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MC 5713-5716 AND MC 5780-5788

TUMBY BAY

PROGRESS REPORTS ON GEOLOGICAL INVESTIGATIONS FOR THE PERIOD MARCH TO JULY 1970

Submitted by
Nickel and Silver Exploration Pty Ltd
1970

Enquiries: Customer Services Branch
Minerals and Energy Resources
7th Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

Government of South Australia
Primary Industries and Resources SA

CONTENTS ENVELOPE 1368

TENEMENT: Not Related.

TENEMENT HOLDER: Nickel & Silver Expln. Pty. Ltd.

PLANS: Nil.

REPORT ON
PRELIMINARY FIELD INVESTIGATION
HUNDRED OF HUTCHISON
TUMBY BAY S. A.

J.E. LEWIS
MARCH 1970

AMINCO & ASSOCIATES PTY. LTD.,
275 GEORGE STREET,
SYDNEY. 2000.

Tee Sm . 99/70. Nickel & Silver Explorations
Registration of four mineral Claims

INTRODUCTION

At the request of Mr. A.L. Graham of Nickel and Silver Exploration Pty. Ltd., the prospects detailed elsewhere were visited on the 8th and 14th March. This report records the information gathered and makes recommendations for future exploration.

TITLE OF CLAIMS

TITLE	MINER'S RIGHT	REGN. NO.	DATE STAKED	NAME OF PROSPECT (USED IN TEXT)
Nickel and Silver Exploration Pty. Ltd.	18443	5715	8/1/70	Iron Mount Prospect
	18440	5716	8/1/70	Tumby Bay Mine Prospect
	18480	5781	29/1/70	Iron Mount Prospect
	18481	5782	29/1/70	Iron Mount Prospect
	18482	5783	29/1/70	Iron Mount Prospect
	18483	5788	29/1/70	West of Iron Mount Prospect
	18476	5785	29/1/70	East of Pt. Lincoln Mines Prospect
	18442	5784	29/1/70	Flinders Lode Prospect
	18477	5780	29/1/70	Waterfall Creek Prospect
A.L.Graham	18439	5713	8/1/70	Iron Mount Prospect
	18438	5786	29/1/70	Flinders Lode Prospect
M.S. Maher	18444	5714	8/1/70	Iron Mount Prospect
	18445	5787	29/1/70	Flinders Lode Prospect

It should be noted that Pechiney has an All Minerals Lease covering this area, with the exception of these claims. No work has been done on these claims to date. The owners were granted a one month extension which fell due on March 10, 1970. At the present time an additional 14 days grace has been applied for to enable them to commence exploration operations before the 24th March.

LOCATION AND ACCESS

The claims all lie within the Hundred of Hutchison, 4 to 5 miles northwest of Tumby Bay in the Southern Eyre Peninsula. They are between 136° 02' and 136° 05' longitude, and between 34° 19' and 34° 21' latitude.

Geographically the claims are within the rolling hills of the Lincoln Uplands. Access is easily gained to the wheat farms on which the claims are located via good secondary roads. No prospect is more than four miles from the Lincoln Highway. Farm tracks, in turn, permit easy access on to the individual claims.

