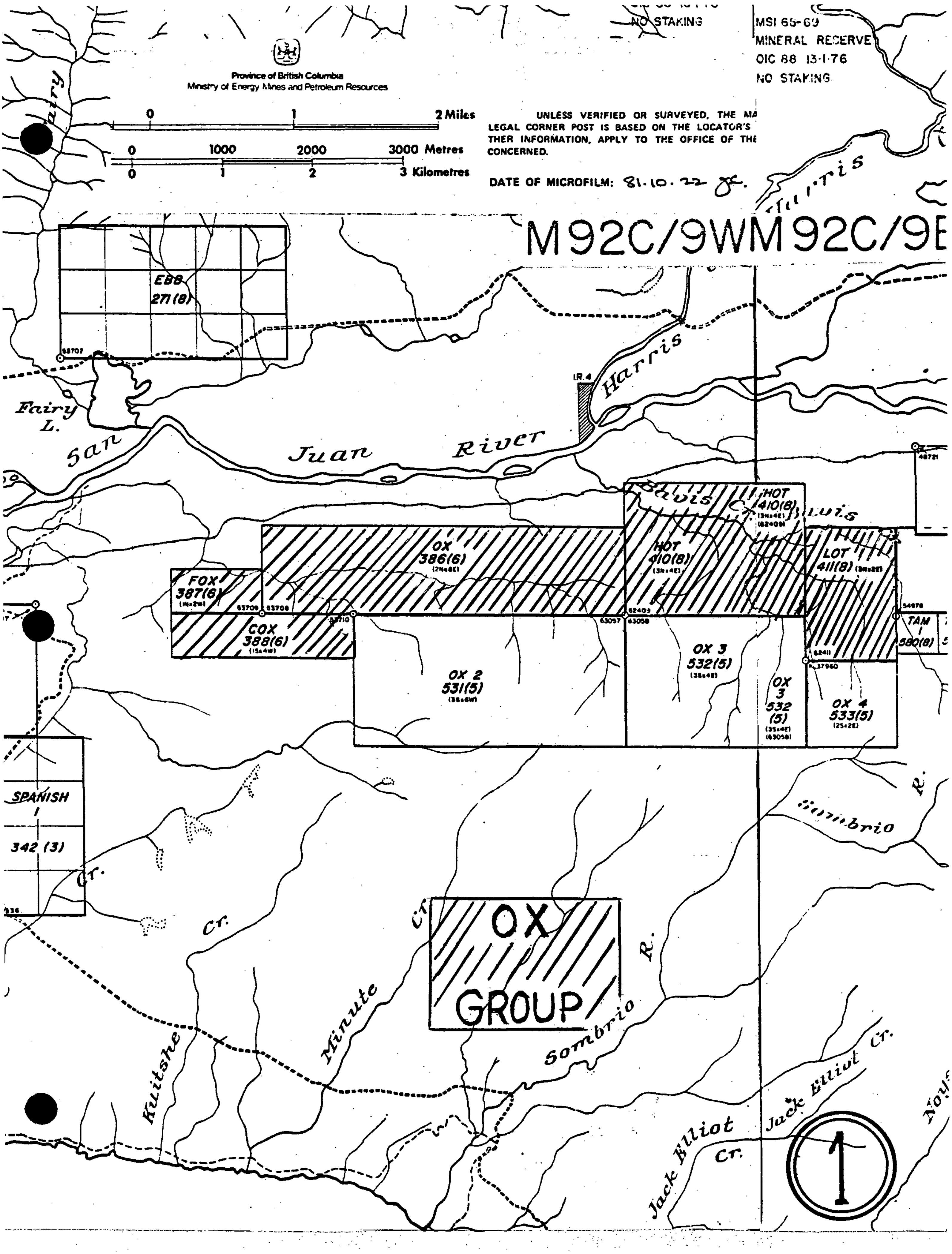
GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL REPORT
ON THE OX CLAIM GROUP

SITUATED 8 KM EAST OF PORT RENFREW
VICTORIA, B.C. BRITISH COLUMBIA
M 92 C/9 W & E   48° 34' N, 124° 17'W

OWNER: M. TAVELA
OPERATORS: M. TAVELA, UTAH MINES LTD., COMINCO LTD. AND LACANA MINING CORP.
AUTHORS: K.E. NORTHCOTE, S.C. GOWER AND M. TAVELA

DECEMBER 1981

Part 1 of 2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DATE OF MICROFILM: 81.10.22
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EBB 271(8)
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San Juan River
Harris
I.R.4
FOX 387(6)
OX 386(6)
COX 388(6)
HOT 410(8)
LOT 411(8)
OX 2 531(5)
OX 3 532(5)
OX 3 532 (5)
OX 4 533(5)
TAM 1 580(8)
SPANISH 1 342 (3)
Sombrio R.
Kuitshe Cr.
Minute Cr.
Jack Elliot Cr.
OX GROUP
1

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INTRODUCTION

(Index etc., Map 2, Overview, Map 3)

GENERAL DESCRIPTION

The site is accessible by automobile from the Victoria Port Renfrew Highway No. 14 along two logging mainlines (ML) and hence parallel the EW strike and topography.

The area is logged with secondary growth. This with residual and thinning tangel restricts movement beyond creeks and logging roads. Without the latter, the discovery and the now reported surveys would not have been possible.

PROPERTY DEFINITION

The area was selected in 1979 from the aero-magnetic map showing a distinct depression. This was interpreted, based on experience on the opposite side of the valley (assessment report 180-#568 - #8278 by M. Tavela), as a possible site of granitic intrusions.

In the spring of 1980, geochemical gold was discovered in albitite and diorite dykes leading to a seasons work by Tavela, resumed in 1981 and assisted by a fellow prospector T. Archibald. M. Tavela is the present operator/owner.

Utah Mines (geologists Schmidt, Richards and Pollock) did two prong recce in mid-winter 1980/81. Cominco has assisted intrument and laboratory studies.

Lacana Mining held the property under first refusal option from April to June 1981. During that time, Lacana made a major geochemical and geological study (S.C. Gower and K.E. Northcote).

Geochemical lattice gold (>50 ppb) in arsenopyrite and pyrite is widespread in albitite/diorite dykes, their immediate country shales and in quartz veins within the same. In the west end (map 3) in one diorite dyke, gold values hint economical volumes.

Visible gold without arsenopyrite occurs in the center (map 10) in a perpendicular quartz vein and in the diffuse quartz around it in order of 0.15 oz/ton over 25 square metres. The showing has no apparent connection with adjoining albitite.

Direct gold exploration by selected systematic sampling has covered many of the exposed parts of the property. These are mainly ridges parallel with the strike. An estimated two-thirds of the area is not covered. Most of it has thin drift cover.

SUMMARY OF WORK

Geochemical Survey

	No. Rocks	(By drilling, blasting)	Soils No. Silts
M. Tavela 1980	95	(17)	42
Utah 1980/81	66		14
Lacana 1981	343	(188)	40
Total	504	(205)	96

Grand total of analyzed samples is 600 and they are listed in map numbers 3,6,7,8,9 and 10.

Geophysical survey:

Magnetics: 24 line km, 687 stations; Maps 12 and 13

Geological survey:

1980: scale 1:20000, 1:16000 and 1:5000; 20 units of 40 units; Map 3

1981: scale 1:5000; 26 units of 40 units; Maps 4 and 5

Topographic survey:

Base maps of 1:20000 and 1:5000 provided by B.C. Forest Products Ltd.

