

Snip Project, Suite 600, 1200 W. 73rd Ave.,  
Van., B.C. V6P 6G5



November 15, 1988

Mine Development Steering Committee  
c/o Engineering and Inspection Branch  
Ministry of Energy Mines and Petroleum Resources  
Parliament Buildings  
Victoria, B.C.  
V8V 1X4

887747

Attention: Mr. Raymond C. Crook  
Chairman

LOG NO:	NOV 18 1988	VAN
ACTION:		
FILE NO:	SNIP	

Dear Mr. Crook:

RE: SNIP PROJECT - MILL SITE

This letter is to advise you and the other participants in the Mine Development review process of a mill site change, which has been developed in engineering evaluation of the Snip Project. We request that the new information be incorporated in the Stage I review, which is presently underway.

Section 2.4.1 of the Stage I Report discusses three potential mill locations. One of these, Site #1, was found to be unfeasible and was not given further consideration. However, based on geotechnical evaluations, both Sites #2 and #3 were found to be suitable locations. Site #2 was initially selected for inclusion in the Stage I submission, because of apparent advantages of an ore haulage portal location.

Favourable features included minimal surface handling of ore and a position directly above the tailings pond which would allow gravity conveyance of tailings and mine drainage. The mill was to be founded on trenches excavated in bed rock.

The Civil Engineering study of Site #2 was largely based on aerial photographs, topographic maps and preliminary survey information. However, through further assessments of this site, a more comprehensive engineering of mill requirements and a full consideration of operational logistics, the advantages originally apparent are no longer found to be decisive factors. Therefore, we wish to advise that the project will contain a mill located at Site #3.

Mr. Raymond C. Crook  
Ministry of Energy Mines and  
Petroleum Resources  
Page 2

Safety, operability and a more compact operation from a logistical perspective are the major advantages of Site #3 on Bronson Flats. In addition, it affords ample room for expansion, should production be increased or service facilities be added in the future. This location and its more satisfactory mill general arrangement, from an operating point of view, are illustrated in the attached drawings.

With respect to the Site #3 location, we wish to confirm that there are no changes in other project features such as waste rock and tailings pond disposal sites. Tailings will be pumped in a secure line to the Monsoon Valley impoundment.

A preliminary environmental evaluation of Site #3 by Norecol Environmental Consultants Ltd. has indicated that there are no significant concerns with respect to environmental protection. Provision is made in design to contain any and all process spillage within the mill. All mill solutions contain gold. All spillage will be directed to a control sump of sufficient size to hold all overflow material in the event of power interruptions or process upset. Water management features will control runoff from the mill site during construction and operation.

We are cognizant that the new mill location is on an ancient flood plain of Bronson Creek and that peak floods could impact this area. This situation is presently being assessed and if a flood risk is confirmed, the mill will be protected with an appropriate containment structure.

The new mill site requires a significant consideration of ore transportation requirements and two options are evident. The first would involve surface haulage from the present 180m portal and this would necessitate upgrading the present access road. The second would be to drive a new haulage and access adit from a point above the Bronson Flats location. A third alternative would involve upgrading a portion of the original Skyline road around the north shore of Monsoon Lake where the more favourable terrain would result in an improved and lower cost haulage road. These options are presently being evaluated and our decision will soon be communicated to you.

Should the new mine access option be selected, there will be no change in plans for waste rock disposal. This material would continue to be discharged from the 180m to the site specified in the Stage I report. Mine drainage emanating from a new haulage portal would be pumped to the tailings pond or discharged directly if its quality meets Ministry of Environment requirements.

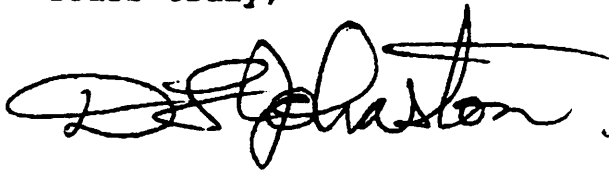
Mr. Raymond C. Crook  
Ministry of Energy Mines and  
Petroleum Resources  
Page Three

This letter is being distributed to all primary recipients of  
the Stage I report.

Thank you for your consideration of the mill site change  
specified in the letter.

Please do not hesitate to contact me if you have any  
questions.

Yours truly,

A handwritten signature in black ink, appearing to read "D.L. Johnston". The signature is fluid and cursive, with a large initial "D" and "J".

D.L. Johnston  
Vice-President

DLJ/rab  
Attachment

cc: Stage I Report Distribution

FAME '87

COMINCO LTD.

EXPLORATION

WESTERN CANADA  
31 January 1987

1986 YEAR END REPORT

SNIP PROPERTY

SUMMARY

Several high grade gold shear/vein systems were drill tested and trenched, while contour soil geochemistry and prospecting extended coverage to the west, north and south. The work, funded by Delaware Resources Corp. was carried out in three separate stages, each being contingent on the success of the previous stage.

