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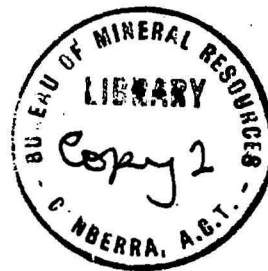
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REPORT ON DIAMOND DRILLING OF MUCKETTY MANGANESE

DEPOSIT, NORTHERN TERRITORY

by

N. J. MacKay.

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Deposit, N.T.

Surface geology - Scale: 1 inch = 100 feet.  
Cross Sections - Scale: 1 inch = 20 feet.

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# REPORT ON DIAMOND DRILLING OF MUCKETTY MANGANESE

## DEPOSIT, NORTHERN TERRITORY

### INTRODUCTION

The Mucketty manganese deposit is 65 miles north of Tennant Creek and 30 miles south east of Renner Springs. Access to the deposit is by a track from the Stuart Highway which is 6 miles west of the deposit.

A geological examination of the Mucketty manganese deposit was made by N. O. Jones in August, 1955. (Geological Report on the Mucketty Manganese Deposit, Bureau of Mineral Resources Records No. 1955/120). He recommended that diamond drilling be carried out to determine the extent of the manganese mineralisation below the surface. The geology and mineralisation of the deposit are described in Jones' report. Grades of manganese ore used in this report are the same as those used by Jones. They are :-

- Low grade ore - less than 35%  $MnO_2$
- Medium grade ore - 35-60%  $MnO_2$
- Good grade ore - greater than 60%  $MnO_2$

Good grade ore is being sold by the leaseholders to the Territory Enterprises Pty. There is no market for ore containing less than 60%  $MnO_2$ .

Drilling commenced at Mucketty on 22nd March, 1956 and ceased on 7th April, 1956. A total of 251 feet of drilling was completed with an average core recovery of 84%. The surface plan and cross sections showing the drill holes accompany this report (Plate 1).

### DRILLING RESULTS

The strongest manganese mineralisation at Mucketty occurs on Mineral Lease 53A where a zone of good grade ore strikes along the hill scarp and dips into the hill at 25° to the northeast. Five holes were drilled from the top of the hill scarp in order to determine the extent down dip of good grade ore on Mineral Lease 53A and to ascertain whether a more extensive drilling campaign was warranted at Mucketty.

The drilling results show that the manganese mineralisation decreases rapidly both in size and grade down the dip of the mineralisation. This is shown in the cross sections through the drill holes. The greatest thickness of good grade ore in the deposit is exposed in an open-cut near section line AB, and this is where the mineralisation has its maximum extent down its dip.

The five drill sites were selected and surveyed by K.W.A. Summers, who also logged the drill cores. Assays of core samples from DD2 and DD3 were done in the Assay Office of the Mines Branch at Alice Springs.

The logs of the five drill holes are given below:-

Drill Hole No. 1

DD1  
Vertical hole  
R.L. 1070'  
Core recovery 79%

Footage	Recovery	Description
0 - 12'	8' 6"	Weathered felspathic sandstone with residual quartz and impregnations of manganese oxide and limonite. Iron content is high but the manganese content is very low.
12' - 15'	1' 9"	Ditto, with some veinlets (1/16" wide) of manganese oxide parallel to the bedding of the sandstone.
15' - 39'	20' 6"	Ditto, manganese content is higher between 23' and 25' 6" (approx. 10% MnO <sub>2</sub> ).
39' - 42'	3' 0"	Soft leached siltstone with some small nodules of manganese oxide and limonite.
42' - 63'	16' 0"	Soft leached siltstone impregnated with iron oxides, no manganese oxide.

Drill Hole No. 2

DD 2  
Vertical hole  
R.L. 1064'  
Core Recovery 92%

Footage	Recovery	Description	Assay Result
0 - 32'	30' 6"	Weathered felspathic sandstone with residual glassy quartz, strongly limonitic, with small amounts of disseminated manganese oxide.	
32' - 35'	1' 0"	Ditto, with higher content of manganese oxide.	12.3% MnO <sub>2</sub>
33' - 39'	5' 0"	Red siltstone, high in iron but no manganese present.	
39' - 47'	6' 6"	Soft leached siltstone, no manganese.	