Prospecting:

32 of 40 units

Grid Establishment

Chaining along & perpendicularly to the roads in connection of detail surveys and tie-ups: 6 km.

Claims worked

All claims of the group (Ox, Fox, Cox, Hot and Lot) have been worked with all above surveys in varying densities so that as a whole the west part (Ox, Fox, Cox) is better covered than the east part.

The area is glaciated and drained from east and south, slopes in general 12^{o} north with accesses paralleling the east-west strike. This has caused that useful information has been obtained next, and often only, to the groups limits.

GEOLOGICAL REPORT

PETROGRAPHIC REPORT

PORT RENFREW SUITE

INTRODUCTION

Lacana Mining Corporation contracted Bema Industries Ltd. to make a petrographic study of eight (8) thin sections and rock specimens. This study was completed during 1½ days utilizing petrographic microscopes made available at Bacon and Donaldson, Vancouver and by Mr. Matti S. Tavela.

LOCATION AND ACCESS

A general location for the suite of samples is east of Port Renfrew townsite and between the Leech River and San Juan Faults. This area is accessible by logging road from Port Renfrew and has most recently been mapped by J.E. Muller with a report in preparation.

GENERAL GEOLOGY

The area between San Juan and Leech River Faults is underlain by Leech River Formation which also extends from Port Renfrew on the west to Goldstream Park on the east. The Leech River Formation, according to Muller, is a shear folded metagreywacke-slate complex with minor metavolcanic rocks and some ribbon chert and is of late Jurassic to early Cretaceous age. These rocks increase in metamorphic grade from phyllite on the north to garnet biotite schist with andalusite porphyroblasts southwards towards the Leech River Fault. There, muscovite gneiss and pegmatite with large muscovite and tourmaline crystals is also present. The age of metamorphism is approximately 40 million years. See Muller, 1977, G.S.C. Open File 463.

The suite of rock specimens supplied for this petrographic study include microdiorite, microquartz diorite and albitic aplite which are said to intrude the Leech River metasediments. All rocks have a cataclastic texture and some show albitization, silicification and carbonatization in addition to chloritic and sericitic alteration. Sulphides, including pyrite and arsenopyrite are present in most specimens and their presence is significant as possible carriers of gold values.

ECONOMIC GEOLOGY

Historically, placer gold mining was carried out at Leechtown on the Leech River and more recently placer exploration has been undertaken on other streams between Jordan River and Port Renfrew. The source of placer gold is not well understood. Early exploration for lode gold in quartz vein systems was carried out in several areas within the Leech River Formation, notably at Goldstream Park, and more recently in the Leech River rocks north of Sooke.

CONCLUSIONS

The presence of intrusions, in Leech River Formation, resulting in silicification and albitization of metasediments accompanied by dissemination of sulphides (pyrite and arsenopyrite) is significant. The possibility of a new model for exploration for low grade gold mineralization, mineable by open pit methods, is suggested within the Leech River rocks on southern Vancouver Island.

Specimen #213

Sericitic, Carbonatized (Quartz) Diorite

Macroscopic

The rock is holocrystalline, fine grained, granular (<1 to 1 millimetre, scattered 3 millimetres), is non-magnetic with scattered fine aggregates of minute sulphide grains.

Microscopic

Plagioclase; 65%, An_{30}, graphitic to myrmekitic quartz(?) and albite intergrowths.

Sericite; 10%, interstitial

Carbonate; ≈10%, interstitial

Biotite; trace with iron stain

Chlorite; >5%

Quartz; >5% minor interstitial, less alteration dusting than plagioclase, strained extinction.

Opaque; <1%

The texture is granitic, fine grained with interstitial sericite and carbonate alteration.

Specimen #153

Albite, Aplite

Macroscopic

The rock is white, porcelain-like, dense, generally very fine grained (.5 to 1.0 millimetres) with scattered coarser grains (2 to 3 millimetres). The specimen is cut by small quartz veinlets. Non-magnetic. Mineralization consists of widely scattered arsenopyrite.

Microscopic

Plagioclase; 90% $n \approx$ or $<$ balsam $X \wedge 010 \approx 16^{\circ}$ Albite

Sericite; $<$10% disseminated, interstitial and within plagioclase

Chlorite; minor

Apatite; trace

Quartz; interstitial quartz not positively identified, no apparent relief differences.

Opaques; $<$1%, regular diamond shaped outline of some grains indicates arsenopyrite.

Texture is holocrystalline, phaneritic, fine-grained, allotriomorphic granular. Scattered coarse grains occur in a fine grained groundmass.

Specimen #166

Silicified Carbonatized Cataclasite(?)

Macroscopic

The rock is light grey, mottled cream, irregularly veined by quartz, has very fine granular sulphide aggregates, is non-magnetic and has iron stained surfaces.

Microscopic

Quartz; 15%, as irregular grains and elongate grain aggregates <.5 to 2 millimetres in length, diffuse veinlets.

Carbonate; 55%, fine granular (<0.1 millimetres), irregular masses.

Chlorite; 25% irregular shreds forming whispy partings or poorly developed foliation.

Biotite; <5%, altered

Opaques; 1%, very irregular grains and aggregates of a number of grains (<0.1 millimetre to >2 millimetres).

The rock is strongly altered to carbonate forming masses of very fine granules with coarser aggregates of irregular quartz and chlorite grains forming diffuse, interrupted veinlets and partings. Opaque minerals, sulphides, generally consist of very irregular grains and aggregates of grains scattered in plane of foliation. A few subhedral grains suggest arsenopyrite.

Specimen #216

Micro (Quartz) Diorite

Macroscopic

The rock is fine grained (<.5 to 2.5 millimetres), light grey, bleached appearance and has 1%(+) fine disseminated and scattered coarse (3 millimetres) sulphides (arsenopyrite).

Microscopic

Plagioclase; 80%, albitic rimming, slight dusting of alteration, twinning visible but not persistently clear.

Apatite; <1%

Biotite; <1%, altered

Sericite; ≈5%

Chlorite; ≈10%, alteration of biotite

Opaque; ≈1%, euhedral crystal outlines suggest arsenopyrite.

Quartz; not positively identified.

The rock is holocrystalline, phaneritic, fine grained, (≈.5 millimetre) allotriomorphic, granular. Mafic minerals show preferred orientation with chlorite and sericite tending to form thin irregular partings. Euhedral outline of opaque minerals suggests arsenopyrite.

Specimen #225

Cataclasite Schist

Macroscopic

The rock is light grey, has a very fine grained matrix with scattered coarser grains or fragments. Widely scattered sulphides, consisting of pyrite and lesser arsenopyrite, are smeared out along foliation.

Microscopic

Plagioclase; 55%, alteration dusting, scattered coarse grained subhedral crystals contain minute apatite grains.

Quartz; 25%, clear, strained extinction, few strung out lenses of quartz aggregates

Sericite; 20%, parallel extinction

Biotite; trace

Carbonate; <5%

Chlorite; present

Opaque; <1%

The rock is markedly foliated; accentuation given by sericite whisps throughout a very fine grained matrix (0.1 to 0.2 millimetre). Scattered coarse grained rock fragments composed of quartz and plagioclase.

