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REPORT ON

EXPLORATION PROGRAMMES 1986-1993

Snowbird Property

FORT ST. JAMES, B.C.
OMINECA MINING DISTRICT

LATITUDE: 54°28'N LONGITUDE: 124°32'W

N.T.S.: 93K/7E-8W

for

X-CAL RESOURCES LTD.
P.O. Box 48344
Bentall Centre
Vancouver, B.C. V7X 1A4

Vancouver, B.C.
30 October 1993

Chris J. Sampson, P.Eng.

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Vancouver, B.C. V6K 2L6

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BAMPSON ENGINEERING INC.
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SUMMARY AND CONCLUSIONS

1. X-Cal Resources Ltd. 21 claim (266 metric unit) Snowbird property is situated 25 kms. west of Fort St. James and 580 kms. NNW of Vancouver, British Columbia. Access is easily gained by an all weather paved road west from Fort St. James to the Sowchea campsite situated in the southeast corner of the claim block. From this location a series of four wheel-drive roads give access to the rest of the property. Relief on the property is relatively subdued. The showings are at relatively low elevation, approximately 800 metres above sea level.

2. Placer gold mining took place in the Fort St. James area during the late 19th century. Gold and antimony bearing veins were staked on the property in 1920 and shipments of antimony ore were subsequently made by Pioneer Mines in 1939 and Inland Mining in 1947. Programs of exploration by various owners of the property gradually extended the originally discovered areas of gold mineraliaation (the Shaft and Peg-leg veins, referred to as «Snowbird Zone» in this report). The principal programs of drilling were by Cominco 1942, Westwind Mines 1974, and Prism Resources 1980.

3. Dr. Franc Joubin first became involved with Snowbird through Pioneer Gold Mines in the 1940s. This involvement eventually lead to the total acquisition of the property in the late 1970s by his private company Pipawa Explorations Ltd.

4. X-Cal Resources optioned the property from Pipawa in 1985. They subsequently carried out programmes of:
   a) geological mapping;
   b) geochemical soil sampling;
   c) prospecting and rock chip sampling;
   d) Induced Polarization VLF-EM HLEM and magnetometer geophysical surveys;
   e) trenching;
   f) percussion drilling;
   g) diamond drilling.

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These programmes extended the original area of gold mineralization (the Snowbird Zone) and discovered three other gold bearing zones, the North, East and Granite zones (Figure 5).

5. The Snowbird Zone (Shaft and Peg-leg veins), North Zone and East Zone consist of gold-quartz-stibnite-arsenopyrite veins, and stringer veins situated within a NW trending, NE dipping (principally 40-50°), up to 90 metre wide, brittle ductile shear zone and associated subsidiary structures (called the Mariposite Alteration Zone or MAZ on X-Cal maps).

   The hangingwall rocks are graphitic/pyritic argillites and cherty argillites. Footwall rocks are also argillites and cherts but include a significant proportion of andesitic volcanics. These formations are part of the Cache Creek group of Pennsylvanian to Late Triassic age.

   The MAZ or deformation zone comprises a tectonic mélange of variably altered argillites and volcanics (from the country rock), and ultramafic material. The visually distinctive red-orange weathering listwanite alteration is best developed in and adjacent to ultramafic (hartzburgitic) material within the host shear zone and consists of ferroan magnesite, ankerite, silica, fuchsite (locally known as mariposite) and pyrite. Better developed vein structures (and higher gold grades) occur at the hangingwall and footwall contacts of the host shear zone. High grade gold (probably re-mobilized) occurs in late NE/SW striking brittle cross-shears which are probably related to the high angle dextral faults which offset the mariposite alteration zone.

6. The Granite zone is situated on the Sowchea peninsula. It was discovered by the 1989 geochemical soil sampling programme which located very strong arsenic and gold anomalies (up to 0.2 oz/tonne or 6.8 ppm gold) associated with an elongate granitic stock. Subsequent thin section microscopy indicates that the granitic body is an altered leucocratic quartz diorite. Trenching and percussion drilling discovered goid bearing quartz veinlets up to 10 cms. width which assay up to 0.25 oz/ton. The limited distribution of the gold bearing veinlets does not, however, explain the extensive and strong geochemical anomalies.

7. A combined geological resource of 306,000 tonnes grading 0.22 oz/ton gold has been estimated by X-Cal for the Snowbird Zone (Shaft vein, Peg-leg vein) and the North Zone which currently represent the most economically significant gold bearing zones on the property.

8. In 1991, Cominco optioned the property from X-Cal and carried out programmes of geochemical soil sampling, VLF-EM and magnetometer geophysical surveys over the large part of the Snowbird property outside the area that had been extensively explored by X-Cal in the 1986-1990 programme. Much of this area is covered by extensive and deep overburden which consists principally of lacustrine clays, which were deposited in the post-glacial period when Stuart Lake was more extensive and much deeper than it is today. Cominco's surveys failed to penetrate the extensive cover and discovered little of significance.

9. The principal exploration targets on the property are thus: a) the Granite Zone; b) extension of the North Zone to the NW where it has been offset by faulting into Stuart Lake; c) exploration of the NE/SW striking cross fractures in the Snowbird and North zones, which carry high grade gold; d) the mercury and IP apparent chargeability anomalous zone which parallels the MAZ. These are described as follows:

10. At the Granite Zone, trenching, sampling and percussion drilling has failed to explain the strong arsenic and gold geochemical anomalies (up to 6.8 ppm gold), which occur over a distance of 800 metres in association with the altered leucocratic quartz-diorite body. Trenching has located some narrow gold bearing quartz veinlets in sericitic altered leucocratic quartz diorite country rock.

11. The MAZ and contained Snowbird and North Zones are offset by a series of NE/SW striking dextral strike slip faults, which progressively offset the North zone to the north until it disappears under the water of Stuart Lake around lines 8N and 9N. A programme of winter drilling from the lake ice would be required in order to explore for extensions of the North Zone in this area. Such drilling could only be done in a particularly severe winter since in most winters the ice on Stuart Lake is not sufficiently thick to support the weight of drilling equipment.

12. The MAZ and contained veins strike NW/SE. Dips are to the NE at approx. 40-50°. Most diamond drill holes todate have been drilled from NE to SW at right angles to the strike and dip of the principal structures. However, the late stage high grade gold bearing fractures, as located by hole 86-6 (.5 ft. assaying 248.16 oz/tonne gold) and at the bottom of the inclined shaft strike approx. NE/SW. A programme of drill holes from NW to SE, particularly around 86-6, is thus recommended.

13. The 1986 geochemical soil sampling programme by X-Cal when re-interpreted by Smee in 1990 located a 900 metre long NW/SE trending mercury anomaly, associated with the MAZ zone and the contained Snowbird and North gold zones. An apparent chargeability anomaly located by the 1987 IP survey is also associated with this zone. Approximately 200-300 metres to the southwest are mercury and apparent chargeability anomalies which parallel the MAZ and which may represent another mariposite alteration zone, similar to that which has been explored todate but which occurs in an area of more extensive and deeper overburden. A programme of drilling is recommended to explore this area.

COST ESTIMATES

A: The Granite Zone which consists of gold in narrow veins with an associated gold, arsenic geochemical anomaly in soils, should be further explored and the source of the gold anomalies located.

The exploration programme would be broken into two phases. Phase 1 would rehabilitate the grid established over the Granite Zone and include detailed prospecting and sampling. Targets thus delineated would then be trenched with a backhoe. Each of these trenches would be sampled. Drill targets would be outlined based on the results of this Phase 1 programme. Phase 2 would be a drill programme to test the targets at depth.

Phase 1	Personnel costs	$ 20,000
	Field subsistence	3,000
	Field materials	1,000
	Backhoe, incl. mob and demob	10,000
	Sample analysis	5,000
	Transport, incl. gas	3,000
	Reporting, drafting, computer work	3,000
	Office expenses and travel	2,000
	Taxes, incl. GST	3,000
	TOTAL: Phase 1	$ 50,000

Phase 2 Drilling 5 NQ holes, 500 feet each in order to place one and perhaps two holes into each anomalous zone. The drilling costs are quoted on an all-up basis, including mob and demob, geological supervision, and reclamation.

5 holes totalling 2500 ft. at $30/ft.	$ 75,000
Geological logging, office work	5,000
Taxes	10,000
TOTAL: Phase 2	90,000
TOTAL: GRANITE ZONE	$140,000

B: North Zone Extension.
Drilling from lake ice would cost more than land based drilling. Five NQ holes, each 800 feet would be required as follows:

5 NQ 800 ft. diamond holes at $40/ft.	$160,000
Geological logging, office work, etc.	20,000
TOTAL: North Zone Extension	$180,000

C: Exploration of NE/SW Striking Fractures
Six 135° bearing NQ holes particularly in the vicinity of 86-6 is required.

