# **GEOCHEMICAL ASSESSMENT REPORT**

**ON THE CK PROPERTY** 

Minfile# 082M/224

**Upper Raft River Area** 

NTS 082M13E

119<sup>o</sup> 34' West, 51<sup>o</sup> 52' North

Kamloops Mining Division

By

Joseph E. L. Lindinger, P.Geo.

June 27, 2006 Revised February 27, 2007

# Table of Contents

SUMMARY	1
INTRODUCTION AND TERMS OF REFERENCE	2
PROPERTY DESCRIPTION AND LOCATION	2
ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY	5
HISTORY	5
GEOLOGICAL SETTING	18
Regional Geology	18
Regional Geology	18
Local Geology	21
Property Geology	21
2005 WORK PROGRAM	26
RESULTS	27
INTERPRETATION AND CONCLUSIONS	29
RECOMMENDATIONS	29
SELECTED REFERENCES	31
STATEMMENT OF QUALIFICATIONS	32
Appendix I – Analytical Results	33

# List of Figures

Figure 1 Location Map	
Figure 2 – Property	
Figure 3 – Regional Geology	
Figure 4 – Property Geology	
Figure 5 Sample Location Map	
FIĞURE 6 - MMI Zn, Pb, Cu RESULTS	

# List of Tables

TABLE 1 – MINERAL TENURE	2
TABLE 2 - MMI RESULTS	
TABLE 3 - 2005 EXPENDITURES	
TABLE 4 BUDGET	

# SUMMARY

Leo Lindinger owns a portion of the CK claims in the Clearwater area, Kamloops Mining Division, British Columbia, in NTS area 82M13. The claims are accessible from paved provincial highway #5 by 54 km of good forest road, which begins a few km east of the town of Clearwater.

The claims are underlain by rocks of the Shuswap metamorphic complex of the Omineca crystalline belt, highly deformed gneisses of metasedimentary origin in which mineral deposits have been found. The deposits are of the sedimentary exhalative type, and are thus an attractive

exploration target.

Attention was directed to this property in 1973 by the discovery of mineralized boulders. Work by Rio Tinto Canadian Exploration Ltd., Cominco Ltd., Rea Gold Corporation and Verdstone Gold Corporation resulted in the discovery of several mineralized zones. One of the zones, called the New zone, has been intersected by 83 drill holes over a strike length of about 1.3 km.

A preliminary sampling program was completed on May 18, 2005 with soil and rock samples taken. The soils were analyzed using Mobile metal ion analytical methods. The rock sample was prepared for visual metallurgical examination of the iron in content in high grade sphalerite. Preliminary visual metallurgical estimation of interstitial iron in high grade sphalerite from the New Showing deposit was 5-6 % iron. These results have a probable moderate negative impact on the metallurgical characteristics of the ore grade material. Results from a very limited MMI soil sampling program produced a possible moderate zinc anomaly up ice and u-p dip of the CK horizon and one very strong lead anomaly probably derived from eroded material.

Additional expenditures are justified to try to improve the properties potential. On the larger CK property owned by Lindinger and Denis Delisle a property wide road rehabilitation, orientation grid and MMI soil sampling program is justified. Also justified is infill drilling to increase the 2003 Inferred Mineral Resource of Newson of the New showing. A two-staged budget for doing this is proposed, with expenditures of \$350,000 for the surface phase and \$600,000 for the second drilling phase.

# INTRODUCTION AND TERMS OF REFERENCE

This report documents the results of preliminary metallurgical rock sampling and Mobile Metal Ion (MMI) sampling over and near to the "New showing" (Minfile # 082M224) zinc-lead-silver deposit of the CK property. The sampling was completed on the portion of the claims owned by the Author.

# **PROPERTY DESCRIPTION AND LOCATION**

The portion of the CK Property owned by the author comprises the following 2 claims totaling 19 cells and 378.87 hectares. The claims are on Crown Land located in the Kamloops Mining Division. The claims cover portions of NTS map sheets and are centered at  $119^{\circ}$  34' West and  $51^{\circ}$  52' North. The claims are 100% beneficially owned by Leo Lindinger. Additional details including the current expiry dates are tabulated in "Table 1 – Mineral Tenure" below.

Ownership	Tenure	Claim Name	Owner	Мар	Good To	Status	Mining	# of	Area in
	Number			Number	Date*		Division	Cells	Hectares
Lindinger 100%	505819	ckc	LINDINGER	082M	2007/FEB/04	GOOD	Kamloops	8	159.497
Lindinger 100%	531854	CK NEW	LINDINGER	082M	2007/FEB/04	GOOD	Kamloops	11	219.375
TOTALS								19	378.872

#### TABLE 1 – MINERAL TENURE

\*pending acceptance for assessment credit the work this report documents as per event number 4063274 filed January 11, 2006. On February 4, 2006 Tenure Nos. 505810, 505812, 505820, 505822, 505819 were amalgamated into one claims Tenure# 531854 as per event number 407834.

The Claims protect part of the CK "New Showing" prospect (Minfile# 082M224 and to the north the Main Boulder Showing (Minfile# 082M137, and East Showing (Minfile#082M245).

Mineral claims in British Columbia may be kept in good standing by incurring exploration expenses or by paying cash in lieu. Four dollars per hectare per year of exploration work must be applied prior to the first, second and third anniversaries followed by an eight dollar per hectare per year requirement thereafter. Proposed exploration work causing mechanical disturbance normally requires that a Notice of Work and Reclamation must be submitted at least 30 days before work is planned to begin. The author is not aware of any extraordinary environmental liabilities that may be associated with land comprising the property.

To complete mechanical exploration work a reclamation bond will have to be placed with the Ministry of Energy Mines and Petroleum resources of B.C. For the work recommended in this report the bond should not exceed 5000 dollars.



531527 30 \$26566 Æ 82M.092 82M 093 CK Claims 100% owned by Lindinger MAIN Tibo BOULDER SHOWIN EAST SIDE SHOWING **NEW SHOWING** Figure 5 DEPOSIT BCB 95065 Figure 5 12 ab M.082 82M.083 2 km r f British Columbia Map Center: 119 33 48" W, 51 54 37" N

Figure 2 – Property

# ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Following is excerpted from Newsom 2003(1)

...'The property is in the Shuswap Highlands physiographic region. Topographic relief on the property ranges from just under 900 metres above mean sea level in the southwestern corner of the property to just over 1700 metres elevation in the northeastern part. Slopes are generally moderate, and, with care, roads could be (and many have been) constructed to provide access to most parts of the property. It is possible to drive by 2-wheel-drive truck almost to the main mineralized zone of the property, and by 4-wheel-drive right to the zone. The area is forested, and has not been cut for some years.

Access is via approximately 54 kilometres on Forestry Road #9, beginning a few km east of the town of Clearwater. Clearwater is served by paved provincial highway #5, in the valley of the Thompson River, and has limited services. Kamloops is 123 km south of Clearwater on highway #5, and has light and medium industrial services and suppliers, including many related directly to the mining industry. A CN rail line parallels highway #5, and connects to both trans-Canada rail lines. At its closest point, the rail line is about 15 km from the property, but a road would need to be built to connect the property to that point, and the road distance would be considerably greater than the straight-line distance. Therefore, the access from the property to rail would be by Forestry Road #9 to the rail line near Clearwater.

Annual precipitation here is moderate. Snow can accumulate to depths of 1.5 to 2.5 metres in winter, and snow may inhibit work from early October to late May

There is sufficient unoccupied land on the property for which the use of surface rights for mining purposes can be obtained. However, due to the local topographic relief, care would have to be exercised in placing waste rock dumps and tailings dumps so that they would not present a slump hazard at some future time, and so that run-off would not contaminate the nearby creeks. A power line runs along the main valley 15 km to the east, beside the rail line and road, and power could be brought in from it. Water is available from Kowalski Creek or the Raft River, both of which cross the property. Experienced mining personnel are available in the region."...

#### HISTORY

The Following is excerpted from Newsom 2003;

#### ... "5.1 HISTORY OF OWNERSHIP

In 1973, claims covering much of the property as now constituted were staked by Mr. Andy Home.