Specimen #230

Cataclasite Metasediment(?)

Macroscopic

The rock is mottled, medium to light grey, very fine grained, black disseminated material with very fine grained quartz cut by irregular coarser quartz veins and blebs. The specimen also contains abundant partings and fracture coatings of waxy green, clay-like secondary material which may be sericite or chlorite and sericite mixture. Pyritic encrustations occur in fractures; non-magnetic.

Microscopic

Quartz; >90%, coarse veinlets or layers interlayered with fine grains, uniform relief suggesting fairly uniform composition; little or no plagioclase.

Chlorite; <5% whispy partings, scattered interstitial, parallel extinction.

Sericite; <1%, associated with chlorite, whispy partings, parallel extinction.

Opaque; generally very fine grained aggregates, irregular to whispy in open spaces and very fine grained disseminated dusting, minute to 0.5 millimetre.

The texture is holocrystalline, euhedral, clusters of slightly coarser grains in a finer grained groundmass, coarser grained veinlets. There are scattered irregular holes in the slide, some tendency for opaques to be associated with these. Whispy partings of mafics and opaques also occur. There are no obvious quartz overgrowths and most quartz grains show strained extinction.

Note: A very brief examination of a polished slab of this specimen under reflected light suggests an intergrowth of pyrite and arsenopyrite. A minute isotropic gold coloured mineral grain may be gold but was too small for sectility test.

Specimen #231

Biotite, Plagioclase, Quartz, Cataclasite Schist

Macroscopic

The rock is light to medium grey, fine to very fine grained, laminated by thin biotitic partings with iron staining on fracture surfaces. Very fine aggregates of sulphide grains are smeared in foliation planes.

Microscopic

Plagioclase; 35%, An_{30}, generally very fine grained with scattered coarser grains.

Quartz; 45%

Biotite; 15%

Chlorite; <5%

Sericite; <10%, parallel extinction

Unidentified high relief, high birefringent grain.

Opaque; aggregates of dust size particles in plane of foliation forming whispy partings, few scattered elongate grains.

The rock has a cataclastic texture, is foliated with elongate grains, especially sericite and biotite in the plane of foliation. There are many lensoid quartz grains and aggregates of grains.

Specimen #289

Cataclastic Microquartz Diorite

Macroscopic

The rock is fine to medium grained with a slightly porphyritic appearance, sericitic with a creamy pink colour resulting from iron staining. Sericite gives the rock a slightly sugary appearance. Fine grained silver coloured sulphides (arsenopyrite and pyrite) are scattered throughout the specimen; non-magnetic.

Microsopic

Plagioclase; 45%, An_{28} + albite.

Quartz; 35% graphitic intergrowths

Biotite; <5%, whispy partings

Sericite; 15%, whispy partings and irregular clots.

Opaque; <1%

The rock is fine grained (<0.5 to 1 millimetre), has a cataclastic texture, shows graphitic intergrowths of quartz and albite and a weak foliated appearance because of preferred orientation of sericite and whispy sericite partings.

GEOLOGY AND MINERAL POTENTIAL OF THE OX, FOX, COX, HOT AND LOT CLAIMS NTS 92C/9W

(Maps 4 & 5)

INTRODUCTION

K.E.Northcote and Associates Ltd. was contracted by S.C.Gower of Lacana Mining Corporation to prepare a geological map of the OX, FOX, COX,HOT and LOT claims totalling 74 units in the Victoria Mining District, at Port Renfrew on Vancouver Island, 92C/9W. See Figures 1 and 2.

A period of about 10 days was to be spent geological mapping and an additional 5 days or less examining thin sections preparing a geological map and reporting on the geology and mineral potential of the claims area. A geological mapping program was carried out May 19 to 28, after an initial rock geochemistry and assaying program was comleted and during additional geochemical follow-up.

Initial examination and sampling of rocks and vein material indicated a new gold exploration possibility in the Leech River Formation on southern Vancouver Island. A possibility exists for gold mineralization in wall rock and in quartz veins which may be related to the presence of aplite sill-dyke systems.

This report and accompanying geological map, Figure 3, discusses the geology and mineral potential of the claims area.

GEOLOGY

The area of the OX, FOX, COX, HOT and LOT claims is underlain by late Jurassic and early Cretaceous metasedimentary rocks of the Leech River Formation. At this locality these rocks are intruded by aplite sill-dyke systems which appear to have been emplaced during and after the waning stages of metamorphism.

LEECH RIVER FORMATION

Slate-Phyllite Unit

Most of the claims area is underlain by foliated slate-phyllite. Original bedding, sedimentary textures and structures have largely been obliterated, Compositional layers occur parallel to the foliation and may, in part at least, represent original bedding lying along the limbs of isoclinal folds. For example a chert layer that probably represents an original bed was noted near the west end of Branch 2000 logging road.

The slate-phyllite, on a very small scale, is well foliated and shows minute lensoid interlaminations which grade through fine sugary granular quartz to coarse grained white "bull" quartz sweats. On a larger scale the slate-phyllite has well developed schistocity and is layered to varied degrees parallel to foliation. The layering is evident by differences in competency, and exhibit a lesser degree of schistosity than slate-phyllite. They may show a marked foliation which may occur as minute continuous siliceous laminations alternating with argillaceous material but more commonly form long lensoid laminations lying in the plane of foliation. Similarly, larger coarser grained granular, carbonate-rich, lensoid bodies 1/2 to 2 meters thick occur in the plane of foliation as boudins or tectonic "fish". These boudin-like structures are thought to be remnants of metagreywackes or metasandstones. Other foliated competent interlayers occur within the sequence. Thin sections indicate that some of these are the foliated equivalent of aplite sills and dykes. They are not readily distinguishable from foliated metasedimentary layers. It is significant however to note that both exist.

Mineralization in the slate-phyllite unit consists of widely disseminated pyrite cubes in foliation surfaces and abundantly disseminated pyrite and pyrrhotite in siliceous lensoid laminae, quartz "sweats" and cross veins.

Calc-silicate Unit

A calc-silicate unit occurs in the north part of the claim area on the east half of logging road Branch 2000. See Figure 3. These rocks are distinguished from slate-phyllite unit by a marked change in colour from grey to green. These rocks are foliated and schistose consisting of chlorite, epidote, (amphiholes), quartz and carbonate. A similar occurence of calc-silicate and carbonatized rocks occur in two bands on the north side of logging road Branch 2700. See Figure 3. Here the calc-silicates are intimately associated with carbonatized aplite dykes and are characterized by soft punky weathering.

Mineralization in the calc-silicate unit at the east end of Branch 2000 consists of disseminated pyrite, pyrrhotite and crystals of magnetite with thin layers of fine granular magnetite in planes of foliation. Rusty zones indicate mineralization and form discrete layers in plane of foliation.

APLITE DYKES-SILLS

A major system of aplite dykes and sills are roughly concordant to foliation and trend in a westerly direction along the north side of the claim block. These dykes-sills range in thickness from less than 1 meter to greater than 10 meters thickness.

There has been some problem regarding the nature and origin of these rocks. They have been variously called metasediments, tuffs and sills and dykes. During this study it was concluded from field relationships and petrographic studies that these rocks are intrusive into the surrounding rocks.

