

REPORT ON THE DIAMOND DRILLING AT KOHINOOR
AND ELEANOR LEASES, FINE CREEK, AGICONDI
GOLDFIELD, NORTHERN TERRITORY.

- by -

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SUMMARY

This report deals primarily with four diamond drill holes at two of the Pine Creek gold leases, and briefly summarises the results obtained from previous diamond drilling.

It is considered that the quartz-gold reefs are irregularly distributed in a wide zone of rocks of the Burrell Creek Formation. The gold content of the reefs at depth appears to be low.

INTRODUCTION

Four diamond drill holes (Nos. 3, 3A, 4 and 5) were drilled by the Mines Branch, Northern Territory Administration on the old Kohinoor and Eleanor gold leases (see Plate 1) at Pine Creek. The work was commenced in January and completed in May 1965.

REGIONAL GEOLOGY

The quartz-gold reefs at Pine Creek occur in rocks of the Burrell Creek Formation, which Malone (1962) describes as: "Greywacke, siltstone, greywacke-siltstone locally metamorphosed to andalusite-mica schist and mica schist in west of Pine Creek sheet area." The Burrell Creek Formation at Pine Creek is almost entirely surrounded by granite. To the north-west, the Burrell Creek Formation contains the Union Reefs gold mineralized areas.

HISTORY AND PREVIOUS DIAMOND DRILLING

Hossfeld (1936) described the early mining operations at Pine Creek. His work included plane table maps at a scale of 100' = 1" over some of the mining areas.

The history of Pine Creek mining dates back to the discovery of gold during the construction of the overland telegraph line (Jensen 1914). Chinese labour was used and poorly constructed workings resulted. As the Chinese were not allowed to take up leases for gold, Europeans did so and let them on tribute to the Chinese.

Records of gold produced were not kept before 1894, although there is little doubt that much gold was obtained before that. Known total production up to 1915 is 54,354 tons of ore treated at batteries and mills for a yield of 59,179 ounces of gold, and 67,145 tons of ore treated at cyanide works for a return of 16,929 ounces of gold. This gives an average gold yield

per ton of 1 oz. 1 dwt. by crushing, and 5 dwt. by cyanidation.

Diamond drilling was commenced in 1906 to test the reefs at depth and has sporadically continued to the present day.

The Enterprise Mine, which is considered the most important prospect, has been worked intermittently with Government assistance since 1914. The shaft was originally sunk on the strength of evidence provided by a drill hole, D.D.H. 11 (1915) which was reported by Hossfeld (1936) to have yielded values of 4½ ounces gold/ton, although other sources reported a value of 3 ounces 7 dwts. gold/ton. Drives on the 260 ft. level led to the quartz body which the diamond drill hole had intersected. Samples taken from this 5 ft. wide solid quartz body proved an average value between 4 and 5 dwts. gold per ton.

The Enterprise was re-opened recently, and an association between arsenopyrite and the primary ore has been identified.

Two diamond drill holes were put down in the vicinity of this mine by Mines Branch, Northern Territory Administration, in 1963-64 (Vanderplank 1964). The results of this drilling are shown briefly in a table on page 3. The drill holes were put down on the old Enterprise lease No. 2 and the Monarch lease No. 1.

Details of diamond drilling carried out by the Government before 1920 are not complete. Furthermore, assays of the core produced were evidently only of 'chip' or 'spot' samples. These results are not very enlightening as the gold in the reefs is known to be irregular and patchy, and even split cores do not give entirely dependable assay results. The irregular distribution of the gold values is shown by the previously mentioned sample from diamond drill hole No. 11, which yielded an assay result of over 3 ounces/ton of gold while the quartz body from which it came only averaged 4-5 dwts of gold/ton.

Positions of former diamond drill holes, where known, are shown on Plate 1, together with their lengths, directions and inclinations. Other details are presented on a table below. Blanks in this table indicate that the information is not known.