Diamond drilling (1494.2 m in 12 holes) and surface trenching located 4 gold bearing structures: - three are narrow (2-3 m) subparallel structures than trend 110-120°/65-75° SW. Best Au values from each of these zones include:-

Tara Zone: - tested by 3 holes for 80 m strike, 100 m down dip - 2.0 m of 25.8 g/t Au, 2.2 m of 28.8 g/t and 0.2 m of 91.2 g/t.

Twin Zone:- tested by 5 holes over 150 m strike, 100 m down dip. 2.8 m of 36.4 g/t, 2.5 m of 31.5 g/t, 1.5 m 10.3 g/t, 3.3 m of 12.7 g/t and 3.1 m of 15.9 g/t.

Rope Zone:- tested by one trench, and 2 drill holes for 75 m down dip: - 1.5 m of 12.7 g/t, 1.0 m of 25.9 g/t, 2.9 m of 9.29 g/t and 1.9 m of 5.7 g/t.

All of these structures are still open along strike and down dip. Contour soil lines located 100 and 400 m west of these zones have numerous highly Au anomalous samples (200 to 5560 ppb) indicating possible overall strike lengths of 500-600 meters per structure. Other strongly anomalous Au samples suggest the presence of several additional subparallel structures to the north and south of the known zones.

Lamp Zone:- A fourth gold bearing structure trending (020°-040°/50°W) has been tested over a strike length of 150 m and down dip for 50 m, and is still open along strike and to depth. Three holes have tested this zone - 2 at highly oblique angles resulting in exaggerated thicknesses of: - 13.5 m of 15.4 g/t, 4.0 m of 15.0 g/t, 9.6 m of 10.6 g/t, 2.0 m of 14.4 g/t, the third hole returned 3.5 m of 91.9 g/t and 2.0 m of 3.7 g/t. Air photo interpretation indicates the presence of at least 2 additional untested west dipping 040° structures.

LOCATION AND TOPOGRAPHY

The Snip claims are located 70 km east of Wrangell, Alaska, and 110 km northwest of Stewart, B.C. on the south side of the Iskut River. Nearest road access is from Bob Quinn Lake on the Stewart-Cassiar highway 70 km to the northeast. A landing strip also provides fixed wing access to Bob Quinn. Airstrips suitable for single otter - twin beech type aircraft are located at Skyline-Johnny Flats, 5 km south, and Snippaker Creek 22 km southeast. Fixed wing air service was available during 1986 from Terrace (290 km southwest) to Skyline/Snippaker. Other possible expediting centres include Smithers (290 km southeast) and Wrangell, Alaska (70 km west).

The Snip claims lie at the end of a prominent plateau area called Johnny Flats, and cover the steep transition between relatively flat topography both in the Iskut Valley and on Johnny Flats. A steep fault valley, occupied by Bronson Creek, cross cuts the northeast portion of Snip 2; Red Bluff forms a prominent cliff along the southwest portion of the valley wall. The Snip gold showings are exposed between 600 and 650 m ASL, on the west slope of the ridge called Johnny Nose, at the base of Johnny Flats.

2.

The area is heavily vegetated and lies within the coastal rain forest. A thick covering of slide alder and devil's club on steeper slopes make traversing, and field location very difficult. The mature forest is open and easy to traverse, except in the swampy valley bottoms and gullies where one must pass through fields of giant devil's club.

Rainfall is heavy in the area during the summer and fall. Snowfall is heavy and usually prevents mobilization until late June. The period July to mid-October is available for fieldwork, although prolonged periods of heavy rain start in September, and freezing conditions begin in early October on the upper claim area.

### TENURE

The Snip claims presently total 67 units in 7 claims and cover an area of + 1675 Ha. Assessment work credits from the 1986 work is sufficient to hold all claims for the maximum 10 years.

<u>Claims</u>	<u>Record No.s</u>	<u>Recorded</u>	<u>Assessment Work Due</u>
SNIP 1 (12 units)	1745	November 28,1980	November 28,1996
SNIP 2 (9 units)	1746	November 28,1983	November 28,1996
SNIP 3 (3 units)	2991	October 20,1983	October 20,1996
SNIP 4 (5 units)	2992	October 20,1983	October 20,1996
SNIP 5 (3 units)	2993	October 20,1983	October 20,1996
JIM 1 (20 units)	3602	July 22,1986	July 22,1996
JIM 2 (15 units)	3603	July 22,1986	July 22,1996

