREA: GEORGINA BASIN N.Q. PROJECT: HUCKITTA SOUTH EL5147

SPUDDED: COMPLETED:

LOCATION: SF53-11 HUCKITTA 1:250000 ZONE N.Q. CO ORDS: X:- 539 Y:- 975

ELEVATION: m. AZIMUTH: INCLINATION VERTICAL TOTAL DEPTH: 60m

HOLE TYPE: HAMMER/BLADE DRILLING CONTRACTOR: WESTON DRILLER: M WESTON

LOGGED BY: R.J.V. DATE: BIT SIZE: 120mm TO: T.D. TO: TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (ppm) Pt	Pd	Au
		0-2m Red and green-grey siltstone		0	295865				BLD
		2-3m Yellow-brown, red and green-grey siltstone							
		3-4m Yellow-brown siltstone, black chert			295868				
		4-5m White chert.		5	869	3m			0.01
		5-6m Red-brown and cream siltstone			870				
		6-7m Yellow-brown, light green-grey siltstone			871				
		7-9m Black to white laminated chert, minor green-grey siltstone.			872	3m			0.01
		9-10m Grey and white chert + red-brown, green-grey siltstone			873				
		10-13m Yellow-brown siltstone laminated grey + white chert.		10	874				
					875	3m			0.01
		13-17m Interbedded yellow-brown siltstone and grey chert.			876				
									BLD
		17-20m Black and white chert, Chalcedonic white chert dominant at base. Minor siltstone.		15					
		20-23m Yellow-brown and light green-grey siltstone, banded grey and white chert.		20					
		23-28m Yellow-brown siltstone darkening downwards.		25					
		28-33m Orange brown siltstone		30					
		33-34m Yellow-brown siltstone							
		34-35m Yellow-brown siltstone, white chert		35					
		35-36m Red-yellow-brown siltstone							
		36-40m Brown Siltstone							
				40	295904				

SARACEN MINERALS N.L.

DRILL HOLE No. H1 3

PROJECT AREA: GEORGINA BASIN N.T. PROJECT: HUCKITTA SOUTH EL5147

SPUDDED: COMPLETED:

LOCATION: CO ORDS: X:- ' Y:-

ELEVATION: m. AZIMUTH: INCLINATION TOTAL DEPTH:

HOLE TYPE: DRILLING CONTRACTOR: DRILLER:

LOGGED BY: R.J.V. DATE: BIT SIZE: TO: TO: TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (ppm) Pt	Pd	Au		
		40-57m Brown massive siltstone.		40	295905				BLD		
				45							
			Cmd	50							
				55							
		57-59m Dark chocolate-brown massive siltstone.									
		59-60 Grey-brown fine silty sandstone (No sample due to exess water caving hole)	Cle	60	295924						
		EOH 60m									

SARACEN MINERALS N.L.

DRILL HOLE No. HI 4

PAGE 1 of 2

PROJECT AREA: GEORGINA BASIN N.T. PROJECT: HUCKITTA SOUTH EL5147

SPUDDED: COMPLETED:

LOCATION: SF 53-11 HUCKITTA 1:250 000 ZONE N.Q. CO ORDS: X:- 539 Y:- 975

ELEVATION: m. AZIMUTH: INCLINATION VERTICAL. TOTAL DEPTH: 45 m

HOLE TYPE: HAMMER/BLADE DRILLING CONTRACTOR: WESTON DRILLER: M. WESTON

LOGGED BY: R.J.V DATE: BIT SIZE: 120mm TO: TD TO: TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (PPM) Pt	Pd	Au
		0-1m Chert and clay soil.		0	295925				BLD
		1-3m Yellow-brown siltstone, white chert.							
		3-4m Yellow-brown siltstone much gypsum.							
		4-8m Brown calcreted siltstone.		5					
		8-9m Yellow-brown siltstone, thin sand layer.							
		9-15m Yellow-brown massive siltstone.		10					
		15-18m Yellow-brown siltstone common black and brown iron concretions.		15					
		18-21m Yellow-brown massive siltstone.		20					
		21-23m Medium brown siltstone.							
		23-26m Dark maroon siltstone minor yellow-brown siltstone.		25					
		26-28m Dark chocolate brown siltstone.							
		28-29m Laminated dark chocolate brown and dark grey siltstone.		30					
		29-37m Laminated dark reddish chocolate brown siltstone.		35					
		37-40m Red-brown siltstone.		40	295964				

SARACEN MINERALS N.L.