6 NQ holes 600 ft. at $30/ft.	$108,000
Geological logging, office work, etc.	32,000
TOTAL: NE/SW Fractures	$140,000

D: Exploration of Mercury/Chargeability Anomaly

Six NQ holes, 600 ft. each 225° bearing at $30/ft.	$108,000
Geological logging, office work, etc.	32,000
TOTAL: Southwest anomaly	$140,000
TOTAL: ALL PROGRAMMES	$600,000

1. INTRODUCTION

This report has been prepared at the request of Mr. Shawn Kennedy, President of X-Cal Resources. It summarizes results of exploration programmes carried out by X-Cal Resources and Cominco on the Snowbird property from 1986 to 1993 and makes proposals for further exploration programmes.

In preparing this report, the writer has examined data produced by X-Cal and Cominco during the seven year period, made visits to the property and supervised many of the exploration programmes. The kind assistance of Mr. Shawn Kennedy and Dr. Barry Smee in preparing this report is gratefully acknowledged.

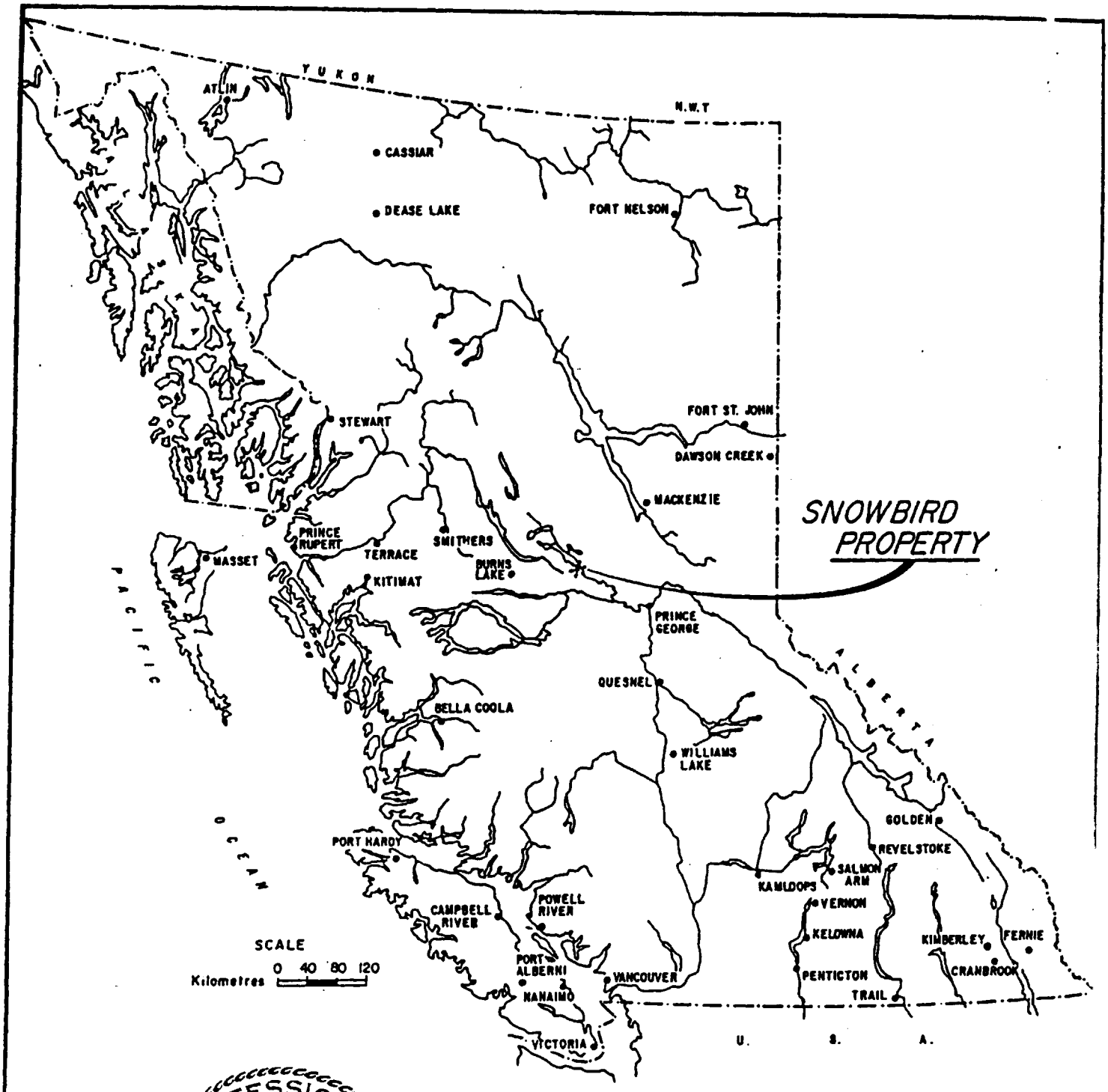
2. LOCATION AND ACCESS

The Snowbird property (Fig. 1) lies within the Omineca M.D. and is located on the SW shore of Stuart Lake approximately 25 kms. due W of Fort St. James, central B.C. (NTS 93 K, 7,8).

Access to the property from Fort St. James is via 17 kms. of public highway to the Sowchea Bay Campground, and thence via 7 kms. of dirt road to the main showing area (Stuart Lake Antimony Mine). This road generally requires the use of 4x4 vehicles. Access to the N and W parts of the property is by old trails which, in the case of key access routes, require extensive upgrading and maintenance.

3. PHYSIOGRAPHY

Much of the central part of the property lies within a NW trending, broad but shallow depression with locally extensive bogs and beaver pond systems. Rising steeply to the W is a series of low peaks forming a prominent N.W trending ridge system, culminating in Mt. Nielsp at 1315 m. elevation. Bounding the broad central depression to the E, and dropping, locally quite steeply, down to Stuart Lake (680 m. elevation) is a series of low topographic rises showing a «drumlinoid» or «crag and tail» morphology.



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PROVINCE OF BRITISH COLUMBIA
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30 Oct 93

X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

LOCATION MAP

Drawn by:	Date	Project No.	NTS	Scale	FIG.
	OCT, 93	87-03	93 K/7E, 8W	1:8,000,000	FIG. 1

Vegetation on the lower ground largely comprises birch, poplar cottonwood and minor coniferous stands with often quite dense underbrush. The higher ground to the W is covered by mature stands of pine and spruce with more open, stunted timber along the ridge crest. Slide alder and devils club typically occupies gullies and intermittent stream beds.

4. CLAIM DETAILS

The Snowbird property is owned 100% by X-Cal Resources subject to a 3% NSR to Pipawa Exploration Ltd. The property comprises 21 mineral claims, totalling 266 units as detailed in Table 1 (see also Fig. 2).

Claim Name	Min. Div'n	Tenure No.	NTS	Units	Record Date	Expiry Date
Sowchea 1	Omineca	241098	93K/07E	20	Jul 29/89	Jul 29/94
Sowchea 2	Omineca	241099	93K/07E	20	Jul 29/89	Jul 29/94
Sowchea 3	Omineca	241100	93K/07E	20	Jul 31/89	Jul 31/94
Sowchea 4	Omineca	241101	93K/07E	20	Jul 31/89	Jul 31/94
Sowchea 5	Omineca	241102	93K/08W	18	Aug 01/89	Aug 01/94
Boarchea Extension	Omineca	242712	93K/08W	6	Sep 18/90	Sep 18/94
Franc 5	Omineca	242855	93K/07E	20	Oct 12/90	Oct 12/94
Franc 6	Omineca	242856	93K/07E	16	Oct 13/90	Oct 13/94
Franc 7	Omineca	242857	93K/07E	18	Oct 14/90	Oct 14/94
Snowbird #1	Omineca	239107	93K/08W	18	Mar 24/86	Mar 24/96
Snowbird #2	Omineca	239108	93K/07E	9	Mar 24/86	Mar 24/96
Snowbird #3	Omineca	239109	93K/08W	20	Mar 24/86	Mar 24/96
Snowbird #4	Omineca	239110	93K/08W	12	Mar 24/86	Mar 24/96
Snowbird #5	Omineca	239111	93K/08W	20	Mar 24/86	Mar 24/96
Snowbird #6	Omineca	239112	93K/08W	8	Mar 24/86	Mar 24/96
Snowbird #7	Omineca	239113	93K/08W	4	Mar 24/86	Mar 24/96
Boarchea	Omineca	238304	93K/08W	6	May 15/80	May 15/96
Shaft Fr.	Omineca	243518	93K/07E	1	Oct 20/53	Oct 20/96
Snowbird #8	Omineca	240212	93K/07E	8	Nov 04/88	Nov 04/96
Campsite	Omineca	243491	93K/07E	1	Nov 05/37	Nov 05/96
Snowbird	Omineca	243492	93K/07E	1	Nov 05/37	Nov 05/96

5. EXPLORATION HISTORY (Prior to 1986)

First staked in 1920, some development work was done on the Snowbird, Campsite and Shaft Fraction Claims, and then the property was allowed to lapse. The showing area was restaked by T.E. Nielson in November 1937. Some work was done, with about 54 tons of antimony ore hand cobbed and sold.