Drill Hole No. 3.

DD3  
Vertical hole  
R.L. 1064  
Core recovery 85%

Footage	Recovery	Description	Assay Result
0 - 10'	6' 3"	Weathered felspathic sandstone with residual quartz. Iron content is high but manganese content is low.	
10' - 16'	5' 6"	Ditto, manganese content increasing	29.0% MnO <sub>2</sub>
16' - 22'	6' 0"	Fine-grained manganese oxide partially replacing sandstone	40.5% MnO <sub>2</sub>
22' - 26'	4' 0"	Fine-grained manganese oxide partially replacing leached siltstone	44.7% MnO <sub>2</sub>
26' - 30'	4' 0"	Massive manganese oxide partially replacing leached siltstone	55.8% MnO <sub>2</sub>
30' - 37'	5' 6"	Soft leached siltstone with no manganese present. Bedding dips 25°	

Drill Hole No. 4

DD4  
Vertical hole  
R.L. 1051'  
Core recovery 92%

Footage	Recovery	Description
0 - 40'	38' 0"	Weathered felspathic sandstone with disseminated, sooty manganese oxide and impregnated with limonite. Manganese content is very low.
40' - 41'	1' 0"	Soft leached siltstone with tiny veinlets of manganese oxide.
41' - 42' 6"	1' 3"	Felspathic sandstone impregnated by manganese oxide (less than 20% MnO <sub>2</sub> )
42' 6" - 55' 10' 3"		Leached siltstone with no manganese present. Bedding dips 20°.

Drill Hole No. 5.DD5  
Bearing 240°M  
Depression 55°  
R.L. 1051'

Footage	Recovery	Description
0 - 39'6"	31'6"	Felspathic sandstone, strongly limonitic, with disseminated, sooty manganese oxide.
39'6" - 40'	6"	Manganese oxide, medium grade ore.
40' - 45'	-	Probably very soft siltstone, no manganese oxide seen in sludge
45' - 49'	2'9"	Leached siltstone with no manganese present.

CONCLUSIONS

The diamond drilling has shown that the manganese mineralisation does not persist very far below the surface and that the grade of the ore decreases sharply down the dip of the mineralisation. The mineralisation is the result of surface enrichment of sedimentary beds which contain small amounts of manganese and iron oxides at depth. Solution of these minerals has occurred, followed by concentration and deposition of the minerals at the surface of the sedimentary beds. The results of the drilling confirm Jones' statement that the "siltstone has been the favourable rock-type in the formation of good grade ore".

Although the Mucketty manganese deposit has a total strike length of 2,000 yards, workable occurrences of ore of good grade are restricted to the area shown on the accompanying surface plan. There is no market for ore containing less than 60% MnO<sub>2</sub>. Up to the end of May, 1956 the production of manganese ore has been 1480 tons at an average grade of 69% MnO<sub>2</sub>. All this ore has been obtained from M.L. 53A.

The reserves of good grade ore (greater than 60% MnO<sub>2</sub>) at Mucketty are confined to M.L. 53A and are considered to be approximately 11,000 tons. In addition there is about 1500 tons available from boulders lying at the foot of the main hill scarp.

Deposit F in the Bootu Creek area is 5 miles south-east of the Mucketty deposit (see Jones' report). Jones considers that "approximately 500 tons of good grade ore are exposed and this ore may form a band 2 - 4 feet thick extending for more than 400 feet on each of the two hills". It appears likely that several thousand tons of good grade ore are available at this deposit.

Summing up, there should be a total of 15,000 tons of manganese ore of grade greater than 60% MnO<sub>2</sub> available at the Mucketty deposit and at Deposit F in the Bootu Creek area.