DRILL HOLE No. H14

PROJECT AREA: GEORGINA BASIN N.T. PROJECT: HUCKITTA SOUTH EL5147

SPUDDED: COMPLETED:

LOCATION: CO ORDS: X:- Y:-

ELEVATION: m. AZIMUTH: INCLINATION TOTAL DEPTH: 45m

HOLE TYPE: DRILLING CONTRACTOR: DRILLER:

LOGGED BY: R.J.V DATE: BIT SIZE: TO: TO: TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (ppm) Pt	Pd	Au		
		40-43 Massive red-brown siltstone. Trace yellow-brown siltstone at 41-42m	Emo	40	295965				BLD		
		43-44 Red-brown siltstone minor grey-brown sandstone (WATER 43m)	Ele	WT	295968				NS		
		44-45m Grey-brown fine silty sandstone. (No sample excess water)		45							
		EOH 45m									

NORTHERN TERRITORY GEOLOGICAL SURVEY

DRILLING SAMPLE RECORD

(see over for explanatory notes)

NAME & ADDRESS OF DRILLING PROJECT SPONSOR (USUALLY LICENSEE)

SARACEN MINERALS N.L.

G.P.O. BOX 703, BRISBANE QLD 4001 Phone: 07-229.7916

NAME & ADDRESS OF STORAGE SITE FOR CORE

Phone:

CATEGORY A, DEEP HOLES

LOCALITY NAME

WELL OR HOLE NAME & NO.

TENEMENT NO

DEPTH OF HOLE (m)

DRILLING COMPLETION DATE

COMMENTS (if any e.g. driller's)

INTERVALS DRILLED(m) INTERVALS RETAINED(m)

CORE

CUTTINGS

NO OF CORE TRAYS

NO OF CUTTINGS SAMPLES

CATEGORY B, SHALLOW HOLES

LOCALITY NAME HUCKITTA SOUTH SITE 3

TOTAL NO. OF HOLES 1

PROGRAM IDENTIFICATION (hole prefix) HI5

TYPE OF DRILLING (specify) rotar/percussion

TOTAL NO. OF RETAINED SAMPLES 60

LOCATION INFORMATION 1:250 000 MAP SHEET NAME HUCKITTA SF53/11 ZONE NO

1:100 000 SHEET NAME JINKA 1:100 000 SHEET NO. (circle) 6052

1:50 000 SHEET NO. (circle)

1:25 000 SHEET NO. (circle)

(Latitude - Longitude and (where possible) Aust. Map Grid Coordinates)

LAT 22° 40' 19" S LONG 135° 36' 30" E; 562500 m EAST 7492600 m NORTH

TECTONIC UNIT (Basin, Block, etc) GEORGINA BASIN

TITLE NUMBER (Usually E.L. number) EL 5147

Name: R.J. VITURE Signature:

Position: GEOLOGIST Date:

NTGS USE ONLY

SECURITY

REPORT NUMBER

ORG - PLACE CODE

DARWIN CORE LOCATION

DATE RECEIVED

RADIOACTIVE MINERALS PRESENT (circle) YES/NO

IF YES, SPECIFY:

(1) Interval(s)

(2) Concentration(s)

GARNDEN MINERALS N.L.

DRILL HOLE No. H | 3

PAGE 1 of 2

PROJECT AREA: GEORGINA BASIN — PROJECT: HUCKITTA SOUTH EL5147

SPUDDED: — COMPLETED:

