KERR ADDISON MINES LIMITED

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To R. A. Dujardin From A. D. Clendenan

Subject Nirvana's Kusk Claims 93 A 7E Date November 15, 1984 Fraser Gold Area

I reviewed their geochemical soil data and geology report (Belik 84) and discussed the area with Bob Potter who visited the Fraser Gold area en route to the Kusk claims in the spring. The Kusk was snow covered at the time of Bob's visit.

The favourable stratigraphy being drilled by Amoco on the Fraser Gold property adjacent to the north appears to continue on to Kusk 5 + 3 in the nose of the syncline. This "knotted phyllite is characterized by abundant augens and boudins of rusty ankerite and/or siderite to 8mm.

The soil anomaly on the Kusk claims is confined to the knotted phyllite.

It is possible that the nose of the syncline provided open space for quartz infilling and thicker or better grade intersections. Potter feels there are numerous soil anomalies associated with this unit in the Quesnel River and Nirvana's is not unique or the best prospect around; Mt. Calvary for example has more potential.

The Au values in soil are anomalous but are an order of magnitude lower than the Fraser Gold values I recall from 1981.

I suggest that we decline Nirvana/Roddy's offer to option us their Kusk Claims.

H.S.C.K

A. D. Clendenan

Attached:

Nirvana 84 Report and excerpted Maps.

The dota was returned to Eldon Schorn 681 9565 , 1070 - 475 Howe St. Vanc on. 15 Nov 84.

Geochemical and Geological Report

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Kusk 1 and Kusk 3-7 Mineral Claims

Gariboo Mining Division, British Columbia N.T.S. 93A/7E

- for -

Nirvana Oil and Gas Ltd. #1020-475 Howe Street Vancouver, B. C.

Prepared by:

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> G. D. Belik, M. Sc. November 2, 1984

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SUMMARY

The Kusk Property, consisting of 11 MGS claims totalling 154 units (3850 hectares), is situated in the MacKay River area, Cariboo Mining Division, British Columbia. The claim area occurs adjacent to Eureka Resources' Frasergold Property, where diamond drilling, carried out by Amoco Canada in 1983 and 1984, has identified significant gold-bearing zones hosted within a strongly deformed, steeply dipping, black phyllite sequence of Upper Triassic age. The gold mineralization, which appears to be stratigraphically controlled, is associated with a "knotted phyllite" unit characterized by the presence of abundant augen and boudins of rusty ankerite and/or siderite up to 8 mm in size. Native gold occurs disseminated within phyllite with higher-grade values marginal to synmetamorphic quartz/carbonate veins and lenses -- a result of partial remobilization of gold during regional metamorphism and deformation of the host rocks.

The gold-bearing knotted phyllite unit has been traced southeasterly through the Frasergold Property into the Kusk 3 and Kusk 5 claim area. Near the center of the Kusk 5 claim the unit deflects westerly around the nose of a major southeasterly-trending syncline. Knotted phyllite is also exposed along the tra the syncline further to the southeast. Here, a lying remnant of the unit appears to be preserved the keel of the syncline within an area measuring approximately 1200 meters by 400 meters.

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Detailed soil sampling has identified several targets within the Kusk claim area. Of main interest is a large zone of weakly anomalous to highly anomalous gold values. This anomalous zone, which is about 1.5 km long and up to 700 meters wide, extends from the boundary of the Frasergold Property southerly into the Kusk 3 and Kusk 5 claim area. A close spacial association between the anomaly and the trace of the knotted phyllite unit is apparent.

In view of the confirmation of a large zone of anomalous gold values in soil, associated with a unique facies of phyllite which is known to host significant zones of gold mineralization on the adjacent property, the Kusk claims are viewed as having an excellent exploration potential. Further work is recommended.





INTRODUCTION

During July 10-30 and September 17-27, 1984, a two-phase exploration program was completed over parts of the Kusk 1 and Kusk 2-7 mineral claims situated in the MacKay River area, Cariboo Mining Division, British Columbia. The 1984 program, which included grid preparation, soil sampling, deep overburden sampling and detailed geological mapping, was carried out in order to evaluate the southeast extension of an Upper Triassic, black phyllite sequence which is known to host significant gold mineralization on the adjacent Frasergold Property.

The 1984 program was completed by G. Belik & Associates Ltd., Kamloops, B. C., under the supervision of G. D. Belik, M. Sc.

