DEPARTMENT OF MINES
SOUTH AUSTRALIA

PRELIMINARY REPORT

ON

MT. GRAINGER GOLDFIELD

SECTION 183 HD. COGLIN

by

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GEOLOGICAL SURVEY

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1. INTRODUCTION

On 12th November, 1963, Mr. Brian Grove, acting on behalf of a syndicate working the Mt. Grainger Goldfield, requested geological advice on exploratory diamond drilling of the lease.

The writer attended a meeting of the syndicate in Adelaide on 27th November, 1963, when it was explained that a geological survey of the property would be necessary before a drilling target could be nominated. The syndicate were anxious for a programme of positive exploration to be started as soon as possible and it was arranged for a preliminary inspection to be made on 16th & 17th December, 1963, to formulate an immediate exploratory programme.

A visit was made as arranged in company with Mr. T. Jones, Chairman of Directors, when the recommendations made in this report were explained.

No maps are included with this report. The reader is referred to those appearing in the publication by R. Lockhart Jack (1913).

2. GEOLOGY

The geology of the goldfield was described by R. Lockhart Jack (1913) in 1913 who made recommendations for further development. No work has been done since Jack's report until the present syndicate commenced operations early in 1963.

Several small mines occur in the vicinity of Mt. Grainger which lies in Section 183 Hundred of Coglin, approximately 7 miles N.N.E. of Oodla Wirra. The largest are the Mt. Grainger and New Medora workings and it is here that the present syndicate are operating.

At the Mt. Grainger Mine, tillite, underlain by slate strike at about 30° (magnetic) and dip at 45-55° to the N.W. A 20' - 30' wide shear zone lies near the contact of these two rocks and dips in sympathy with them. A persistent quartz-ironstone vein, varying from a thin film to 12" wide, lies near the hanging wall of the shear zone and carries some gold. The principal gold values occur however in quartz, limonite leaders which come off from the hanging wall vein towards the footwall approximately at right angles to the shear zone and dip at 30° - 40° to the S.W. Not all of the leaders reach the footwall of the shear zone, and those that do degenerate rapidly into iron-stained joints when they pass into the footwall country rock.

The mine is accessible through a 332' deep vertical shaft which has been re-equipped by the present syndicate. Crosscuts at 120' and 220' intersect the shear zone and from these drives follow along the footwall. A large stope connected to an underlay winze from the surface is present above the 120' level and a small stope extends for about 30' above the 220' level. Water stands at present just below the 220' level plat. but Jack describes a winze on the hanging wall shear to the 330' level which was in payable values in the lower section. Only short drives were made on the 330' level before pumping difficulties occurred and the mine was abandoned.

In longitudinal section Jack shows an ore shoot pitching to the south west at approximately the same angle as the quartz leaders. He estimated that 715 ounces of gold were recovered from 2840 tons of ore won from these workings. This gives a grade of 4 dwt per ton which at today's price would be worth about £3/-/- per ton.

Jack reported that "it is evident that there is a considerable tonnage to be taken out between the 330' level and the surface." He pointed out that nearly all of the development leadings were placed near the footwall of the main shear, a position in which only the stronger quartz leaders would be exposed. He recommended driving on all levels on the

hanging wall vein. The present syndicate has done no work in this mine apart from making a large excavation near the 220' level plat from which little gold was won.

Recent work by the syndicate has been done in Jone's shaft which is located north east of the Mt. Grainger main shaft and about 200' from the footwall of the main shear. Country rock is slate which at the surface strikes at 40 - 45° (magnetic) and dips 55° N.W. A quartz limonite vein, about 6" wide, strikes at 105° and dips 30° - 40° to the south. An underlay shaft follows this for about 100' and is intersected by a vertical shaft (Jone's Shaft) at about the 63' level. A little stoping was done in the early days off the eastern wall of the underlay near the surface apparently on leaders which ran off from the vein. Jack records 459 ozs. of gold recovered from 161 tons of ore.

These high values apparently attracted the syndicate away from the main shaft area. The underlay was extended for a further 20 - 30' below the 63' level and some sublevel driving carried out. Jone's Shaft bottoms at about 100' and a curved cross cut has intersected a thin quartz limonite vein which dips flatly towards (?) the main shear. A winze has been sunk on this vein which at the present time is almost horizontal. A large hole has been excavated at the base of the winze.

Sporadic gold values occur in these new openings. (One assay went 15 dwt per ton) but nowhere in the Jone's Shaft area has any workable tonnage of ore been exposed. In the underlay below the 63' level the vein is offset by minor faults dipping at right angles to it and the miners reported that gold occurred at the intersection of vein and fault. Small pockets may be encountered in driving along these offsets but the tonnage available will be small.

3. DIAMOND DRILLING

No drilling can be recommended at the present time. Targets could be selected in the Mt. Grainger main shaft area but these are also accessible to underground development and more

positive results will be obtained from sampling underground openings.

There seems to be little point in surface drilling as holes would need to be sited in the hanging wall and aimed normal to the main shear zone. In this direction they would be running parallel to the gold bearing quartz leaders.

Drilling from the crosscuts along the strike of the main shear and on the hanging wall side of it would intersect the areas of interest (provided that no large drift in drill hole azimuth occurred) but the quartz limonite leaders are broken and friable and core is certain to be lost in them.

4. CONCLUSIONS & RECOMMENDATIONS

In the Mt. Grainger Mine gold occurs in quartz limonite leaders which lie in and at right angles to a 20 - 30' wide shear zone.

Underground development in an earlier period of mining has been carried to the 330' level and an ore shoot having a southerly pitch has been indicated.

Development on the 120' and 220' levels is located in the footwall of the shear zone, a position to which only the strongest leaders extend. The highest gold values occur adjacent to the hanging wall of the main shear. Underground development to explore this position was recommended by R. Lockhart Jack in 1913 and as no work has been done since Jack's visit his recommendations still apply and should be followed.

High gold values were encountered in the upper part of the workings at Jone's Shaft but further work by the present syndicate, although showing sporadic high assays, has not disclosed any tonnage of ore. It is recommended that work be suspended in this area in favour of the more promising main shaft area.

No drilling targets can be nominated at present, but detailed surface mapping may allow a target or targets for

later exploration to be defined. However, diamond drilling is not considered to be the correct tool for exploring this mine as the attitude of the leaders presents a difficult target and anticipated core losses in the gold bearing veins will make interpretation of results uncertain.

Detailed surface and underground mapping covering the Mt. Grainger and New Hedora mines is recommended. This, with the results of the further underground development, will allow a re-evaluation of the mine to be made.

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5. REFERENCE

Jack, R. Lockhart 1939. The Mt. Grainger Goldfield. Geol. Surv. S.A. Report No. 2.