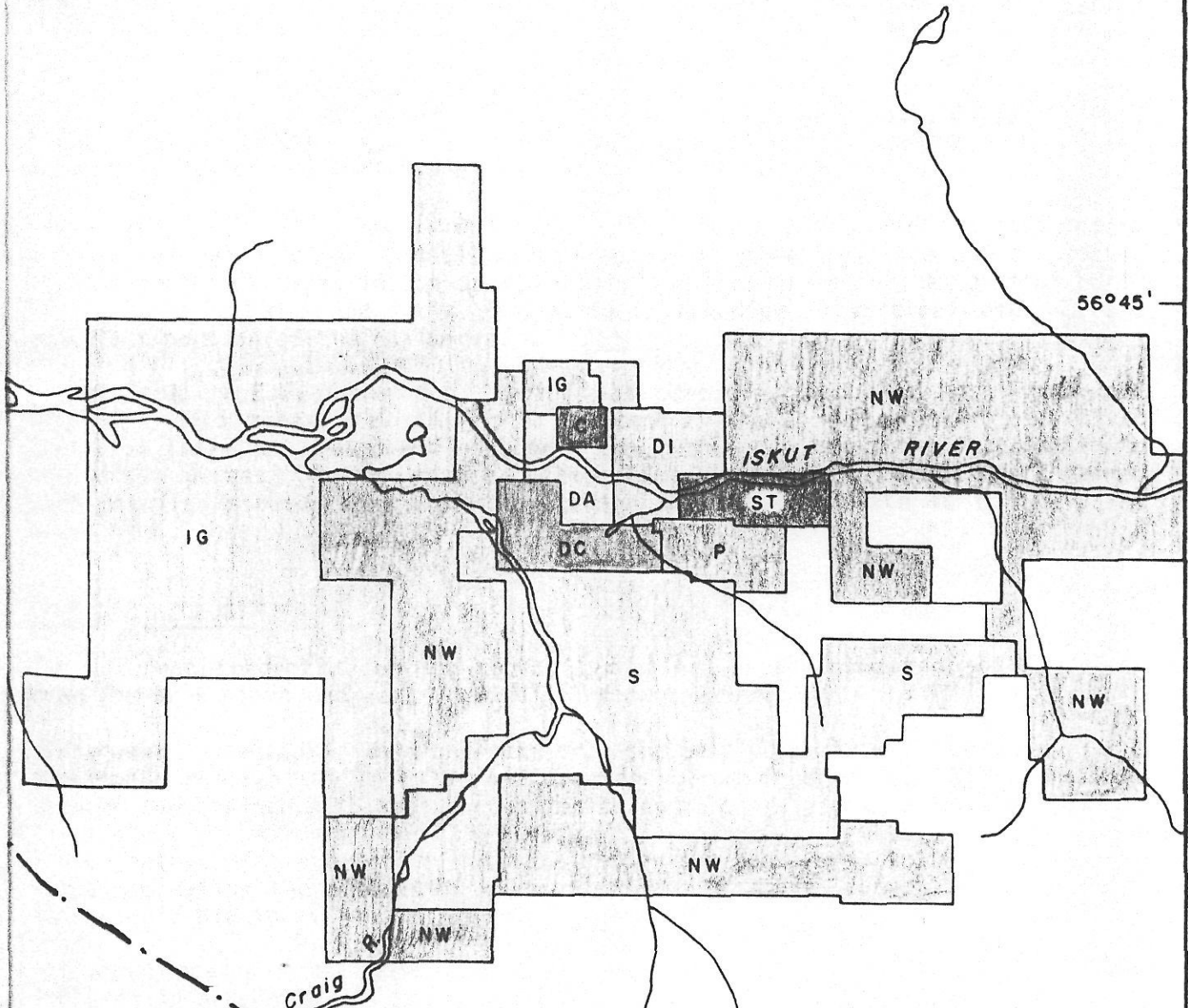
A controversy over the location and orientation of four Crown-granted mineral claims affects part of the Snip 1 and 2 property title. The locations of claims L.2857, L.2858, L.2859, and L.2860 as shown on the claim map correspond with bearings and measurements made by a Crown surveyor. Skyline has purchased these claims from the Tuksi Mining Company and now maintains that the claims are rotated 90° and cut through the middle of the Snip group. Old claims posts (circa 1908) and survey pins (circa 1914) have not been located to substantiate any claim on Skyline's part. A new published 1:50,000 scale NTS Sheet does show the Crown-grants oriented as Skyline suggests - parallel to Bronson Creek not at right angles to it.

In order to resolve this discrepancy a legal land surveyor, J.W.P. Matthews conducted a search of all available information, and plotted the most likely position of the claims. His letter documenting his findings along with a "revised" claim map is attached as Appendix 2.

### HISTORY

The area was first staked by the Iskut Mining Company in 1908 and the claims were crown-granted in 1914. The location of the claims is problematic, as mentioned under tenure.

30' 15' 131°00'



56°45'

56°30'

- Delaware-Cominco
- DA Delaware-American Ore
- DI Delaware-Iori
- Commonwealth Minerals
- Pamour
- S Skyline
- ST Skyline-Tungco option
- NW Northwest Gold Syndicate
- S Iskut Gold Syndicate

BRITISH COLUMBIA  
ALASKA

N.T.S.  
104 B



Drawn by: APR	Traced by:
Revised by:	Date:

### PROPERTY MAP

Scale: 1:250,000

Date: 5-2-1987

Plate: 2

3.

Cominco examined showings in the Johnny Mountain-Red Bluff area in 1929 and staked the area. The claims were dropped, but in 1964 were restaked and a small drill program was carried out to test the copper mineralization near Red Bluff. During the 1964-65 program T.W. Muraro discovered a gold showing on Johnny Nose; in 1980 this showing was staked as the Snip claims.