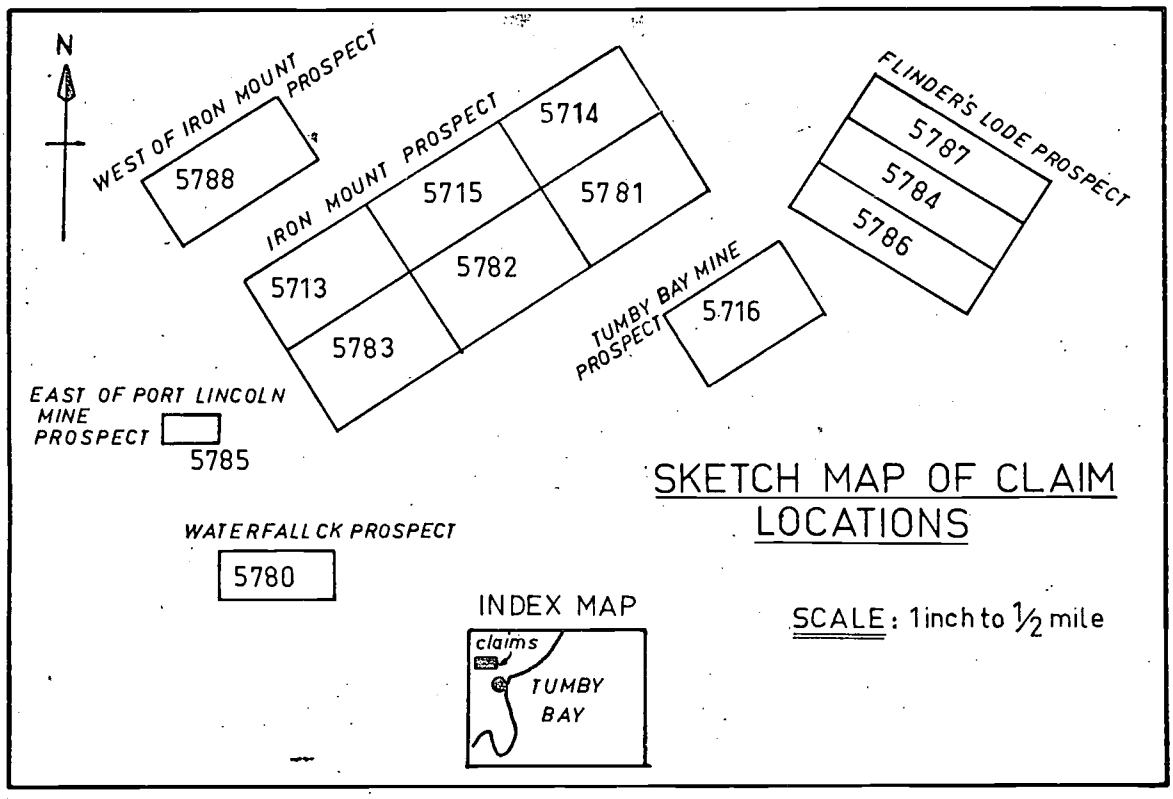

N
WEST OF IRON MOUNT PROSPECT
5788
IRON MOUNT PROSPECT
5714
5715
5781
5713
5782
5783
FLINDER'S LODE PROSPECT
5787
5784
5786
TUMBY BAY MINE PROSPECT
5716
EAST OF PORT LINCOLN MINE PROSPECT
5785
WATERFALL CK PROSPECT
5780
INDEX MAP
claims
TUMBY BAY
SKETCH MAP OF CLAIM LOCATIONS
SCALE: 1 inch to ½ mile

