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REPORT ON KUMBRUF GOLD PROSPECT MADANG DISTRICT, T.N.G.

by

D.B. Dow.

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ILLUSTRATION

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SUMMARY

Kumbruf Gold Prospect, situated near the head of the Simbai River about 90 miles west of Madang, New Guinea, consists of an elevated auriferous alluvial terrace.

The gold in the terrace ranges in fineness from 877 to 900, and has originated in andesite porphyry which intrudes Cretaceous rocks in the Jimi River - Simbai River Divide to the south of the prospect.

The terrace was tested by putting measured yardages of wash through a sluice box,and weighing the gold recovered. The results show that the terrace contains gold worth about fourpence per cubic yard. Dish prospects confirm these values, which are well below economic levels.

It is recommended that no further work be done on the prospect.

INTRODUCTION

History

Gold was first discovered in the area in a tributary of the Simbai River by D. Leahy while accompanying a Government patrol in early 1954. J.C. Mackinnon visited the area in September, 1954, and first pegged the E.P.L. in April, 1956.

Mr. E.T. Forster, Mining Engineer, Department of Lands, Surveys and Mines, inspected the prospect in August, 1956, and recommended a programme of development work. The writer first visited Kumbruf in June, 1959, and reported on the prospect. A programme of work to test an elevated terrace on the leases was laid out, and the writer returned in December, 1959, but little of the work had been done. A further two weeks were spent at the prospect by the writer in March, 1961, during which time the terrace was tested.

Location and Access

The prospect is located about 90 miles west of Madang, near the head of the Simbai River, at an elevation of about 4,800 feet. It is on the south side of the Simbai Valley about six miles from Simbai Patrol Post.

Access is by aircraft to Simbai Patrol Post, then by rough walking track, which takes 3 to 4 hours to traverse. The airstrip at the Patrol Post was built by Mr. J.C. Mackinnon, and is suitable for light Cessna aircraft. Freight is sent by D.C. 3 aircraft to Aiome Patrol Post in the Ramu Valley, about 20 miles to the north-east, and is then relayed by Cessna to Simbai. The cost from Madang is one shilling per pound.

Alternative access is by rough walking track from Aiome, a walk of about three days.

Topography and Vegetation

The country surrounding the prospect is rugged, and nearby mountains rise to about 8,000 feet. The streams are deeply incised, their gradients are steep, and many gorges are developed along them. Most of the Simbai Valley has been cleared, and is covered with kunai grass and secondary scrub, but the mountains are covered with virgin bush.

THE PROSPECT

Description of the Prospect Area

The prospect is a north-north-east trending ridge, about 3 miles long and averaging about 2,000 feet wide, between the Nanoi and Soi Creeks on the west, and Tunonk Creek on the east. The crest of the spur has an average elevation of about 200 feet above the creek. Most of the ridge is covered with kunai grass and secondary scrub.

Development

A water race bringing water from Anabapim Creek follows close to the crest of the prospect ridge for about one mile, and supplies water for ground sluicing operations on the lower terraces. Gold has been won from Tunonk, Nanoi, and Soi Creeks, and from some of the terraces above Tunonk Creek.

The two costeans recommended by the writer were cut by Mr. J.C. Mackinnon using race water, assisted by picking and barring of the ground.

Geology of the Prospect

Basement rocks of the area consist of northerly-dipping basic volcanic rocks, belonging to the Cretaceous Kumbruf Volcanics, and overlying calcareous siltstone and crystalline limestone of the Eocene Asai Beds.

Capping the prospect ridge as far as the Simbai River, and resting unconformably on the basement rocks, is the dissected remnant of an alluvial terrace; this terrace has been shown by development to be underlain by an old channel of the ancestral Tunonk Creek. The gravels of the terrace are deeply weathered, and were probably formed when the creek was dammed by movement along the Simbai Fault, which follows the Simbai River in the Prospect Area. The terrace consists of flat-lying, weathered, and partly unconsolidated gravel and pebble conglomerate, with interbedded lenses of siltstone and muddy sandstone. The basal beds in the old channel are coarser-grained, and consist of well-rounded boulders of igneous rocks in a sandy matrix. The boulders are almost completely weathered; they break easily, and can be removed by ground sluicing.

The terrace has been proved auriferous as far down the ridge as No.1 Costean. Most of the gold occurs in the bottom half of the wash, but the grade is poor. The terrace is overlain by up to 40 feet of yellow clay formed by weathering of the upper gravels. Relicts of rounded pebbles occur in the lower part of this clay.