In thin section these rocks are holocrystalline with phaneritic textures. They consist largely of intermediate (andesine) plagioclase and albite, sericite and lesser amounts of quartz and biotite and in some cases have chlorite and carbonate alteration. In outcrop the bodies pinch and swell, branch and, although mainly concordant or semicordant, locally show strong cross cutting relationships to foliation. Some of the larger sills and dykes are composite in nature showing coarser and finer grained sections. The most disturbing thing about these rocks is that their contact effects are minimal. The wall rocks generally show no effect of emplacement of the aplite except where the wall rocks are carbonate-rich. Here calc-silicate rocks appear to be related to the intrusions. The intrusive bodies may show a slight selvage at their margins. Some sills and dykes are "headed" and seemingly were emplaced as a fairly dry crystal mush.

The sills-dykes may be massive unfoliated or show foliation similar to competent wall rock, and when foliated are difficult to distinguish from foliated metasediments. The fact that some of the dykes-sills are massive and others have overprinted foliation(schistosity) indicates that the timing of emplacement of these bodies may have coincided with late stages of metamorphism of Leech River Formation with overlapping into postmetamorphic stage. The magma may have been generated from within the sedimentary sequence during the late stages of the metamorphic event.

Mineralization in aplite dykes-sills consists of disseminated grains and clusters of pyrrhotite, grains and crystals of pyrite and arsenopyrite crystals.

QUARTZ LENSOIDS AND CROSS VEINS

Quartz lensoids and cross veins containing varied amounts of carbonate tend to occur in areas of abundant siliceous interlayering. These quartz lensoids and cross vein "sweats" are considered to have mainly originated from within the sediments during metamorphism. Drusyness of quartz in surface exposures may be the result of weathering out of carbonate.

There is, however, also evidence of hydrothermal quartz as examples were noted where quartz crystals appear to have grown outwards into open spaces with no evidence of carbonate having been present.

Mineralization in quartz lensoids and veins consists mainly of disseminated pyrite and pyrrhotite. A few specimens containing free gold were collected by other workers.

STRUCTURE

Foliation schistosity is uniform throughout the claims area with average strike 095° and 60° northerly dip. Attitudes range from 080° to 110° and dips were noted from 40°N to 80°N with vertical to steep south dips at two localities.

Similarly, lineations and the minor axes of drag folds on foliation surfaces are uniform with an average azimuth of 280° with -10° plunge. Dragfolds show conflicting conformations in local areas where both "Z" and "S" types are present. Further structural investigation would be required to determine the position and orientation of the major structures.

Major faulting shear zones are suggested by anomalous stream directions and locally by disrupted slaty cleavage. Shearing by faulting is most certainly more prevalent than is obviously evident; with the movement dispersed in foliation planes.

ECONOMIC GEOLOGY

Possibilities for gold mineralization in the Leech River-Aplite rock sequence are twofold. The slates-phyllites may be the source of disseminated gold which requires concentration by weathering, transportation and deposition to form placer deposits or by hydrothermal processes during metamorphism or intrusion. Aplite dykes-sills may also be considered to be a source of hydrothermal gold or alternatively as a hydrothermal convective energy source which could serve to mobilize and concentrate gold in veins within wall rock.

The potential for gold concentrations in placer deposits in streams crossing the Leech River formation has been tested for over a hundred years. It seems unlikely that the slate-phyllite unit constitutes a source of gold, similar to the Yukon schists, with major placer deposits still to be found. Whatever gold that is present in stream sediments more probably originated in smaller more locally concentrated vein-type deposits and is dispersed in the streams.

The potential for gold associated with aplite dykes-sills is also limited because of the apparently "dry" nature of the aplitic intrusions. The wall rock experienced little or no intrusive contact or hydrothermal effects as a result of emplacement of the intrusions. Some quartz veining may be attributed to intrusions but is probably minimal as compared to most of the quartz lensoids and cross veins resulting from sweating out of quartz during metamorphism. It has not been possible to consistently distinguish one kind of quartz from the other. The drusy nature of much of the quartz is the result of weathering out of carbonate. However, some growth of drusy quartz crystals in open spaces without evidence of associated carbonate was noted. This quartz may represent hydrothermal quartz, particularly in quartz-filled fractures within sills and dykes.

In order to improve the potential for gold mineralization the following conditions seem to be necessary. A zone of abundant aplite intrusions would possibly affect a larger volume of wall rock by either releasing a greater amount of hydrothermal solutions or by providing a greater amount of energy to initiate convective cells. A second possibility would be in areas where a number of aplite dykes-sills are in contact with more reactive carbonate-rich rocks. Both of these requirements are met at several locations within the claim area. Some of these locations have been adequately tested and some have not.

WORK DONE

An extensive geochemical rock sampling program conducted by S.C. Gower and M. Tavela has tested various dykes-sills, veins in dyke-sills and veins and lensoids in country rock and country rock between veins. Thirty-three gold values greater than 100 p.p.b. have been obtained and are indicated on the Rock Geochemistry Map, Figure 4.

In order to establish the geological framework and assess the mineral potential of the claims area a geological survey was made of the most accessible parts of the claims utilizing logging road systems and Mosquito and Bavis Creeks.

The area studied geologically and geochemically includes all of the OX claim, the northeast part of COX claim, the north half of OX 2 claim, the HOT claims and the north edge of OX 3 claim. See Figure 3. The remainder of the claims area is untested.

RESULTS

Of a total of approximately 385 samples analyzed or assayed for Au, 33 gave Au values greater than 100 p.p.b. or 0.02 oz/ton. These samples are listed in Table 1.

TABLE 1

Gold Values 100 p.p.b.

G 81 -	004(A)	235p.p.b.	T 81 - 093	39,000 p.p.b.
	014	295 (0.021 oz/t)	094	400
	014(A)	130	095	41,000
	078	100	096	7,600
	081	130	097	270
	081(A)	435	101	3,300
	089(A)	430	108	190
	092	105	142	120
T 81 -	009	400	143	255
	013	3,900 (0.103 oz/t)	152	385
	015	250	154	475 (H.M.)

TABLE 1 (Continued)

T 81 - 018	115 p.p.b.	P 81 - 001	4,000 p.p.b.
020	150	002	115
021	140	004	2,570
022	890	014	1,620
029	160		
065	380		
067	130		

Of these samples the most significant values were obtained from quartz veins in slate - phyllite from the south side of Mosquito Creek just west of the Mosquito Creek Main Line bridge. Two samples gave values of approximately 40,000 p.p.b. or greater than 1 oz/t Au. The significance of these and other values will be discussed by S. Gower and M. Tavela in their report.

As outlined in the Economic Geology section, from a geological point of view, the most favourable conditions for economically viable gold concentrations would probably be met in close proximity to the aplite dyke - sill complexes particularly where these rocks are in contact with reactive calcium - rich rocks. It is thought that the aplite complexes could supply hydrothermal solutions to deposit silica and metals or alternatively supply aheat source to generate convection to mobilize hydrothermal solutions carrying silica and metals originating within the wallrock. These optimum conditions were met in several areas and when sampled and analyzed for Au gave little encouragement. The significant Au values, in fact, were obtained from a quartz vein system somewhat remote from but between dyke - sill systems. A large number of such "remote" quartz systems were tested and only a few indicated Au values of economic significance. Some of these, on follow up sampling, failed to show significant mineralization over mineable widths. Others remain untested for width. Gold bearing vein systems are widely separated and any direct relationship between aplite sill - dyke systems and gold mineralization is obscure.