FIG.1

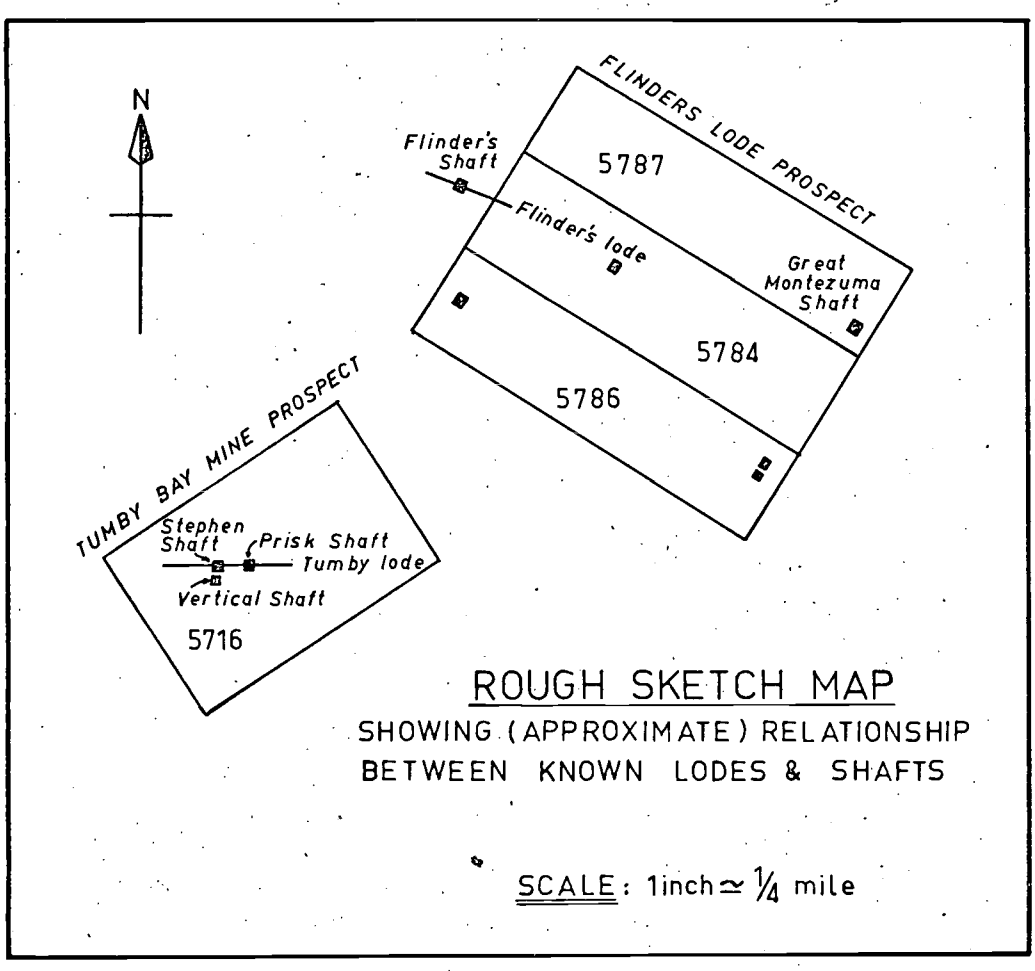

N
FLINDERS LODE PROSPECT
Flinder's Shaft
5787
Flinder's lode
Great Montezuma Shaft
5784
5786
TUMBY BAY MINE PROSPECT
Stephen Shaft
Prisk Shaft
Tumby lode
Vertical Shaft
5716
ROUGH SKETCH MAP
SHOWING (APPROXIMATE) RELATIONSHIP BETWEEN KNOWN LODES & SHAFTS
SCALE: 1 inch ≃ ¼ mile

FIG.2

1. FLINDER'S LODE PROSPECT (Figure 1)

This includes claims 5784, 5786 and 5787. According to R.K. Johns (Geological Survey of S.A., Bull. No. 37) work commenced on two main east-west lodes in 1867. Most of the mining was done from 1910 - 1916 and the property was abandoned by 1918.

Only three filled-in shafts, some stoping work, and trenches are still visible on the north lode. The old Flinder's Shaft is positioned about 180 feet west of the western claim boundary. Within and near the eastern claim boundary (see sketch map) is the Great Montezuma Shaft which appears to be on strike with the Flinder's lode. The distance between these shafts is in the order of 1,500 feet.

Copper minerals (malachite, azurite and chalcocite from the oxidised zone) associated with quartz are found in the old surface dumps. The lode appears to be in a shear zone surrounded by a dark grey banded augen gneiss. In each of these three shafts the lode strikes approximately 110° and dips at 80° south. Johns states (Bulletin No. 37) that the lode was explored to a depth of 240 feet in the Flinder's underlie shaft, with chalcopyrite intersected at 210 feet. Ore was stoped over a length of 65 feet, from the 85 ft. level to surface on the western side of the shaft and over a length of 25 feet on the eastern side.

Two other lodes occur south of the Flinder's lode. Today only a filled in shaft directly south of the Flinder's shaft, and grass covered pits and trenches are visible. Their apparent strike is 95°. In the southeastern part of this claim group are two more closely placed shafts. Here, exposed gneisses are highly weathered.

The third and southernmost lode (Tumby Lode) is discussed in the next section.

As noted by Johns (Bulletin No. 37) 35 tons of ore prepared for shipment have averaged 15% copper.

