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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

SUMMARY OF EXPLORATION ON THE CUNI (COPPER-NICKEL)

FIELD, MELBA FLATS, TASMANIA

MICROFILMED

June, 1969

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SUMMARY OF EXPLORATION ON THE CUNI FIELD,

MELBA FLATS, TASMANIA

INTRODUCTION

The Cuni Field is situated about five miles north-east of Zeehan and is accessible from the Murchison Highway and Emu Bay Railway line which pass close by. The area is low lying and swampy and is covered by scrub.

The orebodies were discovered in 1893 and have been worked intermittently for a total production after sorting and partial roasting of approximately 6,050 tons of ore, assaying 9.7 per cent nickel and 4.7 per cent copper.

The orebodies occur as small shoots at intervals over about 7,000 feet along a north-south trending meta-dolerite sill. From north to south, the known orebodies are:

- (1) North Cuni (including Genet's Winze)
- (2) South Cuni
- (3) Blowfly
- (4) Mosquito
- (5) Vaudeau
- (6) Nickel Reward
- (7) Deveraux.

The area is held by Electrolytic Zinc Company of Australasia Limited under Exploration Licence 2/62 covering $9\frac{1}{2}$ square miles.

This report summarises the geology and the previous geophysical work and diamond drilling carried out on the Cuni Field.

GEOLOGY

The geology of the Melba Flats area is shown on the attached geological maps (Fig. 1 and 2).

The ore bearing intrusive is one of a number of mafic sills within argillite and greywacke of the Lower Cambrian Crimson Creek Formation. The sedimentary rocks generally strike north-south and dip east at 50 to 60 degrees. Part of the Serpentine Hill complex - a large ultramafic to mafic intrusion - extends into the south-eastern corner of the Licence area. The age of the mafic and ultramafic intrusions is between the limits of Lower to Middle Cambrian.

In the Cuni field, at least three mafic intrusives are present. They dip to the east and are more or less concordant with the sedimentary rocks. The orebodies occur within or adjacent to the central sill which is a meta-dolerite averaging 30 feet in thickness. The eastern and western sills are generally coarser grained and have been identified as meta-gabbros. The mafic rocks are partly or highly altered to mineral assemblages of the lower green schist facies of metamorphism.

The meta-dolerite sill has been exposed at intervals over a strike length of about 7,000 feet. It is not continuous over this length and from diamond drilling information it appears to pinch out at depths of 100 to 200 feet below the surface. The continuity of the sill is disrupted by faulting in a number of places. At the Deveraux prospect, the meta-dolerite sill appears to have been displaced by faulting about 2,500 feet to the south-west of the main Cuni line.

The ore occurs in shoots, generally 30 to 150 feet in length, 2 to 6 feet in width and 20 to 130 feet in depth. The shoots are commonly found along the footwall side of the sill.

Two types of ore have been recognised and consist of:

- (1) Pentlandite-pyrrhotite-chalcopyrite-pyrite ore at North Cuni, South Cuni and the Vaudeau Mine.
- (2) Millerite-chalcopyrite-pyrite ore at the Nickel Reward and Deveraux prospects.

Platinum and palladium in the range of 1 to 2 dwts. per ton have been reported in ore from the Vaudeau Mine.

In addition to the copper-nickel mineralization, small quartz-siderite veins carrying galena and sphalerite are present in the area.

GEOPHYSICAL WORK

Self potential, electromagnetic and magnetic surveys have been carried out, mainly by the Bureau of Mineral Resources in 1952-53 and 1956-57. The self potential survey, at traverses 100 feet apart over a north-south distance of 9,200 feet, covered the whole of the Cuni field but the electromagnetic and magnetic surveys covered only part of the field. The self potential and electromagnetic surveys gave strong anomalies over the North Cuni and Nickel Reward orebodies. Weak self potential anomalies were obtained over the South Cuni, Blowfly, Mosquito and Deveraux orebodies. The magnetic work was confined to only a few traverses and did not detect any anomalies.

In general the geophysical work confirmed the presence of short shoots of massive sulphide but failed to locate any new orebodies.

DIAMOND DRILLING

During six periods of activity dating from 1930, a total of 56 diamond drill holes have been drilled on the Cuni field. Much of the drilling was poorly planned and supervised. For these reasons and because of poor core recovery, some of the holes were inconclusive.

Some particulars of the diamond drilling are given in Table 1.

The results of the drilling are discussed in the descriptions of the individual orebodies.