In 1939, Dr. V. Dolmage and R.H. Stewart examined the surface showings and secured an option on the property for Pioneer Gold Mines Ltd.

Pioneer sank an inclined shaft on the «Main Vein» in a quartz stringer zone to a depth of 45 m. They also drove an adit and drifted on the massive stibnite «Cross Vein» (Stibnite Vein) for a distance of 45 m. They shipped 36 tons of crude ore. Later their option lapsed.

In 1942, Consolidated Mining and Smelting held an option on the property and drilled seven holes on the quartz stringer zones of the Shaft Fraction (Main Zone). They were unable to secure extensions of their option and it was terminated.

In 1943, Leta Exploration Ltd. held the property under option and drilled 308 m. of diamond drilling on the Main Zone.

About 1947, Inland Mining Co. Ltd. of Los Angeles stoped out additional ore from the «Cross Vein» (Stibnite Vein). Records for their shipments are 13.22 tons of 55% Sb; 17.88 tons of 58.8% Sb; and 35 tons of 60% Sb.

From October 28th to December 5th 1970, Consolidated Shunsby Mines did a geochemical survey over the main showings.

In 1974, Westwind Mines Ltd.: 280 m. diamond drilling. 5 HOLES

In 1980, Prism Resources Ltd.: 612 m. diamond drilling on the Main Vein. 10 HOLES

1985 X-Cal Resources optioned the property, and from 1986-1990 spent $1.7 m., carrying out soil sampling, trenching, magnetic and IP surveys, 3700 m. of scout percussion (geochem.) and 8600 m. of diamond drilling.

6. REGIONAL GEOLOGICAL SETTING

Au-quartz vein mineralization and associated listwanite (silica-carbonate-fuchsite alteration) at Snowbird is hosted within Cache Creek Group rocks of Pennsylvanian to Lake Triassic age. These rocks form part of the regionally extensive NW trending Cache Creek Terrane in which several Au-listwanite vein type showings and deposits have been documented eg. Atlin, Cassiar areas (see Ash and Arksey, 1990 for summary).

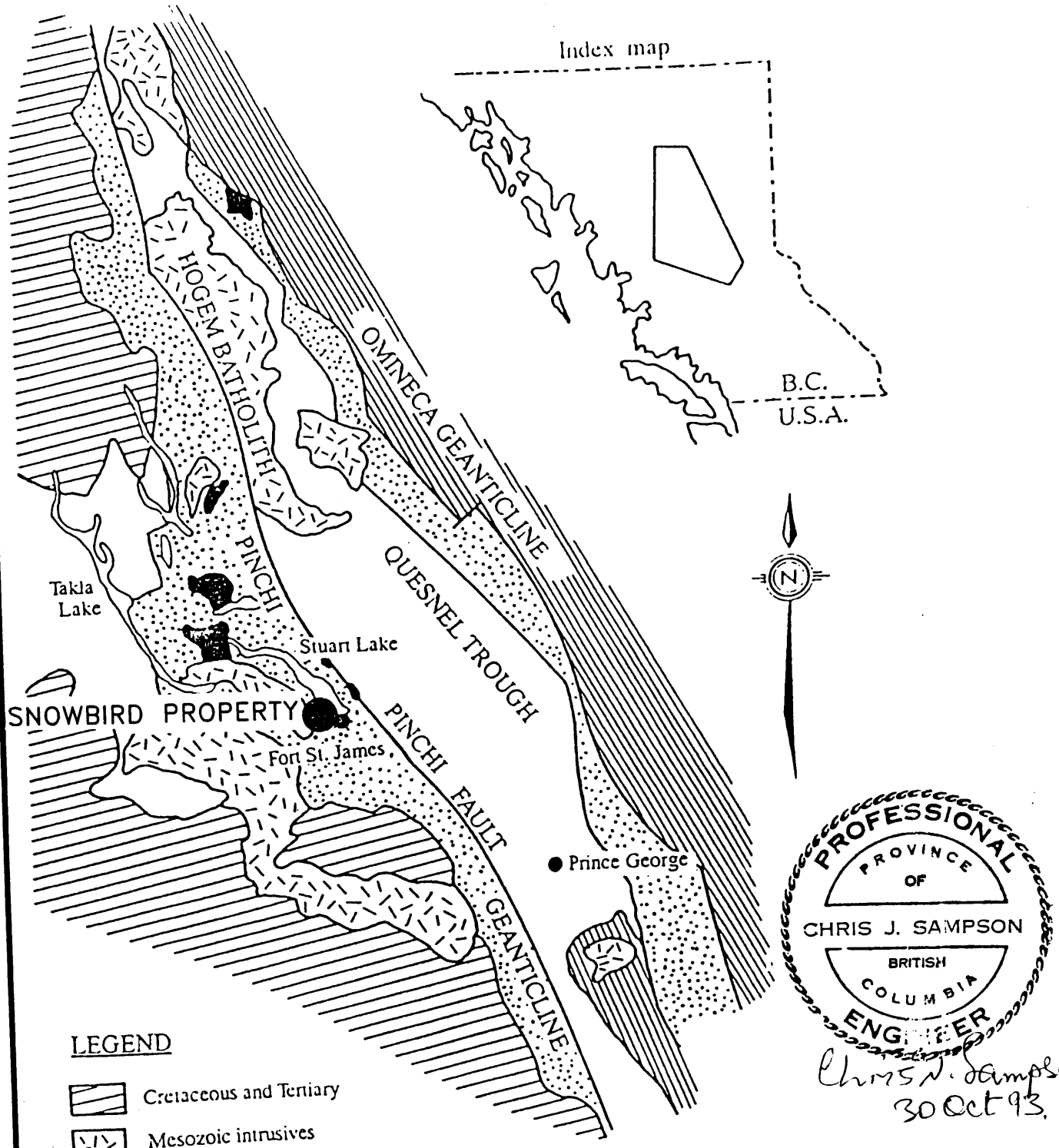
The Cache Creek Group rocks are interpreted to be of oceanic origin and, in the Fort St. James area, include bedded radiolarian cherts, argillites, greywackes, carbonates, pillowed basalts, gabbros, serpentinized alpine-type ultramafics and local blueschist metamorphic assemblages. These rocks have been multiply deformed (Paterson, 1974) and intruded by granitoid stocks and plutons of probable Jurassic age.

In the Fort St. James area, the Cache Creek Terrane is bounded to the NE by a complex, major NW trending, transcurrent fault system - the Pinchi Fault (Paterson, 1977). The numerous mineral deposits associated with the Pinchi Fault indicate that this regional structure was a major conduit for mineralizing hydrothermal fluids.

A related, parallel, NE dipping fault structure, traceable over approx. 20 kms. crosses the E part of the Snowbird property and has been termed the Sowchea Shear Zone (Armstrong, 1949). This structure is the major control on the localization of Au-quartz vein mineralization and associated listwanite alteration on the property.

Anomalous Au values are associated with a major qz diorite intrusion, lying to the W of the property, Au up to 160 ppb in qz diorite, up to 680 ppb in associated fine grained qz veinlets.

Placer gold has been recovered from Sowchea Creek immediately south of the property and Dog Creek, approximately 25 kms. southweast of the property.



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30 Oct 93.

LEGEND

- Cretaceous and Tertiary
- Mesozoic intrusives
- Lower Mesozoic (Takla and Hazelton Groups)
- Ultramafites (Trembleur Intrusives)
- Upper Paleozoic (mainly Cache Creek Group)
- Proterozoic and Cambrian

Scale

40 80mi

40 80km

X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY
OMINECA MINING DIVISION B.C.