Similarly, aplite dykes - sills in contact with carbonatized wallrocks gave no significant Au values. This calc-silicate environment was not fully tested everywhere it occurs on the property. However, on the basis of the low Au values that were obtained it would not appear justified to option the property in order to carry out further testing.

An effective exploration program would probably include heavy mineral sampling of stream systems to localize target areas. Follow-up would be by character sampling quartz vein systems sufficiently close spaced to constitute mining widths. Vein systems of significant grade would then be stripped or trenched, channel sampled and possibly diamond drilled to determine grade at depth. It seems unlikely that any geophysical method would be effective in locating these veins because of the sparse nature of mineralization;and conductive layers in the lithologic sequence.

RECOMMENDATIONS

Unless it can be demonstrated that samples containing gold in excess of .10 oz/ton Au (3400p.p.b.) probably extend over mineable widths it is recommended that the property not be optioned.

PROFESSIONAL
PROVINCE OF
K.E. NORTHCOTE
BRITISH COLUMBIA
ENGINEER

REGIONAL GEOLOGY AND THE OX-GROUP SITE

The above reports supersede the first pass geology of 1980. The latter's results are summarized, as seen then, in the overview (Map 3) for assessment purposes.

In the following regional and local geology and magnetics are brought together in order to interpret two concepts: albitite/diorite intrusions and the basic igneous facies.

The aeromagnetic depression (P.1) (Maps 9272 and 9275 G by the Geological Survey) conincides with the group's claim Hot. Seen from the 1.4 km altitude it is a roundish symmetrical feature with 0.8 km radius, descending 10 gammas and controlled by two flight lines 1.3 km apart.

While the integration and resolution here as elsewhere removes the fine tune, the depression still remains unique where it is situated: near the bottom of a 3.5 km wide valley consisting locally of low susceptibility shales and sandstones with uniform strike and dip.

On the ground the anomaly area has been observed along upper Mosquito and upper Bevis Creeks and their branches in addition of roads. The albitite/diorite clan appears as a 1.0-1.5 km wide belt expressed in north as several narrow and one wide dyke and in south as disoriented exposures which may equally well be connected in two dimensions. In many creeks huge solely albitite float concentrations express the same thing.

Ground magnetics across similar exposures show intensities of 56.100 gammas range with a narrow 50 gamma spread. Similar major magnetic finger print is along the Mosquito ML, especially between points 7 and 8 (Map 12). This together with the geological interpolation brings the postulated intrusive and aeromagnetics together.

A similar situation is well exposed 7 km WSW at Fall Creek where a roundish 1 km wide albitite occupies a major hill. The Mosquito-Bevis area is thought to represent a higher cut of a similar near surface intrusive from where the dykes radiate mainly along the local strike, it is east and west. However, on the north side of the valley all the same dykes cut the formation sharply.

This north slope of the valley consists mainly of basic and intermediate volcaniclastics with minor ribbon chert and graphite schists. The very contact zone of these and the foreland of Island intrusions has many small diabase and lherozolite pipes; corresponding volcanic vents are exposed north of San Juan Bay.

In 1980 several basic cobble size, slightly mineralized floats were picked up from the end moraines from the south where the Red Creek ML exposes them at major creek intersections (Map 6, Tab 6/B). Another non mineralized boulder size igneous rock concentration was found immediately upslope in a shallow drift. Their source was interpreted to be a long way to the east, it is: main ice movement. In a follow-up of a gold anomaly in the same vicinity (Nos. 133,192 in Map 6) an upper limit of this concentration was discovered in two creeks with an andesite outcrop nearby.

This led to further re-examinations: similar multirock residual float concentrations are also 100 m south of Archibald Vein (Map 4 and 10) and at Bevis Creek on Mosquito ML. The limited extent of all three refers to a pipe-like body of multiple character intimated also with the albitite.

Ground magnetics have indirectly covered the above situation (Points 13 and 17, Map 13). The most common other high intensity narrow amplitude magnetics refer to sedimentary beds. As described in the geology section the albitite/diorite has had only minimal thermal and metasomatic effects. Therefore the high magnetite (pyrrhotite) content is rather countable to the igneous origin of the material. The calc-silicite unit may be one such bed and others certainly occur in the shale.

For the gold exploration the implication is that another source than the acidic dykes may be at hand. The basic volcanic concept for gold has seen it's revitalization originating from Australia some ten years ago (Travis et al).

GEOCHMICAL REPORT

(Maps 3,6,7,8,9 and 10; Diagram 11)

The three surveys of Tavela, Utah and Lacana followed the same sampling procedure of 1-5 kg of soils and/or rock chips, pertinent in gold exploration. Part of Tavela's samples (Map 3: T-1,2,3) were hand drilled and blasted. 188 of Lacana's samples were Cobra drilled and blasted.

Sample preparation was standard with splitting between stages except Lacana's all samples were crushed to the finish before splitting. This increased the representativeness of the final sample. The costs were correspondingly higher.

For gold Tavela used Bondar-Clegg and Lacana Min-En laboratories. Both used assay attack on 10-20g samples with standard IMBK/AA finish. Utah's laboratory, Chemex, used aqua regia attack on 5g sample and similar finish.

All laboratories used acid attack on 1g sample and AA finish for silver. All Lacana's samples were analyzed also for aresenic with acid attack on 1g sample and colorimetric finish with 2ppm detection limit with the same resolution.

Two hundred eighty-two of Lacana's rock samples, representing two sampling and analytical batches, are plotted on a log-log Au/As correllation plot (Diagram 11).

The distribution shows that 87% of points fall to the 2/3 of the plots field where gold content in relationship to aresenic shows a static upper limit for gold in order of 100 ppb versus arsenic's spread from 2 to 6000 ppm.

Conversely in the remaining 1/3 of the field, with 13% of samples, the arsenic has a narrow spread from 2-100 ppm and gold a wide spread from 10-40,000 ppb. The 20 samples from Archibald Vein are among the one third's 38 samples.

INITIAL GEOCHEMISTRY IN 1980

(Map 3,6)

After the initial success with rocks (prospecting report) all creeks from or near the intersections between them and the three EW running parallel roads (Mosquito and Red Creek ML and 2000, 2700, map 4,5) were sampled. Since the creeks sweep the property from S to N, this gave a good multiple coverage.

Forty samples produced two anomalies both re-sampled in different times and in a slightly different spot results of which confirm the initially obtained (Map 6: Nos. 136,192,both 145 ppb Au/Nos 149, 237 - 80, 105 ppb Au; later by Lacana Map 8, T-65-380 ppb Au, 38 ppm As)

The follow up of the former anomaly at the Red Creek ML lead to an igneous rock exposure area. The latter at the roadside of 2700 (Map 8) was followed up by sixteen blasting sites, eight of the heavily leached quartz veins without gold. Between this and the remaining row of eight samples is a swap covered depression without drainage.

Another Lacana's follow up from the 1980 season is the Archibald vein pictured in Map 10. The contemplated follow-ups of the values in the trenches T-1,2,3 (Map 3) was not done. The values here occur in the composite albitite/diorite itself both as dissiminations and in ladder veins.

MID-WINTER 1980/81 SURVEY BY UTAH MINES

(Map 7)

The company has not provided a report for the present purpose; the following is based on interviews with the participating geologists mentioned earlier. The surveys hip chain lines and many flagged sites has been seen after it.