2. TUMBY BAY MINE PROSPECT (Figures 1 and 2)

This prospect consists of a single claim, namely 3716. The Tumby lode is a half mile south of the Flinder's shaft.

The ore was explored in three main shafts. The 167 ft. deep Prisk underlie shaft is connected to the 124 ft. deep Stephen shaft by a crosscut on the 68 ft. level. A vertical shaft was connected to the Stephen shaft on the 52 ft. level by a 25 ft. long crosscut. Stoping was carried out between these two crosscut levels, where the ore formation was up to three feet wide.

No primary minerals were recorded. Chalcocite, covellite, cuprite and copper carbonates were recovered, and are associated with quartz. (Johns, Bulletin 37). The country rock consists of a light to dark variegated banded gneisses.

Pits and trenches are still visible over a length of 1,200 ft. The lode strike east-west and dips at 80° to 85° south.

According to the records, twenty five tons of ore (at 19 per cent copper) were extracted by 1910. In 1917, Winton stated that marketable ore exists on the dumps, and suggested that the eastern end of the lode beyond the Prisk shaft be investigated.

3. IRON MOUNT PROSPECT

This prospect consists of claims 5713, 5714, 5715, 5781, 5782 and 5783. The bounds of this staked area encompass the old Iron Mount Mine and follow its extension along a ridge of hematite quartzite and other ferruginous quartzites and cherts with interbedded schists. Northwest of this ridge Tertiary (?) lateritic and fossil soils and Quaternary alluvium, clays, sands and gravels occur. Southeast of the ridge are undifferentiated archean rocks.

At one time the Iron Mount Mine was worked commercially as an iron producer. The ore was used as flux in the Port Pirie smelters. It assayed up to 51% Fe and up to ½% manganese. In recent times, the prospect has been quarried for road metals.

Below good outcropping jaspilite, iron oxides have been leached and there is some deposition of secondary iron.

A magnetic and gravity survey down dip from the outcrop did not disclose a non-magnetic zone of high density, which would indicate a possible orebody of secondary hematite. (G.F. Whitten, W.B. Robinson, S.A. Annual Report for 1964-65).

4. WEST OF IRON MOUNT PROSPECT

This prospect consists of a single claim, 5709. The area is covered by Tertiary (?) laterites and fossil soil development overlying Archean dolomites and hematite quartzites (striking 60°) which lie in undifferentiated Archean gneisses, schists and quartzites.

Boulders and outcrops in this area tend to be either highly weathered hematite quartzite or highly weathered Archean gneisses.

5. EAST OF PORT LINCOLN MINE PROSPECT

This claim, 5785 was staked on the northeast side of Waterfall Creek opposite the old Port Lincoln Mines. Only a single quartzite outcrop striking at 70° over a length of 200 ft. occurs within this claim. The quartzite is massive and clean looking except where it grades into a quartz feldspar gneiss along its eastern side.

6. WATERFALL CREEK PROSPECT

This prospect, claim 3780, was staked over the southernmost mine of the Port Lincoln Mines group. Ore in this area was produced intermittently from 1849 to 1904. Total recorded production was 850 tons with a 500 ton parcel averaging 25-30% copper. A few shafts were sunk below the 200 ft. level with some production coming from this depth. (Johns, Bulletin No. 37).

On the present prospect stoping along a shear in augen gneiss was completed over a 300 ft. length. The stope has subsequently filled in to a maximum depth of 30 ft. Beyond the stope, trenching, and pits extend another 300 ft. to the northeast, and 300 ft. to the southwest. The lode itself strikes 80° and dips at 70° to 85° south. Pits and trenches northwest of the main lode intimate the occurrence of another lode, slightly convergent to the first, along with additional stringers.

Broken quartz rocks on the dumps, containing malachite, azurite and other secondary copper minerals are very abundant. The mineralised quartz vein as seen at the southwest end of the stope pinches, swells and branches. Its overall width here varies from six inches to three feet.