TABLE OF PINE CREEK DIAMOND DRILLING AND MAIN ASSAY RESULTS

D. D. Hole No.	Year Drilled.	Depression.	Total Length.	Lease Hole Collared on.	Results and Assays.
1	1906-7	45°	1,338'	New Year	720' 3 dwts Au/ton. 1,228' Visible gold, 2" quartz. 1,271' 2 dwts Au/ton, 1,286' 3 dwts Au/ton.
2	1911		701'	Michaelmas	
3	1911		513'	Kleanor	
4				New Thunderer	
5	1912-13	45°	800'	Sagabiel	704-709' 2 dwts Au/ton. 709-715' 1 dwt Au/ton. 715-722' 2 dwts Au/ton. 722'-748' Trace Au. 748-754' Trace Au 754-761' 6" 2 dwts Au/ton.
6	1913	50°	625'	Czarina	
7	1913	65°	718' 8"	North Star	Did not intersect quartz or lode formation
8	1915	65°	720' 3"	North Star	No lode material intersected
9	1915	65°	500' 1"	North Star	No lode material intersected
10	1915	50°	665'	Enterprise	187-199' Trace - 15 dwts Au/ton. 267-330' Trace-1 dwt Au/ton. 514-549' Trace- 15 dwts Au/ton.
11	1915	45°	405'	Enterprise	182' 4" - 340' 6" Trace to 3 oz. 7 dwt Au/ton at 340' 6".
11	1964	50°	271' 6"	Monarch	40-42' 2.0 dwts Au/ton. 62' 6"-63' 5.2 dwts Au/ton. 122' 60"-127' 3.9 dwts. Au/ton. 192' 6"-198' 2" 21.7 dwts Au/ton. 220' 3"-225' 5.4 dwts. Au/ton. 435' 8"-436' 4" 3.9 dwts Au/ton
2	1964	53°	510'	Enterprise	345' 4"-349' 4" 3.7 dwts Au/ton. 349' 4"-354' 2.9 dwts Au/ton 386-389' 3.5 dwts Au/ton. 406' 6"-410' 2.7 dwts Au/ton.
3	1965	47°	400'	Kohiner	328' 10"-329' 6" 3.4 dwts Au/ton.
3A	1965	62°	360'	Kohiner	58' - 61' 0.6 dwts Au/tons
4	1965	Vertical	433'	Kleanor	46 Lode material.
5	1965	60°	400'	Kleanor	310-310' 6" 0.8 dwts Au/ton. 324-325' 2 dwts Au/ton. 342' 7"-343' 11" 1 dwt Au/ton

KOHINOOR LODE

Discussion

The open cut on the Kohinoor lease (see Plate 2) is 500 feet long with a maximum width of 30 feet, and has been mined to a maximum depth of 20 feet. Jensen (1919) states that the lode worked was a saddle shaped quartz body averaging 2-3 dwts gold per ton.

Diamond drill holes 3 and 3A were put down to test for continuations or repetitions of this lode. Neither hole encountered significant mineralization.

Both holes intersected vertical beds of coarse grained graywacke beneath the open cut. The bedding mentioned in Jensen's Adit (see Plate 2) is also vertical. South west of the open cut, the bedding dips approximately 70° to the south west. An anticlinal structure is indicated with mineralization associated with the axial plane.

Plate 2 shows the positions of these diamond drill holes and a section through them. Also shown is diamond drill hole No. 2 which was drilled beneath the north western end of the open cut in 1911. This hole did not intersect any mineralization.

Conclusions

Mineralization, if present beneath the Kohinoor lease, is very patchy. The lode worked at the surface was almost certainly enriched by oxidation and weathering and averaged only 2-3 dwts gold per ton. It is therefore reasonable to assume that any lode beneath this lease would yield less than 3 dwts gold per ton.

ELEANOR LODGE SYSTEM

Discussion

The Eleanor lease has many shafts from the surface and is mostly covered with rubble, mine spoil and alluvium.

Jensen (1919) published a plan of the 170 feet level on the Eleanor lease showing the location of stopes. This plan is reproduced on Plate 3. The irregular nature of the ore shoots is known from the following information from Jensen (1919):

"The auriferous veins are short shoots somewhat pancake shaped and occur parallel or sub-parallel at frequent though irregular intervals. The richest shoots, and in fact the whole of the payable shoots, strike at right angles to the strike of the country, namely north easterly, with a dip to the south east at 30 degrees. The zone in which the shoots are contained is bounded by slides or fault lenses striking 320 degrees and dipping south west at high angles. These slides are indicated by bands of chloritic slate and cut off the flat dipping auriferous shoots on either side. The auriferous shoots occur at various intervals and very irregularly, which fact renders prospecting underground much akin to blind stabs and accounts for the tortuous nature of the underground workings."