LOCATION: SF53-11 HUCKITTA 1:250 000 ZONE N.Q. CO ORDS: X:- 625 Y:- 926

ELEVATION: m. AZIMUTH: — INCLINATION VERTICAL — TOTAL DEPTH: 60m

HOLE TYPE: HAMMER / BLADE — DRILLING CONTRACTOR: WESTON — DRILLER: M. WESTON

LOGGED BY: R.J.V — DATE: — BIT SIZE: 120mm TO: TD — TO: — TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (ppm) Pt	Pd	Au
		0-1m Alluvium		0	295969				BLD
		1-6m Hard dark red-brown and grey calcareous siltstone and limestone							
		6-7m Grey-brown stromatolitic limestone		5					
		7-9m Dark red-brown siltstone							
		9-10m Grey-brown limestone, minor dark red brown siltstone		10					
		10-12m Grey to black calcareous siltstone and limestone							
		12-15m Grey calcareous siltstone and limestone, minor red-brown siltstone		15					
		15-19m Dark red-brown and dark grey siltstone (WATER AT 17m)		WT					
		19-21m Dark grey, green-grey, brown-grey and red-brown siltstone.		20					
		21-24m Dark grey siltstone with dark red-brown siltstone becoming abundant downwards.							
		24-27 Dark red brown siltstone minor grey siltstone		25					
		27-30m Grey and dark red-brown hard calcareous siltstone.							
		30-31m Light grey-brown limestone		30					
		31-32m Dark red-brown siltstone.							
		32-35 Dark chocolate brown siltstone.							
		35-37m Grey porous limestone		35					
		37-38m Red-brown and grey siltstone.							
		38-40m Cream, red-brown, grey hard calcareous siltstone.		40	296008				

SARACEN MINERALS N.L.

DRILL HOLE No. H15

PROJECT AREA: GEORGINA BASIN N.T. PROJECT: HUCKITTA SOUTH EL5147

SPUDDED: COMPLETED:

LOCATION: CO ORDS: X:- Y:-

ELEVATION: m. AZIMUTH: INCLINATION TOTAL DEPTH: 60m

HOLE TYPE: DRILLING CONTRACTOR: DRILLER:

LOGGED BY: R.J.V DATE: BIT SIZE: TO: TO: TO:

CORE RECOVERY	DEPTH (Metres)	DESCRIPTION	Core bedding angle and joint spacing	LOG SCALE 1:	SAMPLE No.	ASSAYED LENGTH	ASSAY VALUE (ppm) Pt	Pd	Au		
		40-42m Dark to light grey siltstone brown and pink siltstone.		40	296009				BLD		
		42-43m Mid greyand red-brown siltstone									
		43-44m Red-brown siltstone									
		44-45m Red-brown and dark grey siltstone		45							
		45-46m Dark grey siltstone.									
		46-49m Greys cream, red-brown, pink siltstone	fle								
		49-50m Pink green-grey and red-brown calcareous siltstone.		50							
		50-52m Dark red-brown, grey pyritic siltstone.									
		52-54m Red-brown siltstone grey limestone									
		54-57 Red-brown and grey calcareous siltstone. Minor weathered red sandstone (uphole cont.)		55							
		57-58m Dark grey siltstone									
		58-59m Dark grey siltstone, lesser cream and red brown siltstone.									
		59-60m Yellow brown sandy siltstone		60	296028						
		EOH 60m									

APPENDIX 2 EL 5147 ANALYTICAL RESULTS

Australian Laboratory Services PTY. LTD.

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32 Shand Street, Stafford, Q. 4053.
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Perth Office and Laboratory
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Townsville Laboratory
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Charters Towers Laboratory
18 Drew Street, Charters Towers, Q. 4820
Phone: (077) 87 4155. Fax: (077) 87 4220.

Bendigo Laboratory
127A Victoria Street, Eaglehawk, Vic. 3556.
Phone: (054) 46 1390. Fax (054) 46 1389.

LABORATORY REPORT

Client: SARACEN MINERALS

Address: G.P.O. BOX 703
BRISBANE
QLD. 4001

Contact: MR. R. TUCKER

Order No. AL3008329

Sample Type: PERCUSSION CHIP

Batch Number: M245

No. of Samples: 491
Date Received: 29/12/87
Date Completed: 14/01/88

SAMPLE NUMBER	Element / Unit / Method	Pt ppb PM217	Pd ppb PM217	Au ppm PM217	Au(R) ppm CHECKS	
295 777-779		<10	<10	<0.01		
295 780-782		<10	<10	<0.01	<0.01	
295 783-785		<10	<10	<0.01	<0.01	
295 786-788		<10	<10	<0.01		
295 789-791		<10	<10	<0.01		
295 792-794		<10	<10	<0.01		
295 795-797		<10	<10	<0.01		
295 798-800		<10	<10	<0.01		
295 801-803		<10	<10	<0.01		
295 804-806		<10	<10	<0.01		
295 807-809		<10	<10	<0.01		
295 810-812		<10	<10	<0.01		
295 813-815		<10	<10	<0.01		
295 816-818		<10	<10	<0.01		
Detection Limit:		10	10	0.01		

Comments:

Signatory: J. Dunn

Australian Laboratory Services PTY. LTD.