Sixty-six rock chip samples were from the shale/ quartz vein system from road cuts deemed favorable and to fill caps of the summer's sampling. The 14 silts, all in double, were taken from the mainline/creek intersections from the east part of the group.

All traverses proved barren except the x-section along the beginning of road 2000 (maps 4,5) between Mosquito ML and Creek. This is the sample series of AJS-16128C-1 to 11. Besides few stray Au/Ag values it provided two spectaculars, Nos. C-5 and C-6, with the following results:

	Geochem		Assay, oz/ton	
	Ag, ppm	Au, ppb	Ag	Au
C-5	0.8	5500	0.06	0.154
C-6	20.0	1750	1.72	0.086

A third geologist with a team was dispatched for resampling this and other sites. The sample nos. 81728-8173 covered the above section and the results, as resampled, could not be verified. Likewise, Lacana's similar effort failed.

The discrepancy cannot be pinpointed at this time. Before Tavela's and later Lacana's resamplings have not failed to confirm a clear anomaly, although the results have had a wide spread, as expected in gold geochemistry.

SURVEY IN 1981 BY LACANA

CONCLUSIONS

Gold values are restricted to quartz vein systems over narrow intercepts. These veins exhibit lensoidal characteristics and extremely low tonnage potential. The possibilities still exist that structurally controlled gold mineralization occurs in topographical lows expressed as creek drainages.

RECOMMENDATIONS

Based on the low gold values and the localization of gold only in quartz vein systems remote from but between dyke systems no further work is recommended on the property. The owner Matti Tavela will be carrying out additional surveys on the property and will inform Lacana of his results. To check the concept of gold mineralization concentrated in the topographical lows, a heavy media silt sampling technique would be appropriate.

SUMMARY

Lacana Staff in conjunction with consultant K.E. Northcote and owner M. Tavela carried out a program blasting, rock sampling, geological mapping and geochemical surveys. A period of about three weeks were spent on the project with total costs of approximately $25,000.00. Initial examination and sampling of rocks and vein material had indicated the possibility could exist of economic gold values in the Leech River formation on Vancouver Island.

LOCATION

The property is located approximately 10 km Northeast of Port Renfrew on southern Vancouver Island. 92 c/9w.

GENERAL GEOLOGY

The majority of the property is underlain by a slate phyllite unit which exhibits good foliation which may easily be mistaken for bedding in the field. An impression of original bedding is exhibited by composition laying which occurs parallel to the foliation. The north portion of the property is underlain by a greenish foliated shistose calc-silicate unit. Mineralization in this unit consists of pyrrhotite, pyrite and magnetite. A major system trends westerly across the property along the north side of the claim group. These dykes average about four metres in thickness with a range of from 1-10 metres. Mineralization in the dykes consists of pyrrhotite, pyrite and arsenopyrite.

The only significant gold mineralization discovered on the property occurs in quartz lensoids and cross veins which is hosted in silicified phylite units. Some specimens of free gold were collected by Lacana Staff.

WORK PROGRAM

A program of detailed rock sampling along logging roads was carried out by Lacana Staff in conjunction with owner Matti Tavella. Rock samples were chipped across bedding planes over distances of from one to ten metres. The rock type, general structure, alteration and mineralization were taken and the sample interval noted. The sample material weighed from 3-5 kg. The samples were placed in plastic bags and shipped to Vancouver for analysis in Min-En Laboratories for gold, silver and arsenic.

RESULTS

Approximately one in ten of the 400 samples taken assayed greater than 0.02 oz/ton Au. The most significant samples were obtained from quartz veins in slate phyllite from the south side of Mosquito Creek. Two samples assayed in excess of 1.0 oz/ton gold, however; these were narrow quartz veins which contained small specks of visible gold in quartz adjacent to the phyllite contact.

Detailed Sample Notes

G-81-001, G-81-004 Foliated Shales cut by quartz veinlets, some silicification, graphite, minor slickensides developed.

G-81-005, G-81-008 Contorted shales, bedded muscovite, occasional quartz stringers.

G-81-009 Massive quartz stringer zone 1 metre in thickness transected by a 3 cm quartz veinlet developed along joint planes.

G-81-010, G081-014 Crenulated shales and phyllites bedded muscovite, minor limonite probably after pyrite.

G-81-014A 10 cm thick quartz vein developed along joint planes with graphite.

G-81-015, G-81-018 Shales and phyllites, quartz stringers both bedded and cross cutting.

G-81-019-021 Contorted shales extremely friable, contains well developed quartz swarm in cross cutting structure about 1 metre across.

G-81-022-023 Massive shale which becomes highly contorted and cut by a fault striking 000^{o}.

G-81-022A Sample of fault gauge, with some rock fragments.

G-81-024-025 Steeply dipping well laminated and foliated shales containing some quartz veinlets along bedding plane.

G-81-026 Stratiform quartz vein striking 90^{o} dipping 78^{o}. Yellow brown in color with interbedded muscovite shales.

G-81-027 Foliated shales with interbedded siltstone, minor quartz seams.

G-81-028 Folded shales plunging S.W. Well foliated shales cut by rusty andesite dyke.

G-81-029-032 Foliated shales minor stratiform quartz veinlets dipping south.

G-81-033-036 Soil and rock debris from probable fault, contains abundant graphite.

G-81-037 Sample of major quartz vein parallel to bedding.

G-81-038 Baked shale on hanging-wall of quartz vein containing numerous stratiform veinlets.

G-81-039-040 Foliated shales numerous interbedded quartz veinlets.

G-81-041 Quartz vein developed along jointing about 25cm thick but with limited lateral extent.

G-81-042 Laminated shales and siltstones.

G-81-043 Quartz vein varies from 4-10 cm in thickness. Quartz stratiform but introduced.

G-81-044 Shales near vertical, containing numerous stratiform quartz veinlets.

G-81-045 Sample of Albite-quartz-muscovite dyke across two metres.

G-81-046-050 Foliated shales and phyllites containing massive shale units and minute veinlets of quartz.

G-81-051 Contorted shales containing a massive siltstone unit one metre in thickness. Sample G-81-051A is of a vugy quartz zone across 0.5 metres.

G-81-052-056 Phyllites, rusty weathering, occasional quartz veinlets.

G-81-057 Quartz float from beneath roots of overturned tree.

G-81-058-059 Well laminated shales, limonite along bedding planes.

G-81-060 Quartz vein about 10cm across with some adjacent phyllite.

G-81-061-066 Foliated shale, introduced cross-cutting quartz. Some pyrite.

G-81-069 Quartz zone about 0.2 metres thick.

G-81-070 Contact zone between shales and fine grained grey-green massive unit, possibly a water-lain tuff.

G-81-071-074 Bedded shales containing contorted stringers of quartz.

G-81-075-076 Sample taken from pile of micro-diorite boulders.

G-81-077 Sample of Albitite dyke containing minor quartz-veins with traces of pyrite.

G-81-078 Quartz float with feldspar envelope containing abundant disseminated arsenopyrite.

G-81-079-080 Shale from hanging wall of sill, heavily slickensided, some graphite.

G-81-081 Cross cutting quartz vein in Albitite across 0.2 to 0.3 metres. Striking 210° dipping 58° N.E.