It is possible that changes in thickness of mineralisation are due to regional structural controls. In the mined stope, the dip of the lode varies going down dip, and on the surface the strike of the lode is offset by several feet (likely a sinistral fault).

CONCLUSIONS AND RECOMMENDATIONS

From the brief examination of these six prospects the most favourable areas for further detailed exploration are the three old copper prospects. More specifically these are the Flinder's Lode Prospect, the Tumby Bay Mine Prospect and the Waterfall Creek Prospect.

These areas were all feasible mining propositions around the turn of the century. All three prospects are aligned in an approximate east-west direction and occur in a similar geologic environment, i.e. secondary copper minerals associated with quartz in the oxidised zone. These near vertical lodes are concentrated along narrow shears in banded augen gneisses. Old reports infer that the ore grades of these respective mines were all in excess of 15% copper.

Although some secondary copper ore potential remains on the dumps, and in the shear zones, unextracted primary mineralisation (as found in the Flinder's Lode) occurs as an extension directly below the oxidised zones. These zones of primary copper minerals would undoubtedly contain ore of a lower grade. However, it seems justifiable to do some surface stripping using a bulldozer in an attempt to increase potential possible reserves.

It is suggested that an initial strip be cut (bulldozed) at right angles to the old lodes so that any additional mineralised shear zones are recognised. Further stripping along these shears will delineate the surface dimensions (length of lode and vein width) of these potential possible reserves.

REFERENCES

1. R.K. Johns - 1961 - "Geology and Mineral Resources of the Southern Eyre Peninsula", Bulletin No. 37, Geol. Survey of S.A.

2. 1964-65 - "Annual Report of the Director of Mines and Government Geologist", South Australia.

3. Tumby Geological Map, 1 mile series, Map No. 813, Zone 5.

CONYNGHAM ST. FREWVILLE SOUTH AUSTRALIA 5063 TELEPHONE 79 1662 TELEGRAMS 'TELEX' AA82520

ENV. 1368

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

019

PLEASE ADDRESS ALL CORRESPONDENCE TO THE DIRECTOR.

OUR REFERENCE: AN3/405/0 3539/70

YOUR REFERENCE:

7 April 1970

The Managing Director,
Nickel & Silver Exploration Pty Ltd,
53A Stevenson Street,
PORT LINCOLN SA 5606.

REPORT AN3539/70

YOUR REFERENCE: Letter dated 31.3.70

IDENTIFICATION: As listed

DATE RECEIVED: 1.4.70

ANALYSIS
%

Sample Mark	Copper Cu	
1	6.4	OVER 120 FT.
2	45.0	NODULES
3	20.5	OVER 15 FT

Enquiries quoting AN3539/70 to Officer in Charge please.

Analysis by: A.E. Francis

Officer in Charge, Analytical Section: A.B. Timms

A. B. Timms
For N. Draper
Director.

pkm

CONYNGHAM ST. FREWVILLE SOUTH AUSTRALIA 5063 TELEPHONE 79 1662 TELEGRAMS 'TELEX' AA82520

ENV. 1368

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

9020

PLEASE ADDRESS ALL CORRESPONDENCE TO THE DIRECTOR.

OUR REFERENCE: MP 3/405/0
YOUR REFERENCE:

9 July 1970

Mr A. L. Graham,
Managing Director,
Nickel and Silver Exploration Ltd,
53A Stevenson St,
PORT LINCOLN, SA 5606

REPORT MP 4608/70

YOUR REFERENCE:	Letter received 10 June, 1970.
MATERIAL:	Sample of rock chips.
LOCALITY:	Not specified.
IDENTIFICATION:	Not labelled.
DATE RECEIVED:	10 June, 1970.
WORK REQUIRED:	Identification of sulphides.

Investigation and Report by : R. Cooper.

Electron probe microanalysis by : P. K. Schultz.

Chemical analysis by : S. Smith.

Officer in Charge, Mineralogy-Petrology Section : Dr K. J. Henley.

