

Summary of:

Kennedy River Gold Camp
Geology and Mineralization

Enclosures:

- 1) Location Map
- 2) Drawings of Shack Veins
Shack II Vein
Elite Vein
Bear and Black Veins

by David Pawliuk, P. Geol.

International Coast Minerals Corporation
and Associated Companies
1950 Park Place, 666 Burrard Street
Vancouver, B.C., V6C 2X8
Tel (604) 685-4335 Fax (604) 685-3353

1. Regional Geology

The Kennedy River Gold Camp lies within a tectonically active part of Vancouver Island. Triassic Karmutsen Formation volcanic rocks and Quatsino Formation limestone of the Vancouver Group and Jurassic Bonanza Group volcanic rocks have been intruded by granitic rocks. These granitic rocks are the Jurassic Island Intrusions granodiorite, and the Tertiary Sooke Intrusions quartz diorite (Muller, 1977). Contacts between the intrusives and the wallrocks are usually discrete; the contacts are faulted in few places. The rocks have been transected by west-northwesterly to westerly trending, generally steeply dipping faults. Most of these faults are of Tertiary age (Henneberry, 1987). Certain of the larger faults, such as the Mine Creek Fault, are probably older and may have been active since Jurassic time. The Mine Creek Fault has a strike length of 45 km. Gold-bearing quartz-sulphide veins within the district are found primarily along faults, therefore the veins are likely of Tertiary age (Pawliuk, 1989).

2. Gold-Bearing Quartz Veins

2.1 Shack Vein

The Shack Vein, including its western portion known as Shack II Vein, is emplaced along a northeasterly trending fault which is probably a splay of the Mine Creek Fault. This gold- and silver-bearing quartz-sulphide vein averages 40 cm in width on the surface and dips 60 to 67 degrees to the northwest. The Shack Vein is discontinuously exposed for 160 m along strike. The results of 14 diamond drill holes and two rotary hammer drill holes on the Shack Vein structure show that the vein extends to a depth of 142 m down dip. It is open at depth and along strike at both ends. Shack Vein wallrock locally contains low gold and silver concentrations.

Preliminary ore reserve estimates for Shack Vein have been calculated based on the results of surface sampling and diamond drilling. Shack Vein contains from 37,920 to 42,015 metric tonnes of probable and possible ore at an average grade ranging from about 0.560 to 0.701 ounces gold per metric tonne (See attached drawings of Shack and Shack II Veins)

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2.1 Shack Vein Cont.

The Shack Vein is composed of off-white to pale grey, locally brecciated quartz which is usually banded over a few cm near vein margins. The vein often contains wispy, lensoid wallrock andesite xenoliths that usually contain 5 or 10 percent disseminated pyrite (Pawliuk, 1989).

Diamond drill cores of the Shack Vein contain an average of up to 2 or 3 percent pyrite, 3 percent pyrrhotite, 4 percent chalcopyrite and up to 2 percent sphalerite. The sulphide mineral content of the vein in diamond drill cores averages about 2 or 3 percent. The sulphides occur as irregular masses up to about 7 cm by 5 cm across filling cavities, and as hairline veinlets along irregular fracture surfaces. Pyrite in the central part of the Shack Vein in diamond drill hole SH-88-2 occurs as subhedral crystals up to 5 mm across. Vein quartz is locally corroded and invaded by sulphides (Pawliuk, 1989).

Shack Vein in rotary hammer drill hole SH-88-A contains 3 percent carbonate. Shack Vein in diamond drill hole SH-88-1 contains about 1 percent carbonate within 2 cm of both hangingwall and footwall contacts. In the other drill holes, the Shack Vein contains no carbonate or only trace amounts. The carbonate content of Shack Vein therefore appears to increase with depth (Pawliuk, 1989).

Traces of greenish grey, wispy chlorite locally line fracture surfaces within Shack Vein quartz. The contact between Shack Vein and the wallrocks is usually faulted with approximately 2 mm of grey mud and finely broken core present. In some places the contact is discrete (Pawliuk, 1989).

Shack Vein Wallrock

Shack Vein intrudes Karmutsen Formation rocks and skarn on the Captain Hook and Giant Bear mineral claims. These wallrocks are generally fine grained and well cemented except within a few centimetres of the vein contacts where the wallrocks are usually sheared and schistose (Pawliuk, 1989).

