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GEOCHEMICAL SOIL SURVEY ON THE MT. TODD AURIFEROUS AREA  
NORTHERN TERRITORY.

EXPLANATORY NOTES

The area is situated approximately at 40 kilometers northwest of Katherine, at 14 kilometers off Stuart Highway near Edith Falls National park and is included in the area of Exploration Licence 229 on which this company has a joint venture exploration agreement with the legal holder of the licence, Australia Ores and Minerals Ltd. The area was known as gold field in the past and contains several reefs in slates and sandstones of the Pre-Cambrian system. The reefs are quartz-ironstone type consisting essentially of quartz and limonite in oxidized zone but is probably quartz-arsenopyrite with some pyrite, chalcopyrite and galena in primary zone. The ore was crushed and cyanided in Mt. Todd battery at one time and was roasted, hand-crushed and cyanided at mine at other time. The average gold content of ore treated in the past appears to be 23 dwt per ton and sampling results in the past by the government suggested to be 16 dwt per ton of average grade.

The work was conducted in 1973 for the purpose of prospecting gold reefs and was carried out on the area outside gold mining leases in the hope of sounding on buried reefs or possible extension of known reef formations. The area is shown in Map 1 and Map 2. Application of 7 gold mining leases were lodged with Mines Branch and the positions are also shown in Map 1 and Map 2.

A ground control grid was established in 1973 and consists of two sets of parallel lines spacing 50 meters apart, the one running due north-south and the other east-west. Station co-ordinates at every intersections of two sets of lines were pegged with wooden stakes and were flagged on which aluminium tags were nailed up making many square parcels of land with a 50 meters side.
A geochemical soil survey was conducted over the area during the period of 1st June to 31st August 1973. One foot deep small hole was shoveled at each station co-ordinate. The samples were taken from the bottoms of the holes and were sent to the laboratory of Geochemical and Mineralogical Laboratories Pty. Ltd., Bishop Street, Darwin, after sifting it with 22 mesh screens at prospecting sites. For the laboratory's convenience the samples were further sent to Perth W.A. to be analysed for gold and arsenic by Perth laboratory of the same company. Darwin laboratory undertook the work of preparation of samples known as sieve technic.

The results of 574 samples were returned from the laboratory by the end of August 1973. The results of the analyses and location are shown in Map 1 for arsenic and in Map 2 for gold.

Frequency distribution and cumulative distribution were plotted for arsenic and frequency distribution for gold. Fig 1 shows frequency distribution of arsenic plotted on normal graph paper and cumulative frequency on logarithmic paper. The figures of logarithm ppm instead of ppm were plotted on the x-axis. Inspection of both graphs suggests background values of 0 to 65 ppm (1.8 log ppm) arsenic, mixed values 65 to 125 ppm (2.1 log ppm) and anomalous values greater than 125 ppm. It is also suggested that the area has high background in arsenic compared with other case histories on geochemistry. Any higher values more than 160 ppm are dealt with as the highest anomaly in Map1.

Frequency distribution of gold were also plotted on normal graph paper in Fig 2. It is observed that gold is closely distributed within 0.01 ppm to 0.16 ppm and 74.72 % of total samples belongs to the range of 0.02 to 0.06 ppm. Only 8 out of 574 indicate higher values beyond 0.16 ppm. Any higher values more than 0.09 ppm are dealt with as the highest class anomaly in Map 2.

The presence of several anomalous zones within the mapped area are indicated and are shown in Map 1 and Map 2.
The area of good correlation between anomalies of gold and arsenic are observed and are shown in a composite map of Map 3. An exploration programme of additional geochemical survey in blanked zones in the maps is now in progress and some number of additional results on analyses are awaited.

Follow-up study on the anomalous zones with bulldozer trenching and diamond drilling is also recommended. The trenching is to proceed any drilling.

30th September 1973

M. Sakurai

Note

Mr. Sakurai advised that exploratory trenching would be conducted by his party. Further information is not available at this stage.
Anomalous zones of arsenic
Anomalous zones of gold

WANDAROO MINING CORPORATION PTY. LTD.
MOUNT TOOD AREA
Composite map (3)
DRAWN DATE SCALE: 1 = 5000
P.S. 19-9-73
Fig 1

Frequency distribution and cumulative frequency of arsenic in 574 samples from Mt. Todd gold field, Northern Territory.
Fig 2
Frequency distribution of gold in 574 samples Mt.Todd gold field Northern Territory