Other companies that have held ground in the Red Bluff-Johnny Mountain area are: Kennco 1949; HBM&S 1955-63; Noranda 1962, Texas Gulf 1974-1978; Skyline 1978-present; Placer Developments Ltd. - option from Skyline 1982; Anaconda - option from Skyline 1984.

### REGIONAL GEOLOGY

Forest Kerr mapped the regional geology of the Iskut River area in the period 1926-1929 and published GSC map 311A in 1935. Kerr's memoir 246 on the area was published posthumously in 1948. The Geological Survey of Canada's "Operation Stikine" in 1956 mapped the Stikine-Iskut area on a regional basis, was published as the 1"=4 mile GSC Map 9-1957. Past Cominco work, Mawer (1964), Parsons (1964, 1965), Nagy (1966), Bagshaw (1968) discusses the regional geology and mineralization in the vicinity of the Snip claims.

GSC mapping shows the area is underlain by Permian and triassic metasedimentary and metavolcanic rocks. Andesitic lava and tuff, plus argillite and greywacke, are dominant rock types in the area. Orthoclase porphyry occurs as a stock north of the Snip claims, and as a northwesterly trending subvertical dike in the southeast portion of the claim group.

Recent work by E.W. Grove for Skyline has concluded that the host rocks for Skyline's gold zones are similar to members of the Lower Jurassic Unuk River formation (Hazelton Group) while unconformably overlying rocks are correlative to the Middle Jurassic Betty Creek formation (Hazelton Group). Grove feels he can take detailed stratigraphy from the Stewart area and correlate it to the Iskut River area.

### DETAILED GEOLOGY

Ian Paterson conducted contour geologic mapping, prospecting and soil sampling over the area north and west (down hill) from the drilling.

Subsequent petrographic work on rocks from the Snip property was carried out on 8 specimens from surface rocks and 11 specimens from drill core. All rocks were slabbed and stained with sodium cobaltonitrate to clarify k-feldspar content.

The objective of the exercise was to classify the host rocks to the gold-bearing veins and define the alteration mineralogy which may have a spatial relationship to the gold-bearing veins.

Specimen locations are given in Plate 3 and individual rock descriptions are included in Appendix 2.

### PRIMARY ROCK TYPES

#### (a) Sediments

Most of the rock types exposed on the Snip claims appear to be metasediments of volcaniclastic origin. They have been subdivided into four lithological types which are probably interbedded; siltstones, wackes, calcareous wackes and pebbly wackes. The rocks are generally massive bedded and bedding is only seen in silty units between turbidites. Unaltered siltstones and greywackes are composed mainly of albitic plagioclase with a variable content of calcite. Metamorphic recrystallization has formed biotite from the clay component. This biotite generally parallels a weak foliation. The coarser grained wackes and the pebbly wackes contain clasts of (a) plagioclase, (b) k-feldspar, (c) porphyry with plagioclase and orthoclase phenocrysts, (d) biotite + augite andesitic porphyry and (e) fine grained andesite. Quartz clasts are only rarely present. All clasts are subangular and poorly sorted indicating immature sedimentation. Source rocks would appear to be intermediate volcanics and associated syenitic intrusives.

4.

#### (b) Intrusive Rocks

Syenitic orthoclase porphyry occurs as a dyke-like intrusive along the northeastern flank of Johnny Mountain. The porphyry contains 40% orthoclase phenocrysts from 5 to 15 mm diameter set in a fine grained grey matrix composed of plagioclase, sericite and disseminated magnetite. This unit is enveloped by an extensive alteration halo in adjacent metasediments (described later).

Biotite + pyroxene lamprophyre was intersected in a number of drill holes and also seen in trenches and in outcrop in gullies on the northeast flank of Johnny Nose. The dykes are a few metres in thickness and have 20-30° (NNE) azimuth. In outcrop the contacts dip 85° W.

In thin section, the dykes are seen to contain biotite, k-feldspar, plagioclase and pyroxene phenocrysts in a fine grained matrix consisting of biotite, k-feldspar, sericitized plagioclase, and two pyroxenes (one aegeritic). The plagioclase phenocrysts are reddish coloured in hand specimen.

Leucocratic syenitic feldspar porphyry is present in DDH 86-1 at 60.3 m. This unit forms a thin dyke (2 m true thickness) consisting of 15% plagioclase phenocrysts (3 mm max) in a fine-grained k-feldspar matrix. Minor disseminated pyrite (up to 4%) is present. This unit may be similar lithologically to the feldspar porphyry which is closely related to mineralization on the Skyline ground.