From the plan of the prospect (plate 3) it can be postulated that the largest opening from which ore was mined was of the size order of 200' x 20' x 50'. This particular shoot was intersected down-dip by D.D.H. 3 (1965) approximately 100 feet from the lowest point worked.

At this point, the shoot consisted of alternating bands of quartz with pyrite, calcite, arsenopyrite and chlorite and greywacke-slate. The gold content of the quartz assayed up to 2 dwts per ton (full details in appendix).

Diamond drill hole No. 4 was drilled to the east of this large shoot but failed to intersect any mineralization.

Conclusion

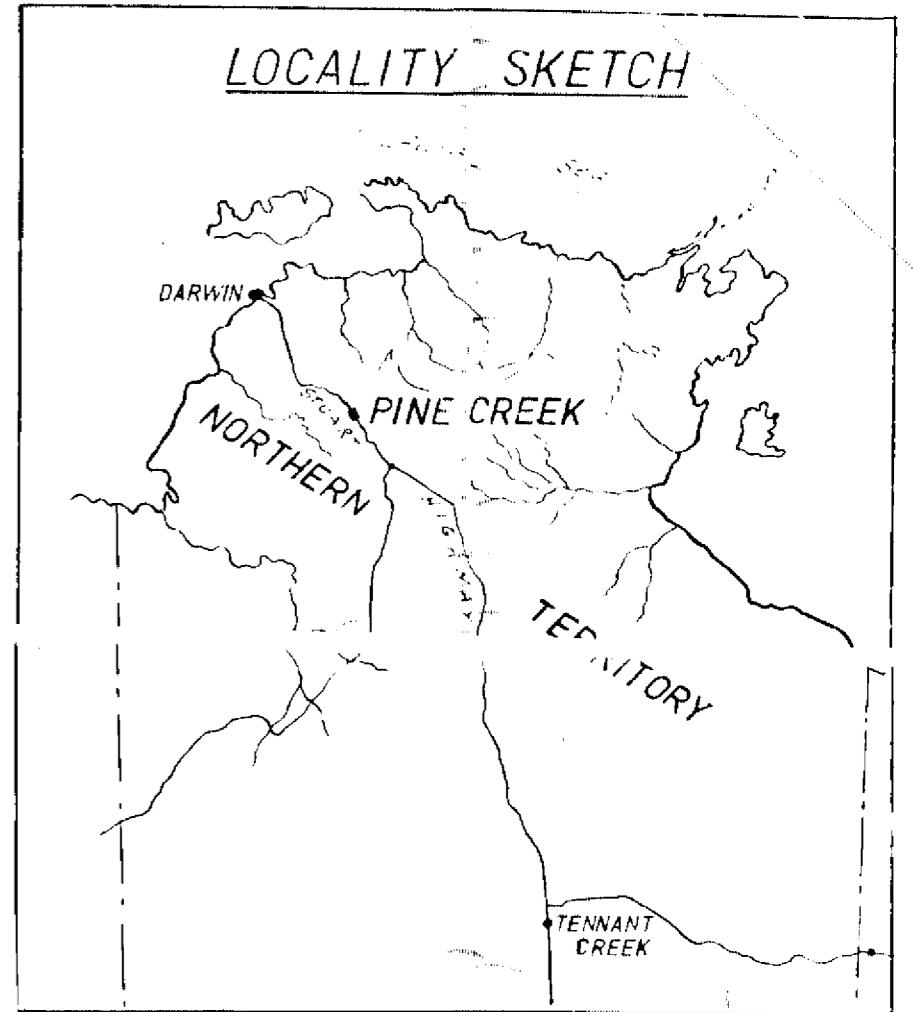
The lenticular shoots of ore in the Eleanor lease which were worked in the past have an irregular distribution making exploration for further ore both difficult and costly. Furthermore, the shoots are small and their grade is largely unknown, analyses of lode intersected by diamond drilling indicating a low grade. The near surface shoots have been mined as they probably had a higher gold content than those at depth, due to oxidation and secondary enrichment.

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APPENDIX.