In 1974, the property was dealt to Sicintine Mines Ltd., who optioned it to Rio Tinto.

In 1975, the option was terminated and returned to Sicintine.

In 1976, the property was returned to Andy Horne.

In 1977, Cominco optioned the claims from Horne. Claim CK 84 was staked in 1977.

In 1985 Cominco terminated the option.

In 1986, the property was optioned by Rea Gold Corporation.

In 1999 the property was sold to BWI Resources Ltd., the predecessor company to the present owner, Penteco Resources Ltd.

In 2001, all claims except CK84 lapsed, and were restaked as the claims listed in section 3.0.

# 5.2 PREVIOUS WORK

The work described in this section is taken from the assessment work files of the B.C. Ministry of Energy and Mines. Other reports on the property have been prepared, but were apparently not filed for assessment credits. Many of the other reports are summary in nature, and do not appear to contain much, if any new work. The writer is satisfied that substantially all of the important work is in the files described herein.

Figure 3 shows a graphic summary of the work done outside of the main mineralized zone on the property, the New zone, and Fig. 4 shows the detailed drilling of that zone. The property has been entirely covered by soil geochemical surveys, and only one anomaly is large enough to show on the scale of Fig. 3. Prospecting was done by most operators, but its extent was not documented in any report. Geological mapping was done by most operators, and the end result is here presented as Fig. 5. More detailed mapping was done of individual showings, but is not reproduced here because it does not bear on the conclusions or recommendations of this report. Geophysical work was done on areas where soil geochemistry and/or prospecting had indicated mineralization, and appears to have been quite useful. The axes of the principal anomalies are shown on Fig. 3. Most of the drilling outside the main zone is shown on Fig. 3, except for the Main Boulder showing, where the amount of work done was so concentrated that it can't be show on the scale of Fig. 3.

In the discussion below, the writer gives these basic operational details of the work so that the reader may judge the merit of the techniques and equipment used, and can compare them with those that might be used today.

#### 5.2.1. 1974 work by Riocanex

In 1974, Rio Tinto Canadian Exploration Ltd. (Riocanex) carried our an airborne EM. and magnetic survey, soil and stream sediment geochemical surveys, prospecting and a diamond drill program.

The airborne survey was carried out by Northway Survey Corp., of Toronto, using a Bell 206A helicopter towing a bird with a fluxgate magnetometer and an EM

system developed by Lockwood Survey Corp (Watson and Azuelos, 1974. AR 5189). The survey covered most of the present property, except the small claims, CK1 to CK6, and a bit of claim CK. The magnetometer measured the strength of the resultant magnetic vector with a claimed sensitivity of one gamma (one nanotesla). The EM system measured in-phase and quadrature components of the field strength of the secondary electromagnetic field as parts per million of the primary field, which was an alternating field at 1000 hertz. Both instruments recorded in analogue format on a paper strip chart recorder. The flight path was recorded by a 35 mm camera, and flight path recovery was by reference to topography. No EM anomaly was discovered on the present claims, even though the survey area included the "New" or Main showing (see Fig. 3 for locations of named showings or areas). The magnetic survey shows that the northern two-thirds of the property is an area of higher magnetic relief than the rest of the survey area. The New or Main showing is at the southwestern edge of the area of high relief, and several of the other known showings are also in that area.

The soil geochemical survey was done in three parts. The first was a detailed survey which covered ground which is now the northern halves of Horne 1 and Horne 2, the southern halves of Horne 3 and Horne 4, and the southwestern corner of claim CK, and extended well off the present property to the east and west (Petersen, 1974. AR 5192). Lines were run east-west by pace and compass at intervals of 400 feet or 800 feet, and 1759 samples were taken at intervals of 100 feet along the lines, although not all were taken on the property as presently constituted. The "b" horizon was sampled with a shovel, and the minus 80 mesh fraction of each sample was analysed for copper, lead, and zinc at the Riocanex lab in Vancouver, by hot acid extraction and atomic absorption spectrophotometry. Copper results did not show any anomalous areas. Lead and zinc showed areas where several samples had elevated concentrations. It was concluded by the author of the report that these areas reflected concentrations of sulphidic boulders on top of till, and that the areas of high values are not near the bedrock sources of the boulders. That author suggested that the source should be sought to the north.

Nevertheless, 2 of these areas of high readings were tested by 7 diamond drill holes from 4 collar locations. Three holes were lost in overburden, and had to be repeated, and one of the repeat holes was abandoned in bedrock, so there were effectively only 3 or 4 holes drilled. Total footage was 1268 feet. One hole (CK-1) was drilled below the New showing (unknown then), to test an anomaly, in the same location where the writer collected an anomalous soil sample recently (Newson, 2003). The others were drilled in the Main Boulder zone. Comments on the drill logs indicate that there were also trenches at three of the sites, but no mention of these is made in the main text of the report covering the work, so it is not known by whom the trenches were made, or what they uncovered. Pyrrhotite was found in some holes, but no mineralization of economic interest was found.

Following the first detailed soil and stream geochemical survey, a reconnaissance stream sediment survey was run up the stream valley between the "showings". This survey is referred to in Paltser, 1975a, but no data are presented, and it is not clear to which stream Paltser refers. The showings are presumably those found by Horne, but that is not stated. Paltser says that the

stream was anomalous to its upper reaches, and that the "North" group of claims was tied on to the north to cover a possible source of the mineralized boulders.

Following the staking of the North group of claims, a second reconnaissance stream sediment survey was carried out over them and over unstaked ground surrounding them (Paltser, 1975a. AR 5471). The sample medium was fine, silty sediment from the active channel or banks of the streams. In this survey the preliminary analyses were performed in the field using a cold acid extraction and test for total heavy metals using dithizone. In this procedure, a sample measured by volume is put in a test tube, a buffering solution is added, and a measured volume of dithizone is added to the test tube. The dithizone solution is green, but turns red if heavy metal ions are present in great enough concentration that all of the dithizone is used up in the reaction with the base metal ions. Addition of more dithizone solution will eventually turn the solution green again. The number of millilitres of dithizone solution required to turn the solution green is a measure of the concentration of heavy metal ions present in the sample. Analyzing the samples in the field provides immediate feed-back so that anomalies can be followed to their source. All of the samples were also analysed at the Riocanex lab in Vancouver as described above. The field analyses correlated well with the lab analyses, and proved useful.

Only a few of the sample sites are on the present property, but the sample which is most anomalous appears to be on one of the small claims at the northern end of the present property, in the Raft synform area.

The second detailed soil and stream sediment geochemical survey covered the North claims, and thereby covered the northern part of the present property not already covered. 613 soil samples and 63 stream samples were taken, of which only a portion are on the present property. The sampling and analytical methods are as outlined for the first soil survey, discussed above.

Anomalous lead and zinc values were found in what is now the west-central part of claim CK, about 3 km northeast of the original boulders, i.e. the Mist/North zone. Copper values were essentially flat. Mineralization in bedrock was found in the anomalous area, consisting of massive and disseminated fine-grained sphalerite, minor galena, and some chalcopyrite in quartz-biotite gneiss. Some showings were also found to have marble in the footwall. Paltser recommended geological mapping, magnetic and IP surveying.

#### 5.2.2. 1975 work by Riocanex

In 1975, Riocanex conducted a program of magnetic, VLF and IP surveying in an area focussed on the geochemical anomalies and showings, followed by three drill holes (Beckman, 1975. AR 5613). This work was done in the Raft synform and North grid areas.

The magnetometer was a Scintrex MF-2 fluxgate unit, and it was used to survey 11.1 line-miles. Corrections were made by re-reading a base station. It had been hoped that the magnetic survey would outline the stratigraphy, but the conclusion was that it did not do so. However, several sharp anomalies were noted, and these coincide with other geophysical anomalies and with known showings.

The VLF unit was a Geonics EM-16, and station NLK, in Washington State was used as transmitter. The purpose of the VLF survey was to find conductors, which experience to date had indicated might be due to massive sulphide bodies. The in-phase values were Fraser-filtered to remove the effect of topography, and to make the results easier to interpret. It was successful in showing the known sulphides.