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Bendigo Laboratory
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Perth Office and Laboratory
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Phone: (09) 272 2300. Fax: (09) 272 5787.

Townsville Laboratory
21 Bombala Street, Garbutt, Q. 4814
Phone: (077) 79 9155. Fax: (077) 799 729.

LABORATORY REPORT

Client: SARACEN MINERALS
Address: G.P.O. BOX 703
BRISBANE
QLD. 4001

Contact: MR. R. TUCKER

Order No. ALS008329 Sample Type: PERCUSSION CHIP

Batch Number: M245

No. of Samples: 491
Date Received: 29/12/87
Date Completed: 15/01/88

SAMPLE NUMBER	Element Unit Method	Pt ppb PM217	Pd ppb PM217	Au ppm PM217	Au(R) ppm CHECKS
295 819-821		<10	<10	<0.01	
295 822-824		<10	<10	<0.01	
295 825-827		<10	<10	<0.01	
295 828-830		<10	<10	<0.01	
295 831-833		<10	<10	<0.01	
295 834-836		<10	<10	<0.01	
295 837-839		<10	<10	<0.01	
295 840-842		<10	<10	<0.01	
295 843-845		<10	<10	<0.01	
295 846-848		<10	<10	<0.01	
295 849-851		<10	<10	<0.01	
295 852-854		<10	<10	<0.01	
295 855-857		<10	<10	<0.01	
295 858-860		<10	<10	<0.01	
295 861-863		<10	<10	<0.01	
295 864		<10	<10	<0.01	<0.01
295 865-867		<10	<10	<0.01	<0.01
295 868-870		<10	<10	0.01	
295 871-873		<10	<10	0.01	
295 874-876		<10	<10	0.01	
295 877-879		<10	<10	<0.01	
295 880-882		<10	<10	<0.01	
295 883-885		<10	<10	<0.01	
295 886-888		<10	<10	<0.01	
295 889-891		<10	<10	<0.01	<0.01
295 892-894		<10	<10	<0.01	
295 895-897		<10	<10	<0.01	
295 898-900		<10	<10	<0.01	
295 901-903		<10	<10	<0.01	
295 904-906		<10	<10	<0.01	
Detection Limit:		10	10	0.01	

Comments:

Signatory:

FORM ALS 01

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Bendigo Laboratory
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Phone: (054) 46 1390. Fax (054) 46 1389.

LABORATORY REPORT

Client: SARACEN MINERALS
Address: G.P.O. BOX 703
BRISBANE
QLD. 4001

Batch Number: M245

Contact: MR. R. TUCKER

No. of Samples: 491
Date Received: 29/12/87
Date Completed: 15/01/88

Order No. ALS008329 Sample Type: PERCUSSION CHIP

SAMPLE NUMBER	Element Unit Method	Pt ppb PM217	Pd ppb PM217	Au ppm PM217	Au(R) ppm CHECKS	
295 907-909		<10	<10	<0.01		
295 910-912		<10	<10	<0.01		
295 913-915		<10	<10	<0.01		
295 916-918		<10	<10	<0.01		
295 919-921		<10	<10	<0.01		
295 922-924		<10	<10	<0.01		
295 925-927		<10	<10	<0.01	<0.01	
295 928-930		<10	<10	<0.01		
295 931-933		<10	<10	<0.01		
295 934-936		<10	<10	<0.01		
295 937-939		<10	<10	<0.01		
295 940-942		<10	<10	<0.01		
295 943-945		<10	<10	<0.01	<0.01	
295 946-948		<10	<10	<0.01		
295 949-951		<10	<10	<0.01	<0.01	
295 952-954		<10	<10	<0.01		
295 955-957		<10	<10	<0.01		
295 958-960		<10	<10	<0.01		
295 961-963		<10	<10	<0.01		
295 964-966		<10	<10	<0.01		
295 967-968		<10	<10	<0.01		
295 969-971		<10	<10	0.01		
295 972-974		<10	<10	<0.01		
295 975-977		<10	<10	<0.01		
295 978-980		<10	<10	<0.01		
295 981-983		<10	<10	<0.01		
295 984-986		<10	<10	<0.01		
295 987-989		<10	<10	<0.01		
295 990-992		<10	<10	<0.01		
295 993-995		<10	<10	<0.01		
Detection Limit:		10	10	0.01		