CLAIMS

The Kusk Property is comprised of 11 cc. claims totalling 154 units as detailed below:

<u>Mining Division</u>	<u>Claim Name</u>	Units	Record No.	Record Date
Cariboo	Kusk l	9	4141	Nov. 20/81
Caribõo g	Kusk 2	12	4142	Nov. 20/81
Cariboo	Kusk 3	20	4143	Nov. 20/81
Cariboo	Kusk 4	16	4144	Nov. 20/81
Cariboo	Kusk 5	9	4145	Nov. 20/81
Cariboo	Kusk 6	20	4146	Nov. 20/81
Cariboo	Kusk 7	20	4147	Nov. 20/81
Cariboo	Kusk 8	20	4148	Nov. 20/81
Cariboo	Kusk 9	4	4149	Nov. 20/81
Cariboo	Kusk 10	4	4150	Nov. 20/81
Cariboo	Kusk ll	20	4151	Nov. 20/81

Ownership of the above claims is as follows:

Mr. J. J. O'Neill -50% Kerr, Dawson & Associates Ltd. -25% G. Belik & Associates Ltd. -25%

Nirvana Oil & Gas Ltd., #1020-475 Howe Street, Wancouver, B. C. and Roddy Resources, Inc., R.R. #3 Yellowhead Highway, Kamloops, B. C., have jointly optioned the claims from the above owners. Nirvana Oil & Gas Ltd. is the Operator of the Joint Venture.

LOCATION AND ACCESSIBILITY

The Kusk claims area situated in the Horsefly District, Cariboo Mining Division, British Columbia. The claim area extends southeast from the headwaters of the MacKay River, along the western boundary of Wells Gray Provincial Park. The center of the property is situated about 100 kms east of Williams Lake at geographic co-ordinates 52° 15' North Latitude and 120° 30' West Longitude.

The most practical means of access to the property is by helicopter. A drill access road presently extends up the south side of the MacKay River Valley to within about 2.0 km of the Kusk #3 claim.

PHYSIOGRAPHY AND VEGETATION

The Kusk claims are situated along a northwesttrending series of ridges and peaks with rounded tops and steep valley walls which extend between and parallel to the MacKay River and McKusky Creek/Crooked Lake Valleys. Eureka Peak, the highest point in the vicinity of the claims, attains an elevation of 2,428 meters. Elevation of the claim area ranges from about 2,100 meters a.s.l.

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Below 1,800 meters a.s.l. thick stands of mature balsam, spruce, fir and cedar with heavy underbrush predominate. Above 1,800 meters a.s.l. forest cover is lighter and above 1,900 meters to 1,950 meters a.s.l. alpine-type vegetation prevails. 8.

EXPLORATION HISTORY

The earliest recorded exploration activity within the region of the claims was for placer gold along the upper reaches of the Horsefly River drainage system. In 1902 a small amount of placer gold reportedly was recovered from Frasergold Creek, a tributary of the MacKay River.

In 1959 copper was discovered near Eureka Peak, 5 kms northwest of the Kusk 6 claim. Exploration on this porphyry-type prospect continued, intermittently, until 1974. Several companies were involved including Helicon, Amex, Rio Tinto and Noranda.

In 1979 Mr. C. Gunn staked the Kay 1 to Kay 8, 2-post claims along Frasergold Creek. Silt and soil samples collected in this area by Mr. Gunn were found to contain moderately to highly anomalous gold values.

The Kay claims were optioned by Keron Holdings Ltd. in the fall of 1979. The property was expanded over a large area to the northwest and preliminary geological and geochemical exploration programs were completed in 1980 and 1981. These programs lead to the discovery of significant gold mineralization within a sequence of Upper Triassic black phyllites.

In December 1982 the Kay, Mac and Alpha claims, collectively known as the Frasergold Property, were assigned to Eureka Resources, Inc. Amoco, through an option agreement with Eureka is currently evaluating the property.

The Kusk claims were staked in November, 1981 to cover the possible southeast extension of the auriferous horizon identified on the Frasergold Property. Exploration work carried out to date on the property includes wide-spaced reconnaissance soil sampling over most of the claim area in 1982, detailed soil sampling and mapping within the central part of the claim area in 1983 and detailed soil sampling and mapping in the western part of the claim area in 1984. The 1984 program, which is the subject of this report, delineated a large zone of anomalous gold values in soils, asso-

ciated with the southeast extension of the same lithological unit which host known mineralization on the Frasergold Property.

GENERAL GEOLOGICAL SETTING

The Kusk Claims occurs along the nose of a major northwest-Frending, overturned syncline (informally designated the Crooked Lake Syncline). The axis of this syncline projects through the central part of the claim area, parallel to the MacKay River and McKusky Creek/Crooked Lake Valleys (Fig. 3).

The Proterozoic Snowshoe Formation forms the base of the Crooked Lake Syncline and are the oldest rocks exposed in the area. This unit consists of sharpbanded paragneiss, leucocratic feldspar-augen gneiss, schist and sub-mylonite.