K. J. Henley

for N. Draper
Director

EXAMINATION OF SULPHIDES IN A SAMPLE OF ROCK CHIPS

Specimen: Not labelled P.S. 13401 I and II

Location: Not given (Outcrop extends for 60 chains in a copper bearing area)

Rock Name: Pyritized acid plutonic rock (?granite)

Hand Specimen:

This consisted of small chips of a light-coloured acid plutonic rock through which were sparsely distributed small, less than 1.0 mm, flecks of pyrite.

Polished Section:

A visual estimate of the opaque constituents gave the following:

Pyrite	~1%
Chalcopyrite	Trace
Nickel Sulphide	1 grain
Goethite	<1%

The major sulphide in the rock is pyrite which occurs in small, dispersed xenomorphic grains up to 0.25 mms long. The larger grains frequently have a thin coating of goethite about them.

Chalcopyrite occurs as similarly shaped grains which are invariably less than 100 microns long, and it is far less abundant than the iron sulphide.

One grey coloured grain, with a yellowy-brown tint, which was strongly anisotropic, could not be identified optically. It was examined with the electron probe microanalyser and found to contain nickel and sulphur. The dimensions of this grain were approximately 50 microns by 20 microns.

As mentioned, goethite occurs around pyrite grains. It also occurs in small equant grains, mostly in the 5 to 20 micron size range, throughout the body of rock.

As requested by telephone the sample was assayed for copper. The copper content proved to be 0.01%.

dk.

ENV. 1368

PORT LINCOLN.....5606

14th June, 1970.

TO BOARD OF DIRECTORS,
SOUTHERN CONCRETE MASONARY LTD.,
AUSTRALIAN INTERNATIONAL AND BRITISH.

0022

This report of work carried out on Tumby Bay claims is supplementary to the report of AMINCO AND ASSOCIATES CONSULTING GEOLOGISTS.

Surface stripping has been carried out on the following claims :- Nos. 5780, 5785, 5783, 5782, 5781, 5713.

Mineralization has been found on a further three claims as a result. These claims are Nos. 5783, 5782, 5781.

Details follow on work carried out on the Waterfall creek prospect, claim No. 5780.

A. A Bulldozer was first used to make a suitable working platform on the claim.

B. A Backhoe was then brought in and nine exploration holes averaging 8ft. x 8ft. in diameter and varying from 6ft. to 14ft. in depth were put down on the supposed direction of the lode.

C. The lode was encountered in eight of the holes running in a North east to South west direction over a length of 120ft.

D. Samples taken over 120ft. in length and 1ft. to 4ft. in width assayed 6.4% over 120ft., 20.5% over 15ft. included in the 120ft. and 45% in nodules encounted in the sixth hole.

E. Further bulldozing was then carried out to move material excavated from Back hoe holes.

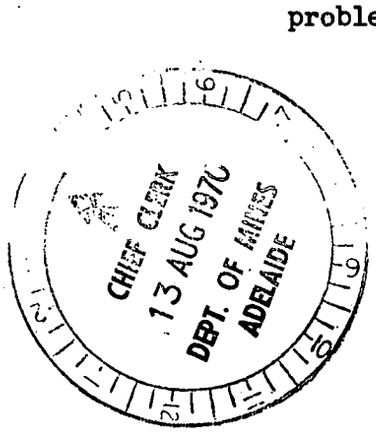
F. The backhoe was again used and the material that was left between the nine holes was excavated up to the sixth hole and down to the level of the lode, which is now exposed over the length of 120ft.

G. Extensive bulldozing was then carried out to prepare the area for a mining operation and appropriate areas were built for the setting up of a Treatment Plant.

H. Fine bulldozer cuts were made on an adjoining lode formation but no mineralization was encounted.

I. Trenching was then undertaken with the use of the backhoe. At the south west extremities of the lode two cuts were made 2ft. wide and fifty to sixty feet long varying in depth according to the rock strata. Further work will be necessary to remove clay and sediments from the clefts of the lode formation before further testing for mineralization can be carried out.

J. A jackhammer was used to test the feasibility of an open stope mining operation. Results were very satisfactory, as the quartz formation which contains the ore presented no problems to the jackhammer.