The IP unit consisted of a Scintrex 2.5 kw transmitter and a Newmont-type, Mk-6 receiver. The "a" spacing was 50 feet, and readings were taken at 1,2,3, and 4 a-spacings. The IP showed the known sulphide showings, and also revealed a zone of high chargeability that was not explained.

As a result of this work, Beckman recommended 2 drill holes, and 3 were drilled later in 1975, one in the Raft synform area, and two on the North grid (Paltser, 1975b. AR 5631). Drilling was done by H. Allan diamond drilling, of Merritt, B.C., using BQ equipment. Two holes tested geophysical anomalies from the survey discussed above. The anomalies were found to be due to disseminated pyrrhotite and disseminated to massive graphite. The third hole tested one of the showings, and did intersect lead and zinc mineralization, but it was thinner and lower grade than expected, at 3.5 feet grading 3.98% zinc, 0.71% lead, 0.01% copper, 0.18 oz/ton silver, and 0.007 oz/ton gold.

Paltser recommended that no further work be done on the property.

## 5.2.3. 1978 work by Cominco

In 1978, Cominco carried out IP, magnetic and VLF surveys in three stages, covering the Main Boulder and New showings, and leading to the discovery of the latter. The first stage was on a grid which is on the western edge of the present claim Horne 4 (Scott, 1978a. AR 6756). The IP system consisted of a Scintrex time-domain IPR-8 receiver, and a Huntec 7.5 kw transmitter. A pole-dipole array was used, with an " a" spacing of 50 metres and n= 1,2,3,and 4. Readings were taken at 50 metre intervals, on lines 100 metres apart. Two areas of high chargeability were found, one on the western side of Kowalski Creek, and one on the eastern. The western anomaly coincided with magnetic high readings, and with a VLF conductor on some lines, and is up slope from mineralized boulders (the boulders which led to the discovery on the "Main Boulder" showing). It was assigned a high priority for follow-up. The anomaly on the eastern side of the creek (the "East Side" anomaly was not as strong as the western one, had partial magnetic coincidence, and was not tested with VLF. It was assigned a lower priority.

The second phase (Scott 1978b. In AR 6909) extended the lower-priority area to the southeast, onto the present claim CK 84. This resulted in the discovery of a new anomaly on the new part of the grid. Some detailed IP was done with an "a" spacing of 25 metres on the new anomaly, and also on the high-priority anomaly discovered during the first stage of the survey.

The third stage extended the coverage 600 metres farther south and a bit east, to about the southern boundary of CK 84, and extended some of the lines from the first phase about a kilometre farther east (Scott, 1978c. AR 7299). This survey

differed from the first two stages in that the IP work was done by Peter E. Walcott and Assoc. Ltd., instead of by the usual Cominco crew. Walcott used a Crone N-IV receiver, the results of which are not quantitatively comparable to the Scintrex IPR-8, so the readings were multiplied by a factor determined by overlapping some of the previous lines. The chargeability anomalies detected by the second stage work at the southern end on the grid continued onto the new lines to the south, but weakened towards the southern end of the survey.

The magnetometer used in all three stages was a Scintrex MP-2 proton precession unit. Diurnal corrections were by re-reading to a base station or subbase stations. Readings were taken at 25 metres intervals on lines 100 metres apart. The trend of the isomagnetic contours gave an indication of the trend of the geology of the property, and discrete magnetic high areas were outlined.

The VLF unit was a Crone Radem, measuring in-phase tilt angle, and the horizontal component of the field strength. Readings were taken at 25 metre intervals, using station NLK as transmitter. Only 4 lines were surveyed on the first grid, to check the IP conductivity anomalies, but all lines were surveyed in the second stage. The in-phase results were not Fraser-filtered, and therefore retain a strong influence by the steep topography. Compensation for topographic influence was made by " eyeball" according to Scott. The VLF results showed conductors coinciding with the chargeability anomalies, and this was interpreted to enhance the IP anomalies. Several VLF conductors were found that did not coincide with IP anomalies, and these were interpreted to not be of interest. VLF was done in the first two stages of the geophysical surveying, but not in the third.

In 1978, Cominco carried out trenching on the grid on which the geophysical surveys discussed above were carried out. Eight of the eleven trenches were dug on the west side of Kowalski Creek (called McKloski Cr. on some maps in the assessment work files, with various spellings), in the area of the Main Boulder showing. The assessment work submission contains no description of sampling methods, discussion of results, conclusions or recommendations about the project. Sketches on the trenches with assay values on some would seem to indicate that trench 9, on the west side of the creek, and trench 6, near drill hole CK-1, has values of zinc exceeding 20% over widths of more than a metre in a number of places.

Also in 1978, Cominco carried out diamond drilling resulting in the discovery of the "New" showing (Murrell, 1979a. AR 7213). Twenty holes were collared, of which 18 were completed, for a total of 2114 m, or 2028m counting just the completed holes. Eleven of the holes intersected the zone over thicknesses varying from 0.6 to 7.8 metres, and with grades between 1.1% combined lead and zinc to 23.9% lead and zinc. The total strike length spanned by the drilling was 2.1 km, although clearly the coverage did not suffice to prove continuity. Murrell suggested that a 600 metre-long part of the zone might contain material with a grade of 1.6% lead and 11.2% zinc with an average thickness of 2.5 metres. Murrell further stated that the zone was in a thin layer of calc-silicate and carbonate rocks within metasedimentary rocks and pegmatite. He suggested that much more drilling and testing was required to prove economic feasibility.

## 5.2.4. 1979 work by Cominco

In 1979, Cominco carried out geochemistry, did IP surveys on 4 grids on, or partly on, the present property, magnetic surveys on two, and drilled 18 holes, totalling 2768 metres.

The geochemical survey covered a large part of the Cominco claims as they were then, and a total of 8003 samples were collected and assayed (Murrell, 1979b. In AR 7644). Of these, perhaps about a thousand are on the present property, from about the middle of Horne #3 northward through CK to CK-1 and CK-2. The "b" horizon was sampled where it could be identified, by means of a shovel and plastic spoon. The minus 80 mesh fraction was analysed in the Cominco lab in Vancouver by hot acid extraction and atomic absorption spectrophotometry. The threshold anomalous values for zinc and lead were "considered" to be 200 ppm and 40 ppm respectively, but no explanation was given as to how these values were decided upon. Using these criteria, a number of single-station anomalies were found, but only one which continued across more than two adjacent lines appears to be on the property (on claim CK-1), but it is very close to the edge.

The IP and magnetic surveys are discussed in Scott, 1979 (AR 7644). The first was a detailed survey of 2.1 line-km on the Main Boulder showing, which had previously been surveyed at a broader scale (see above). That survey used a Huntec Mk IV LOPO portable transmitter, and a Scintrex IPR-8 receiver, a dipole-dipole array, a spacing of 25 metres, and n=1 and 2. Several chargeability high/conductivity low anomalies were found.

The second IP survey, of 28.8 line km, was on the Mist grid, which is an extension to the northeast of the grid surveyed in 1978 (see above). It extends approximately to the northeastern corner of the present claim Horne #4. The Mist grid survey used the Huntec 7.5 kw transmitter and the Scintrex IPR-8 receiver. "A" spacing was 50 metres, with n=1, 2, 3, and 4, in a pole-dipole array. Several strong to moderate chargeability anomalies were found. Since graphite and pyrrhotite are known to cause IP, magnetic, and conductive anomalies in this area, Scott suggested that the anomalies be checked by geochemistry or geology.

Both magnetic surveys used the Scintrex MP-2 proton magnetometer, with corrections made by re-reading a base station. The results on the Mist grid show that the overall magnetic trend is parallel to the trend defined by the IP anomalies, which probably reflects the lithologic trends. Magnetic relief is highest along the eastern margin of the grid, and the highs are near many of the chargeability anomalies.