#### ALTERED ROCKS

The metasediments on Johnny Nose have commonly undergone metasomatic alteration giving rise to brown weathering pyritic rocks which are white or buff on fresh surface. The intensity of the alteration appears to be proportional to distance from the syenitic porphyry exposed on the northeast flank of Johnny Nose. Alteration "nodes" are also present on the northwest flank of Johnny Nose e.g. PSN-21 but are of limited extent. Altered rocks were also noted in all of the drill holes. Two main alteration types are present which commonly may overlap in hand specimen. The earliest is a pervasive k-feldspathization which may constitute up to 60% of the metasediment and gives rise to a grey fine grained rock which may be confused with silicification if a stain is not used. (TS R86--10358) Some coarse grained wackes contain clastic k-feldspar grains and it is sometimes difficult to separate detrital k-feldspar from metasomatic k-feldspar. The second alteration type is characterized by the assemblage sericite + pyrite + ankerite + pyrite and commonly completely obliterates detrital textures and mineralogy. In DDH 86-6 at 82.7 m the sericite + pyrite alteration forms an anastomosing network which appears to be superimposed on a pervasively k-feldspathized siltstone.

The sericitic alteration is best developed around the syenitic orthoclase porphyry on the northeast flank of Johnny Nose. In places, especially on the northeast side of the syenite abundant stringers of magnetite are present in the sericitic rocks (up to 10%).

A third type of alteration was noted in DDH 86-4 where a greenish black fine grained rock containing abundant calcite veins forms a large proportion of the drill core. This rock contains 40% biotite and 30% chlorite. It is not known whether this mineralogy formed as a result of chloritic metasomatic alteration or is a result of contact metamorphism of a peculiar primary bulk composition.

A diagrammatic section showing possible alteration and mineralization relationships is presented in Plate 4.

#### METAMORPHISM

The metasediments on Johnny Nose have been hornfelsed presumably because of the proximity to the syenitic orthoclase porphyry. The most obvious effect of the metamorphism and deformation on the metasediments has been the recrystallization of biotite in the matrix between detrital clasts and formation of a weak foliation.

The mineral assemblage formed during metamorphism in rocks which were not affected by metasomatic alteration is biotite + albite + epidote + calcite + sphene + pyrite. Recrystallization probably took place in the albite-epidote hornfels facies.

SKARN Calcareous rocks such as those exposed in the showing in "C line" (See Plate 3) have formed skarn rocks with clinozoisite + plagioclase + sphene + biotite mineral assemblages. Their extent, and relationship to mineralization is not known at present.



5.

The timing relationship between metasomatic alteration (k-feldspathization and/or sericite/pyrite) is not well understood. Intuitively it may be assumed that the hornfelsing was essentially contemporaneous with, or closely succeeding the metasomatic alteration.

### STRUCTURAL GEOLOGY

Ian Paterson also carried out structural mapping in the trenches located along the drill section which includes holes 8,9,9A and 10. It was felt that detailed study of a small area on surface could shed light on orientation of structures seen in drill core.

1. Bedding ( $S_0$ ). Bedding measurements can be obtained from silty interbeds in the massive bedded wackes. In the trenches only three convincing attitudes were obtained -  $105^\circ$  strike dipping to north at  $35$  to  $60^\circ$  (Plate 14). In a gully 150 metres to the southwest of DDH 10 bedding attitudes were fairly flat lying (e.g.  $70^\circ$  strike  $10^\circ$  dip;  $160^\circ$  strike,  $8^\circ$  dip).

2. Schistosity ( $S_1$ ). This is incipiently present in the greywackes and is characterized by a fracture cleavage with development of fine grained biotite. At the discovery showing, a zone of well foliated wacke and phyllite is sub-parallel to the main vein structure. This is interpreted as a zone of shear which has accommodated the vein mineralization at a later period. Most of the measured cleavages have southerly or westerly dips (Plates 12 & 14). Different generations of cleavage may be present but are hard to differentiate at this stage.

3. Mineralized Structures ( $S_1^{min}$ ). Veins are mineralized with pyrite + quartz + sphalerite + galena + arsenopyrite and have  $110^\circ$  to  $165^\circ$  strike and generally dip between  $50^\circ$  and  $80^\circ$  to the southwest. It may be significant that the "Rope Zone"- arsenopyrite lens developed along a fracture cleavage with  $90^\circ$  strike and vertical dip - somewhat different from the other veins. Several irregular oxidized veins were seen in the footwall of the main shear.

It is important to note that gold bearing pyrite + quartz veins 150 metres southwest of DDH 10 have  $150^\circ$  azimuth and  $70^\circ$  dip to the northeast (See Plate 3).

4. Crenulation Lamination ( $L_2?$ ). This was best developed in the foliated rocks bordering the main vein and may be associated with the development of a later cleavage ( $S_2?$ ). The lamination plunged  $25^\circ$  to northwest (Plates 12 & 14). Elsewhere lamination is not well developed.

5. Late (barren) quartz veins (Plate 14). These veins are generally up to 1 metre long, 10 cm wide and have surprisingly consistent orientation ( $60^\circ$  strike, dip  $30$ - $50^\circ$  southeast). They may be useful in helping to orientate drill core.

6. Joints. Orthogonal joint sets are fairly prominent. The best developed set has orientation of  $20^\circ$ E of N and has been exploited by lamprophyre dykes.