Our claim No. 5788 high grade iron has been encountered and a report on this accompanies this report.

Owing to the extent of mineralization already found on these claims a drilling program would be the next logical step. However, owing to the amount of cash which was available from the sale of a 50% interest of this promising area it is impossible for the present exploration company to carry out this second stage.
In reference to above paragraph please read attached memo from Dept. of Mines. S.A.

Samples from claim Nos. 5783, 5782, 5781, are in the hands of AMDEL for identification and assay. There are good chances that a copper sulphide percentage will result from this sample.
However, should the assay show the presence of Pyrite, which is possible owing to the proximity of a large iron formation. Then a market already exists in Port Lincoln.

The Assistant Works Manager of Cresco Fertilizers has verbaly advised that Cresco would be interested in buying Pyrite to use in the manufacture of Sulphuric Acid. If this is the case, then more than a drilling program would have to be carried out.

Photos of surface stripping and trenching carried out on various claims, accompany this report. Details of claims are on the back thereof.

Also accompanying this report is proposed plan of mining operations on the Waterfall creek prospect. Tests carried out show that a true 73% · 27% solution of acid and water over a period of twenty four hours has proved the most successful - the copper leaving the precipitate to adhere to the scrap metal.

Also contained in this report isan expenditure list for the three months exploration program which was submitted to the Dept. of Mines, S.A. and which was agreed upon by the share holders of the 14 claims in question.

REMARKS

I see know reason why mining on a small scale cannot be commenced at the Waterfall creek prospect while further testing is being carried out.

Approximately 5 tons of ore has been accumulated already, and this would assay between 10% and 15%.

Also I suggest two test holes - one each on the Tumby Bay lode claim No. 5716 and also the Flinders lode claim No. 5784.

NICKEL & SILVER EXPLORATION PTY. LTD.

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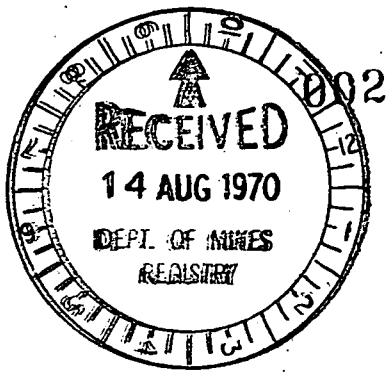
ENV. 1398



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PROGRESS REPORT

ON

TUMBY BAY CLAIMS, S.A.

FOR

NICKEL & SILVER EXPLORATION PTY. LTD.

AMINCO & ASSOCIATES PTY. LTD. SYDNEY

PROGRESS REPORT

ON

TUMBY BAY CLAIMS, S.A.

INTRODUCTION

The writer was requested by Mr. A. Graham, Managing Director of Nickel & Silver Exploration Pty. Ltd. to carry out an evaluation of the exploration progress achieved to date on the various mining tenements held by his company in the Tumby Bay area, and to recommend further work if warranted. The details of Mr. Graham's request are contained in a letter dated 29.6.70.

The writer travelled from Sydney on July 8th and in the company of Mr. Graham inspected the Iron Mount prospect, its adjacent area and the Waterfall Creek prospect. This report was prepared in Adelaide the following day and despatched to Sydney for publication.

LOCATION, HISTORY, LOCAL GEOLOGY

A report on a preliminary field investigation of the Tumby Bay claims prepared for Nickel & Silver Explorations Pty. Ltd. in March, 1970, by J.E. Lewis of Aminco & Associates Pty. Ltd. contained details of location, history and local geology. Those details are not repeated here.

INTRODUCTION

The writer was requested by Mr. A. Graham, Managing Director of Nickel & Silver Exploration Pty. Ltd. to carry out an evaluation of the exploration progress achieved to date on the various mining tenements held by his company in the Tumby Bay area, and to recommend further work if warranted. The details of Mr. Graham's request are contained in a letter dated 29.6.70.

IRON MOUNT PROSPECT

(a) Stage 1 Work Done

Exploration work on the Iron Mount prospect has comprised surface prospecting and sampling, bulldozer trenching and some analytical and mineragraphical work carried out by AMDEL in Adelaide.