The third IP survey in 1979 was carried out on the Autumn grid, in the eastcentral part of Horne #2. (Readers should note that there is another "Autumn" grid in the work done by operators subsequent to Cominco, which is not the same grid.) The survey consisted of 3.8 line km, with instruments and parameters the same as for the survey in the Mist grid. The highest chargeability and lowest resistivity coincide with the highest magnetic readings, sometimes directly, and sometimes flanking. The fourth IP survey was done on the Raft synform grid, under contract by Peter E. Walcott and Assoc. Ltd., using a Huntec 7.5 kw transmitter and a Huntec Mk III receiver. Readings from this receiver were multiplied by a factor to make then equivalent to those from the Scintrex IPR-8 used elsewhere. The southern and western parts of this grid are on the present property (CK-5 and -6). The highest chargeability was noted at the boundary of the present claims, and the next highest was inside the present boundary.

The 1979 drilling program (Murrell, 1979c. In AR 7644) consisted of 2768.4 metres in 18 holes. Ten of the holes continued the 1978 program in the "New" zone. Some were fill-in holes between some of the older holes, and others were drilled below existing holes, on the same sections. Four holes were in the Main Boulder area, and four were in the Mist showing area.

Fifteen of the 18 holes encountered mineralization ranging from 0.02 to 1.6 metres thick, and grading from 0.69% lead and zinc to 30.93% lead and zinc. Murrell concluded that the New zone was thinner than previously thought. No significant assay was returned in the other two zones.

## 5.2.5. 1980 work by Cominco

In 1980, Cominco carried out local detailed geological mapping, prospecting, a geochemical soil survey, IP and magnetic surveys on two grids, and diamond drilling (15 holes in 3 areas totalling 1277.3 metres).

In the soil geochemical survey, 2027 samples were taken (Murrell, 1980a. In AR 8317), of which the writer estimates that fewer than half were taken on what constitutes the present property. All of claims CK-2 and CK-4 was covered, as were the eastern halves of CK-1 and CK-3, and the southeastern quarter of CK-6. A large part of CK was covered, but it is a bit difficult to plot the current claim boundaries on the old map with the information provided. The southern thirds of both Horne #1 and Horne #2 were also covered on a separate grid.

The "b" horizon was sampled where it could be identified. The minus 80 mesh fraction was analysed in the Cominco lab in Vancouver by hot acid extraction and atomic absorption spectrophotometry. The threshold anomalous values for zinc and lead were "considered" to be 200 ppm and 40 ppm respectively, but no explanation was given as to how these values were determined. By these criteria, a "few zones" of anomalous values were found, some coinciding with known showings, and some not.

On the present claims, some anomalous values were found on the northern claims (CK-1 to CK4), in the Raft synform area. A fairly large area on anomalous values was found in the northwestern corner of CK, and a linear anomaly in the shape of an upside -down Y was found in the southeastern corner of Horne #1. Cominco's survey extended beyond this, but the anomaly is confined to presently staked ground. It is partly in a drainage system, and this writer infers that it may be due to mineralization higher up the slope, perhaps in the North Strat grid area, or the No-name boulder area, or the Spring showing (see below).

Drilling by Cominco in 1980 totalled 1277.3 metres in 15 holes in three areas, the New showing, the Main Boulder area, and the Raft synform (Murrell, 1980b, in

AR 8317). One of the purposes in drilling the New showing was to find zones where folding had thickened the sulphide layer, which would tend to make it more likely to be economic. The drilling failed to find thickening in two areas, but found it in one area. The drilling also tended to indicate that mineralization might continue down dip, that the deformation of the zone was not as great as interpreted from the 1979 drilling, but that the zone varies in thickness and grade over short distances.

Drilling in the Main boulder area totalled 361.8 metres in 4 holes, and was designed to test the down-dip extension of mineralization found on surface. Only one hole intersected mineralization, 2.8% combined lead and zinc over 0.33 metres.

Four holes totalling 354.1 metres were drilled in the Raft synform area to look for mineralization in a fold closure inferred from previous geochemical and IP work. Two holes drilled from the same set-up intersected minor mineralization (0.45 metres of 2% lead and zinc). Two others didn't intersect any mineralization.

The drilling in the New showing and Main Boulder areas is on the present claim group, and some of the Raft synform drilling is in the northern end of the claims.

Murrell concluded that the1980 drilling showed the mineralization to be very extensive, but thin and that much more drilling would be required to determine if parts of it might be economic.

The IP survey of the North Strat grid (not to be confused with the "North" grid) used a Scintrex IPR-8 receiver and a Huntec M-4 LOPO portable receiver (Scott, 1980a in AR 8317). The "a" spacing was 50 metres with n= 1,2, and 3. Three chargeability anomalies were found, sometimes coincident with resistivity highs, and sometimes with resistivity lows. The grid was also surveyed with a magnetometer, a Scintrex MP-2 proton unit, with diurnal corrections made by reference to a base station magnetometer, a MBS-2 unit. Three areas of magnetic highs were found, but these did not coincide with the chargeability anomalies.

The northernmost line or two of the North Strat grid may be in the southeastern corner of Horne # 1, but most of the grid is off the claim. The grid is up-slope from the Y-shaped geochemical anomaly noted above, and the mineralization underlying the grid may be the cause of the anomaly.

The Raft synform grid was also surveyed by the IP and magnetic methods (Scott, 1980b. In AR 8317). The IP survey used the same receiver as was used in the survey above, but used the Huntec 7.5 kw transmitter. The field magnetometer was the same unit as above, but was corrected for diurnal variations by the base station looping method. The 1980 grid extended the 1979 grid to the south (by one line), to the north (by two lines) extended two lines to the east, and re-ran part of a line to check a suspect anomaly. The new lines served to extend and confirm anomalies discovered in 1979. The suspect anomaly was not confirmed, and it was concluded that it had been due to bad contact or telluric effects. The western end of the new southern line is on the present property (CK-6), but the

other new work is probably just off the claims. The doubt arises because of uncertainty in reconciling the present claim boundaries with the previous claims using the data in the assessment files.

#### 5.2.6. 1981 work by Cominco

In 1981, Cominco drilled 9 holes totalling 664.1 metres in the North Strat area, to follow up on geological mapping, soil geochemistry, and IP surveying, all of which had indicated that the mineralized zone might continue into this area (Murrell, 1981. AR 9011). The nine holes were drilled on 5 cross sections, 200 metres apart. Six of the nine intersected lead-zinc mineralization, from a hairline to 1.0 metres thick, the latter grading 25.8% combined lead and zinc. This confirmed Murrell's conclusions of 1980, and he recommended more drilling. The northernmost one or two holes are close to the boundary of the present property (Horne #1), but these are not the ones with the best assays.

#### 5.2.7. 1986, 1987 work by Rea/Verdstone

In 1986, Rea Gold Corporation, along with their joint-venture partner Verdstone Gold Corporation, re-established the central control grid, carried out prospecting, a geochemical survey in the southern half of property, built access roads, and did some trenching.

In 1987, Rea and Verdstone carried out a three-phase drilling program of 8347.8 metres in 95 holes (Blanchflower, 1987. AR 16,030; Oliver, 1988. AR 17,539). Six mineralized zones were tested, of which 3 are on the present property, i.e., the New showing, the Main Boulder showing, and the No-name boulder train. The program was under the overall supervision of Minorex Consulting Ltd. Drilling in the first phase was done by Quest Canada Drilling, of Vancouver, using a Longyear Super 38 drill recovering BQ core. Drilling in the second and third phases was by J. and D. Drilling, and Connors Drilling.

The purpose of the drilling on the New showing was to fill in the drilling done by Cominco to get better information for the estimation of the geologic resource of the zone. In all, 59 diamond drill holes were put down along a 1250 metre strike length of the New showing.

At the end of the drill program on the New showing, Oliver drew a number of conclusions and made several recommendations regarding the new showing. He joined previous workers in not being able to identify a single horizon in the sequence which could be identified as the mineralized horizon, and reiterated that clean marble seemed to be the best clue. He suggested that the mineralized horizon may be at a change from platformal carbonates to pelitic sediments. He also suggested that the fact that there is less pegmatite here than at many other locations on the property might account for it being the best zone. He estimated, from 83 intersections of the new showing zone, an unweighted grade of 14.5% zinc, 2.36% lead and 8 g/t silver, and an average thickness of 1.16 metres. He declined to estimate a tonnage because of the difficulty of proving continuity both along strike and down dip. He recommended more drilling in the area close to the best showing of this zone, but says that deeper drilling should only be done if grade/thickness isopachs so indicate.

