Rept. Bk. No. 56/127
G.S. No. 2636
D.M. 1863/62

DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY

METALLIC MINERALS SECTION

Report on

MINERAL CLAIM NO. 4383

NEALES FLAT

by

J. Verhofstad
Geologist

6th June, 1963

D.M. 1863/62

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Map No.	Title	Scale
S-3399	Sketch Map of Mineral Claim 4383, Sec. 318, Hd. Neales	4 chains = 1 in. approx.

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NEALES FLAT

(G.H. BIAR & E.H.LINKE)

ABSTRACT

An iron and manganese gossan was investigated in Section 318, Hundred of Neales, about 11 miles S.E. of Eudunda, and covered by mineral claim No. 4383. Mineralisation is associated with joint or fracture planes. The quantity of iron and manganese is too low to warrant further work.

INTRODUCTION

At the request of the claimholders, (Messrs. G.H. Biar and E.H. Linke) the writer investigated an alleged occurrence of lead and silver minerals on the above claim which covers an area of about 20 acres. The regional geology of the area is outlined on the Truro sheet of the Geological Atlas 1 mile series produced by the Department of Mines, Adelaide. The accompanying sketch map No. S 3399 shows the gossan outcrops in more detail.

GEOLOGY

The terrain is undulating and partly covered with open forest; the claim is cleared of vegetation. Drainage is towards the east and outcrops are scarce, except in the creeks. The surface is covered with float.

The claim is located in Lower Sturtian "boulder tillite", consisting of a pebbly sandstone, which is porous in some places. The bedding plane is inferred from the parallelism of many flat pebbles. Low grade metamorphism has developed a fine mica that gives the rock a slaty appearance. The poorly developed slaty cleavage which parallels the bedding plane of the tillite strikes 350° and dips 80°W.

Joints striking 350° and dipping 20-30°E are recognised all over the area. Slickensides are present on the joint surface, the direction of dip is 90°, the pitch 20° - 30°.

An igneous dyke, which is petrographically described as a micromonzonite, has intruded the Sturtian tillite. The measured strike and dip of this dyke in the creek north of the area are 346° 20-40°E and are roughly parallel to the joint planes. However, along the eastern boundary of the claim semi-outcrop and float of the dyke rock extend in a more meridional direction.

MINERALISATION

Iron and manganese oxides occur in narrow elongated zones in and around the claim parallel to the strike of the Sturtian Tillite. The iron and manganese oxides are found in layers of about 1 cm thickness, or associated with quartz veins. Both layers and veins occur in association with a greenish-grey, partly brecciated quartzitic rock, which appears to be an indurated, silicified type of tillite, as it contains the same kind of sub-angular pebbles as the surrounding Sturtian tillite.

Silicification, brecciation and mineralisation which occur in narrow zones (probably not wider than a few yards) are associated with and parallel to the joint or fracture planes. The layering of ore minerals in these zones also parallel the joints.

No relationship between the intrusive dyke and the mineralisation has yet been established.

Pending a petrological report on the rock samples submitted, the following ore minerals were tentatively identified in hand specimens:

1) Martite, which is found in layers 1 cm wide (with or without coarse euhedral quartz), as scattered crystals, or in quartz veins. All these occurrences are associated with the silicified tillite;
2) hematite, which is next in abundance is found only in quartz veins;

3) a colloform manganese ore mineral, black with irridescent colours, commonly associated with martite, occurs as coatings on the joint surfaces. Manganese oxide is also found in fern-like patterns on minor fracture planes in tillite and in the intrusive dyke rock;

4) limonite and box-work patterns (after siderite?) with euhedral quartz crystals.

The maximum content of combined iron and manganese oxides in the silicified tillite is low, approximately 15%.

CONCLUSION

The occurrence can be described as a gossan. No lead or silver minerals are present. The quantity and percentage of iron and manganese is of no economic importance and no further action is recommended.