### 1986 WORK PROGRAMME

#### Trenching (See Plate 3 for location)

A total of 179.4 m of trenching was completed in 8 trenches. Of this total, 144.4 m exposed bedrock and was chip sampled and assayed for Au, Ag (See Plates 12 to 18). The trenching was done by a 2 man crew using a XAS 50 skid mounted compressor and air hammer. Progress averaged close to 10 metres of trench per day, which includes the initial clearing/slashing of the sites and the mucking out after blasting. A working radius of 125 metres was found to be an effective distance before air pressure dropped off to unacceptable limits. This necessitated a total of 5 helicopter moves in order to locate the compressor near the selected trench sites.

As seen from the trench assay plans, most trenches with the exception of T-8, and T-2N returned low values. Trenches T-6, T-7 and T-9 were all located along a stream gully located approximately 100 metres south of the discovery (T1-T2) gully. The best grab samples taken in 1982 from this gully include: 16.1 g/t;

6.

26.7 g/t; 31.5 g/t and 38.4 g/t. Highest values from T-6 of 7.3 g/t over 1 m. T-7 of 0.66 g/t over 1 m and T-9 of 0.75 g/t has so far failed to substantiate the earlier grab sample results.

Although T-10 was located in the "discovery gully", 50 metres vertically below T-1/T-2 no significant gold values were encountered (highest 1.9 g/t). Later structural interpretations from drill holes S-86-8, 86-9A, and 86-10 combined with surface information from T-1 and T-2 suggests that the discovery (Twin Zone) trends out of the gully down topography and would pass approximately 10-20 m to the south of T-10.

Subsequent structural interpretations based on drill holes S-86-3, 86-7, and 86-12 from the Lamp Zone suggests that the surface trace of this zone lies 30-50 m to the east of T-11 and 20-30 m to the east of T-12 thus accounting for the low values encountered in these trenches.

### Diamond Drilling

Diamond drilling was carried out by Drilcor of Delta using a helicopter portable hydracore 28 drill unit. Drilling was "spread out" over 3 phases with each subsequent phase dependent on encouraging results from the previous phase. This resulted in 2 shutdown periods during which assay results were evaluated and a decision to continue was made. The drill crew was sent to Vancouver during these breaks at Cominco's expense. Delays between drill phases included 14 days between phase 1 and 2 and 18 days between phase 2 and 3.

A total of 12 BQ drill holes were completed to target depth, with 1 hole abandoned short of its target. Total meterage drilled was 1494.2 metres. Core recovery averaged 98% + in unmineralized sections, and varied from good (90%) to poor (10-50% over 1-5 m) in mineralized sections. Drilcor ran 2-12 hour shifts with an average advance of 30 metres per shift. Drill site locations were mostly steep and/or heavily timbered. All sites required brush slashing and some falling with trees over 1 metre at the base common. Blasting of overburden and/or bedrock along with cribbing was necessary at most sites to create a level platform for the drill. Sites normally took 1 day to prepare, with more difficult locations (ie) 86-8, 86-9, 9A, and 86-10 requiring 2 days per set up. Moves between sites took 2 to 4 hours with an average of 1 hour of helicopter time per move.

### Contour Soil Geochemistry and Rock Sampling

Contour soil sampling was carried out along 3 widely spaced lines located west (downhill) from the 1986 drilling. The lines followed the 550, 450 and 250 metre topographic contours. In all, 2.6 kilometres of sampling was completed at a spacing of 25 metres (see Plates 10 & 11). Due to the steep terrane (30-50° slopes) soil is erratically developed within the survey area. Sample depths were usually between 10-20 centimetres, and the soil horizons sampled varied from B to C, to talus fines. Silt samples were also taken when streams/gullies were encountered along the contour lines. Outcrop distribution throughout the surveyed area is generally poor, but where exposed, bedrock grab samples were also taken (Plate 3). Statistical treatment of the soil data appears in Appendix 3.

### DRILL HOLE GEOLOGY AND MINERALIZATION

Interpretation of gold assay data indicates that 4 gold bearing structures have been located by the 1986 drilling. Definition of the various zones relies on surface structural measurements where available, and "best fit" structural contouring of the elevations of all the significant gold intersections (see Plate 5). While other interpretations are possible, the calculated strikes and dips resulting from the structural contour map represents the best agreement with measurements taken from exposed shear-vein systems in trenches T-1, T-2 (Twin Zone), and T-8 (Rope Zone). Three zones, the Tara, Twin and Rope zones are all subparallel and + 50 metres apart and trend 110-120°/60-70°S. The Lamp Zone trends 020°-040°/750°W, and is also the only zone identified so far that is closely associated with a subparallel, but steeper lamprophyre dyke (020°/80°-vertical).

7.