Gallium and germanium are often present in other sedex type deposits, and 15 samples from the New showing core were analysed for these metals. The mean values were found to be 5.26 ppm and 24.67 ppm respectively.

Five holes were collared in the Main Boulder zone, and three were completed (Oliver, 1988, p 37). No massive sulphide mineralization was intersected. Oliver pointed out that after 15 holes to that date, no hole has intersected any massive sulphide mineralization, and concludes that the zone has no potential. No further drilling was recommended here in the absence of new information that would indicate otherwise.

Four holes were drilled under the No-name boulder zone, and none intersected massive sulphide mineralization. Oliver observed that most of the rocks intersected were igneous, and concluded that the potential of this area was low.

Also in 1987, Rea and Verdstone collected 1269 soil samples over 66 line km of cut and chained lines over four showings in the southern part of the property as it was then, of which only one, the No-name boulder zone, is on the present property. The sample medium was the "b" horizon, where it could be identified. Analyses for lead, silver, zinc, and copper were by atomic absorption spectrophotometry at the Kamloops Research and Assay Laboratory. Statistical analysis was used to calculate means and standard deviations of the samples. In the no-name zone, 3 areas show elevated values in lead, zinc and silver, and one sample shows a high copper value. The silver high was drilled, and was apparently due to a sheared, pyritiferous, and slightly altered fracture zone in an intrusive rock type. Lead and zinc anomalies were coincident. Drilling them did not reveal a bedrock cause.

#### 5.2.8. 1988 work by Rea/Verdstone

In 1988, Rea and Verdstone carried out IP and magnetic surveys, trenching, diamond drilling, of showings to the north of the New showing, and geological mapping of the area surrounding the showings (Rotzien and MacFayden, 1989. AR 18,359).

The purpose of the mapping program was to map the extent of the calc-silicate interval, which hosts the mineralization. The geochemical sampling was designed to test the mapped calc-silicate horizon to look for possible mineralization, and the geophysical surveys were to follow up on any geochemical anomalies which might be found. The trenching and drilling was designed to investigate the North and Mist showings, the East side area, the Raft synform, and any new areas found by the geological, geochemical, or geophysical work. All of these areas are on the present property, but the Raft River synform area extends off the property.

The 1988 work was done under the overall supervision of Dolmage Campbell, and other contractors were Le Clerc Drilling Ltd., Geotronics Surveys Ltd. (geophysics), Amex Exploration Service Ltd. (linecutting, geochemistry), Crowfoot Developments (surveying), and Kamloops Research and Assay Laboratory. Geological reconnaissance of the Raft Synform area at the northern part of the property showed it to be underlain by north-striking, east dipping biotite gneisses, interbedded with narrow bands of calc-silicates. Pegmatites are generally present as sills, and form resistant ridges. The Spring showing, near the southeastern corner of the property, was shown to be cut off to the south by pegmatite, and to be covered by overburden to the north. An interpretive geological map of the property was produced by tying in all of the data available at that time, and this map is presented herein as the best map of the property available to the writer (Fig. 5).

The IP survey used a 2.5 kw IPT-1 transmitter made by Phoenix Geophysics Ltd., and Huntec Mk IV receiver. A test line was run across the North showing (as distinct from the "North Strat" showing), but an anomaly could not be convincingly correlated with the known geology. The western parts of the survey lines are on the eastern edge of the present property, on claims CK, Horne #3, and the southernmost line extends onto Horne #1. A resistivity anomaly is seen on all lines, and is very close to the eastern boundary of the property. It shows moderate correlation with elevated chargeability values, and is interpreted to be a lithologic contact between marble/calc-silicate rocks to the east, and biotite gneisses to the west (Cruickshank and Mark, 1988. In AR19,359). It follows a small topographic depression flanked by topographic highs across most of the lines.

A magnetic survey of the Mist area (on claim CK) could not follow the mineralized horizon.

A re-examination of the IP test line by the Dolmage Campbell geologists concluded that the mineralized horizon was expressed as a resistivity low, but were uncertain if this was due to the sphalerite mineralization, or to graphite/pyrrhotite /pyrite mineralization in the footwall biotite gneisses.

Trenching on the North and Mist showings revealed that the mineralization consists of fine-grained to medium-grained sphalerite, with pyrrhotite and pyrite in a highly siliceous matrix. The horizon is discontinuous, splitting into two lenses, and pinching and swelling. The zone could not be found in all trenches, giving more evidence of its erratic nature.

Trenching was carried out on a newly discovered area called the Cat showing, in the Raft Synform area, exposed in a skidder road made for drill site access. Two graphitic horizons and a new marble horizon were uncovered. Values of 0.46% lead and 7.15% zinc were found in boulders in one trench. A discontinuous zone of coarse sphalerite with a true thickness of 0.2 to 0.3 metres gave values of zinc from 0.3% to 7.73%. Five holes were drilled in the Raft Synform area intersected an easterly-dipping sequence of biotite gneisses, with interbedded calc-silicate and marble. Mineralization occurs as thin stringers and coarse disseminations of sphalerite in the calc-silicate and marble units. None of the typical massive, pyrrhotite-rich mineralization was found.

Six holes were drilled in the Mist/North area. Zinc values up to 18% were returned from samples, but over widths too thin to be economic.

Six drill holes were put down in the East Side area, between holes previously drilled. No mineralized zone was intersected, although some pyrrhotite -graphite -pyrite mineralization in biotite gneiss was intersected. The New showing could not be extended to this area. Although marble horizons were intersected in three holes, there was no mineralization in them.

#### 5.2.9. Recent work

In 1998, D.H. Green, P.Eng., carried out prospecting on the property, reviewed the previous work, and recommended a program of drilling 36 holes on 24 sections, for a total of 2925 metres of drilling (AR 25,641)."...

In 2000 a short two hole diamond drilling program was completed at the new showing area. The results were as excerpted from the news release dated June 5, 2000.

..."Two diamond drill holes, totaling 255.1 feet were completed in June 2000 on the CK Zinc Claims located near Clearwater, British Columbia. These two holes were drilled to confirm the location of the target lead-zinc mineralization from past drilling. One hole near the outcrop was drilled 46.1 feet at a 45 degree dip. A second hole DDH 30 was drilled 219 feet at a 90 degree dip. Both holes successfully intersected the target lead-zinc mineralization.

The outcrop hole intersected 12 feet of mineralization at 33.3 to 45.3 feet assaying 2.05% lead and 11.73% zinc including 6.3 feet of mineralization at 39 to 45.3 feet assaying 3.6% lead and 20.2% zinc. Hole DDH 30 intersected 2.3 feet at 174.1 to 178.4 feet assaying 6.5% lead and 27.5% zinc.

Our geological consultant states that the rock in the mineralization is highly folded. Future work should focus on strike extensions of the mineralization and on areas of possible folding where the mineralization may have been thickened."...

The following is excerpted from Newson 2003(2) (AR27059)

..."In 2001, H. K. P. Yanwgwhe, P. Geol., carried out prospecting, rock sampling, and magnetic surveys on and near the known zone, on a small line grid established by cutting and blazing, and marked with flagging. The magnetic survey was designed to find out whether the known zone is magnetic. He found that the zone is magnetic, but early snow in the mountains in the area of the CK claims hampered work, and the magnetic survey could not be continued to find new mineralization. The geological and sampling work was also curtailed before completion of the planned program. The assays of samples in the rusty mineralized outcrop showing in claim CK-84, confirmed previous findings. ICP assays ranged from 2180-4710 ppm lead, 19200->20000 ppm zinc, and one grab sample assayed 22.4% zinc and 3.91% lead. The mineral assemblage is indicative of a sedex or sedimentary exhalative type. The strike of the mineralized zones is generally north-south but the dip attitudes changed abruptly from locality to locality, varying from vertical to steep (45' to 60') east to west. These rapid reversals of dips indicate perhaps much lateral east-west faulting, though without appreciable lateral displacements. The magnetic profiles plots reflect this."..