REGIONAL GEOLOGY

DRAWN BY: C.J.S./ rwr	DATE: OCT., 1993
SCALE:	FIGURE: 4

7. PROPERTY GEOLOGY AND MINERALIZATION

Mineralization defined to date on the property largely comprises Au-quartz-stibnite-arsenopyrite veins and stringer zones localized within a NW trending NE dipping up to 90 m. wide brittle-ductile shear zone and associated subsidiary structures (called the M.A.Z. or Mariposite Alteration zone by X-Cal). Diamond drilling indicates hangingwall rocks to comprise graphitic/pyritic argillite and cherty argillite whilst footwall rocks include a significant proportion of andesitic volcanics; the deformation zone itself comprises a tectonic melange of variably altered argillite, volcanic and ultramafic material. The visually distinctive red-orange weathering listwanite alteration is best developed in and adjacent to ultramafic (hartzburgitic) material within the host shear zone and consists of ferroan magnesite, ankerite, silica, fuchsite and pyrite. Alteration occurred coincident with fault movement as evidenced by the repeated deposition-disruption of alteration products. Better developed vein structures (and higher Au grades) occur at the hangingwall and footwall contacts of the host shear zone (eg. Shaft and Peg-leg veins). Mineralization consists of pyrite, arsenopyrite and stibnite within the quartz-carbonate veins and adjacent host rock. Au is generally micron sized and intimately associated with the arsenopyrite and to a lesser extent, pyrite and stibnite. Rare coarse Au and massive stibnite are associated with the cross-cutting NE/SW brittle cross shaars and appears to have been remobilized, possibly from the main zones of mineralization.

The exact timing of Au deposition is as yet unknown, but field evidence suggests that deposition occurred towards the waning stages of intense carbonatization and deformation. Au deposition occurred prior to the introduction of Sb. Stibnite deposition appears to have occurred late in the alteration/mineralization process as evidenced by the partial corrosion and replacement of quartz by stibnite (Madu et al, 1989). The disparity between the depositional timing of Au and Sb is further evidenced by the poor correlation coefficient of Au/Sb assays.

A combined geological resource of 305,980 tons @ 0.22 oz/ton Au has been estimated by X-Cal for the Snowbird Zone (Main Vein, Peg-leg Vein) and the North Zone, which currently represent the most economically significant

mineralized zones on the property. Though these zones remain open at depth, current data suggests that Au grades are erratic.

Exploration results on the gold bearing zones are as follows:

7.1 Snowbird and North Mineralized Zones

Intensive diamond drilling tested the Mariposite alteration zone (MAZ) between L2S and L6N (800 m.) (Figure 8). Targets tested included the Peg-leg and Main Veins (Figure 8) at Snowbird and the multiple lodes within the North prospect (Figure 9). Drill density averaged approximately 30 x 30 m. and tested both zones to 150 m. below the surface.

Drill data from the MAZ was reviewed and where possible interpreted on a cross-sectional basis. From this interpretation, long-sections of each of the mineralized surfaces were constructed to elucidate lode geometries and ore potential and to provide a base for resource evaluation. This work indicated the following:

7.1.1 North Zone

a) Economic mineralization occurs in three discrete pods that are localized at the hangingwall contact (the Hangingwall Surface) and at the center to footwall (Surfaces A and B) of the alteration envelope.

b) Ore continuity appears reasonable between intersections although structural complexity (eg. fault blanks) and the close proximity of lenses A and B to each other precludes certainty in some areas.

c) Quoted drill intercepts invariably consist of a thin, high grade core enveloped by low grade mineralization.

Hole	Quoted Intercept		Including			Remaining		
	(m)	(oz/t)	(m)	(oz/t)	(% Au)	(m)	(oz/t)	(% Au)
89-11	4.59	0.136	0.6	0.518	50	3.99	0.079	50
89-2	1.72	0.351	0.6	0.82	82	1.12	0.10	18
88-13	6.18	0.319	0.7	1.412	50	5.48	0.18	50

Many of the thin high grade zones contain in excess of 50% of the total intersection metal. The continuity of the higher grade zones is unknown.

d) Drilling has effectively blocked out the area of economic mineralization. Strike potential to the north is limited by a major NE/SW dextral fault zone that eventually offsets the MAZ under Stuart Lake (Figure 5). To the south potential was tested by the late 1989 drilling which indicated a rapid thickening of the alteration zone at depth. Thick low grade and sporadic intersections above 0.1 oz/t were recorded indicating that mineralization is weakening at depth.

Plunge potential is evident on Surface A, steeply north below 89-19 (1.45 m. @ 0.10 oz/t) and shallowly south on Surface B, below 89-13 (6.15 m. @ 0.319 oz/t). In addition, the 89-15 (1.0 m. @ 0.19 oz/t) intersection recorded within andesitic tuffs 9 m. into the footwall of the alteration zone requires explanation.

7.1.2 Snowbird

Drilling and previous trenching and shaft sinking outlined small tonnage/moderate grade mineralization on the Main and Peg-leg Veins.

Drilling failed to intersect economic mineralization on the Peg-leg structure below the surface sample defined ore block. The only intersection of note 86-6 (0.15 m. @ 248 oz/t) occurs within a cross-cutting fault and probably represents sporadic, coarse, remobilized Au.

7.1.3 Eastern Alteration Zone

Exploration outlined an anomalous zone of intense carbonate alteration of similar characteristics to the MAZ (Figure 5). The zone appears more structurally complex, strikes at 340 degrees and apparently dips to the SW. The zone may represent the southern faulted continuation of the MAZ or, more likely, a separate hangingwall zone.

Trenching and drilling though anomalous failed to intersect significant mineralization. the zone is at this point a secondary target only.

7.1.4 Granite Zone

Soil sampling and trenching over a leucocratic quartz diorite stock in the hangingwall of the Sowchea Fault zone outlined a linear (800 m.) Au anomaly (up to 0.2 oz/t or 6.8 ppm). Percussion drilling failed to intersect significant Au values or explain the nature of the anomaly although it is likely that the Au is associated with thin discontinuous quartz stringers cut in trenching. These may represent leakage zones at the top of a system.

8. QUATERNARY GEOLOGY AND DRIFT COVER

The Quaternary history of the property area comprises a phase of glacial advance in an overall easterly direction, followed by ice retreat and formation of glacial lakes. Periodic reductions in lake levels occurred from an estimated maximum of 760 m., stabilizing to present-day levels e.g. 680 m. in Stuart lake (Plouffe, 1991). Drift deposits associated with these events include boulder till, lacustrine clays and fluvial sediments. All three types are present on the Snowbird property. Percussion drilling on the E part of the property intersected lacustrine clays in excess of 55 m. thick underlain by a basal boulder till. Clay rich overburden is frequently impervious to groundwaters carrying bedrock derived metal ions, severely limiting geochemical dispersion. Therefore, a detailed knowledge of the distribution of these deposits was considered critical for interpretation of soil geochemical data.

9. EXPLORATION PROGRAMMES 1986-1993

Exploration programmes carried out by X-Cal Resources (1986-1990) and Cominco Ltd. (1991) are summarized in the following list. Results are described under the headings: a) Geological Mapping; b) Geochemical Soil Sampling; c) Geophysical Surveys; d) Trenching Programmes; e) Percussion Drilling; f) Diamond Drilling; g) Reserve Calculations.

1986: X-Cal Resources did a programme of geochemical soil sampling over the area surrounding the Main Vein, Peg-leg and Stibnite veins and two programmes of trenching. The first programme in early 1986 using a bulldozer did not expose bedrock in most locations. The later programme in October 1986 exposed bedrock in 3 of the 10 trenches excavated. 10 NQ diamond holes totalling 933 m. (3062 ft.) were drilled 18 Nov.-4 Dec. 1986 (Game and Sampson January 1987).

1987: X-Cal drilled a further 25 NQ diamond holes (2680 m., 8794 ft.) in Feb.-March. Geophysical Surveys - I.P. Max-Min, Em., VLF-EM and Magnetometer were done on 100 m. spaced NE-SW grid lines on a 2 km. long grid centered on the area of drilling (Game and Sampson June 1987, March and Cruikshank May 1987).

Percussion drilling (57 holes 1530 m., 5020 ft.) was done in August over an area covering the existing grid and other parts of the property in order to sample basal till and the initial 2 to 4 mtrs. of bedrock along the strike extension of main alteration zone (quartz-ankerite-mariposite) and also to explore anomalies outlined by the Feb.-Mar. geophysics (Game, December 1987).

1988: X-Cal in Jan.-Feb. drilled 15 NQ diamond holes (1564 m., 5130 ft.) along strike both north and south of the area of gold mineralization explored by previous drilling programmes. This resulted in discovery of a new zone (the North Zone) approx. 400-700 m. northwest of the inclined shaft (Game and Sampson March 1988).

In Sept.-November programmes of prospecting, trenching (12 trenches) and percussion drilling (81 holes 1719 m., 5640 ft.) discovered a further area of gold mineralization (the East Zone) on the Sowchea peninsula and indicated a possible extension of the Main gold zone to the south (Sampson Dec. 1988).

1989: X-Cal in Jan.-Feb. drilled a further 13 NQ diamond holes (1741 m., 5711 ft.) on both the North and East zones. An estimate of «geological reserves» in the North Zone was made (Game and Sampson March 1989). In September X-Cal drilled a further 10 diamond drill holes on the North Zone (1622 m., 5322 ft.) (Game April 1990).