Comments:

Signatory: G. Dunn

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Townsville Laboratory
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Phone: (077) 79 9155. Fax: (077) 799 729.

LABORATORY REPORT

Client: SARACEN MINERALS
Address: G.P.O. BOX 703
BRISBANE
QLD. 4001

Contact: MR. R. TUCKER

Order No. ALS008329

Sample Type: PERCUSSION CHIP

Batch Number: M245

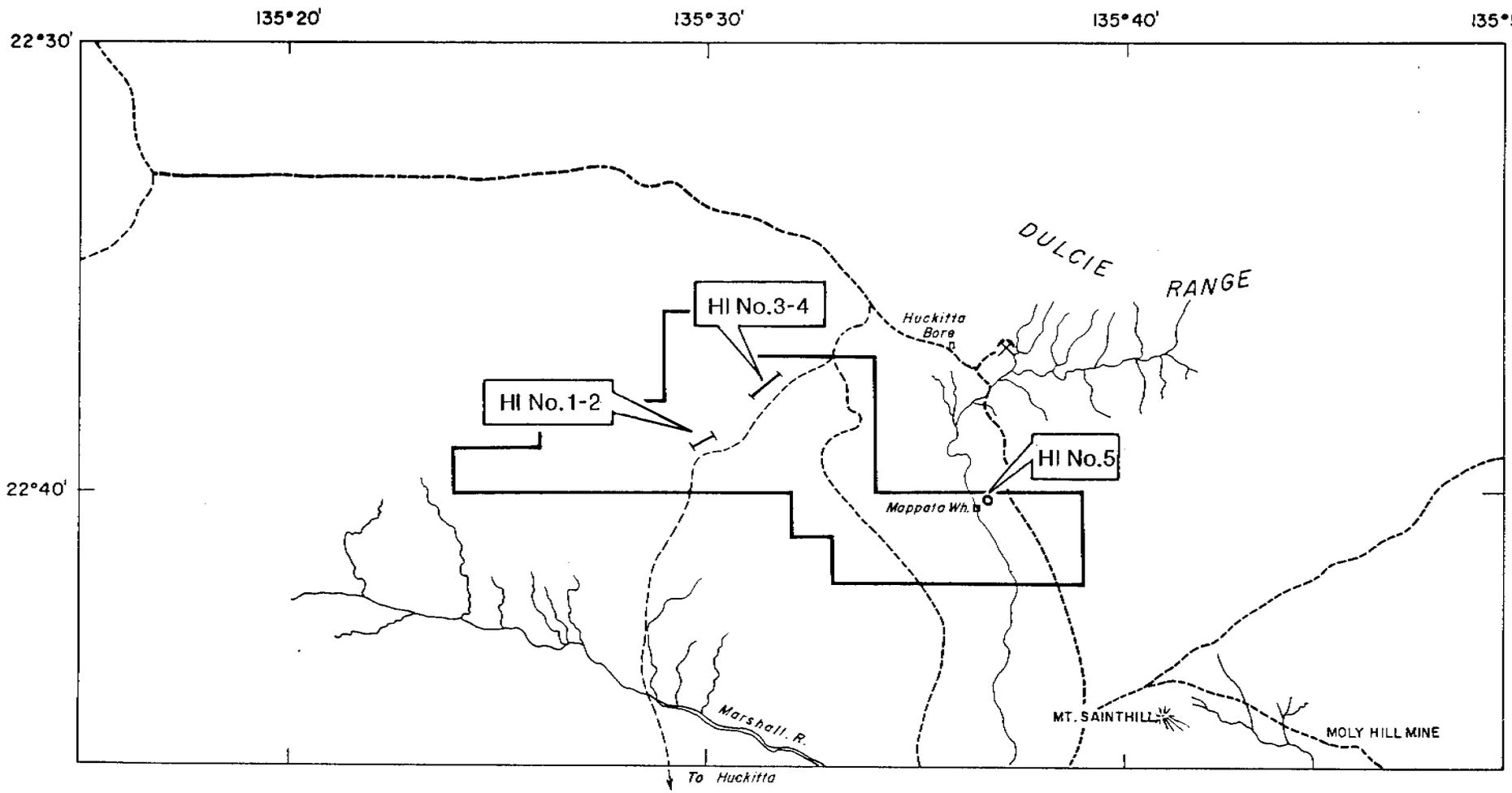
No. of Samples: 491
Date Received: 29/12/87
Date Completed: 14/01/88