I. TARA ZONE	Hole #	Interval	Au Grade g/t
	S-86-1	78.7 - 78.9	0.2 m of 91.2
	S-86-8	51.6 - 53.6	2.0 m of 25.8
	S-86-9A	117.6 - 119.8	2.2 m of 28.8
II TWIN ZONE			
	S-86-1	43.0 - 46.3	3.3 m of 12.7
	S-86-8	5.2 - 8.0	2.8 m of 36.4
		13.1 - 15.6	2.5 m of 31.5
	S-86-9A	93.6 - 94.6	2.0 m of 2.9
	S-86-10	132.0 - 133.5	1.5 m of 10.3
		136.5 - 138.5	2.0 m of 3.7
	S-86-11	139.6 - 142.7	3.1 m of 15.9
III ROPE ZONE			
	S-86-9	43.3 - 46.2	2.9 m of 9.29
	S-86-9A	46.0 - 47.0	1.0 m of 25.9
		51.0 - 52.9	1.9 m of 5.7
	S-86-10	104.7 - 106.7	2.0 m of 3.1
IV LAMP ZONE			
	S-86-3	31.4 - 35.4	4.0 m of 15.0
	*(oblique to strike)	45.3 - 47.8	2.5 m of 8.8
		55.4 - 59.9	4.5 m of 13.6
		62.9 - 68.9	6.0 m of 24.0
	S-86-5	65.3 - 66.4	1.5 m of 3.7
	S-86-7	18.5 - 20.5	2.0 m of 14.4
	*(down dip)	28.7 - 38.3	9.6 m of 10.6
	S-86-12	70.1 - 70.4	0.3 m of 5.8
		77.5 - 81.0	3.5 m of 91.9
		92.5 - 94.5	2.0 m of 3.7
V OTHER SIGNIFICANT INTERSECTIONS			
- UNASSIGNED			
	S-86-2	73.5 - 76.5	3.0 m of 5.7
		81.0 - 85.5	4.5 m of 13.1
		100.5 - 102.0	1.5 m of 9.0
	S-86-5	35.6 - 36.7	1.5 m of 4.9
	S-86-6	47.9 - 49.7	1.8 m of 5.8
	S-86-12	138.6 - 139.9	1.3 m of 26.4

Altered siltstones to arkosic wackes as discussed in detail by IAP (above) host all 4 zones. An early potassic (k-spar) flooding appears widespread and forms a halo of variable width/intensity adjacent to the shear vein systems. The k-spar flooding imparts a pale grey cast to the host rocks and where intensely developed the rock takes on a silicified - "intrusive" appearance. Although detailed, systematic staining for k-spar has not been carried out, visually it would appear that the k-spar flooding is variable in intensity and envelopes from adjacent structures may in places overlap, creating a very broad unfocused alteration zone. Gold values are elevated to several hundred ppm within k-spar rich zones but are usually sub-economic unless later mineralizing processes have occurred. Sericitic alteration is locally intense with best development seen in S-86-6. Silicification, apart from that present in the distinctive quartz-carbonate-chlorite-pyrite veins - described below, is poorly developed through-out, mostly in weak local veinlets and stockworks.

8.

Gold mineralization, with exceptions noted below, is directly related to recognizable shear vein systems, with chloritic shears and fault gouge usually identifying these zones. Variable amounts of pyrite ranging from massive pods/bands to heavily disseminated sections occur throughout the shear zones. Distinctive, narrow (5-20 cm) quartz-carbonate-chlorite-pyrite ( $\pm$  sphalerite, chalcopyrite, galena) banded veins are also commonly associated with the shear-veins. Distribution of gold values within the zones is as yet poorly understood. Pyrite carries some, but not all of the gold values. Massive pyrite when assayed separately returns values in the 5-10 g/t range, examples are:

PBS  
ZnS  
Cpy  
Arsenic  
Py

S-86-2	101.5 to 102.0	0.5 m	6.9 g/t Au
S-86-7	31.1 to 32.3	1.2 m	8.8 g/t
S-86-12	70.1 to 70.4	0.3 m	5.8 g/t

Higher grade sections, while still having abundant pyrite present always have 1 or more narrow (5-20 cm) qtz-carb-chl-pyr bands as well and where assayed separately these ran:

S-86-1	78.7 to 78.9	0.2 m	91.2 g/t Au
S-86-11	141.2 to 141.7	0.5 m	64.0 g/t

Fault gouge, when recovered shows a wide variation in gold content, with increasing pyrite usually signalling the presence of higher gold values. Only one example from the core illustrates this observation:

S-86-1	45.1 to 45.7	low pyrite gouge	0.6 m of 1.2 g/t
	45.7 to 46.3	very pyritic gouge	0.6 m of 50.5 g/t

All the core was split and assayed for Au Ag Cu and in several instances this resulted in some surprises when significant gold values were obtained from "ordinary looking-unmineralized" sections of core. Some of the higher values include:

S-86-3	45.3 to 47.8	2.3 m of 8.8 g/t Au	- hornfelsed, minor pyrite
	67.4 to 68.9	1.5 m of 21.0 g/t	- medium-coarse grained arkosic-wacke pyrite 1-2%.
S-86-7	18.5 to 20.5	20 m of 14.4 g/t	- fine-medium grained arkose, weak chlorite-pyrite stock-work.

Several other sections returned "unexpected" values of 1 to 4 g/t Au as well. Future drill programmes will continue to split and assay all core in order to test for these difficult to recognize intervals.