Two or three percent, locally up to 10 percent, disseminated pyrite is usually present in wallrock within about 50 to 80 cm of vein margins. The wallrock is often weakly to moderately silicified within about 0.5 m to 2 m of vein margins.

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2.1 Shack Vein Cont.

Karmutsen Formation andesite locally contains up to 5 percent kaolinite along hairline fractures within a few meters of vein margins (Pawliuk, 1989). Hangingwall andesite in diamond drill hole SH-88-7 assays 0.026 oz/ton gold and 0.02 oz/ton silver across 56 cm. Footwall andesite in diamond drill hole SH-88-2 assays 0.034 oz/ton gold and 0.11 oz/ton silver across 50 cm; footwall andesite in hole SH-88-8 assays 0.072 oz/ton gold, 0.12 oz/ton silver and 0.02 per cent copper across 59 cm. In hole SH-88-11 footwall andesite assays 0.016 oz/ton gold, 0.09 oz/ton silver and 0.02 per cent copper.

Skarn

Karmutsen Formation andesite and felsic volcanic rock have locally been altered to garnet-magnetite-diopside skarn. Skarn occurs most commonly along fractures or as irregular patches and bands within the volcanic rocks. Skarn alteration is most pervasive near faults and along the margins of limestone beds.

Skarn locally contains epidote, pyrite, chalcopyrite, pyrrhotite, hematite, malachite, azurite and quartz veinlets. Magnetite in skarn occurs as disseminated crystals, irregular masses and as bands up to about 20 cm wide. Pyrite and pyrrhotite are usually disseminated within skarn. Chalcopyrite in skarn occurs as irregular, lensoid masses and as veinlets.

Skarn locally contains up to 0.068 oz/ton gold, 0.28 oz/ton silver and 2.78 per cent copper across 43 cm. A selected skarn sample assayed 0.042 oz/ton gold, 1.18 oz/ton silver and 10.53 per cent copper (Pawliuk, 1989).

Geochemical analyses were performed on 23 skarn samples. These samples contain up to 40.5 parts per million (ppm) silver, greater than 10 percent copper and 2,860 ppm zinc. No gold was detected by these analyses.

2.2 Elite Vein

The Elite Vein strikes easterly to northeasterly and dips 55 to 80 degrees to the north northwest. It is emplaced along a shear or fault which is likely a splay of Canoe Creek Fault. The vein is exposed for 85 m along strike and extends to a depth of 52 m below surface. The Elite Vein is open at depth and along strike to the northeast; it may also be open along strike to the west (Pawliuk, 1988).

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2.2 Elite Vein Cont.

The Elite Vein is composed of off-white to locally pale grey or pale greenish white quartz with brown, greyish brown or brass coloured patches where sulphides are abundant. The vein quartz is fractured; chlorite and sulphides line some of the fracture surfaces. The vein is 75 to 90% quartz and 10 to 25% sulphide minerals. The sulphide minerals are mainly pyrite and pyrrhotite with lesser amounts of chalcopyrite, sphalerite, galena and arsenopyrite (?). The Elite Vein locally contains 1% carbonate, up to 6% sericite, traces of biotite and traces of jarosite.

The results of 26 continuous chip samples taken along the 27 m long exposed section of the vein averaged 1.28 oz/ton gold over width of 0.54 m. Two metallurgical samples of 15 kg taken over intervals of two meters and three meters averaged 3.42 oz/ton across 0.39 m and 1.18 oz/ton gold across 0.54 m, respectively (See the attached drawing).

The results of 14 diamond drill holes show that Elite Vein extends downward to a depth of at least 52 m below surface. The vein dips between about 55 and 80 degrees to the north and extends at least 85 m along strike. The contacts between the Elite Vein and the wallrocks are discrete or locally faulted with up to 2 cm of fault gouge along vein margins (Pawliuk, 1988).

Elite Vein Wallrock

The Elite Vein intrudes Karmutsen Formation andesite or andesite porphyry and Island Intrusions quartz diorite. These wallrocks are brecciated, silicified and carbonatized with fractures lined by quartz, carbonate and/or sulphides. Locally hornblende has been altered to chlorite and feldspars altered to clay minerals (Pawliuk, 1988).