In 2003 a soil sampling program was completed around the area of the New Showing. As excerpted from Newson 2003(2).

...'Work, consisting of geochemical soil sampling more detailed and focused than any carried out on the property to date, was requested by Ron Burko, President of Penteco Resources Ltd, under the overall supervision of Mr. D.H. Green, P.Eng. (B.C.). A total of 116 samples was taken, some for orientation purposes, to see if the known zone is detectable by geochemical methods, and the rest to investigate the area immediately up-slope from the known zone."...

...'The closest thing to a zinc anomaly is the sequence of samples SP-92 to SP-95. Samples SP-93 and -94 are greater than the mean plus two standard deviations, and the flanking samples, SP-92 and -95 are greater than the mean plus one standard deviation. The mean value of the zinc assays is 108 ppm and the standard deviation is 53 ppm. These values are in and flanking a gully which drains the known zone. This indicates that the sampling technique used here is capable of detecting the type of mineralization to be expected, although these numbers are not particularly high, given the proximity to the zone. Samples SP-99 and -100 are the next most exciting zinc values, and are also downslope from the main zone, in and near an ephemeral drainage channel. This channel would carry run-off in spring, or following a heavy rain. The only copper value more than 2 standard deviations greater than the mean is in sample SP-6, which is more or less over the known zone, where it is weak. Both samples SP-99 and -100 contain values of copper greater than the mean plus 1 standard deviation, tending to increase the significance of that anomaly.

It was not really expected to find gold in these samples, but for the extra cost of the assays it was thought worthwhile to check. Gold values are so uniformly low that it in not meaningful to speak of anomalous values. The highest gold value was found in sample SP-2. That was part of the line immediately above the known zone, and the sample site is on the hillside near an old road, presumably a drill road. No significance can be attached to this value.

Values of silver are not as uniformly low as those of gold, but statistical parameters calculated for silver are not very meaningful either. A string of consecutive values above detection limit roughly corresponds to the zinc anomaly discussed above. They tend to confirm the zinc anomaly.

The other elements do not show any significant values, either as possible economic targets themselves. or as indicator elements for some other element."...

# **GEOLOGICAL SETTING**

# **Regional Geology**

The following description is excerpted from Newsom 2003(1)

...'The region is underlain by rocks of the Eagle Bay assemblage of the Northwestern Shuswap Metamorphic Complex of the Omineca Crystalline Belt

(Okulitch,1985; Massey, 2000; Fournier et al, 2001). The Shuswap Metamorphic Complex is bounded on the south and east by the Monashee Complex, and separated from it by the Monashee Décollement. It is bounded on the northeast by the Kootenay Arc. In the latter area, Hadrynian strata are correlated westward from the Kootenay Arc into the Shuswap Complex, with the boundary placed at the first appearance of sillimanite (Okulitch, 1984). Part of the complex may be an extension of the Selkirk Allocthon of the Kootenay Arc (Read and Brown, 1981). The western boundary is less well defined, and is marked by intrusions and faulting.

The Shuswap Metamorphic Complex consists of strongly foliated and lineated assemblage of metasedimentary gneisses intruded by numerous dykes, sills and irregular intrusions of granites. Rock types include strongly foliated granitic gneiss, quartz-feldspar-biotite gneiss, quartz-feldspar-hornblende gneiss, amphibolite, minor quartz mica schist, quartzite, marble and skarn, abundant and locally dominant pegmatite, muscovite granite and biotite granodiorite, garnetiferous quartz-mica schistose gneiss.

The Shuswap complex is highly deformed, with many periods of metamorphism and deformation, so that it is difficult to decipher the history of the region. The Monashee Complex has gneisses at its core that have been dated at 2800 and 2200 Ma, intruded by plutons dated at 2100 and 1960 Ma, and are thought to be basement to the North American plate (McMillan, 1991). These gneisses are unconformably overlain by a platformal succession of paragneisses that are cut by syenitic intrusions dated at 770 or 750 Ma. The platformal gneiss includes sequences of calc-silicate gneiss, marble, quartzite, and pelitic schist which host some lead-zinc deposits.

Lead isotope ages from these deposits indicate a Cambrian age.

The base metal deposits of the Northwest Shuswap Complex are similar in mineralogy and host rock type to the better known deposits in the Monashee Complex, and it is inferred that they are of the same age as those in the Monashee Complex.

The last government mapping was by the GSC on a regional scale (Campbell, 1964)."...

Figure 3 – Regional Geology



# Local Geology

The following is excerpted from Newson 2003;

... "The area around the property shows a succession from well-layered hornblende gneiss and amphibolite, overlain (structurally) by a calcareous suite of rocks that contains the main sulphide zone, which is in turn overlain by a quartz-feldspar gneiss and pelitic schist succession (Höy,1980).

The structure in the area consists of an east-facing succession folded into a broad synform which plunges easterly. The New showing is on the southern limb of the fold, and its outcrop trace trends southeasterly. The North and Mist zones trend northeasterly on the northern limb."...

## **Property Geology**

The following detailed geological description is excerpted for Newson 2003.

..." Outcrop is poor on the property, according to many of the people whose work is referred to in this report, and the writer would agree. Mapping projects are referred to in many of the assessment work files, but most are limited to the immediate area of showings, and many are outcrop maps with no interpretation.

The map by Rotzien and Macfadyen, 1989 is here presented as Fig. 5, the geological map of the property. Its main feature is to trace the horizon containing the marble, calc-silicate, and sulphide units across the property. Structurally underlying the calc-silicate horizon i.e. generally west of it, is the amphibolitic gneiss, intruded by granitic rocks. Overlying it, i.e. east of it, are the pelitic gneisses, intruded by varying amounts of pegmatite. The amount of pegmatite has considerable importance for the economic potential of the property, since it intrudes the mineralized zones and cuts off the mineralization. In this regard it is probably significant that the map shows a mappable unit that is mostly pegmatite in the southeastern corner of the property. The showings in this area are reported as being short, and often cut off by pegmatite. Drilling and trenching of geophysical and geochemical anomalies there has often revealed a bedrock composed largely of pegmatite.

On the other hand, north of there, pegmatite is a minor (but variable) component of the rock, and mineralization is more continuous there. It is clear that a large proportion of pegmatite in the rock is a negative indicator of mineral potential.

The legend of the map contains all of the rock units seen on the ground, but some do not show up on the scale of the map. Descriptions of the individual rock types on the property is given below, and taken from Oliver (1988), from the work of Benvenuto referred to in Blanchflower, 1986, and from Rotzien and Macfayden, 1989. The original work of Benvenuto is not available to the writer.

# 6.3.1 Intrusive Rocks

Lamprophyre dykes: This is the youngest rock type, and cuts all of the others. It is fine-grained, dark green (due to amphibole), and contains 2-3% magnetite

grains. These seldom exceed 2 metres in thickness, and are volumetrically insignificant. Pegmatite: Bodies of this material cut all other rock types, except the lamprophyre. They occur all over the property, and Oliver suggests that the volume of this rock type may increase south and east of the Raft River, i.e. in the southeastern corner of the present property. The unit typically contains 60% coarse white to cream coloured plagioclase crystals (to 3 cm x 10 cm in size), 25% opaque grey to white quartz, 10% biotite and muscovite, and less than 5% small red to pink garnets. The garnets are sometimes randomly disseminated, and sometimes in small clusters along healed microfractures in the pegmatite. Graphic textures are commonly seen, and xenoliths of gneiss and massive sulphides have been noted. No zonation has been noted, and Oliver suggests that the discovery potential for rare earths and lithium is low.

The pegmatite bodies are quite large, and may be 500 metres in strike length. They may constitute 70% of the rock volume in places, and cut out the mineralized horizons in some zones.