#### CONCLUSIONS

1. The metasediments on Johnny Nose consist of a massive bedded sequence of (arkosic) greywackes, siltstones, calcareous wacke and pebbly wackes which appear to have originated from a volcanic/intrusive land mass. Volcanic extrusive rocks have not yet been recognized in the sequence.
2. Most of the rocks on Johnny Nose have been affected to varying degrees by contact metamorphism characterized by appearance of hornfelsic texture, biotite and associated weak foliation.
3. The metasediments have undergone varying degrees of metasomatic alteration characterized by k-feldspar and sericite + quartz + pyrite. The extent and pervasiveness of the alteration is related to the permeability of the sequence and the postulated presence of a pluton below "Johnny Nose".
4. Gold bearing shear-vein systems cut the metasediments resulting in high grade zones with widths of 1 to 5 metres. Two main mineralized trends have been outlined:

(1) Measured mineralized veins (Tara, Twin, Rope Zones) in the vicinity of drill holes 8,9,9A, 10 have  $110^{\circ}$  to  $165^{\circ}$  strike and dip between  $50^{\circ}$  and  $80^{\circ}$  to the southwest. However, gold-bearing veins (pyrite + quartz) 150 m south of DDH 10 have  $150^{\circ}$  strike and  $70^{\circ}$  dip to the northeast. This latter area has not yet been tested by drilling. Strongly gold anomalous soil samples taken west and north (down slope) suggest the presence of several additional, subparallel structures to the north and south of the known zones.

(ii) The Lamp Zone, as interpreted from drill hole information trends  $020^{\circ}$ - $040^{\circ}$ / $50^{\circ}$ W. This zone is not seen in outcrop, and has not been exposed by trenching, so no accurate structural measurements are available. Air photo interpretation indicates the presence of at least 2 other, untested west dipping subparallel structures.

## RECOMMENDATIONS

With four gold bearing structures already located, and all still open along strike and down dip it is obvious that a large scale follow-up drill program is justified. In addition soil and rock gold anomalies indicates that other subparallel structures are present, and that some may trend downslope to the valley floor. Systematic fence drilling with 3 to 5 inclined (mostly  $-45^{\circ}$ ) holes on lines spaced 100 metres apart should be considered as a first step towards outlining the gold potential within a target area measuring roughly 800 metres x 800 metres. A total of eight fences of holes would be required in order to test the potential downslope from the S-86-8; 9A; 10 section to the valley floor. This portion of the proposed drill program would only test for the presence of subparallel  $110$ - $120^{\circ}$  structures like the Tara, Twin, and Rope Zones. A number of holes oriented  $90^{\circ}$  (bearing approximately  $270^{\circ}$ ) to these fences is also required to assess the potential of the Lamp Zone and other similar untested structures. The drilling suggested above could total 5,000 metres and if successful should provide sufficient information to outline areas requiring 5,000 metres of additional fill-in drilling prior to underground exploration.

The effectiveness of the drilling phase can be enhanced by some preliminary stages that will improve target selection and help in more accurately spotting drill fence and collar locations.

- (1) contour soil sampling appears to be an effective way of tracing the mineralized shear veins. In order to better locate and correlate/trace the various vein systems, contour soil sampling should be completed over the prospective areas at a vertical spacing interval of 50 metres. This would involve 6 to 8 additional contour lines, each approximately 1 to 1.5 km long. At a sample spacing of 25 metres an estimated 400 samples will be collected and analysed for Au,Ag,Cu,Pb,Zn.
- (ii) a VLF geophysical survey should be run in conjunction with the soil survey, in order to more precisely establish the subcrop position of the shear-vein systems. Skyline, 5 km to the south reports good success in locating "most" of their known zones with VLF.
- (iii) limited trenching may be necessary to confirm the presence of the mineralized structures suggested by the geochemistry and geophysics. Trenching will also expose some of the mineralized structures and accurate structural measurements can then be taken. This will aid in the orientation of the drill holes (bearing and dip) relative to the individual structures.
- (iv) a detailed outcrop map should be produced from the Johnny Nose area after completion of line cutting and soil sampling. Objectives will be to (a) trace mineralization and alteration haloes and (b) subdivide the metasedimentary package to enable correlation with drill hole lithologies. A careful watch will also be kept on surface and in drill core for a marker bed in the metasediment sequence. Such a bed could be important in detecting fault offsets of veins, etc.

detailed structural work should also be carried out at the same time as production of the outcrop map. A consultant structural geologist should be engaged for a few days prior to start of geological mapping.

i) systematic staining for k-feldspar should be carried out on surface and drill core specimens. On the Skyline ground, there seems to be a close correlation between gold mineralization and k-feldspar alteration of host rocks, with some of their high grade zones (zephirim) located within k-spar flooded zones.

ii) a reconnaissance soil grid should also be established west of the drill target areas. This would allow for a preliminary soil geochemical survey, geological mapping and prospecting of the Jim 1 and 2 claim areas.

Report by:

R.F. Nichols  
R.F. NICHOLS,  
Project Geologist

Approved for  
Release by:

W.J. WOLFE,  
Manager, Exploration-  
Western Canada.

Distribution

Delaware  
Administration  
Western Canada

31 January 1987