2.3 Black Vein

The Black Vein is emplaced along the easterly trending Bear Fault which is a splay of Mine Creek Fault. The Black Vein therefore, is likely the on-strike extension of the Bear Vein. The Black Vein is exposed for 43 m along strike and dips steeply. The results of diamond drilling show that it extends to a depth of 36 m down dip and is open at depth (Pawliuk, 1989 in prep.).

The quartz-sulphide Black Vein contains off-white to smokey grey to pale green quartz and averages about 5 to 10% sulphide minerals.

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2.3 Black Vein Cont.

The Black Vein contains up to 68% pyrrhotite, 10% sphalerite, 10% pyrite and up to 3% chalcopyrite (Pawliuk, 1989 in prep.).

A zone containing 0.402 oz/ton gold across 72 m for a strike length of 23 m has been outlined by surface sampling of the Black Vein. A bulk sample of approximately 5 tons was taken from the Black Vein and shipped to the cominco smelter in Trail; this sample contained 0.28 oz/ton gold. The best intersection obtained during diamond drilling of the Black Vein assayed 0.936 oz/ton gold across 2.17 m (Pawliuk, 1989 in prep.)

The contacts between the Black Vein and the wallrocks are usually discrete (Pawliuk 1989 in prep).

Black Vein Wallrocks

The Black Vein mainly intrudes Island Intrusions quartz diorite which is silicified, bleached and locally brecciated near vein margins. The quartz diorite locally contains up to 3% combined pyrrhotite and pyrite (Pawliuk, 1989 in prep.).

Hangingwall quartz diorite in drill hole BR-88-10 assays 0.026 oz/ton gold across 50 m.

Black Vein also locally intrudes Karmutsen Formation andesite which is weakly brecciated and carbonatized with local 1% pyrite (Pawliuk, 1989 in prep.).

2.4 Bear Vein

The Bear Vein is emplaced along the easterly trending Bear Fault which is a splay of the Mine Creek Fault. The Bear Vein, therefore, is likely the on-strike extension of the Black Vein. Bear Vein dips at 50 to 55 degrees to the north. The vein likely extends for at least 135 m along strike and to a depth of 45 m down-dip. The vein is open along strike to the east and at depth. An ore shoot grading 0.311 oz/ton gold across 1 m for a strike length of 27 m has been outlined in the adit excavated along the Bear Vein. (Pawliuk 1989 in prep.).

The Bear quartz-sulphide vein contains from traces to 4 or 5% combined pyrrhotite and pyrite, and local 5% spalerite. The vein locally contains up to 25% clay minerals, up to about 3% chlorite and traces of carbonate. The best intersection obtained during diamond drilling of the Bear Vein assayed 0.359 oz/ton gold across a true width of 66 cm. (Pawliuk, 1989 in prep.).

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2.4 Bear Vein Cont.

The contacts between the Bear Vein and the wallrocks are discrete or locally faulted with up to 20 mm of fault gouge and finely broken core along vein margins (Pawliuk, 1989 in prep.).

Bear Vein Wallrocks

The Bear Vein intrudes Island Intrusions quartz diorite which is brecciated and silicified near vein contacts with feldspars locally altered to clay minerals. Bear Vein wallrock contains up to 0.005 oz/ton gold. (Pawliuk, 1989 in prep.).

2.5 TB Vein

TB Vein is emplaced along a fault transecting Quatsino Formation limestone and Karmutsen Formation feldspar porphyry flows. The wallrocks have been silicified within 20 to 40 cm of the vein margins.

TB Vein strikes easterly on an azimuth of 84 degrees and dips 56 to 73 degrees to the north. The vein is 15 to 50 cm wide. It is discontinuously exposed along strike for 38 m.

TB Vein contains 5 to 20 per cent sulphides. The sulphides are predominantly pyrite with locally up to 5 per cent each chalcopyrite and bornite. The vein has been leached and oxidized within 100 cm of ground surface. Nine TB Vein samples contain from trace to 0.541 oz/ton gold and from 0.02 to 15.98 oz/ton silver (Henneberry, 1987).

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