SAMPLE NUMBER	Element Unit Method	Pt ppb PM217	Pd ppb PM217	Au ppm PM217	Au(R) ppm CHECKS
295 996-998		<10	<10	<0.01	
295 999-6001		<10	<10	<0.01	
296 002-004		<10	<10	<0.01	
296 005-007		<10	<10	<0.01	
296 008-010		<10	<10	<0.01	
296 011-013		<10	<10	<0.01	<0.01
296 014-016		<10	<10	<0.01	
296 017-019		<10	<10	<0.01	
296 020-022		<10	<10	<0.01	
296 023-025		<10	<10	<0.01	
296 026-028		<10	<10	<0.01	
Detection Limit:		10	10	0.01	

Comments:

Registered Laboratory No. 825

Signatory: G. Dunn



SARACEN MINERALS N.L.

NORTHERN TERRITORY

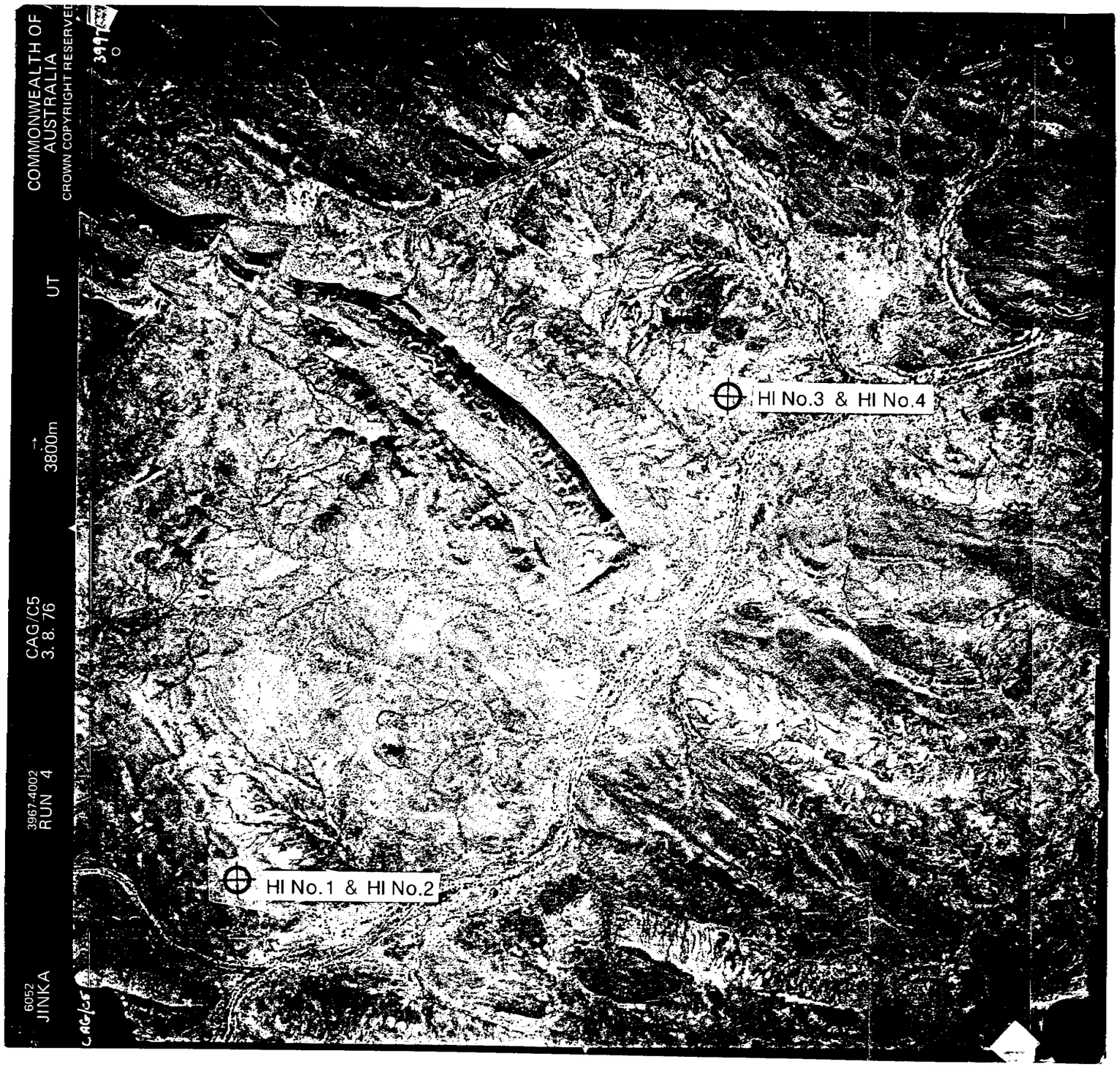
EL 5147-HUCKITTA SOUTH

DRILL HOLE LOCATION MAP

Overlay for Huckitta SF-53-11 1 : 250,000 Geology

5 0 5 10Km.

DRAWN : January, 1988	Fig.2
	A4 1111/1



SARACEN MINERALS N.L.

NORTHERN TERRITORY

E.L. 5147 - HUCKITTA SOUTH

AIR PHOTO JINKA RUN 4 3997

DRILL HOLE LOCATIONS

HI No.1, HI No.2, HI No.3 & HI No.4

March, 1988

Figure 3

SARACEN MINERALS N.L.