LOGS OF DIAMOND DRILL HOLES. 3, 3A, 4 and 5. (1965).

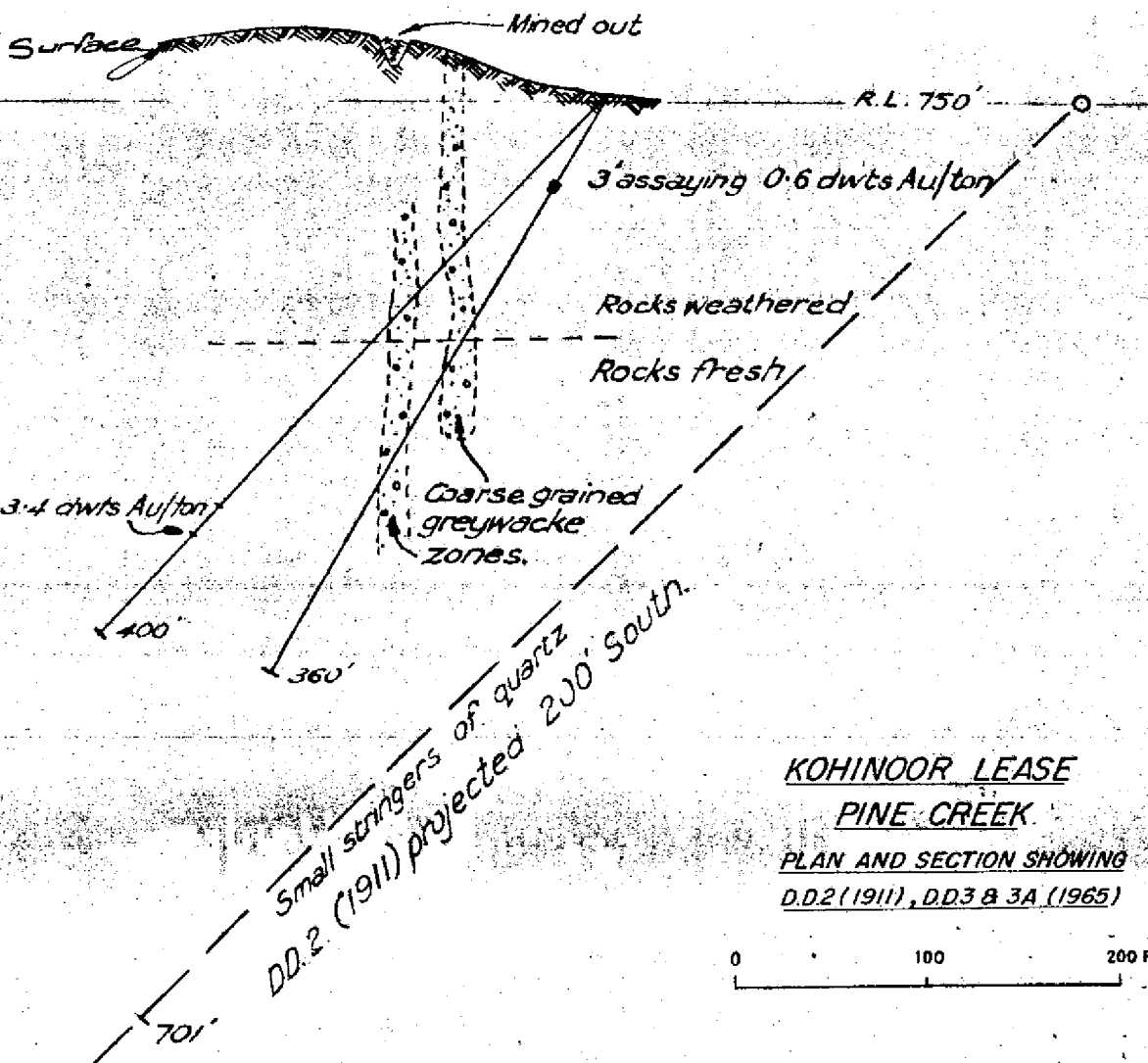
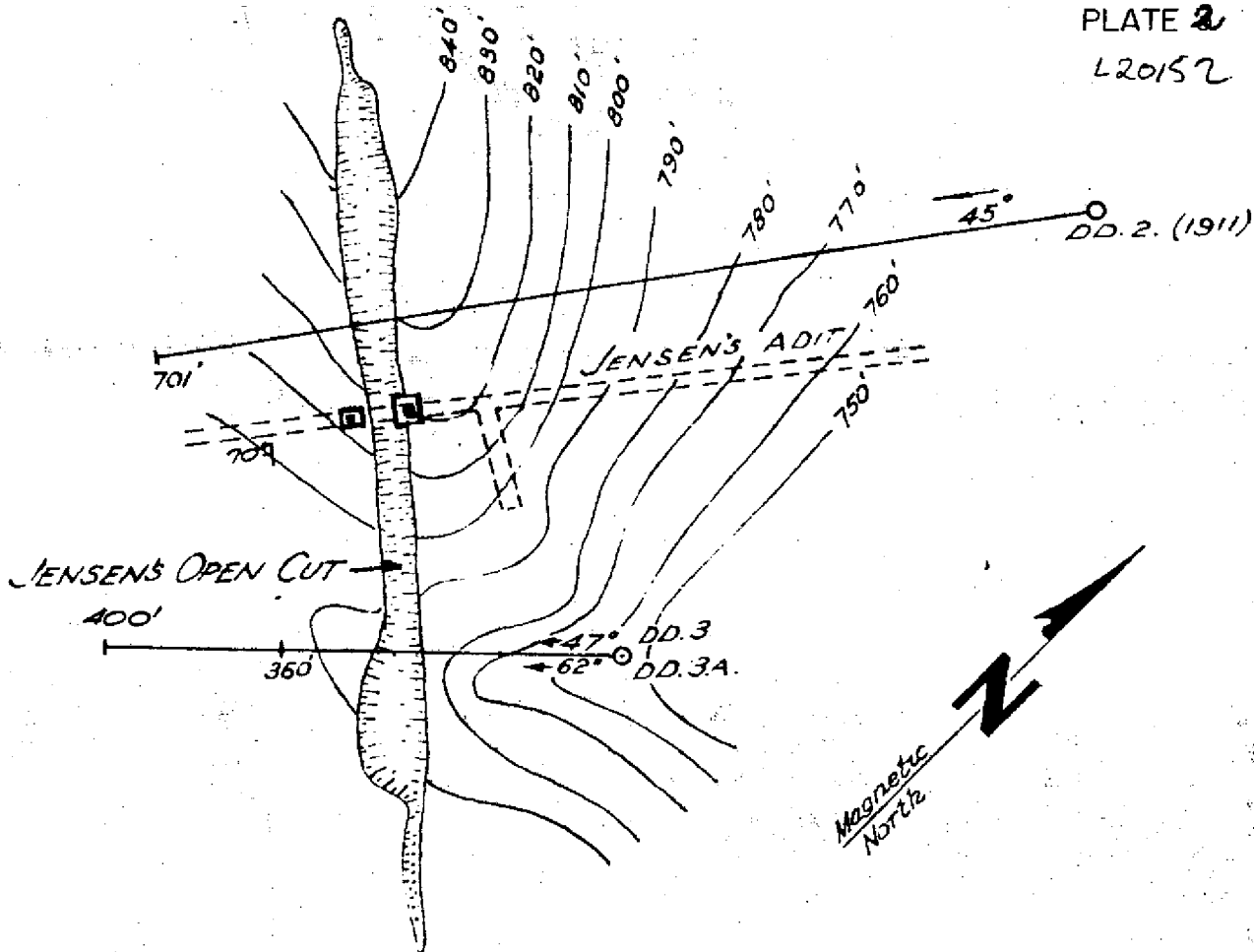