1990: Western Mining Corp. examined the property and calculated geologic gold «reserves» in the Main and North zones (305,980 tons at 0.219 oz Au i.e. 67,000 ounces, average width 2.63 m. - Jones March 1990).

1991: Cominco did gridding (96.7 kms.) soil (1770 samples) and stream sediment (42 samples) sampling, rock sampling (50 samples), geological mapping (25 km^2 at 1:5000 and 1:10,000 scales), VLF-EM and Mag and trenching (18 pits). The Cominco programmes covered the Snowbird property outside the area originally gridded by X-Cal.

Results of exploration programmes:

9.1 Geological Mapping

Areas were mapped by X-Cal in 1986, 1989 (Game, Sampson, Farkas) and by Cominco in 1991 (Callan). Callan describes the 1991 programme as follows:

> «Geological mapping was carried out at 1:10,000 scale and 1:5,000 scale with the principal objective of identifying Au mineralized and/or hydrothermally altered shear structures. Areas previously mapped in detail by X-Cal Resources were not the focus of this programme and were therefore simply examined in order to become familiar with the style and characteristics of the target mineralization.
>
> Mapping control was established using grid, hip chain and compass and air photographs. Exposure on the property varies considerably from locally in excess of 75% e.g. in the Mt. Nielsp area, to essentially zero exposure in the topographically subdued, overburden covered central portion. As an aid to mapping, VLF-EM/Mag surveys were carried out over the mapped area.
>
> Results of the mapping are shown in Figure 3. Definition of a true stratigraphic sequence was precluded by poor exposure of contact relationships between the various lithologies and the resultant inability to distinguish stratigraphic from tectonic contacts. Structural disruption and

repetition of stratigraphy is considered highly probable. The ultramafic and associated gabbroic rocks are inferred (based on generally accepted models of oceanic crust from ophiolitic terranes) to represent material of deep crustal/upper mantle origin and would be expected to lie below the volcano-sedimentary package in a stratigraphic sense.

Measured bedding orientation and lithological boundaries suggest a W-WNW trend to primary depositional fabric. Superimposed on this fabric is a marked NW structural grain defined by largely inferred NW trending shear structures and a related, variably developed, NW trending, subvertically dipping foliation.

A major structural feature on the property is indicated by tha inversion of the hartzburgite-gabbro material and the volcano-sedimentary sequence. Their present juxtaposition may be interpreted as the lower limb of a major recumbent fold (nappe), the result of low angle reverse faulting, or some combination of these. The marked discordance between the shallow SE dipping basal contact of the hartzburgite-gabbro panel and bedding/interpreted lithological contacts indicates that low-angle, reverse faulting has occurred. Silicification and locally intensified fabric development is associated with this structure.»

Mapping did not identify structure in outcrop which might explain the major NE trending magnetic discontinuity extending through the «saddle» immediately N of Mt. Nielsp to Kasaan Bay. X-Cal identified a zone of NE trending dextral faults in the Kasaan Bay area. The 1991 mapping does however show evidence of some dextral displacement and attentuation of units corresponding with this geophysical discontinuity. Foliated hartzburgite and serpentinite occurrences N of line 6000 N in the Kasaan Bay area correspond with the magnetic high across the N part of the property.

No significant vein mineralization or listwanite alteration was identified during the 1991 Cominco mapping.

9.2 Geochemical Surveys

9.2.1 Soil Sampling

Soil sampling by Consolidated Shunsby (1970) had shown an 800 ft. long antimony anomaly with values up to 694 ppm Sb centered on the showings and workings on the Snowbird Main Zone. In October 1986 X-Cal carried out a soil sampling programme over this area to confirm Shunsby's results. Samples were analyzed for Sb and Hg. Interpretation of results in 1986 indicated that anomalous values were confined to the area of known showings but subsequent filtering of the data and reinterpretation by Smee (1990) showed presence of mercury anomalies associated with overburden covered area of mineralization (Figure 6b).

The 1989 soil sampling programme was intended to define areas of alteration and mineralization (the East Zone) on the Sowchea peninsula where shallower overburden and local relief would permit geochemical soil sampling to be more effective. The survey located strong arsenic mercury and gold anomalies - particularly over the Quartz Diorite intrusive on the Sowchea peninsula.

Results of the 1986 and 1989 programmes were combined by Smee (1990) and are shown on Figures 6a and 6b.

The 1991 Cominco Surveys were conducted at two sampling densities over a detailed grid and a coarse grid area (Figure 3).

(i) At 25 m. intervals on lines O N to 1400 N inclusive, E of 1000 E; and on lines 1600 N to 3600 N inclusive, E of 500 E (see Figure 3).

(ii) At 100 m. intervals on alternate lines (i.e. O N, 400 N, 800 N etc.) over the remainder of the grid.

Samples were taken from the "B" horizon where discernible. In the absence of a "B" horizon, the "C" horizon was sampled, except in the specific case where clean lacustrine clays were encountered. In this case the sample was taken from the top of the clay immediately below the humic layer, taking particular care not to include material from the humic layer. Organic rich, boggy ground was not sampled.

Samples were analyzed for Cu, Pb, Zn, Ag, Ni, Fe, Mn, As, Ag, Sb and Au. The first set of analyses returned no Au or Sb values above detection, whilst Hg showed very poor variability. Thus, in view of the strong Au-As association of the target mineralization and good variability in As values, it was decided to use As as the primary pathfinder element and drop Au, Sb, and Hg from subsequent analytical work. Once all analyses had been received, the data was reviewed and selected samples with elevated As and/or base metals re-analyzed for Au (74 samples). All samples returned Au values below detection.

As anticipated, any geochemical expression from underlying bedrock using conventional soil sampling methods was masked in areas of lacustrine clay and till overburden. Higher levels of Zn, Pb, Cu and As in residual and colluvial soils associated with areas of abundant outcrop were not therefore assumed to be anomalous, though some of the higher values, perhaps associated with weak mineralization were thought to warrant field checks.

Five key areas of interest were defined:

(a) An area of of elevated As (3 samples: 27-192 ppm) occurring at the base of slope on lines 1600N and 2000N at 300 to 400W.

(b) Isolated, weakly elevated Pb, Zn and Cu values over the coarse sampling area, notably N of Mt. Nielsp, where better values (e.g. Pb up to 15 ppm, Zn up to 229 ppm) are associated with outcrop of argillaceous clastic rocks.

(c) A broad area of highly correlative Zn (200-500 ppm range), Pb (10-20 ppm range) and Cu (40-200 ppm range) in an area of good residual soil development over extensive sheared argillaceous rocks in the detailed sampling area between 1800N and 2800N, east of 1000E.

(d) Coincident Zn (up to 2136 ppm), Pb (up to 660 ppm) and As (up to 103 ppm) anomalies in an area of clay overburden on line 1000N, 550 to 575E.

(e) Anomalous Pb (up to 105 ppm) on line 1600N, 1275 to 1325E, again in an area of inferred clay overburden.

Areas A and D were subsequently soil sampled in more detail. An approximately 600 m. long As anomaly with local Pb (up to 1271 ppm) and Zn (827 ppm) highs was confirmed in area A. No further significant metal values were obtained in area D.

9.2.2 Rock Geochemistry

Rock samples taken by Cominco in proximity to anomalous soil geochemistry in area C noted above returned Pb values (up to 13 ppm) comparable with those obtained in soil sampling, but much more subdued Cu (i.e. 15-40 ppm range) and Zn (i.e. 10-90 ppm range). A single sample (AHS 91-1; sheared graphitic argillite with quartz vein material) returned values of 174 ppm Cu, 8 ppm Pb and 316 ppm Zn with no associated Au.

Boulder and rock fragment samples from till collected during test-pitting (see below) gave two interesting values of 521 ppm Cu (AHS 143; pit J) and 26 ppb Au, 224 ppm Cu (NCS 501; pit G).

9.3 Geophysical Surveys

In spring 1987, Geotronics Surveys did IP Resistivity, Horizontal loop EM, VLF EM and Magnetometer surveys over a grid surrounding the Snowbird Main Zone (Figure 3).

The IP Survey proved to be the most informative. The Apparent Resistivity and Chargeability mapped an anomalous zone striking NW/SE across the grid, open to both NW and SE, which surrounded the then known gold occurrences. Nine chargeability anomalies were located, all of which were subsequently explored by trenching and drilling. The central anomalies (A, B, C) are caused by mineralization associated with the veins in the Snowbird Main Zone. The northwestern anomalies were subsequently shown to be caused by disseminated mineralization in the North Zone. The anomalies at the SE end of the grid (E, F, G, H) are probably caused by disseminated mineralization and alteration associated with the East Zone.

The chargeability/resistivity results also indicated presence of 030 strike cross faults which offset the M.A.Z. (Main Alteration Zone) and contained gold veins.