NORTHERN TERRITORY

E.L. 5147 - HUCKITTA SOUTH

AIR PHOTO JINKA RUN 5 4044

DRILL HOLE LOCATIONS

HI No.5

March, 1988

Figure 4

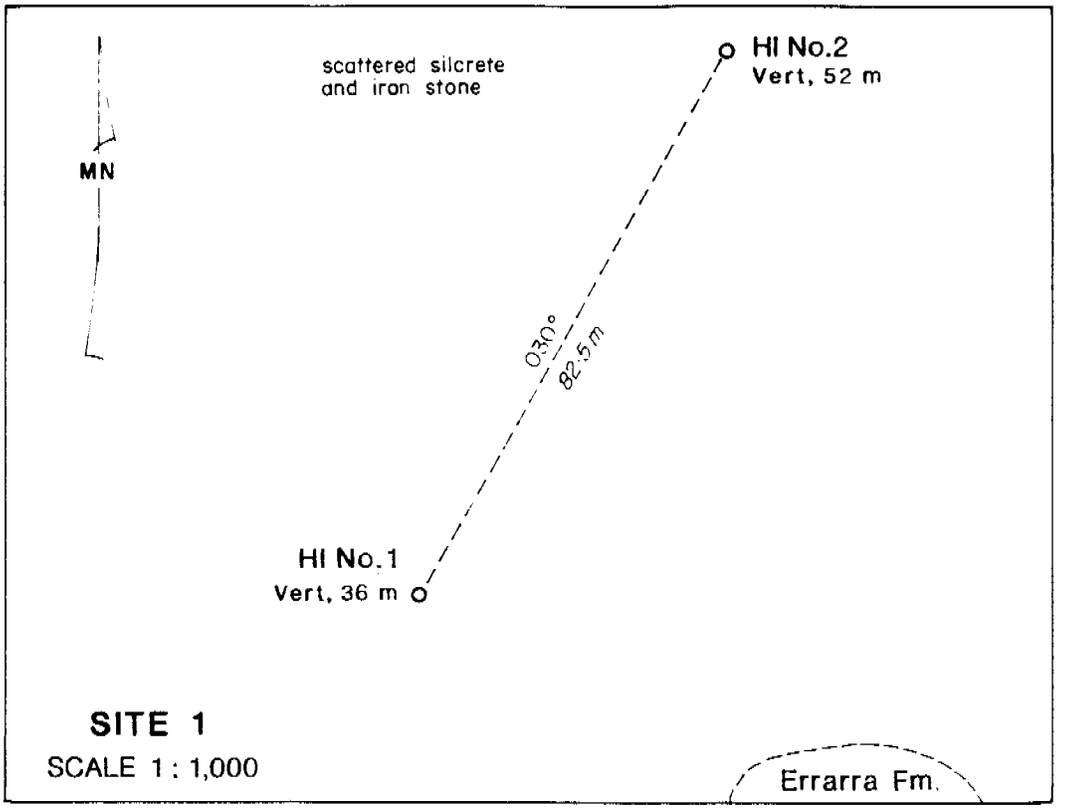


Figure 5