G-81-082 Albitite with traces of arsenopyrite in banded chalcedony.

G-81-081A Bulk sample of quartz zone.

G-81-83 Western most quartz zone containing cross cutting swarm, striking north and dipping variably. Thickness of zone 0.3 metres.

G-81-84 Sample 15cm thick quartz vein in green massive rock (tuff) containing numerous augens of quartz and cross cutting quartz veinlets.

G-81-085 Quartz-vein in albitite 10cm thick.

G-81-086-087 Albitite striking 075° dipping 85° traces of pyrite.

G-81-088 Shale between albitite zones approximately 4 metres in thickness.

G-81-88A Quartz vein and shale against hanging wall of west zone.

G-81-89 Quartz vein in Albitite.

G-81-90 Foliated shale with minor quartz veinlets.

G-81-100 Sample of shale from blasted section contains cross cutting quartz veinlets.

G-81-101 Fresh blasted Albitite, occasional speck of arsenopyrite.

G-81-102 and 104 Contorted shales, abundant stratiform quartz.

G-81-103 and 105-107 Albitite, abundant dissiminated arsenopyrite, some pyrite.

G-81-108 Contorted shales between two albitite zones, quartz veins.

G-81-109 Albitite containing arsenopyrite and pyrite.

G-81-110-111 Shale containing minor quartz veinlets.

G-81-112-113 Albitites containing pyrite and arsenopyrite.

G-81-114 Shale, interbedded between Albitites.

G-81-115 Albitite containing abundant arsenopyrite.

G-81-116 Shale at end of sampled zone.

G-81-118 Sample of fresh barren abitite from blasted material.

P-81-001-002 Honey colored quartz some arsenopyrite.

P-81-003-004 Shale containing minor quartz.

P-81-005 Vugy quartz.

P-81-006-016 Shale containing minor quartz veinlets with some arsenopyrite.

P-81-018-020 Soil samples

P-81-021-030 Graphitic shale, quartz veinlets containing arsenopyrite.

P-81-031 Shales

P-81-032 Cross cutting quartz vein

P-81-033 Hanging wall shale

P-81-034 Cross cutting quartz veinlets in massive green rock.

P-81-035-040 Graphitic shale some arsenopyrite.

P-81-041-043 Soil samples

P-81-044-049 Graphitic shale, minor quartz.

P-81-050-051 Soil samples.

P-81-052 Shale containing minor quartz veinlets.

P-81-053-056 Soil samples.

P-81-057 Graphitic shale.

P-81-058-060 Soil samples.

P-81-061,063,064,066,069,070, Shale

P-81-062,065,068,069 Soil samples.

P-81-067 Quartz veinlets.

P-81-071-075 Shale containing minor quartz.

P-81-076 Quartz containing arsenopyrite and shale.

P-81-077-078-080,081 Shale containing quartz.

P-81-079-082,087 Quartz

P-81-083-085,088-091, 095 Shale, quartz veinlets, pyrite.

P-81-092-094 Soil samples.

P-81-105 to 108 Samples south along road from G-81-100 from massive green rock flanked by shale.

P-81-96-104 Samples of silicified shale from quarry.

GEOPHYSICAL REPORT

(Maps 12 and 13)

The magnetic recce was done mainly along roads with addition of two loose grids around points one and six in the above maps. The latter was a pilot survey and has not been drawn.

The purpose of the survey was to aid geological-interpretation and represented in the third party of the geological report. The surveys technicalities follow.

The instrument was Sintrex Proton Magnetometer model M-P-2/1980 with nominal +- 1 gamma resolution. The survey used 50-25 m controlled spacing, orientation northerly. Base stations were used only in the two detail grids. In the road surveys the combined and separate effects of magnetic storms and iron objects (mainly culverts and buried steel ropes) were controlled by repetition on the spot and aside of the disturbance until a repeatable and acceptable reading was obtained. The results, as represented, are believed to be free of errors of significance.

The survey followed or crossed the geological strike with slight angle except between points 3,11,12,13 and 17 where a near x-section was obtained. If this picture is projected to several imaginery x-section and combined with geology as known it is quite clear that magnetics are the easiest way to map the site's unexposed parts and it's additional rock units as projected before.

PROSPECTING REPORT

(Map 3 and 6)

All prospecting in 1980 was done together with geochemical and geological surveys. The relative density of prospecting is the same as sample density in map 6. The important prospecting events are as follows.

The traverses along the dense logging road met led firstly to an erroneous conclusion that any possibilities for a prospector has been studied before. Nevertheless, a set of rocks from albitite/diorite outcrops with seritization or with few visible pyrites was collected. Several samples showed geochemical gold (Tab 6/A in Map 6, Nos. 136, 149,144,153).

The second round produced a ladder vein type quartz-pyrite-arsenopyrite mineralization with gold in a composite albite/diorite dyke (Map 3:T-1-2-3, Map 6,6/A, Nos. 191,216). This site has been blasted and bulldozed by roadbuilders before The ladder vein type mode proved to be common in dykes during later prospecting.

During a routine sampling T. Archibald, prospector, discovered a visible gold bearing quartz vein. It now carries his name and is described elsewhere in this report. All surveys and all field operators have in a true sense acted also as prospectors along the roadside extensive outcrop. But no further successes are on record. Based on this experience a summary of the prospecting characteristics of the area is offered for future use.

Two glaciations, one a long distance along the valley, and one very short distance perpendicular to the slope have scooped the site of all preglacial overburdens. There are no placer gravels although Mosquito and Bevis Creeks pan very fine gold in the mobile gravels forming today.

The bedrock is deeply leached where sulfides occur. Especially thoroughly leached are quartz veins with sulfides and predominantly with silicate inclusions. Since the amount of barren rusty rocks is near limitless compared with gold bearing rocks, which today still have not revealed other identifying marks, a prospector without much analyzing is helpless.

Prospecting then needs guidelines limiting the targets and to do them thoroughly. One such is provided by new rock type float concentrations in place. Others can be eg. models of gold occurences in near similar conditions such as saddle reef model and basic rock concept.

STATEMENT OF COSTS

MATTI TAVELA

1980: applied credit per mand day includes all support, accommodation, food, transportation. Ox claim completed 10.05.1980.

FIELD DAYS

M. Tavela: 24.05.-2.06; 23.06-03.07; 13.07-27.07; 04.09.-19.09.; 09.10.-17.10; total 61 days @ $ 300.00 (allocation: prospecting , geology 40, geochemistry 21 days)	$ 18,300.00
T. Sullivan 04.-08.09, 5 days @ $ 125.00	625.00
T. Archibald 18, 19.09 2 days @ $ 125.00	250.00
	$ 19,175.00

ANALYSIS BY BONDAR-GLEGG

One Au assay	$ 8.00
One Au/Ag assay	11.00
One As, Bi and six element geochem	8.15
114 Au, geochem @ $ 5.25	598.50
40 soil preparation @ $ 0.70	28.00
74 rock preparations @ $2.50	185.00
	$ 838.65

SUPPLIES

150 sample bags @ $0.25	$ 37.50
Explosives	40.00
8 Thin section @ $6.00	48.00
	$ 125.50

1981: deviation from 1980: accommodation and food in a motel which adds costs.