NOTE LEASE BOUNDARIES ARE SHOWN AS EXISTING IN 1913

PLAN
 of
GOLD MINING LEASES, PINE CREEK,
AGICONDI GOLDFIELD N.T.
 SHOWING
DIAMOND DRILL HOLE COLLARS

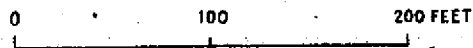
SCALE 1 INCH = 300 FT

G65/19B

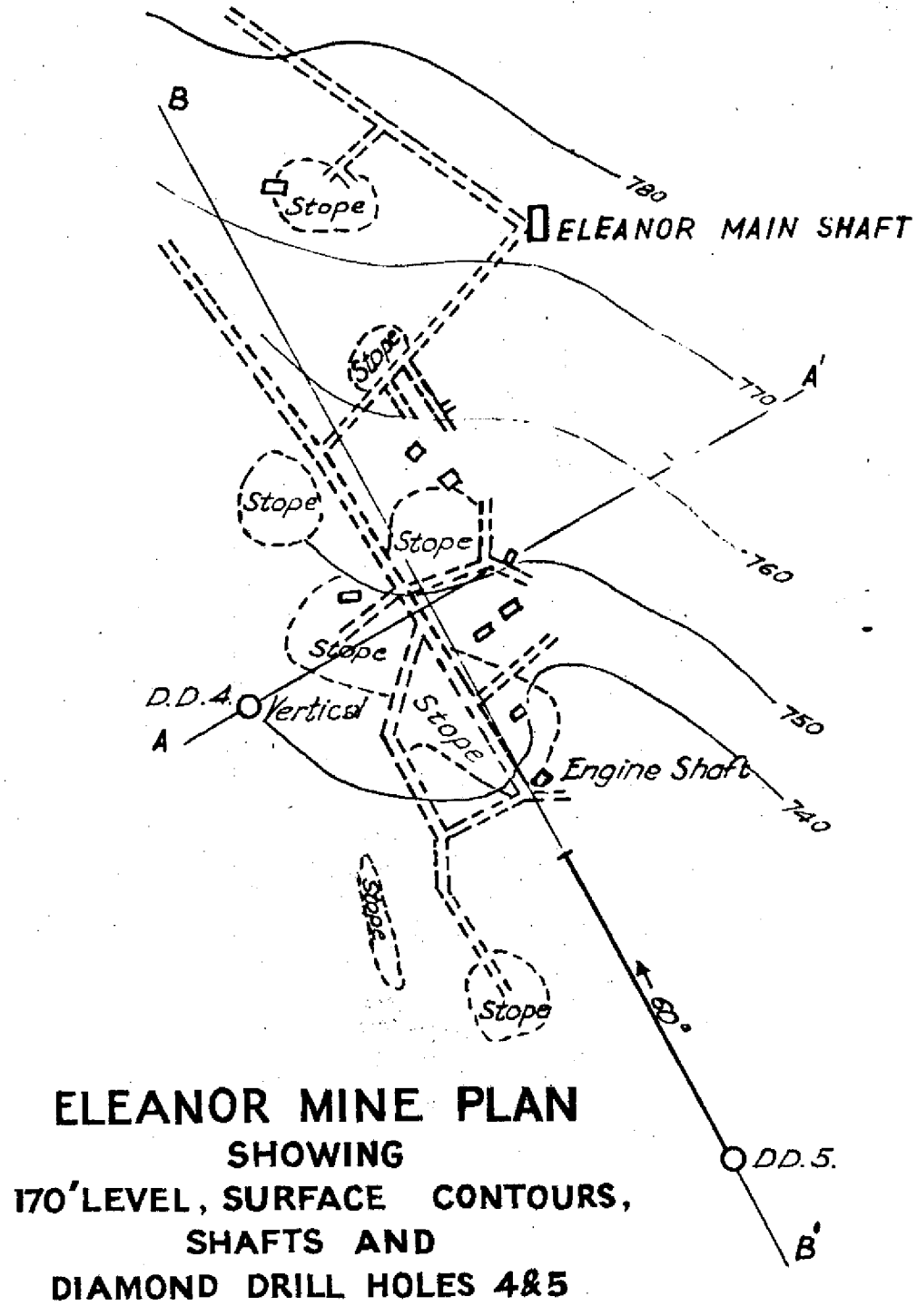


**KOHINOOR LEASE
PINE CREEK**

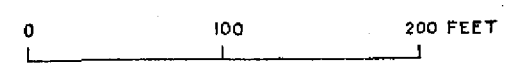
**PLAN AND SECTION SHOWING
D.D.2 (1911), D.D.3 & 3A (1965)**