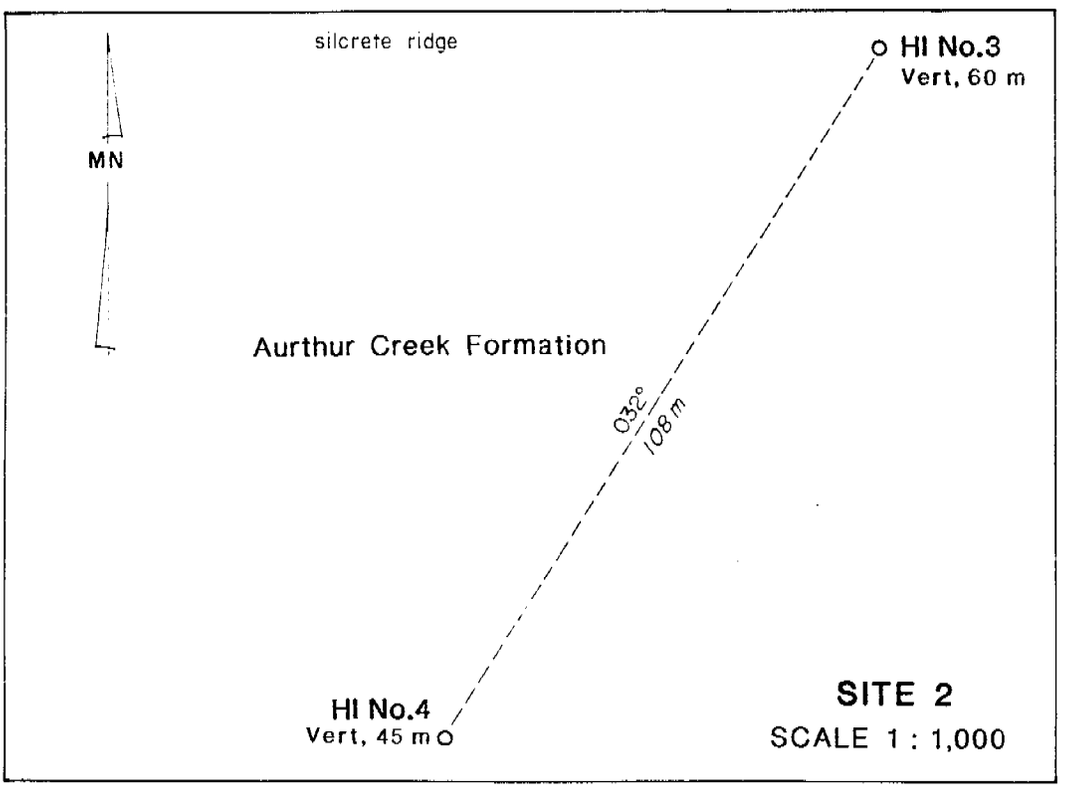


Figure 6

SARACEN MINERALS N.L.	
NORTHERN TERRITORY E.L. 5147 - HUCKITTA SOUTH **DRILL SITE PLANS** SITE 1 & 2	
AUTHOR:R.Virtue DRAWN:March,1988	Fig.5&6 A4 1155