Both flanks of the prospect ridge are covered by younger terrace remnants down to creek level. These younger terraces are much less weathered than the ancient terrace, and contain numerous large boulders, up to 6 feet in diameter, embedded in pebbly wash. The gold is concentrated in the lower three feet of these terraces, and most of it rests on the bottom. Barren yellow clay overburden is common.

Origin of the Gold

The gold won from the prospect, both from the terraces and the river bed, ranges in fineness from 877 to 900, and in size from very fine colours to nuggets weighing up to one ounce. Most of the gold is well worn, but a small proportion of angular gold is found. Small quartz/gold and hematite/gold specimens are common, and it is believed that the gold was derived from auriferous quartz and hematite stringers in the main range at the head of Tunonk Creek.

Rocks of the main range drained by creeks flowing towards the prospect are Cretaceous siltstone, belonging to the Chim Group, intruded by the Oipo Intrusives, which range in composition from ultramafic to acid.

The more acid phases of the intrusives are porphyritic microgranodiorite and minor andesite porphyry, which probably introduced the gold. Gold has been found on both sides of the Jimi-Simbai Divide, but only in creeks draining these rocks.

Results of the Testing

Two costeans were cut to test the deposit.

No.1 Costean: A small gully was chosen for the site of No.1 Costean in an effort to reduce the volume of ground to be removed. The clay overburden proved to be unstable in

wet conditions, and considerably hampered the work. The bottom of the terrace was exposed on cleaning out the bed of the gully, but it was found to dip into the hill at about 20°. By lowering the tailrace several times the bottom was followed for about 30 feet before work was suspended. The lower beds consist of boulders of almost completely weathered porphyry and other igneous boulders surrounded by a small amount of sandy material.

At the time of the writer's visit the face was dangerously unstable, and the wash could not be tested in this locality.

No.2 Costean: was started about 1,700 feet to the south-south-west of No.1, but the bottom was also found to dip steeply into the hill, and work was suspended before an adequate face of wash was exposed.

Mr. Mackinnon has kept records of the gold from these costeans, but they give no reliable estimate of the gold content of the terrace because gold concentrated in the gully and in small recent terrace remnants is included in the returns.

As the costeans proved unsatisfactory for testing purposes, the writer decided to test exposures of wash in Anabapim Creek about 500 feet from Tunonk Creek. Here the creek has exposed the bottom 30 feet of the terrace. It was not possible to test a single face, but three cuts were made which tested 30 feet of the wash. The cuts were vertical and one yard wide, and a total of 26½ cubic yards of ground was put through a sluice box for the following results:

Costean	Depth feet	Gold Values pence/c.yd.	Fineness	Description of Wash
No. 1	14 - 30	1	901	Decomposed pebbly wash, large proportion of clay binding.
No. 2	6 - 14	4.2	877	Cobbles and pebbles, well consolidated clay matrix.
No. 3	0 - 6	11	893	Boulders, well consolidated sandy matrix.

The average value for the 30 feet of wash is fourpence per cubic yard. The wash tested is overlain by at least 30 feet of clay which has resulted from weathering of the pebbly wash. Though this was not tested, dish prospects show the values to be poor. There is a progressive decline in values towards the top of the wash tested, and the overburden probably contains values of less than one penny per cubic yard.

CONCLUSIONS

As only one small exposure of the terrace has been tested, the results must be treated with caution; however, dish prospects taken from the bottoms of No.1 and No.2 Costeans help to confirm the values shown by the boxing. These values are well below economic levels.

The bottom of the old channel of the ancient Tunonk Creek is not exposed, and it is here that the best values would be expected. However, the writer considers that there is little likelihood of its carrying sufficient values to make the overlying terrace payable for the following reasons :-

1) The volume of wash in the channel is too small compared to the volume of wash in the terrace.

2) There is no evidence for suspecting that the quantity of gold being shed when the terrace was laid down was any greater than that at present being shed.

The writer, therefore, believes that the values in the old channel will be similar to those in the present creek bed. If anything, they are likely to be even lower, because the present creek has concentrated gold from the terrace.

The only feasible method of testing values in the channel is by percussion drilling, but the writer considers that the prospects do not warrant the considerable expense entailed in transporting the drill to and from Kumbruf.