The writer's prejudice is to consider very coarse-grained intrusive felsic rocks in high-grade metamorphic terrane to be migmatite, until it is proven to be pegmatite. This prejudice was developed during a detailed mapping project in granulites, and was confirmed during mineral exploration work in granulites. In some rocks, the metamorphic conditions appear to be such that the felsic paleosome melts, or at least recrystallizes rapidly enough that it becomes mobile, and is squeezed into cracks in the still-solid mafic paleosome, where it looks like a pegmatite dyke. The writer has traced such dykes back to a layer in a gneissic sequence, and has seen the " pegmatite" grade back into the gneiss. In all of the descriptions of core and outcrop in the literature available on this property there is no mention of uncommon elements or exotic minerals which might be expected in true pegmatites. The writer would suggest that the possibility that the pegmatites here are really migmatites should be at least considered as a possibility in trying to understand the geology of the area, and in planning the exploration.

Amphibolitic sills: This unit is fine to medium-grained, and has a dark green colour, due to talc-tremolite alteration, and it also contains 5-8% disseminated magnetite. It cross-cuts bedding in the gneisses, but has similar dips. It has not been seen on the present property, but is included here for completeness.

Orthogneiss: This is the oldest intrusive unit on the property, since it is cut by all of the others. It is fine-grained, hard, and a "salt-and-pepper" texture formed by 4-5% finely disseminated biotite in very pale-coloured quartz/feldspar matrix. A unit of this rock is near the New zone mineralization. Its origin is unknown, but Oliver suggests that some rocks called orthogneiss may be paragneisses, derived from clean quartzites.

#### 6.3.2 Supracrustal rocks

Biotite gneiss: This unit is characterized by alternating banding of dominant finegrained to medium-grained biotite-rich layers and quartz/feldspar rich layers 1 to 3 cm thick. Garnet and sillimanite also occur in the biotite-rich layers. This unit is interpreted as having been derived from a pelitic sediment. It is the dominant rock type in the structural hanging wall of the mineralized zone.

Siliceous biotite gneiss: This is similar to the unit above, but the felsic layers are dominant over the mafic.

Coarse-grained biotite gneiss: Coarse-grained, well foliated, black and white coloured, composed of black biotite, quartz and plagioclase. Biotite gneiss close to (<10 metres) and underlying massive sulphide bodies is often very coarse-grained and garnetiferous.

Siliceous calc-silicates: Well-banded rock, with diopside, almandine, quartz and feldspars forming individual layers, along with biotite. This unit appears to be dominant in the carbonate-rich zone which includes the mineralized horizon, and in one showing, hosts the mineralization.

Limy calc-silicate: Calcareous, or limy, calc-silicates are intermediate between marbles and the siliceous calc-silicates, with carbonate forming up 60% of the rock. It is commonly near both marble units and mineralized horizons. In the absence of true marbles, this unit is the preferred host rock. It also frequently contains disseminated sphalerite. This rock type is mottled to banded, medium green to white, occasionally with dark orange garnets.

Marble: Clean, white marble units are normally the host of the mineralization, and can be in either the hangingwall or footwall. Disseminated sulphide mineralization is also often seen in this unit. It is in gradational contact with overlying calc-silicates. Some marbles contain quartz and chert pebbles.

Sulphide mineralization: Sphalerite is generally fine-grained, reddish brown in colour, and is the dominant sulphide. Zinc grades usually vary from 15 to 25%, and lead from 1 to 3%. Also present in the massive sulphide lenses are silver at an average of 8 g/t, and trace amounts of gold (5 ppb). Pyrrhotite forms about 10 to 15% by volume of a typical massive zone. Knots of quartz and diopside, from 5 to 15 mm across, form 5 to 10% of the massive sulphide, and some diopside and calc-silicates are also present.

Chert: True chert has been seen only in the North Strat area, just at and off the southeastern corner of the present property, and only in core, where it is in 10 to 15 cm thick layers underlying the mineralization.

Amphibolitic gneiss: Dark green, fine to medium-grained, amphibole-rich, with layers of quartz and white to cream coloured plagioclase 2 to 5 cm thick. This unit forms the stratigraphic base of the supracrustral rocks. This unit is common in the northern part of the property, and in a canyon at the south end of Kowalski Creek.

The Raft synform is an example of large-scale early isoclinal folding, with closures in the northern part of the present property. This is the important phase of folding, since it controls the outcrop trace of the favourable lithologic interval. Minor folds related to the synform which dominates the local structure have axial

planes which are steeply-dipping, and axes plunging variably east and west (Höy, 1980). These folds have thickened the sulphide layers in some places.

On a detailed scale, the structure is more complicated than it is on the local area scale. Dip reversals are common, and repetition or disappearance of rock units is noted in drill holes and in outcrop. This is due to several episodes of late folding and faulting. One set of folds plunges southerly, and has a strong lineation parallel to the axes. These folds range from fairly open to quite tight, and post-date the regional metamorphism. These folds also appear to have thickened the main sulphide lens, in some places at least. Important faults are show on the geological map, Fig. 5.

Disseminated graphite, pyrrhotite, and pyrite are common in the gneiss, and are responsible for some of the geophysical responses found by workers here. Coarsely crystalline, greyish-white weathering marble was mapped there as well, but individual units could not be traced for more than 100 feet along strike, and none was ever more than 10 feet thick. "...

The economic deposit of most known importance is the New showing which is partially covered by claims owned by the Author. The New showing is a 1.2 kilometer long partially explored zone of semi-massive to massive sphalerite, pyrrhotite, galena, pyrite and chalcopyrite. Massive sulphide varies from less than 0.1 to over 4 meters and appears to average about a meter. The "New Showing" exposure near the middle of the deposit where the zone is at its thickest due to isoclinal refolding of the original sulphide layer. This area has been the focus of most of the sporadic work completed in the last 10 years. The geological characteristics of the deposit is similar to the "Broken Hill" type deposit of Australia.



Figure 4 – Property Geology From Newson 2003



# Figure 5 Sample Location Map From Denis DeLisle

MMI soil samples (C and K series) shown with UTM Zone 10 locations. S1 and S2 are metallurgical rock sample locations.

# 2005 WORK PROGRAM

Although considerable exploration work has been completed on the CK property no known or reported metallurgical work on the iron content of the sphalerite was ever completed. Also no testing to determine the viability of MMI soils sampling was ever completed.

Mr. Denis Delisle, a qualified prospector spent one day (May 18, 2005) sampling the New showing area for massive sulphide material for preliminary metallurgical sampling and a preliminary soil survey for Mobile Metal Ion (MMI) analyses. Mr. DeLisle took the metallurgical samples from massive sulphide material from two locations at the New Showing. The soil samples were 10- 20 cm below the bottom of the organic layer. The "C" series soil samples were from the northeast (hangingwall) side of the new showing in undisturbed material. The K samples were from undisturbed soil sample sites to the east and southeast (along the strike and down hill of the mineralized horizon) of the New Showing.

Mr. Delisle delivered the soil samples to via greyhound to SGS Lakefield Laboratories in Ancaster, Ontario for MMI analyses for Copper, zinc cadmium and lead, all elements enriched in the CK sulphide deposits. Soil sampling for MMI analyses requires the sample be placed in a sealed plastic bag (usually a "ziplock" bag) immediately after removal fro the sample site. He delivered the massive sulphide rock samples to the Author who delivered them to G&T Metallurgical Laboratories in Kamloops Ontario for preliminary determination of iron content in sphalerite, and to Ecotech Analytical Laboratories in Kamloops for metallic assay. The rock samples were tested for iron in the sphalerite lattice at G&T Metallurgical laboratories in Kamloops. The soil samples were tested for mobile metal ion using proprietary techniques.

**RESULTS** Please refer to Appendix I for analytical certificates.

MMI soil sample results.