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TABLE 1

Hole Nos.	Year	Company	Area
DH 2, 3, 4	1930	Copper Nickel Mining Company	North Cuni
✓ DH 5, 6	"	"	North of South Cuni
✓ DH 1, 7, 8	"	"	South Cuni
✓ DH 9, 10	1939-40	Gold Mines of Australia	North Cuni
✓ DH 13, 16	"	"	Blowfly
✓ DH 12, 14	"	"	Mosquito
✓ DH 11, 15, 17	"	"	Vaudeau
EM 1, 2, 3, 4	1953	Eagle Metals	North Cuni
✓ M 6, 7, 8, 9	1955-56	Montana Silver Lead Company	North Cuni
✓ M 13, 14, 15, 16	1957	"	Nickel Reward
✓ M 10, 11, 12	1955-57	"	Devereaux
✓ MFP 109, 110, 111	1965	Electrolytic Zinc Company	North Cuni
✓ MFP 112, 113	"	"	South Cuni
✓ MFP 114, 118, 120, 122	1965-66	"	Nickel Reward
✓ MFP 126, 127, 128, 129, 130, 131, 132	1968	"	North Cuni

NOTES ON THE KNOWN OREBODIESNORTH CUNI AND GENET'S WINZE

At Genet's Winze, the orebody was worked to a depth of 10 feet over a length of 70 feet but the tonnage produced is not known. The orebody in this section strikes north-east and dips at 60 to 70 degrees east.

A total of 17 holes have been drilled in this section, as shown on the longitudinal projection (Figure 3). The drilling shows that the copper-nickel mineralization extends over a strike length of about 210 feet although it may not be continuous. The deepest intersections were obtained at about 100 feet below the surface. All the deeper drill holes failed to intersect ore and also, except for MFP 129 and possibly M 9, apparently did not intersect the meta-dolerite sill. It is inferred that the sill pinches out in depth as is suggested by the evidence from MFP 128 and 129, where the thickness of the sill is reduced from 40 feet in the upper hole to 2 feet in the lower hole.

If the orebody is assumed to be continuous, there is a possible ore reserve of 12,000 tons at a grade of 4.0% Ni and 2.2% Cu in the section from BN to BP (Figure 3).

At North Cuni, a shaft was sunk to a depth of 80 feet where the orebody was found to be 3 feet wide. South of the shaft the orebody was stoped to a height of 30 feet producing 960 tons of ore.

Seven holes have been drilled in this section as shown on Figure 4. Copper-nickel mineralization was intersected in five of the holes but the grade was low, except for MFP 110 which is suspect because the grade was based on a sludge sample.

There is possibly 2,500 tons of ore remaining above the 80 foot level drive.

SOUTH CUNI

The South Cuni shaft has been sunk to a depth of 80 feet and driving at the 75 foot level proved an ore shoot 80 feet in length. The recorded production is 1,189 tons.

The results of the five drill holes in this section show that the orebody does not extend in strike or depth (Figure 5).

BLOWFLY AND MOSQUITO

Workings at the Blowfly produced 300 tons of ore and the shoot appears to have been completely worked out. Drilling to the south of the ore shoot failed to intersect ore (Figure 6).

The Mosquito, which is approximately 250 feet south of the Blowfly, produced 50 tons of ore. The depth extent of this ore shoot is not known but is probably small (Figure 6).

VAUDEAU

The Vaudeau shaft was sunk to a depth of 127 feet. The orebody was about 110 feet in length on the surface but had reduced to 45 feet at the 122 foot level. The ore production was 3,900 tons.

Drilling to test the orebody in depth (Figure 6) failed to intersect ore and there appears to be no significant quantity of ore left in this orebody.

NICKEL REWARD

There are possibly two orebodies in this section, one of which is exposed in a surface trench. Some shallow shafts have been sunk but no production records are available.

The results of the eight holes drilled in this section give a confusing picture but the orebodies evidently do not extend either in strike or depth.

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DEVERAUX

No production has been recorded from this prospect and drilling indicates that the orebody is of very limited extent.

CONCLUSIONS

Small shoots of high grade copper-nickel sulphide mineralization are found at seven locations over a distance of about 7,000 feet along a meta-dolerite sill.

The copper-nickel mineralization is probably genetically related to the meta-dolerite sill but the reasons for its occurrence at odd intervals along this one particular sill are not known.

A self potential survey confirmed the presence of the known orebodies but failed to locate any new orebodies.

Diamond drilling has shown that the known orebodies are too small for commercial exploitation.

The best prospects would appear to lie in finding new orebodies. To this end, the suggested approach is further geophysical work in conjunction with soil geochemistry. Only a small part of the field has been covered by the electromagnetic technique and further work could utilise electromagnetic, magnetic and possibly induced polarisation techniques. Reconnaissance soil sampling has shown marked copper-nickel geochemical anomalies near the nickel bearing sill and this method could be extended to cover the whole Cuni field.

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