The HLEM survey located several conductors most of which correlated with resistivity lows and were thus probably caused by faults, shears and alteration zones. The VLF EM survey was of limited usefulness - mapping mostly water filled shears. The magnetics showed moderately quiet fields over the grid area with some lineal features which are related to faults, shears, etc.

In 1991 Cominco completed 84 kilometres of VLF and mag (Figure 3). The objective was to aid in geological mapping and to develop drill targets in conjunction with geochemical responses.

The surveys identified two major structural features on the property. The most conspicuous of these is a broad NE trending structure defined by a fairly abrupt magnetic discontinuity extending from the "saddle" immediately N of Mt. Nielsp, towards the Kasaan Bay area of Stuart Lake. Magnetic patterns show a dextral horizontal offset.

VLF anomalies clearly define a number of NW trending shear structures, notably on the E part of the grid. These structures are locally coincident with topographic breaks and depressions and their existence is locally supported by field observations.

9.4 Trenching Programmes

The initial programme of trenching carried out by X-Cal Resources in 1986 were planned to explore soil geochemical anomalies which had been located by Pipawa Explorations in the 1970s. Both the bulldozer trenching programme in early 1986 and the backhoe trenching programme in October 1986 encountered deep overburden which nearly in all trenches proved to be beyond the reach of the machine used. The backhoe programme did however discover mineralized boulders in the basal till in some of the trenches.

The October 1988 trenching programme was carried out in order to explore the mineralization comprising the East Zone. This area consists of a series of ridges with outcrop and overburden is generally much shallower.

In 1991 Cominco trenched 3 areas of anomalous geochemistry, one of which included coincidental VLF mag anomalies using a Caterpillar 225 backhoe. A total of 18 trenches were dug to depths of down to 6 metres. Pit profiles were recorded and samples taken from each distinctive layer of overburden or at regular intervals in more homogeneous material. Bedrock was not intersected in any of the pits. Overburden in area A consisted of a deep boulder till layer overlaying to the east and thickening in that direction by brown and grey laminated clays. Local sand and gravel horizons (River Channel Beach) within the clays carry significant water. Up slope derived aluvial material directly overlies the basal till on the lower slopes of steeper ground to the west. Arsenic values are typically higher in co-aluvial material (up to 125 ppm arsenic) than the underlying boulder till (up to 15 ppm arsenic). Arsenic levels are variable in the clays, typically in the range of 4-19 ppm arsenic.

9.5 Percussion Drilling

In August 1987, 57 percussion holes (5020 feet - 1530 m.) were drilled. The intent was to sample the basal till and top 5-10 feet of bedrock overlying the strike extension of the quartz-ankerite-mariposite zone (M.A.Z.) and investigate geophysical anomalies located by the February-March 1987 survey.

Of 57 holes, 51 encountered bedrock, with 25 showing weak to strong quartz-ankerite-mariposite altered rock. Significantly, altered rock was encountered approximately 500 metres north and south of where it had been encountered by diamond drilling.

The 1987 percussion drilling outlined several areas of gold mineralization:

a) Around the inclined shaft in holes:

87-23	407 ppb Au	10.0 feet
87-26	796 ppb Au	5.0 feet
	539 ppb Au	5.0 feet
	471 ppb Au	5.0 feet
	2227 ppb Au	5.0 feet

b) The area 550-700 m. northwest of the inclined shaft as shown in holes:

87-29	465 ppb Au	5.0 feet
	13934 ppb Au	5.0 feet
87-37	7708 ppb Au	3.0 feet
	316 ppb Au	5.0 feet

(Subsequently the North Zone)

c) The area approximately 300 metres east of the inclined shaft shown in hole:

87-50	420 ppb Au	10.0 feet
	644 ppb Au	5.0 feet

(Subsequently the East Zone)

In September 1988 a further 81 holes were drilled (1719 m. - 15640 feet). A list of holes (starting at P88-58 since fifty-sevem percussion holes had been drilled in 1987) is shown below. Wherever possible the percussion holes were drilled 10 feet into the bedrock. Samples were taken from the rock chips for each 5 foot run, usually starting 5 feet above bedrock. From each 5 foot interval an approximately 1 kg. sample was analyzed for silver, arsenic, copper, lead, antimony, zinc and gold.

Location	Hole Number	Metal Values in ppm (Au in ppb or oz/ton where indicated)
Lakeshore, northern end of drilled area	65	198 Pb, 219 Zn
Main Zone:		
North zone:	117	124, 174, 133 As
L10N	69	166 Au, 305 As
L8N	115	44, 836 Au, 59, 527 As
Central area: L2N	73	47 Au, 249 As
Possible southern extension:		
8+50S	105	50, 12 Au, 54, 133 As
L10S	92	106, 112 Cu
	93	34, 54 Au, 101, 102 As
	94	161 Cu
L10+58S	111	100, 105 Cu, 40, 84 Sb
East Zone:		
4+13S	132	55 Au, 88 As, 144, 145 Zn
4+80S	133	99 As, 128, 134, 146 Cu
5+63S	134	139 As, 17, 23 Sb, 133, 134 Zn
6+70S	135	89 Au, 123 As, 62 Cu
7+60S	136	101, 132 As
8+38S	137	60,98 Au, 215, 335 As, 14, 14 Sb
8+50S	118	65, 65 Au, 342, 335, 451 AS
8+70S	101	132, 151, 213 As, 178 Cu
9+20S	102	158, 267 As, 43, 81 Au
10+20S	138	121, 367, 387 Au, 306, 540 As, 8,12 Sb
L11S	121	80 Au, 241, 379 As
11+30S	99	99 Au, 240 As
13+10S	130	305, 485 Au, 172, 477 As
13+45S	119	125 Au, 15 Sb
On Cabin Road	122	43. 65 Au. 151. 123. 206 Cu
South of Mud Bay: (on new bulldozer road)	75	11, 115 Cu
	124	44, 715 Au, 150 As
	125	49 Au, 146, 384 Zn
	126	157, 241, 266 Zn
	127	152, 153 Zn

The most significant result of the 1988 prospecting, trenching and percussion drilling programmes was discovery of the East Zone on the Sowchea peninsula.

9.6 Diamond Drilling

X-Cal has carried out 5 diamond drill programmes at Snowbird (hole locations are shown on Figure 8).

Date	Metres	Feet
Nov/Dec 1986	933	3,062
Feb/Mar 1987	2680	8,794
Jan/Feb 1988	1564	5,130
Jan/Feb 1989	1741	5,711
September 1989	1622	5,322
	8540	28,019

The 1986, 1987 programmes explored an area immediately around the original shaft and Peg-leg showings where drilling by Cominco (1943), Westwind (1974) and Prism (1980) had located gold values.

The 1986 drilling, combined with results from previous drilling, outlined two areas of good grade gold mineralization:

a) Around the inclined shaft in holes:

P10	0.167 oz/ton	3.0 ft.	
C-4	0.24 oz/ton	5.0 ft.	C holes by Cominco 1943
W-4	0.12 oz/ton	4.0 ft.	W holes by Westwind 1974
C-3	0.35 oz/ton	5.0 ft.	P holes by Prims 1980
P-7	0.584 oz/ton	8.0 ft.	X holes by X-Cal 1986
X86-2	0.27 oz/ton	13.94 ft.	
(incl.	0.637 oz/ton	3.23 ft.)	
C-1	0.27 oz/ton	2.5 ft.	
C-2	0.35 oz/ton	5.0 ft.	

b) An area approx. 400 ft. grid south of the inclined shaft as shown by holes:

P-6	0.698 ozton	3.0 ft.
X86-6	248.16 oz/ton	0.5 ft.
X86-7	0.717 oz/ton	3.3 ft.

Principal intersections were as follows:

Hole #	DEPTH from(ft/m)	to (ft/m)	Footage (ft/m)	Au oz/t	Assay Ag oz/t	Sb %
X86-2	215.46(65.67)	229.4(69.92)	13.94(4.25m)	0.27	0.08	5.43
	215.46(65.67)	218.74(66.67)	3.28(1.0m)	0.637	0.29	12.90
	228.58(69.67)	229.4(69.92)	0.82(0.25)	0.605	0.01	0.88
X86-6	214.97(65.52)	215.47(65.67)	0.5(0.15)	248.16	84.58	0.03
X86-7	92.99(28.04)	95.28(29.09)	2.38(1.0)	0.715	0.07	0.02
	217.62(66.33)	219.59(66.93)	1.97(0.6)	0.211	0.13	0.03

The drill holes all successfully intersected the quartz-ankerite-mariposite alteration zone (M.A.Z.) which was thus extended along strike to grid south by over 130 m.