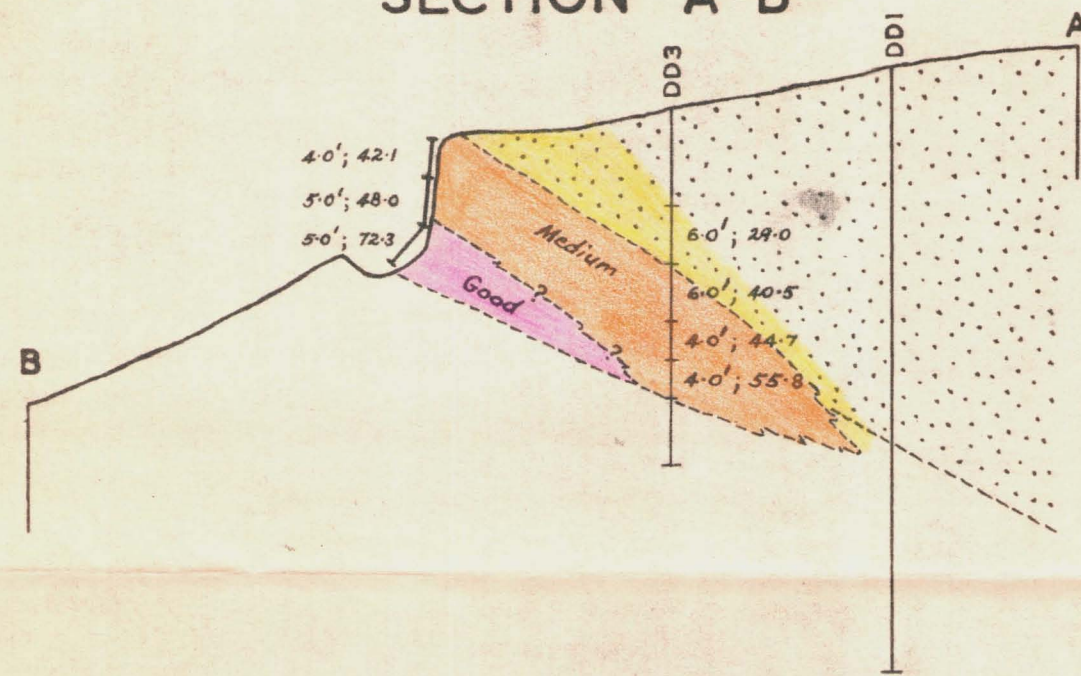
(N. J. MACKAY)  
Senior Resident Geologist.

Bureau of Mineral Resources,  
Resident Geologist's Office,  
DARWIN. N.T.