GEOLOGICAL PLAN

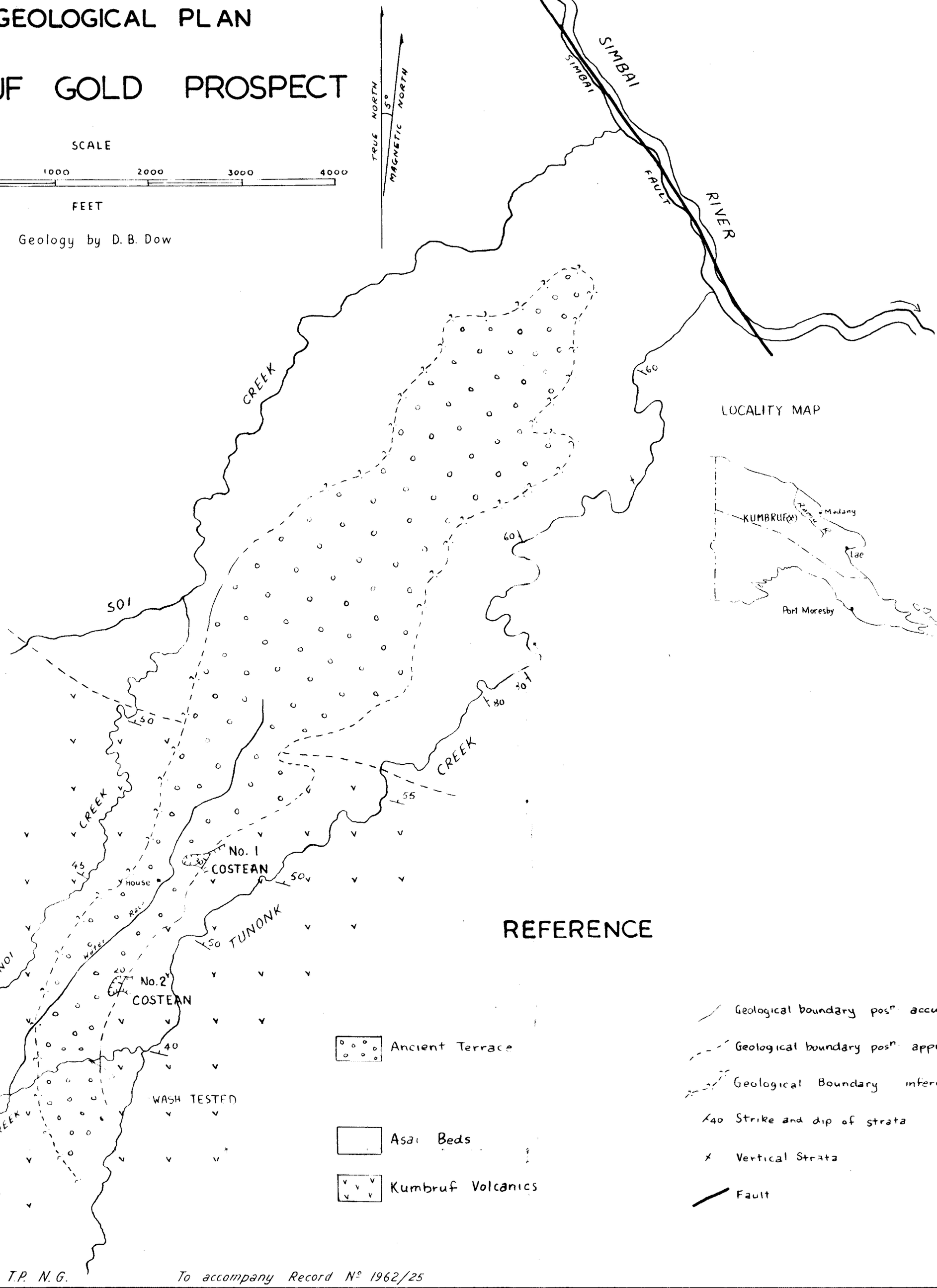
KUMBRUF GOLD PROSPECT

SCALE

1000 0 1000 2000 3000 4000

FEET

Geology by D. B. Dow



LOCALITY MAP

REFERENCE

Ancient Terrace

Asai Beds

Kumbruf Volcanics

Geological boundary posn accurate

Geological boundary posn approximate

Geological Boundary inferred

40 Strike and dip of strata

Vertical Strata

Fault

Geological Office, Wau, T.P. N.G.

To accompany Record Nº 1962/25

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