The intersection in X86-2 on the Main Vein consisted of massive quartz vein carrying fracture filling massive stibnite. The highest values, 0.637 oz/ton gold, 215.46-218.74 ft., and 0.605 oz/ton gold, 228.58-229.4 ft. occur in an area of massive fracture filling stibnite.

The gold bearing interval in hole X86-6 occurs within a 0.5 ft. wide quartz vein which is situated on the footwall of the main quartz-ankerite-mariposite alteration zone (M.A.Z.). The intersection contained spectacular visible disseminated to massive gold, assaying 248.16 oz/t Au, 84.58 oz/t Ag and 0.03% Sb.

The 1987 holes 87-1 to 87-2 and 87-25 were drilled to further explore the gold bearing zones located by previous programmes (Cominco 1942, Prism 1980 and X-Cal 1986).

Gold values intersected by the 1987 programme were not as high as in previous programmes but the drilling did successfully extend the strike length of the alteration zone to 650 m. between Holes 87-22 (252N) and 87-21 (393S). The MAZ (Mariposite Alteration Zone) is strongly developed in both holes and was thus wide open along strike in both directions.

Holes 87-23 and 24 were drilled on geophysical targets. 87-23 intersected a graphite filled fracture zone with high volume water flow. Hole 87-24 was abandoned at 47.55 m. (156 ft.) in overburden - indicating that the conductor is in overburden.

Principal intersections were as follows:

Hole	Intersection(m)	Au oz/t	Ag oz/t	Sb %
87-1	95.4- 96.4 (1.)	0.013	0.01	0.03
87-3	65.25-65.55 (0.3)	0.059	0.01	0.01
87-6	52.42-43.57 (1.05)	0.031	0.01	0.01
87-8	106.0-107.0 (1.0)	0.123	0.03	0.04
	124.0-125.0 (1.0)	0.038	0.01	0.02
87-10	91.48-92.48 (1.0)	0.010	0.01	0.01
87-11	69.2- 70.2 (1.0)	0.081	0.01	0.03
87-15	66.83- 67.83 (1.0)	0.030	0.05	0.02
87-17	80.67- 80.87 (1.0)	0.053	0.06	0.02

The 1988 drilling outlined a new zone (the North Zone) of gold mineralization along the main structure approximately 400 m.-770 m. northwest of the inclined shaft as shown in holes:

Hole #		Intersection	Au oz/t
X 88-6		8.69 ft.	0.226
		9.85 ft.	0.109
X 88-9		3.28 ft.	0.298
X 88-13		3.77 ft.	0.110
		20.08 ft.	0.319
	(incl.	3,28 ft.)	1.412
X 88-14		10.17 ft.	0.0897
	(incl.	3.35 ft.)	0.252)

The gold bearing intersections in holes 88-6, 9, 13 & 14 represented a strike length of 370 m. (approx. 1200 ft.) along the M.A.Z.

Hole 88-15, drilled to 243.83 m. (800 ft.) successfully intersected the M. A. Z. with accompanying quartz veining and stibnite mineralization at approximately 183 m. (600 ft.) vertical depth. Although gold values were low, the hole showed that the system is open at depth and contains alteration and mineralization similar to that seen in the shallower intersections where ore grade gold values had been encountered.

Principal intersections in 1988 were:

Hole #	DEPTH (from(ft/m) to (ft/m)	Footage (ft/m)	Au oz/ton	Ag ppm	As ppm
X 88-6	272-49(83.05) 281.18(87.5)	8.69(2.65)	0.226	7.3	83
	272.62(83.70) 277.90(87.7)	3.28(1.0)	0.251	1.4	56
	277.90(84.70) 281.18(85.7)	3.28(1.0)	0.287	1.4	80
	309.00(94.18) 318.85(97.18)	9.85(3.0)	0.109	1.6	78
	309.00(94.18) 312.28(95.18)	3.29(1.0)	0.143	1.6	68
	312.28(95.18) 315.56(96.18)	3.28(1.0)	0.142	2.0	97
X 88-9	272.65(83.10) 275.93(84.10)	3.28(1.0)	0.298	1.2	75
X 88-13	333.35(101.60) 337.12(102.75)	3.77(1.15)	0.110	1.8	1375
	356.15(108.55) 376.23(114.76)	20.08(6.12)	0.319	3.6	502
	359.99(109.72) 363.27(110.72)	3.28(1.0)	1.412	3.6	92
	363.27(110.72) 366.55(111.72)	3.28(1.0)	0.280	5.6	82
	369.83(112.72) 372.95(113.67)	3.12(0.95)	0.134	2.4	2830
X 88-14	281.12(85.68) 291.29(88.78)	10.17(3.10)	0.0897	0.7	64
	287.94(87.76) 291.29(88.78)	3.53(1.09)	0.252	0.7	9

The 1989 programme explored gaps between previous intersections, and extended the North Zone both downdip and to grid north. It also tested an area of gold mineralization east of the Main Zone (East Zone) indicated by previous trenching and percussion drilling.

The 1989 drilling further defined gold mineralization in the North zone as shown in holes:

Hole #	DEPTH from(ft/m) to (ft/m)	Footage (ft/m)	Au oz/t	Ag ppm	As ppm	Sb ppm
X 89-2	192.56(68.69) 195.84(59.69)	3.28(1.0)	0.114	1.1	886	590
	212.15(64.66) 217.99(66.44)	5.84(1.78)	0.351	0.6	5704	136
	213.99(65.22) 215.99(65.82)	2.00)0.60)	0.820	0.8	10788	117
	215.99(65.92) 217.99(66.44)	2.00(0.62)	0.146	0.5	4928	199
X 89-3	325.51(99.21) 335.58(102.28)	10.07(3.07)	0.264	1.0	4047	77
	325.51(99.21) 328.46(100.11)	2.95(0.90)	0.116	1.0	1624	58
	328.46(100.11)330.00(100.58)	1.54(0.47)	0.872	0.9	14396	55
	330.00(100.58)332.30(101.28)	2.30(0.7)	0.225	1.2	2975	66
	332.30(101.28)335.58(102.28)	3.28(1.0)	0.139	0.8	2115	111
X 89-4	265.96(80.45) 271.50(82.75)	7.54(2.30)	0.189	1.2	1111	832
	263.96(80.45) 264.46(80.60)	0.50(0.15)	1.450	3.2	2863	4657
	267.72(81.60) 271.50(82.75)	3.78(1.15)	0.151	1.1	1166	430
X 89-9B	362.55(110.50)365.17(111.30)	2.62(0.80)	0.128	1.6	1914	548
	496.71(151.39)504.48(153.79)	7.87(2.40)	0.124	1.7	1020	39
	499.99(152.39)501.99(152.99)	2.00(0.60)	0.436	3.3	3471	52
X 89-10	514.30(156.75)520.99(158.79)	6.69(2.04)	0.152	5.9	929	1016
	517.45(157.71)520.99(158.79)	3.54(1.08)	0.274	10.0	1741	1590
	527.94(160.91)537.43(163.80)	9.49(2.91)	0.204	1.8	2284	60
	530.70(161.75)533.98(162.75)	3.28(1.0)	0.160	1.0	944	63
	533.98(162.75)537.43(163.80)	3.45(1.05)	0.401	3.2	4981	64
X 89-11	506.52(154.38)521.58(158.97)	15.06(4.59)	0.136	18	1104	3967
	509.47(155.28)512.75(156.28)	3.28(1.0)	0.127	77.2	903	904
	516.03(157.28)519.61(158.37)	3.58(1.09)	0.105	3.2	1004	14711
	519.61(158.58)521.58(158.97)	1.97(0.60)	0.518	0.8	3214	1311

The gold bearing intersections from holes 89-2,3,4,9B,10 & 11, combined with the 1988 diamond drilling, provide nine intersections in the North Zone along a strike length of approximately 150 m. (500 ft.) and approximately 120 m. (400 ft.) downdip length.

Holes 89-12 & 13, drilled to test elevated gold values in the East Zone, cut quartz-carbonate-mariposite altered rock and a mineralized felsic dyke but returned low gold values.

The September 1989 drill programme consisted of ten holes (89-14 to 89-23) drilled on the North Zone, in order to explore gaps in previous drilling and downdip extension of the mineralization.

Principal intersections were:

Hole	Intersection(m)	Interval	Gold Assay(oz/ton)
89-16	127.09-130.06	2.97m.	0.103
	146.79-147.24	0.45m.	0.283
89-17	102.03-102.63	0.60m.	0.303
89-19	190.73-191.18	0.45m.	0.275

9.7 Reserve Calculations

In March 1989 (Game and Sampson) used the nine intersections on the North Zone to calculate a geological reserve as shown in the following table. These figures are a guide to tonnage present and do not represent reserves in any of the defined categories such as 'proven', 'probable', etc. Rock density of 12.32 cu.ft. per ton was used (2.6 S.G.).