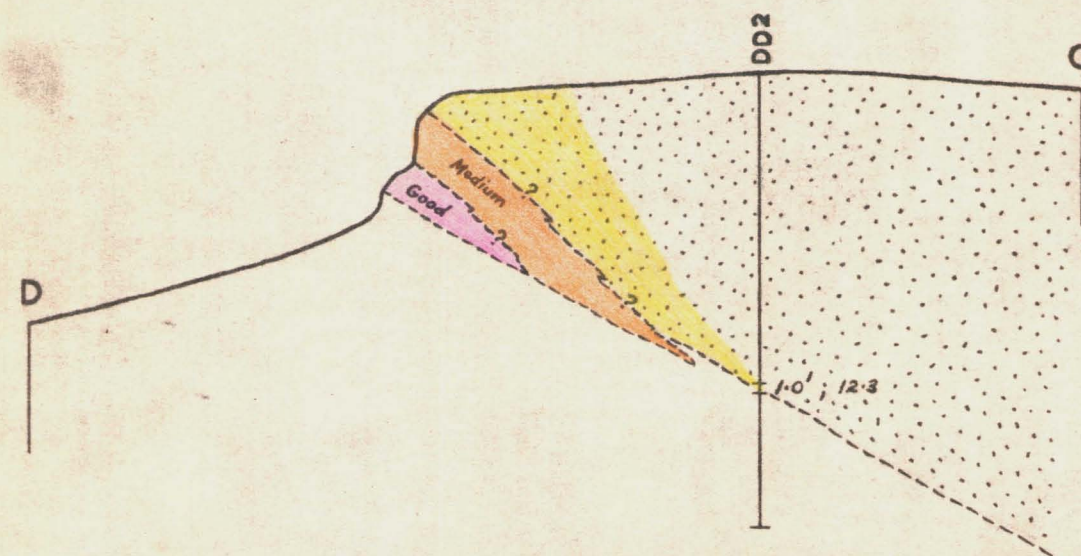
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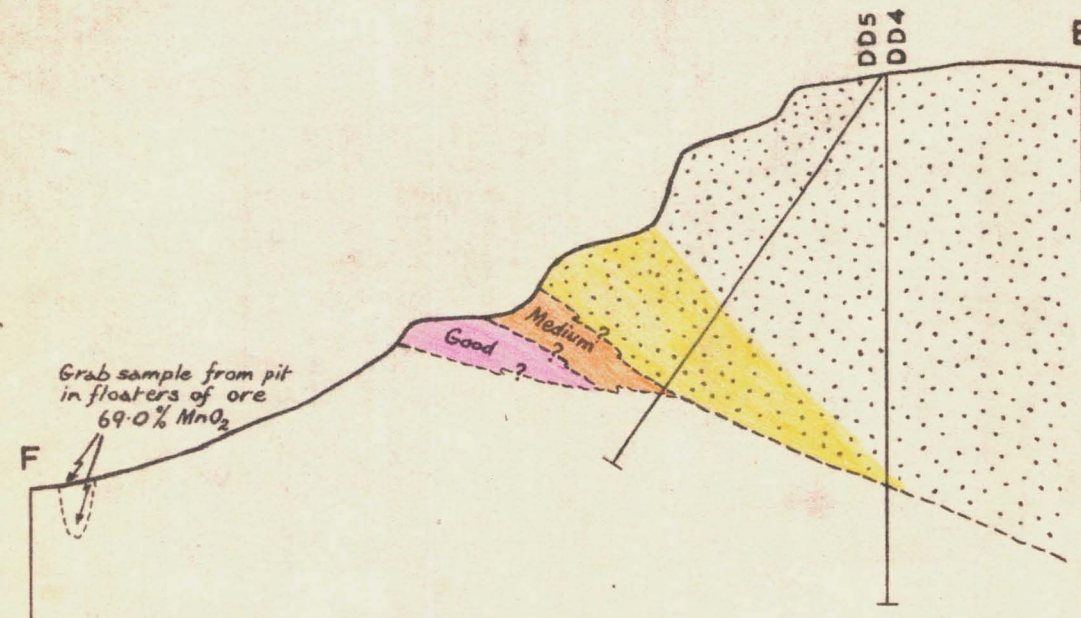
# SECTION A-B