Overlying the Snowshoe Formation with apparent major structural discontinuity is a 100 meter to 500 meter thick section of andesite to basaltic metavolcanics. This unit, which has been mapped as part of the Slide Mt. Group by R. B. Campbell (1978) can be traced around the entire perimeter of the Crooked Lake Syncline and serves as a useful marker horizon.



Overlying the Slide Mt. Group is a thick section of Triassic metasedimentary and metavolcanic rocks. A thick basal phyllite/greenschist sequence, which appears to conformally overlie the Slide Mt. Group, grades upward into alkaline, augite-porphyry flows, tuffs and breccia. This latter volcanic succession is exposed within the core of the Crooked Lake Syncline.

On the Frasergold Property, the basal phyllite/ greenschist sequence has been subdivided into three members by the writer (Belik, 1981). The lower member consists of interbedded dark grey to black phyllite, greenschist and quartz-sericite schist and forms a transitional zone, 50 meters to 250 meters wide, between the greenstone and greenschist of the Slide Mt. Group and the thick black phyllite sequence of the middle member. Lithologies of the lower member have not been recognized within the area of the Kusk claims.

The middle member, which underlies most of the Kusk claim area, is characterized by dark grey to black, locally strongly pyritic, lustrous phyllite with minor intercalated lenses of limestone. The phyllite contains abundant lenses, pods and irregular veins of translucent to milky-white quartz. Most of quartz is synmetamorphic and developed as "sweats" during the main period of deformation and regional metamorphism.

On the Frasergold Property the middle phyllite member includes a knotted, iron-carbonate rich facies which is the host unit for zones of stratabound gold mineralization. The knotted phyllite is characterized by abundant fine-grained iron-carbonate knots (ankerite and/or siderite) up to 1 cm in size. The knots, which are actually augen and boudinage structures appear to be the result of the segmentation of competent, ironcarbonate rich laminations during the main period of deformation of the host rocks.

The knotted phyllite unit, which has been traced from the Frasergold Property into the northwest part of the Kusk claim area is discussed in more detail in the section of this report dealing with the detailed geological mapping.

The upper member, which consists of interbanded black phyllite, quartzite, greenschist and quartzsericite-chlorite schist, is well exposed along the south limb of the Crooked Lake Syncline. At the nose of the syncline, a small section of the unit extends through the northwest corner of the Kusk 5 claim.

All units have been regionally metamorphosed. The metamorphic grade increases from Lower Greenschist

to Upper Greenschist towards the base of the Crooked Lake Syncline.

All units are tightly folded and display a penetrative crenculation foliation which transposes bedding and an earlier foliation parallel to bedding. Late stage folding has warped bedding and the early crenulation foliation into a broad, northwest-trending, gently-plunging folds (eg. Crooked Lake Syncline).

Detailed Mapping

Detailed mapping was carried out in the central part of the northern grid area between lines 0+00 and 6+00S (Fig. 4). The mapping was carried out in order to determine source of anomalous gold values in soils identified in the area by sampling carried out during the first phase of the 1984 program.

The detailed mapping confirmed the extension of the knotted phyllite unit (host for the gold mineralization on the Frasergold Property) through the anomaly area. The unit, which has an apparent stratigraphic thickness of about 300 m, extends southerly to about line 4+00S where it deflects westerly around the axis of the Crooked Lake Syncline. S-type and drag-type

folds in the core of the syncline suggest that the syncline plunges about 15° to the northwest.

A second zone of knotted phyllite was partly delineated along the projected trace of the axis of the Crooked Lake Syncline to the southeast. This outlier appears to be a flat-lying remnant of the unit preserved along the keel of the syncline.

In both the Kusk claim area and Frasergold Property the knotted phyllite unit is characterized by the presence of abundant knots, 1 mm to 8 mm in size. In surface exposures the knots are invariably totally weathered to earthy brown limonite and/or goethite. During the original mapping carried out on the Frasergold Property it was speculated that the knots were an iron-rich carbonate, possibly ankerite and/or siderite (Belik, 1981). Follow-up drilling on the property has confirmed this (ankerite with(?) siderite).

The knots are a result of the segmentation of primary competent iron-carbonate laminations during deformation of the host rocks and thus are actually augen and boudinage structures. The original laminated texture locally is preserved, particularly where the laminations are wider and faintly interlaminated with phyllite.

The knotted phyllite unit contains interbeds of black phyllite without knots a few meters to 10's of meters thick. Interbanding of coarsely knotted phyllite and finely knotted phyllite and/or phyllites with abundant knots or phyllites with minor knots is also apparent. It is uncertain whether this rhythmic-type repetition is a primary feature or whether there is a repetition of units by folding.

SOIL GEOCHEMISTRY

In total 1246 soil samples were collected during the 1984 program. Of these, 1169 were standard soil samples, collected with the aid of a madock to a depth of 10 cm to 15 cm. Because most of the material sampled was from the 'B' horizon these samples have been designated the 'B' horizon samples on plan map no. 5. The remaining 77 samples, which were collected during a follow-up deep overburden sampling program, have been designated a deep 'C' horizon samples on plan map no. 6.