DRILL INDICATED "RESERVES"

(N.B. These figures are based on only 9 widely spaced drill intersections)

FOOTWALL ZONE

Section	Downdip Length	Av. Width	A Grade	Volume	Cu. Metres
3+50N	120m	1.66m	0.208	37.5x120x1.66	7470
3+75N	120m	1.75m	0.199	30.0x120x1.75	6300
4+10N	140m	4.52m	0.281	30.0x140x4.52	18,984
4+40N	120m	3.07m	0.260	30.0x120x3.07	11,052
4+70N	130m	2.2 m	0.132	30.0x130.2.26	8580
			0.231		52,386

i.e. 136,000 tonnes or 148,000 short tones

HANGING WALL ZONE

4+75N	120m	2.80m	0.132	30.0x120x2.80	0.800
4+10N	140m	1.60m	0.136	30.0x140x1.60	6720
4+40N	-	-		-	-
4+70N	130m	173	0.202	30.0x130x1.73	6747
		2.4 m	0.153		23,547

I.e. 61,222 tonnes or 66,400 short tons

TOTAL: 214,000 tons at 0.206 oz/ton

Western Mining Corporation (Jones March 1990) estimated gold reserves as follows:

TABLE 2

SNOWBIRD PROPERTY RESOURCE ESTIMATE

Area	Surface	Tons	Grade (oz/t)	Ounces	Av. Width (m)	Comments
Snowbird	Main Vein	18,230	0.31	11,850	1.70	Block grade heavily influenced byholes C2 and P6 accounting for 46% of the metal
Snowbird	Peg-leg	1,320	0.34	450	0.74	Entire block defined by previous trench sampling
North	Hangingwall	23,950	0.15	3,890	1.37	Ill defined downplunge potential
North	A	116,200	0.164	19,060	1.80	Largest and most continuous block
North	B	124,260	0.255	31,690	3.95	Appears to have highest grade continuity. Heavily influenced by 89-13 providing 55% tonnes and 66% metal
TOTAL		305,980	0.219	66,950	2.63	

Calculation was by polygonal methods within the interpreted ore envelope as defined by the 0.1 oz/mt (or 1.0 m @ 0.1 oz/t) boundary.

The prospect resource is higher than that calculated by Sampson and Game, 1989 (Table 3) primarily due to the addition of resource from the Snowbird zone and later drilling on the North Zone. Indicated grades were slightly higher due in part to the influence of a small number of poorly contrained high grade intercepts.

A statistical analysis of assays was not carried out due to a lack of data, and no cuts were applied to possibly anomalous samples. In addition, as this was a resource estimate, no mining or sampling factors were applied.

TABLE 3

SAMPSON ENGINEERING RESOURCE ESTIMATE: NORTH ZONE

Zone	Tons	Grade (oz/t)	Ounces	Av. Width (m)
Footwall*	148,000	0.231	34,188	2.66
Hangingwall	66,400	0.153	10,160	2.00
TOTAL	214,400	0.206	44,348	2.44

* Equates to Surfaces A and B

Calculated ounces and tonnage per vertical meter are detailed in Table 4. Due to time constraints, a detailed breakdown of both on a 10 m. or 30 m. basis was not completed.

TABLE 4

OUNCES/TONNAGE PER VERTICAL METRE

Area	Surface	Ounce	Tons	Vertical[1] Height	Ounces pva	Tons pva
Snowbird	Main Vein	11,860	38,230	70	169	546
Snowbird	Peg-leg	430	1,320	10	43	132
SUBTOTAL*		12,310	39,570	70	176	563
North	Hanging	3,890	25,950	90	43	288
North	A	19,060	116,200	80	234	1,433
North	B	31,690	266,410	130	420	2,049
SUBTOTAL*		56,640	305,980	130	420	2,049
TOTAL ALL		66,950	305,980	130	314	?

* Assuming centralized development; [1]does not include vertic
to penetrate overburden and reach top of zone

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8 Stable Isotope Study

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11. CERTIFICATE

I, Christopher J. Sampson, of 2696 West 11th Avenue, Vancouver, B.C. V6K 2L6, hereby certify that:

1. I am a graduate (1966) of the Royal School of Mines, London University, England with a Bachelor of Science degree (Honours) in Economic Geology.

2. I have practised my profession of mining exploration for the past 27 years in Canada, Europe, United States and Central America. For the past 18 years I have been based in British Columbia.

3. I am a consulting geologist. I am a registered member in good standing of the Association of Professional Engineers of British Columbia.

4. I have written other reports on the Snowbird claims, but not on other properties within 10 kms. of the Snowbird claims.

5. The present report is based on supervision of work programmes in 1985-1990 and study of published and unpublished reports.

6. I have not received, nor do I expect to receive, any interest, direct or indirect, in the properties or securities of X-Cal Resources or in those of its associated companies.

7. X-Cal Resources and its affiliates are hereby authorized to use this report in, or in conjunction with, any prospectus or statement of material facts.

8. I have no interest in any other property or company holding property within 10 kilometres of the Snowbird group of claims.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
CHRIS J. SAMPSON

30 October 1993
Vancouver, B.C.

Chris J. Sampson

Christopher J. Sampson, P.Eng.
Consultant Geologist

STUART LAKE

ALTERATION ZONE

AREA OF FIGURE 9

(1988) TRENCH 700

NORTH ZONE

SNOWBIRD ZONE

Collapsed headframe

Shaft

Adit

Office

Beaver pond

Surface Expression of Alteration Zone

FAULT

FAULT

TR. 1

TR. 2

TR. 3

TR. 4

TR. 5

TR. 7

TR. 9

TR. 10

APPROX. LOCATION SURFACE EXPRESSION OF ALTERATION ZONE.

Baseline — 135° Az.

22km to Ft St James

L. 10-00 N

L. 9-00 N

L. 8-00 N

L. 7-00 N

L. 6-00 N

L. 5-00 N

L. 4-00 N

L. 3-00 N

L. 2-00 N

L. 1-00 N

L. 0-00 N

L. 1-00 S

L. 2-00 S

L. 3-00 S

L. 4-00 S

L. 5-00 S

L. 6-00 S

L. 7-00 S

L. 8-00 S

L. 9-00 S

L. 10-00 S

117 - 1988 X-CAL Percussion Drill Hole

X-87-15 - X-CAL Drill Holes

Per-35 - X-CAL Percussion Drill Holes

P-8 - Prism Drill Holes

C-5 - Cominco Drill Holes

TR.4 TRENCH LOCATION

0 50 100 200

METRES

THE PROFESSIONAL ENGINEERS PROVINCE OF BRITISH COLUMBIA
CHRIS J. SAMPSON
Chris J. Sampson
30 October 1993

FIG. No. 8

X-CAL RESOURCES LTD.

SNOWBIRD PROPERTY

KASAAN BAY, STUART LAKE, FORT ST. JAMES AREA
OMINECA MINING DIVISION, B.C.

DRILL HOLE LOCATIONS

Rev. MAR., 1989

Drawn by:	Date:	NTS:	Scale:	FIG.
G.L.C.	Feb. 29/88	93K/7E,8W	1:2000	8

The reference scale for this figure is that of the original image. It will change as required on the image, therefore it is not a reliable reference for the original size.

L6N
L5N
L4N
L3N
ROAD
CREEK
BASELINE
QUARTZ ANKERITE MARIPOSITE ZONE
QUARTZ ANKERITE MARIPOSITE ZONE
QAM ZONE
PROJECTED UP DIP TO 700m LEVEL
(CUT)
LEGEND:
1a ARGILLITE
qv QUARTZ VEIN
pv PEG LEG VEIN
mv MAIN VEIN
sh SHEARED
list LISTWANITE ALTERATION
NB NO BEDROCK
CONTACT; DEFINITE, ASSUMED
BEDDING STRIKE AND DIP
SCHISTOCITY STRIKE AND DIP
SHEAR OR VEIN STRIKE AND DIP
SHEAR
TRENCH
89-11 DRILL HOLES
P-29 PERCUSSION DRILL HOLES
0.226/2.65m (oz per ton Au / length of interval)
inches
centimetres
BRITISH COLUMBIA GEOLOGICAL SURVEY
This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
CHRIS J. SAMPSON
Chris J. Sampson
30 October 1993
X-CAL RESOURCES LTD.
SNOWBIRD PROPERTY
OMINECA MINING DIVISION, B.C.
NTS: 93 K/7,8
NORTH ZONE
GEOLOGY AND DRILL HOLE MAP
0 10 20 40 60 80 m
SCALE 1:500
DATE: JULY, 1989 Rev APRIL, 1990
BY: C.J.S./rwr
FIGURE No. 9
Prepared by: RWR MINERAL GRAPHICS LTD.