# SECTION C-D



# SECTION E-F

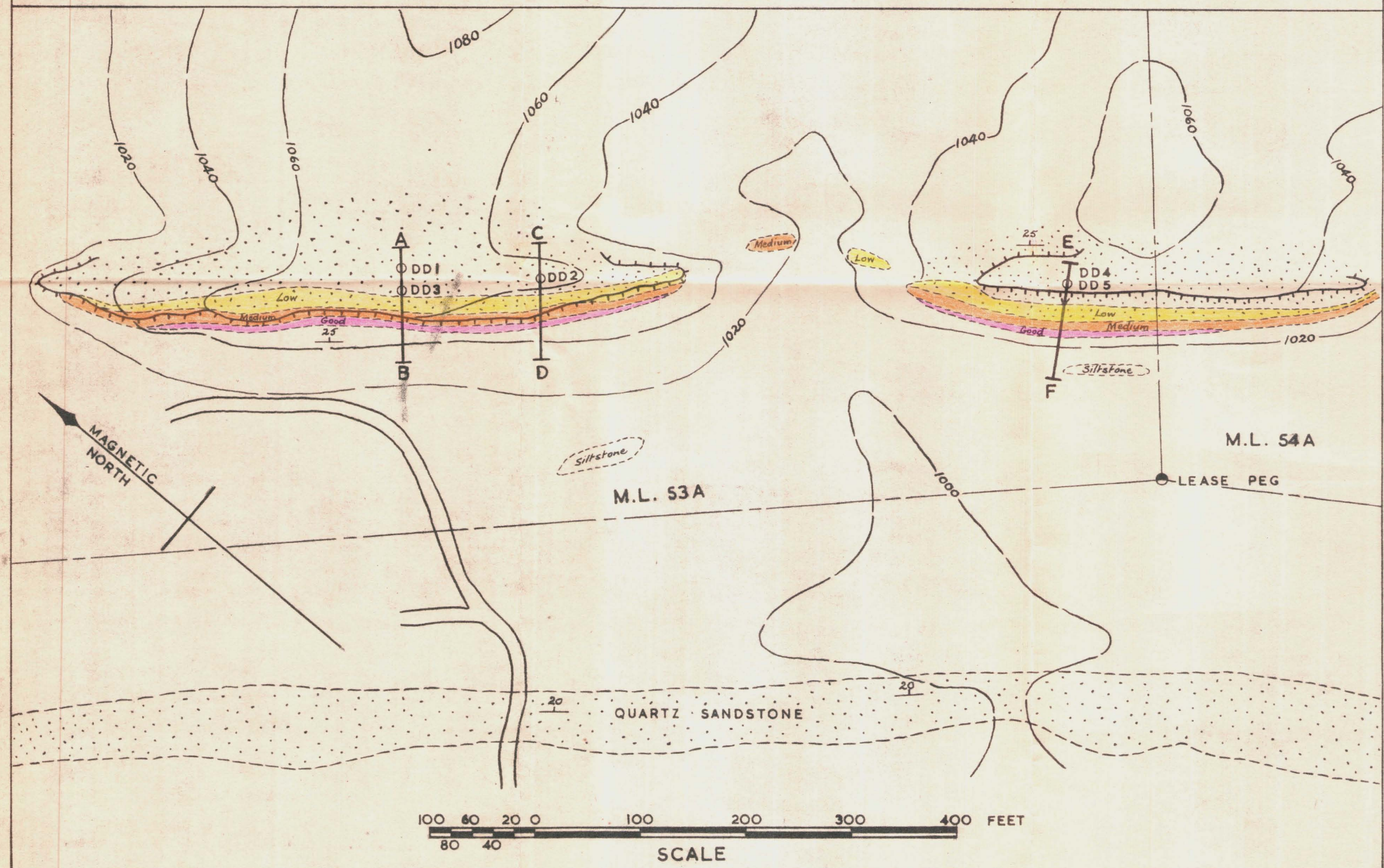


20 10 0 20 40 60 FEET  
SCALE

# SURFACE GEOLOGY

BASED ON GEOLOGICAL MAP BY N.O. JONES

PLATE I



# REFERENCE

- FELSPATHIC SANDSTONE
- SILTSTONE
- LOW GRADE MANGANESE ORE
- MEDIUM GRADE " "
- GOOD GRADE " "
- APPROX. GEOLOGICAL BOUNDARY
- INFERRED " "
- STRIKE & DIP OF STRATA
- DIAMOND DRILL HOLE
- TOPOGRAPHIC CONTOUR LINE
- ROAD

[2'-0" to 7'-11"] ASSAY SAMPLES — WIDTH IN FEET; % MnO<sub>2</sub>

# DIAMOND DRILLING OF MUCKETTY MANGANESE DEPOSIT NORTHERN TERRITORY

Bureau of Mineral Resources  
Resident Geologists' Office  
Darwin, N.T.  
May, 1956.