SAMPLE CO	MPLE CO-ORDINATES Sample Ident		Cu	Zn	Cd	Pb
UTM Z	ONE 10	Scheme Code	MMI-C5	MMI-C5	MMI-C5	MMI-C5
NORTHING	EASTING	Analysis Unit	ppb	ppb	ppb	ppb
		Detection Limit	10	10	20	40
5753680	323040	C-01	49	2280	27	111
5753695	323025	C-02	29	538	<20	<40
5753710	323010	C-03	106	1280	54	<40
5753675	323085	K-01	58	804	<20	48
5753643	323071	K-02	29	1120	<20	403
5753643	323071	K-02A	57	717	<20	488
5753617	323059	K-03	193	5870	31	169500
		DUP-C-01	45	1970	22	132
		AVERAGES	71	1822		

## TABLE 2 - MMI RESULTS

The average for copper was 12 ppm. The zinc results averaged 1822 ppb. Sample K-03 returned significantly anomalous lead (169 ppm) and anomalous zinc (5870 ppb). The area soil sampled and number of samples taken is very limited, however the following preliminary conclusions can be made (Figure 6). Assuming that the till overlying the area was derived from the north or northwest the zinc and copper appear anomalous up ice and up dip of the New Showing lense which is dipping to the northeast. Lead appears to reflect contamination from material eroded from the massive sulphide horizon. Wether the zinc and copper (both more mobile than lead) anomaly is derived from eroded material in the till or derived from bedrock underlying the sample site is unknown. A "B" horizon soil geochemical survey completed in 1974 (Peterson, 1974) outlined the area underlain by the ""New Showing" by a zinc anomaly averaging 350 ppm zinc, and 200 ppm lead. The 2005 results can be used as a starting point for future MMI soil surveys.

Metallurgical test results.

The primary reason for this testing was to determine the iron content in sphalerite for a preliminary estimate of the possible metallurgical penalty for the ore grade material. Based on a visual determination five to six percent interstitial iron was locked into the sphalerite lattice.



TABLE 3	
CK EXPENDITURES	
Denis DeLisle	300
Truck	100
Food	30
MMI analyses	180.77
Iron in Zinc	
determination	670
Report	720
Total	2000.77

## INTERPRETATION AND CONCLUSIONS

The portion of the CK property that Leo Lindinger hold covers a portion of the "New Showing" and the No Name boulder showing on strike to the north northwest. Samples of high grade sphalerite from the New Showing" reported a preliminary visual determination of five to 6 percent sphalerite in the sphalerite crystal lattice. These results suggest a strong possibility of some moderate refining penalty. Very preliminary soil sampling using MMI analytical methods returned possible moderately anomalous zinc and one very anomalous lead sample taken some 50 meters south of the "New Showing". These results are within an area already anomalous for Zinc and lead by a program in 1974 and can be used as part of a baseline for future surveys.

# RECOMMENDATIONS

Recommended is a \$300,000 program of database digitizing, grid construction, road and trail rehabilitation, followed by geological mapping, geochemical soil sampling using MMI analysis over the larger CK property as shown in Figure 2. The focus of this program would be to determine if buried mineralization could be determined by sampling the down dip areas of known mineralized zones, conventional soil anomalies, and geophysical anomalies.

Upon completion of this first phase a second phase of exploration of diamond drilling of the New showing as recommended by Newson in 2003 estimated a \$600,000 is also recommended

database re-creation		\$ 20,000.00
road and trail rehabilitation	\$ 10,000.00	
grid creation	100 kilometers @ \$450 per kilometer	\$ 45,000.00
soil sampling analyses	1800 samples @\$30 per sample	\$ 54,000.00
rock geochemistry and stud	lies	\$ 15,000.00
geological mapping	30 days @700 per day*	\$ 21,000.00
project supervision	45 days @800 per day*	\$ 36,000.00
field technicians	150 person days @350 per day*	\$ 52,500.00
field supplies		\$ 3,000.00
vehicle	80 vehicle days @ \$80 per day	\$ 6,400.00
contingency		\$ 22,100.00
report		\$ 15,000.00
TOTAL BUDGET		\$ 300,000.00
*includes food and accomo	dation charge of \$125 per person day	-

# **TABLE 4 BUDGET**

## SELECTED REFERENCES

- Green, D.H., 1998, Assessment report geological work on CK group, 2 Vols. Report submitted for assessment work credits to British Columbia Energy and Mines. (AR 25,641).
- Höy, T., 1980. CK prospect, Shuswap Metamorphic Complex (82M/13E). In Geological fieldwork, 1979, EMPR 1980-1

\_\_\_\_\_1996. Broken Hill type Pb-Zn-Ag +/-Cu. In Selected British Columbia mineral deposit profiles, volume 2-metallic deposits, D.V. Lefebure and T. Höy, editors. British Columbia Ministry of Employment and Investment Open file 1996-13, pp. 117-120.

Newson, N.R., 2002. Assessment work report on a soil geochemical survey on the CK group, Kamloops Mining Division. Report submitted for assessment work credits to British Columbia Energy and Mines (AR 27,059).

2003, Penteco Resources Limited, CK Claims, Kamloops Mining Division, British Columbia. Mineral Potential Assessment and Exploration Potential. Published 43-101 report.

- Oliver, J.L., 1988. Drilling and geological report on the 1987 exploration of the CK property (AR17,539).
- Peterson, D.B. 1974. Geochemical and drilling report on the CK1-CK60 and RAFT1-RAFT40 claims. Report submitted for assessment work credits to British Columbia Energy and Mines. (AR 5192).
- Rotzien, J.L., Macfadyen. M.A., 1989. Geophysical, trenching, diamond drilling and geological report on the 1988 Exploration of the CK Property. Report submitted for assessment work credits to British Columbia Energy and Mines. (AR 18359).
- Yawnghwe, H.K.P., 2002. Assessment work report on the CK group, Kamloops Mining Division. Report submitted for assessment work credits to British Columbia Energy and Mines. (AR 26,786).

## STATEMMENT OF QUALIFICATIONS

I, Joseph Eugene Leopold (Leo) Lindinger, P.Geo. of 680 Dairy Road, Kamloops, B.C. V2B-8N5 Tel. 250-579-9680 Email joslind@telus.net

HEREBY DO CERTIFY THAT:

- 1. I currently own a portion of the British Columbia Mineral Claim group called the "CK Property.
- 2. I graduated in 1980 from the University of Waterloo, Ontario with a Bachelor of Sciences (BSc) in Honours Earth Sciences.
- 3. I am a member in good standing as a Professional Geoscientist (#19155) with the Association of Professional Engineers and Geoscientists of the Province of British Columbia since 1992.
- 4. I have worked continuously as a geoscientist since graduating in 1980.
- 5. I am responsible for presenting the exploration results in the "Geochemical Assessment Report CK Property" and dated 27<sup>h</sup> day of June, 2006, and revised February 27, 2007.

Signature of J.E.L. Lindinger, P.Geo.

Appendix I – Analytical Results

TABLE 1A									
LIBERATION ANALYSIS OF THE SPHALERITE									
	CK Horn #1 - KM1693								
Sample:	Unsized								
Magnification	400X								
Minoral	Minoral Liberated Locked in Binary with:							Multinhase	
Mineral	Liberated	Ср	Sp	Ga	Po	Ру	Gn	Indutipriase	
Sphalerite	49	31		<1	15	5	<1	1	
Notes 1) Cp-Chalcopyrite, Sp-Sphalerite, Ga-Galena, Po-Pyrrhotite, Py-Pyrite, Gn-Gangue.								-Gangue.	
2) Minerals in order of abundance: sphalerite, gangue, pyrrhotite, pyrite, galena and							alena and		
chalcopyrite.									
3) Interstitial iron in the lattice of sphalerite is about 5-6% Fe.									

# **IRON DETERMINATION IN SPHALERITE**

# **MMI RESULTS**

		Sample Ident	Cu	Zn
SAMPLE CO-ORDINATES		Sample Ident	Cu	<b>Z</b> 11
UTM ZC	DNE 10	Scheme Code	MMI-C5	MMI-C5
NORTHING	EASTING	Analysis Unit	ppb	ppb
		Detection Limit	10	10
5753680	323040	C-01	49	2280
5753695	323025	C-02	29	538
5753710	323010	C-03	106	1280
5753675	323085	K-01	58	804
5753643	323071	K-02	29	1120
5753643	323071	K-02A	57	717
5753617	323059	K-03	193	5870
		DUP-C-01	45	1970
		AVERAGES	71	1822