(b) Results Achieved

The prospecting and sampling located a belt of Archean carbonate-rich metasediments some 15 - 20 feet thick and traceable intermittently for perhaps 4000 - 5000 feet which carry some sulphide mineralization. The rock types show a predomination of narrow impure dolomite bands intercalated with more mafic bands, rich in either amphibole or chlorite, and some fragmented basic to intermediate volcanics. The dolomite bands occasionally show a tendency to develop pale green serpentine as an alteration product. These metasediments dip steeply northwest and strike northeast.

The only identifiable sulphide in the hand specimen is pyrite which occurs generally as fine disseminations. Occasionally pyrite occurs coarser segregations (up to 1/8 inch) confined to a particular dolomite bed or mafic layer, indicating stratigraphic control and perhaps syngeneticism. The greatest concentration of sulphide observed was approximately 5-7% pyrite in a ¼-inch mafic layer. However, the belt of rocks on which the prospecting was concentrated would not contain 0.1% sulphide content overall. The sulphides located have not been decomposed by weathering because of the lime-rich rock sequence in which they occur.

Mineragraphic work carried out by AMDEL on samples from this rather more topographically prominent belt of rocks has confirmed the presence of pyrite and also identified traces of chalcopyrite

(copper sulphide) and an unspecified nickel sulphide. It is felt that the actual identification of minute traces of nickel sulphide in this metamorphic as against igneous geological environment is of more academic interest than of possible economic significance. Nickel mineralization is known further north in the Eyre Peninsula, south of Whyalla at Murininnie, in Archean metamorphic rocks, but this occurrence has little, if any, economic potential.

(c) Recommendations

Although the potential for economic nickel sulphide mineralization in the geological environment of the Iron Mount prospect must be considered low, it is more of a precautionary move that a recommendation for some geochemical soil sampling is given. Should more nickel mineralization occur in the unexposed metamorphic sequences above or below the well-exposed but weakly-mineralized dolomite belt, then soil sample analyses will indicate its presence. Initially at least four lines of soil samples collected from the "C" horizon and spaced 25 feet apart should be run across the full local sequence from west of the Iron Mount ferruginous sequence to several hundred feet east of the dolomitic belt. Analyses for nickel, cobalt, copper, lead and zinc should be requested. It is suggested that the services of competent geochemical samplers be retained to carry out this programme.

WATERFALL CREEK PROSPECTS

(a) Stage 1 Work Done

Exploration work on the Waterfall Creek prospect has comprised surface prospecting and sampling, bulldozer and backhoe trenching, and hand excavation of old opencut workings. Some samples of copper carbonate nodules were assayed and returned values as high as 45% Cu.

(b) Results Achieved

The exploration work was concentrated on the south-western end of the old opencut workings in order to extend the strike length of known copper mineralization. The results were largely inconclusive due to the great depth of overburden - greater than eight feet, the limit of the backhoe.

The excavation of portions of the opencuts confirmed the width of the siliceous shear zone carrying copper carbonates to average close to three feet. The length of the lode is about 600 feet. It is faulted off at the northeast end and the continuation of the dislocated portion is more narrow and weakly mineralized. These dimensions indicate a potential reserve tonnage of 120-150 tons of ore per vertical foot. This is obviously very modest potential and it is unlikely that the deposit could be worked profitably on ore carrying less than 10% Cu. It is considered unlikely that the primary copper mineralization will contain ore of that grade.

(c) Recommendations

The prospect with its present dimensions and likely low primary copper grade is not at all attractive. The only avenue open to upgrading the prospect is to run a limited I.P. programme over

the line of lode, with one line over the known mineralized portion and two lines over the possible southwestern extension. If no response is received from the two exploratory lines then there will be no justification for considering further exploration expenditure.

D.L. SEYMOUR
CONSULTANT GEOLOGIST

Adelaide, S.A.
9 July, 1970

In addition to the above a Geochemical Survey will be carried out on the following claims 5788, 5787, 5784, 5786, 5716 5771 in the neoct few days.