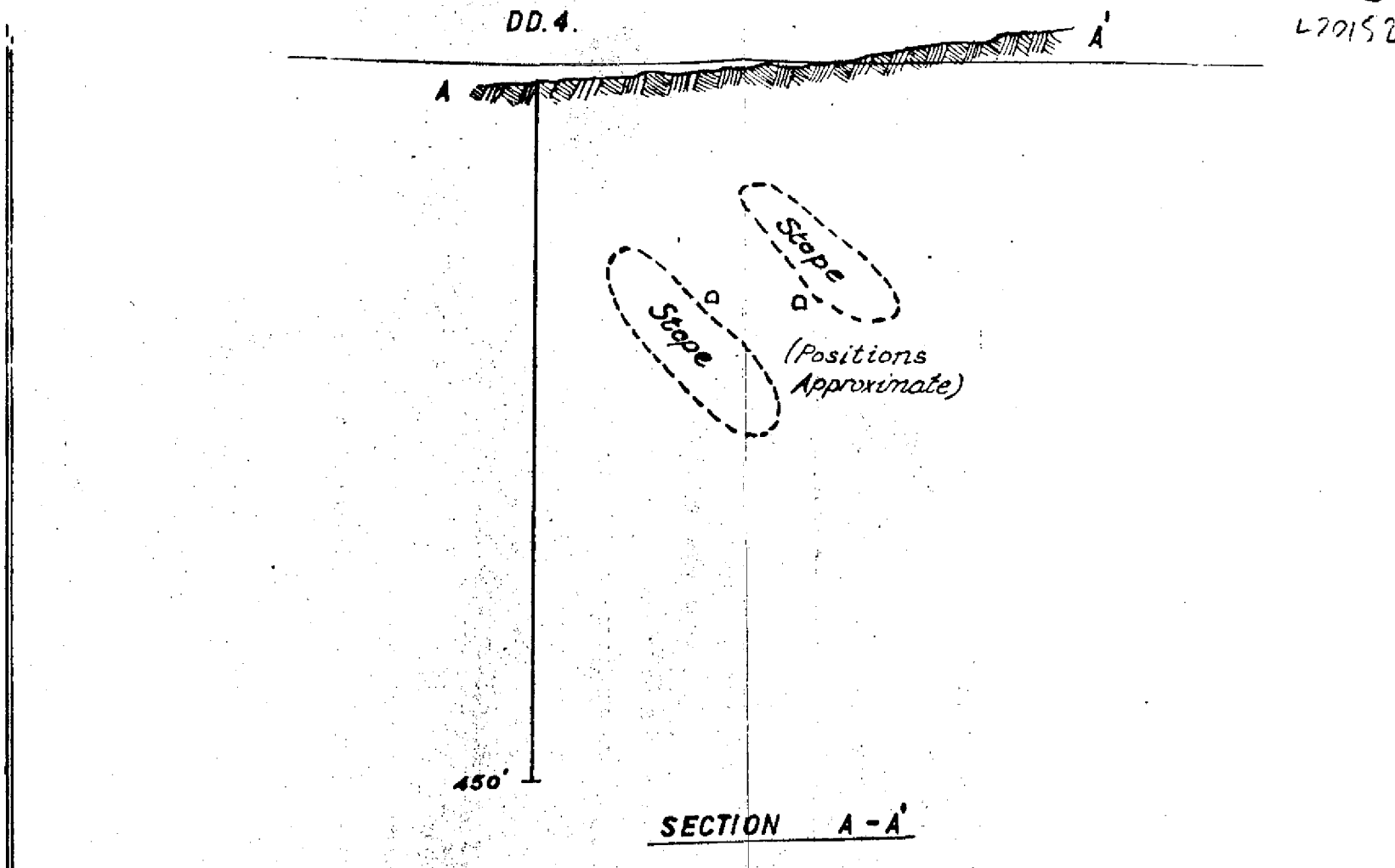
**CROSS SECTION THROUGH
PLANE OF D.D.H's 3 and 3A**