All samples collected during the 1984 program were analysed for gold by Acme Analytical Laboratories Ltd., located at 852 East Hastings Street, Vancouver, B. C.

Grid Preparation

In order to carry out the geochemical surveys grid lines were constructed. Grid lines were blazed and marked with orange flagging with sample sites identified by yellow and orange flagging marked with the line number and station location.

In togal 71.5 km of grid was constructed during the 1984 program.

Sampling Method

'B' horizon samples were obtained by digging holes with a madock to a depth of 10 cm to 15 cm. Most samples consisted of a mixture of partly oxidized, residual and transported material with abundant angular to subrounded black phyllite fragments in a medium to dark grey, clay-rich matrix. A buff till unit locally is prevelant, particularily along the lower valley slopes.

Where possible, soil samples were taken at 50meter intervals along all grid lines (100 meter along base lines). Sites not sampled were due to the presence of talus, cliffs, bogs or swamp. Deep 'C' horizon samples were collected with the aid of a shovel over depths ranging from 15 cm to 115 cm. The average depth attained was about 60 cm. Where possible, deep 'C' samples were collected at or near the bedrock interface. Most of the sample sites reached bedrock or suboutcrop.

Deep 'C' samples were collected at 50-meter intervals along segments of lines 0+00, 2+00S, 4+00S and 6+00S. The depth, material sampled and type of bedrock reached at each sample site is summarized in Appendix II.

Laboratory Determination Method

All samples were first dried and then seived to obtain a -80 mesh fraction. A 10 gm sample was ignited to 600° C and then digested in hot aquia regia (MIBK extraction). Gold values were then determined by Atomic Absorption.

Results for gold are reported from Acme Labs. in parts per billion.

Presentation of Results

Results of the gold analyses for soils are listed

in Appendix I and shown on plan maps no. 5 and no. 6 at a scale of 1:10,000. Figure no. 7 shows cumulative percent distribution of the 'B' horizon samples plotted on log probability paper.

Discussion of Results

" '<u>B' Horizon Samples</u>

Gold content of the 'B' horizon samples ranges from 5 ppb to 2,100 ppb with 87% of the samples containing 10 ppb or less. The cumulative percent diagram suggests the presence of two populations both with a lognormal distribution.

The main population (B for background on Fig. no. 7) has a low background with a narrow range of values. The second population (A) is distinctly anomalous and could reflect a mineralized bedrock source. Based on the calculated curve for population A the following geochemical categories have been derived for the anomalous population:

weakly anomalous: mean less one standard deviation (20-44 ppb) moderately anomalous: mean plus one standard deviation (44-100 ppb) strongly anomalous: greater than mean plus one standard

deviation (+100 ppb)



Two potentially significant anomalous zones have been identified within the areas surveyed in 1984. A large anomalous zone was identified in the northern grid area extending from the west end of line 0+00, southerly across the MacKay River along the east end of line 6+00S. This anomaly, which has an apparent width of up to 700 meters, appears to be associated with the knotted phyllite unit. LI.

A small, but potentially significant anomaly, was identified in the southern grid area (south anomaly on map no. 5) between lines 2+00W and 4+00W at about 6+00N. Further sampling is required in this area to better define extent and continuity of the anomalous zone.

Deep 'C' Samples

The results of the deep 'C' sampling can be summarized as follows:

- 1. The pattern and general magnitude of the gold anomaly defined by the follow-up program compare favourably with the original survey results.
- 2. A greater degree of continuity of the anomalous zone has been established by the 'C' horizon sampling. This is particularily evident from the results of the sampling carried out along line 4+00S.
- 3. The 'C' sampling has demonstrated that anomalous gold extends through the overburden and hence is not a near surface residual enrichment.

CONCLUSIONS AND RECOMMENDATIONS

Exploration work carried out on the Kusk claims in 1984 has confirmed that the property has a potential for hosting large zones of stratibound gold mineralization similar to the deposits discovered on the adjacent Frasergold Property. The host unit for the gold mineralization on the Frasergold Property has been extended into the Kusk claim area and a large zone of anomalous gold values in soils, associated with the unit, has been identified. Further work is recommended.

The next phase of exploration should include detailed rock sampling and possibly additional deep overburden sampling within the main anomaly area and followup sampling and mapping within the south anomaly area. The purpose of this work would be to define optimum targets for a preliminary diamond drill test. Although the amount and location of the drilling would be predicated by the results of the sampling, a drill program totalling about 700 meters, in about 5 to 6 holes should be budgeted for.

Respectfully Submitted, G. D. Belik, M. November 2, 1984

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