J. Verhofstad
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METALLIC MINERALS SECTION

JV:AGK
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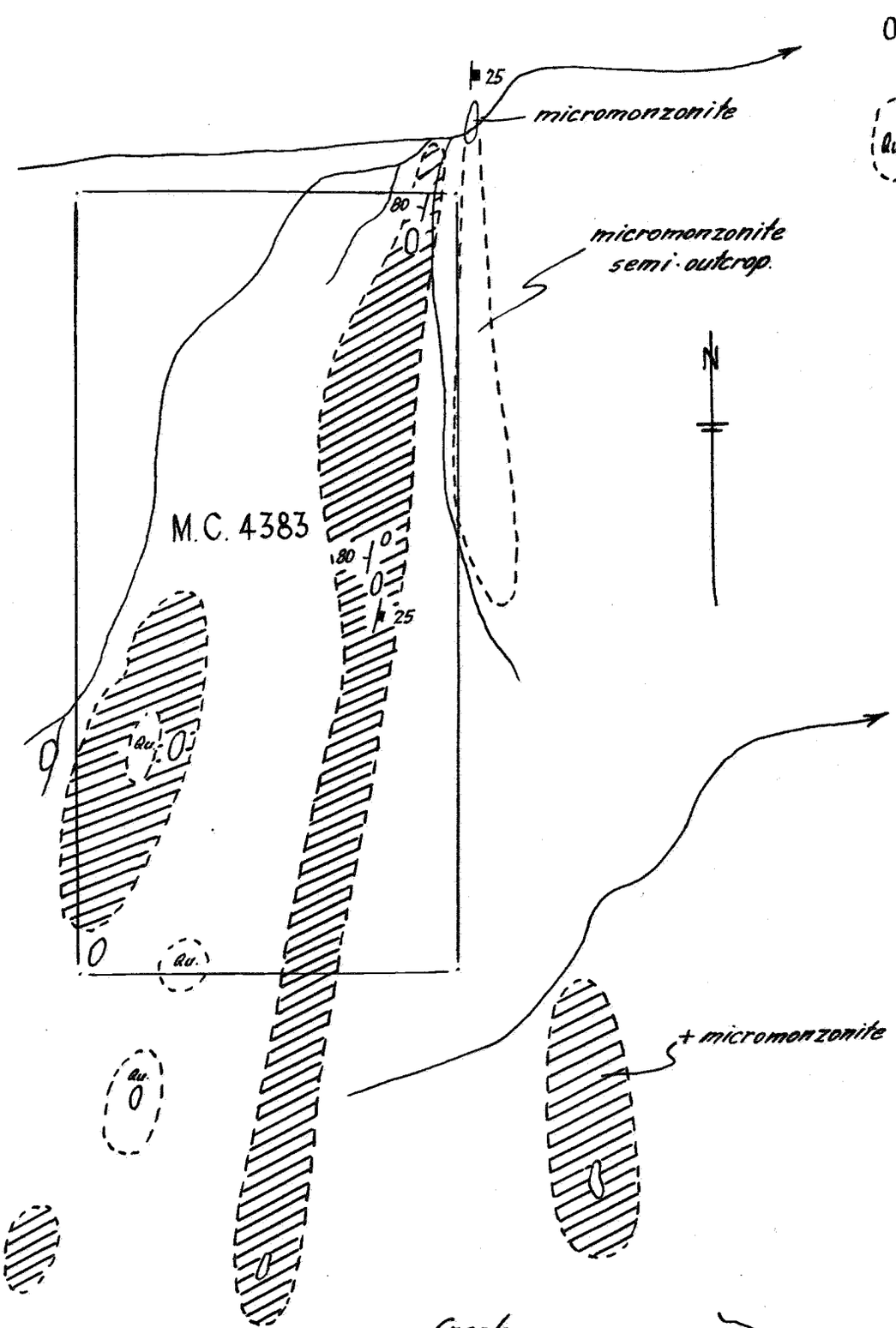

Creek . . . . . ~

Outcrop . . . . . o

Limit of float . . . ⬭

Tillite float containing Fe & Mn oxides ////

Vein quartz . . . . Qu.

Bedding plane . . . . ⊢80

Joint plane . . . . . ⊢25

10 Chains

To accompany report by J. Verhofstad.

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	SKETCH MAP OF Mineral Claim 4383 Section 318, Hd. NEALES.	D.M. 1863/62	Scale 4 Chns. to 1 in (approx.)
		Tcd.		Req.	S 3399
		Ckd.			
Director		Exd.			Date 22·5·63 | Gl. 5

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