MAGNETIC SURVEY

M. Tavela 05.-07.04. 3 days @ $ 300.00	$	900.00
A. Oesch 05.-07.04. 3 days @ $ 100.00		100.00
T. Archibald 07.08.04 2 days @ $ 125.00		250.00
Support 8 man days @ $ 30.00		240.00
	$	1,690.00

FIELD GEOCHEM WITH LACANA

M. Tavela 27.04. - 03.05; 21-28.05		
total 15 days @ $ 300.00	$	4,500.00
Room and board 14 days @ $ 30.00		420.00
	$	4,920.00
GRAND TOTAL	$	26,749.15

STATEMENT OF COSTS

UTAH MINES LTD.

FIELD DAYS

A. Schmidt, B. Richards, T. Pollock, geologists: 15.-17.12. 1980 and 27.-29.01.81 10 man days @ $ 300.00	$ 3,000.00
Food and accommodation: 8 days @ $ 30.00	240.00
	$ 3,240.00
CHEMEX LABS LTD.	
80 samples (Au, Ag, partial As)	$ 529.28
EXPENSES	
Gasoline and ferry	$ 277.05
GRAND TOTAL	$ 4,046.33

GEOLOGICAL MAPPING

June 26,1981

STATEMENT FOR GEOLOGICAL MAPPING AND REPORT
FOR OX, FOX, COX, HOT AND LOT CLAIMS

Port Renfrew B.C. Project 81-2

A. Geological	
Geology (K.E.Northcote)	
Mapping May 19th to 29 @ $350.00/day	$3500.00
Examination of Thin Sections, Preparation of Report and Map 5 days @ $300.00/day	$1500.00
Supportive Charges	
Typing, reproducing and assembling report 2½ days @ $75.00/day	$ 187.50
Thin sections	$ 74.25
Map reproduction	$ 134.15
Photographs	$ 36.57
Travel	
Ferry	$ 29.00
Truck charges 970km @ 20¢	$ 194.00
Gasoline	$ 36.00
Food and Lodging	
Billed directly to Lacana	—
B. Geochemical Compilation	
Compilation(K.E.Northcote) 1 day @ $300.00	$ 300.00
Supportive Charges	
Draughting 15hrs @ 10.00/hr.	$ 150.00
Blueprints	$ 22.90
C. Contingencies	
Telephone, courier service, mail charges, delivery of samples to Min En, draughting to Chong, samples to and from Vancouver Petrographics, maps for reproduction Langley and Chilliwack, confer with S.C. Gower at Langley.	$ 125.00
	$6289.37

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
K.E. NORTHCOTE

STATEMENT OF COSTS

LACANA MINING CORP.

WAGES

S.C. Gower	April 27-30, May 1-3	7 days @ $300.00	$	2,100.00
E.M. Thompson	April 27-30, May 1-3	7 days @ $ 75.00	$	525.00
Lyle Kollough	April 27, 28	2 days @ $ 85.00	$	170.00
Dawn Marsden	April 27, 28	2 days @ $ 75.00	$	150.00
Albert August	April 25-30, May 1-4	10 days @ $100.00	$	1,000.00
Dave Price	April 26 - May 5	10 days @ $221.50	$	2,215.00
Ken Bushman	May 21-28	8 days @ $125.00	$	1,000.00
Support -		46 days @ $ 30.00	$	1,380.00
Truck Rental (inclusive)		19 days @ $ 65.00	$	1,140.00
Petrographic Examination - K.E. Northcote			$	782.24
Ferry Travel		8 trips@ $20.00	$	160.00

ANALYSIS - MIN-EN LABS

Inv. # 1-162	93 Rock Geochem Au	$	465.00
	93 Rock Assay Au, Ag, As	$	1,455.45
	7 Soils Au, Ag, As	$	68.25
Inv. # 1-169	20 Soils Ag, Au, As	$	260.40
	168 Rock Ag, Au, As	$	2,646.00
Inv. # 1-248	7 Soils Ag, Au, As	$	75.95
	62 Rocks Ag, Au, As	$	759.50
Inv. # 1-252	20 Geochem Ag, Au, As	$	335.00
	2 Heavy Media Au	$	50.00
Sample Baga 1000 @ $ .15¢		$	150.00

DRAFTING

F.Y. Chong - 56 hours	$	678.00

MAP REPRODUCTION

Van-Cal Reproductions	$	126.15

REPORT WRITING

1 Day @ $ 200.00	$	200.00

TYPING

4 days @ $ 80.00	$	320.00
CONSUMED SUPPLIES INCLUDING EXPLOSIVES FLAGGING TAPE ETC.	$	1,500.00
MAP PRINTING	$	100.00
		$ 19,811.94

SUMMARY

Matti Tavela	$ 26,749.15
Utah Mines Ltd.	4,046.33
K.E. Northcote	6,289.37
Lacana Mining Corp.	19,811.94
	$ 56,896.79

ALLOCATION

Geology including prospecting	$ 24,460.98
Geochemistry	27,821.66
Geophysics	1,690.00
Reporting	2,924.15
	$ 56,896.79

STATEMENT OF QUALIFICATIONS

STEPHEN C. GOWER

I Stephen C. Gower have been employed as a geologist by Kennco Explorations (Western) Limited, during the period of April 1970 to December 1976 and by Lacana Mining Corporation from the period of February 1977 to the present.

I graduated from the University of British Columbia in the spring of 1970 with a B.Sc. in geology, and have taken several masters courses in exploration and property evaluation.

I am a member of the C.I.M.M. in good standing.

Dated this 3 day of December 1981 at Vancouver, B.C.

Stephen C. Gower, Geologist Stephen C Gower

STATEMENT OF QUALIFICATIONS

I, K.E.Northcote, of K.E.Northcote and Associates Ltd., do hereby state that;

(1) I have been performing as a professional geologist for a period of approximately 25 years for various petroleum exploration companies, mining exploration and consulting companies, and federal and provincial agencies.

(2) I obtained a Ph.D. in geology from U.B.C. in 1968 and qualified for registration with the B.C. Association of Professional Engineers in 1967.

(3) The geological mapping reported herein is a result of my personal fieldwork on and around the area of the Ox, Fox, Cox, Lot and Hot claims.

(4) I have not nor expect to have any monetary interest in Ox, Fox, Cox, Lot and Hot claims.

K.E.Northcote Ph.D., P.Eng.

PROFESSIONAL
PROVINCE OF
K.E. NORTHCOTE
BRITISH COLUMBIA
ENGINEER

STATEMENT OF QUALIFICATIONS

I, Matti Tavela, hereby state that:

1. I am a Geologist/Geochemist, a citizen of Canada and reside at #1, 2230 Harrison Dr., Vancouver, in the Province of British Columbia.

2. I have M.Sc. degrees in geology and in chemistry and a Ph. D. degree in geology from the University of Helsinki, Finland. I have practiced my profession for thirty years.

3. My Canadian experience is: 1961-62 Geologist/Geochemist for Selco Exploration Limited of Toronto; 1970-72 Chief Geochemist for Kennco (Western) Limited of Vancouver; 1973 Project Manager for British Newfoundland Exploration Company Limited for a B.C. Project; 1975-78 Vice-President, Expl., for Compass Exploration Limited of Nassau,

4. I am a Registered Professional Engineer in B.C., a Registered Geologist in the State of California and a Licenced Mining Surveyor in Finland.

Signed: December 1st, 1981, Vancouver British Columbia.

Matti Tavela