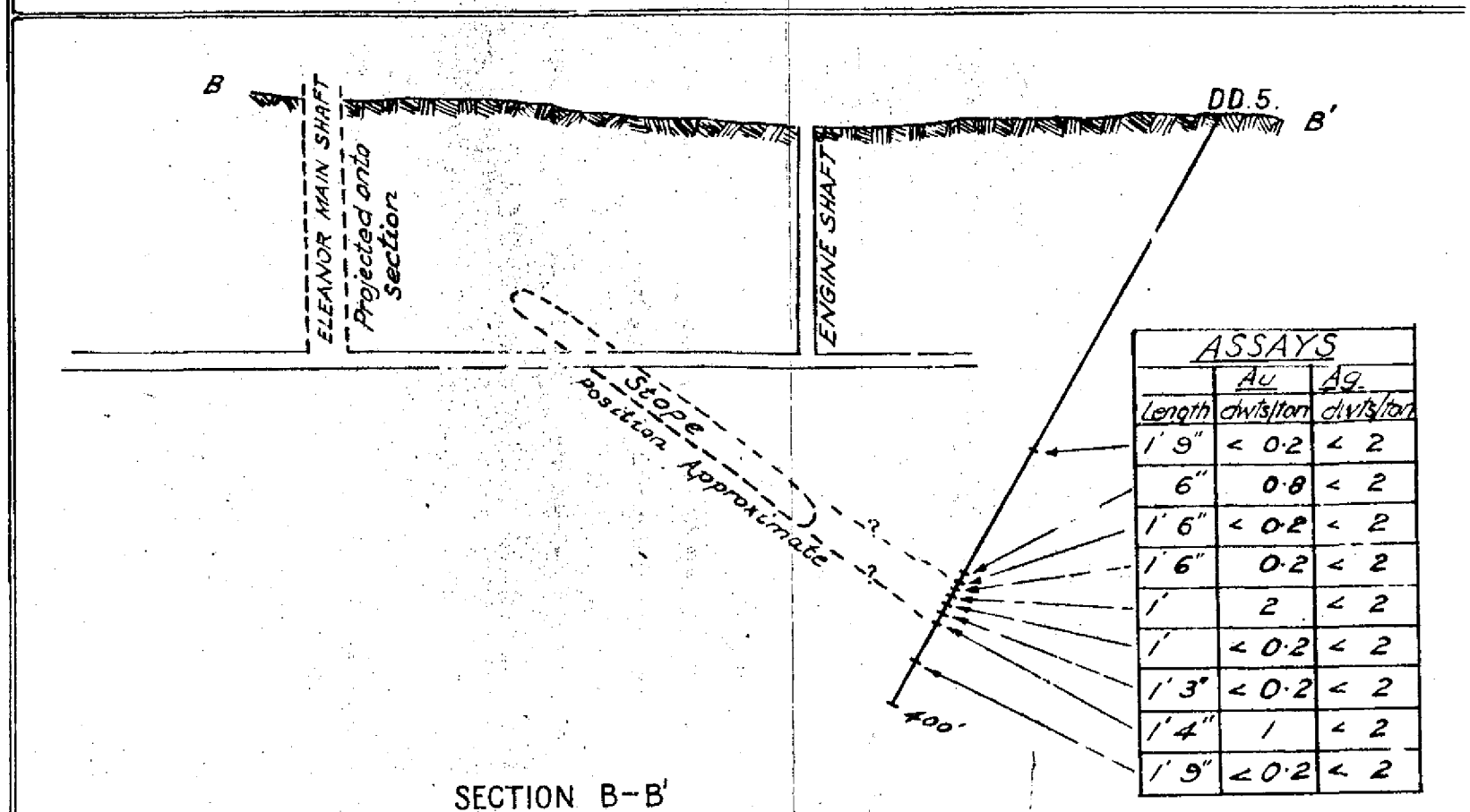
ELEANOR MINE PLAN
SHOWING
170' LEVEL, SURFACE CONTOURS,
SHAFTS AND
DIAMOND DRILL HOLES 4 & 5



Compiled by Resident Geological Section DARWIN 1965 G65/20 D



SECTION A-A'



SECTION B-B'

ASSAYS		
	Au	Ag
Length	division	division
1' 9"	< 0.2	< 2
6"	0.8	< 2
1' 6"	< 0.2	< 2
1' 6"	0.2	< 2
1'	2	< 2
1'	< 0.2	< 2
1' 3"	< 0.2	< 2
1' 4"	1	< 2
1' 9"	< 0.2	< 2

ELEANOR MINE
SECTIONS: DIAMOND DRILL HOLES
Nos 4 & 5

451965-009

To accompany record 1967/75 D51/A8/223