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**REPORT
ON THE
ASPEN SILVER PROPERTY, SALMO
NELSON MINING DIVISION
BRITISH COLUMBIA
FOR
AUCKLAND EXPLORATIONS LTD.**

**December 20th, 1984
Vancouver, British Columbia**

**D.P. Taylor, P.Eng.
Consulting Geologist**

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INTRODUCTION

This report is based upon the extensive report of Dr. A.M. de Quadros, Ph.D., P.Eng., of May 15, 1981 and upon personal inspections and studies of the property. The report of Dr. de Quadros was based on work conducted by Extotal Resources on the Aspen Silver Property in the winter of 1980-1981. Since 1981 two underground rehabilitation programs and a small bulk sample program have been carried out. No diamond drilling has been done since 1981.

The Aspen properties were inspected by the author in the company of Mr. J. Mirko on Monday, the 13th of June, 1983, from November 16th to December 23rd, 1983, and twice during November 1984. E.P. Sheppard, P.Eng., was present from December 19th to December 22nd, 1983.

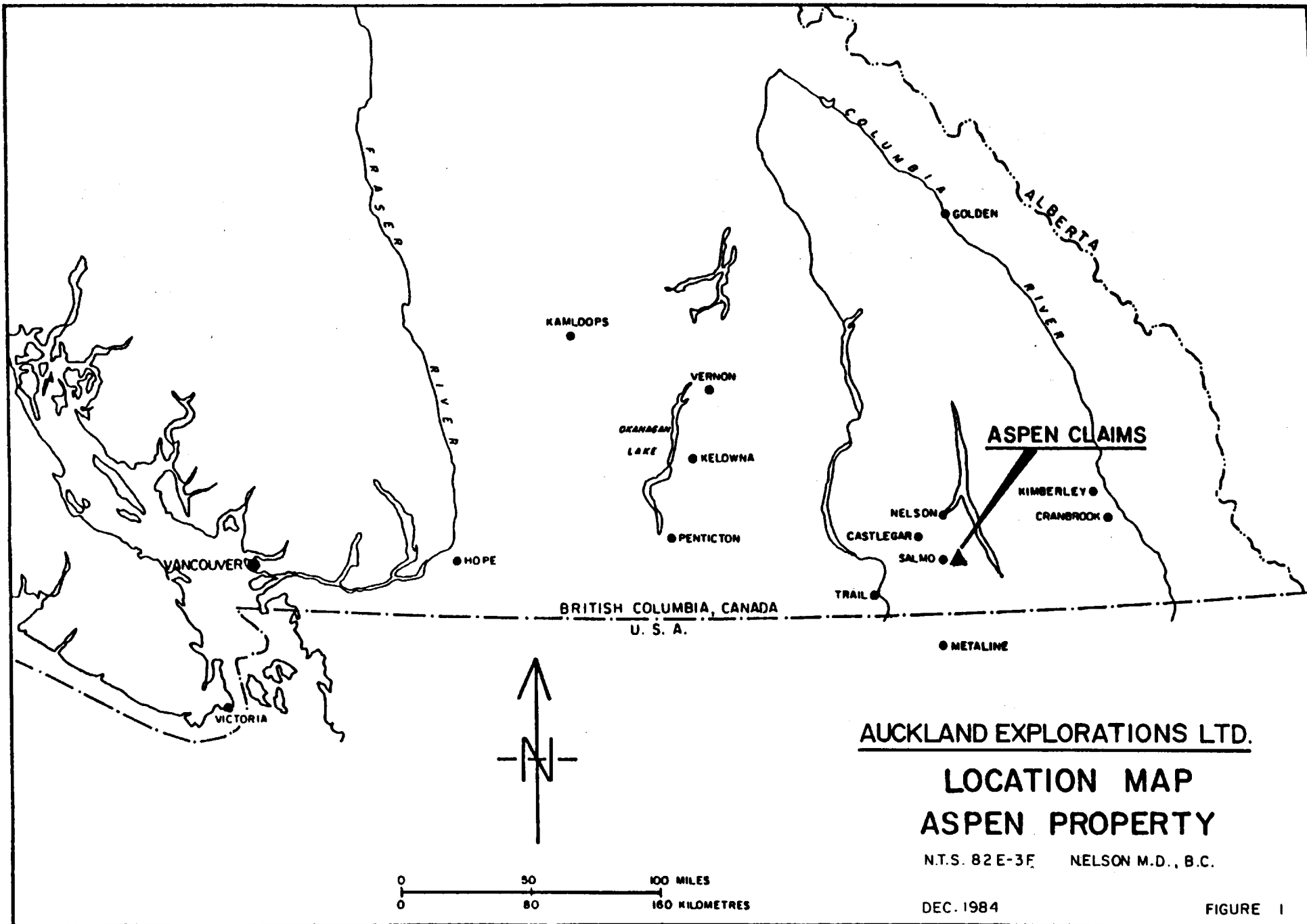
The Extotal Resources Inc. programme included geological mapping, systematic sampling, diamond drilling and petrological studies.

An underground and portal rehabilitation program with some road building, bulk sampling and metallurgical work was carried out from November through December, 1983. This work was sponsored by Chopper Mines Ltd. though J. Mirko covered part of the expenses. Chopper subsequently dropped its option on the property due to lack of financing. A total of \$79,000 was spent on this programme.

From September to December of 1984 further development work was conducted underground at the mine.

LOCATION AND ACCESS

The Aspen Property is located in the West Kootenays of south-eastern British Columbia, approximately 5 kilometres due east of the village of Salmo, B.C. It lies in the Nelson Mining District N.T.S. 82F/3E (Figure 1 and Figure 2). Salmo is the crossroads for the West Kootenays; Highway 6 runs north to Nelson, B.C. (30 km) and south to Spokane, Washington (220 km); Highway 3 runs west to Castlegar (25 km) and



east to Creston and Cranbrook, B.C. and Highway 3B to Trail (35 km) and Rossland. Access to the property is 6 kilometres south of Salmo to Sheep Creek and the H.B. Mine and thence by a gravel road (6 kilometres) to the property. Access is also possible from Porcupine Creek (north of Salmo) along a logging road to the northern part of the property. A trail joins the two roads across the Aspen Creek watershed.

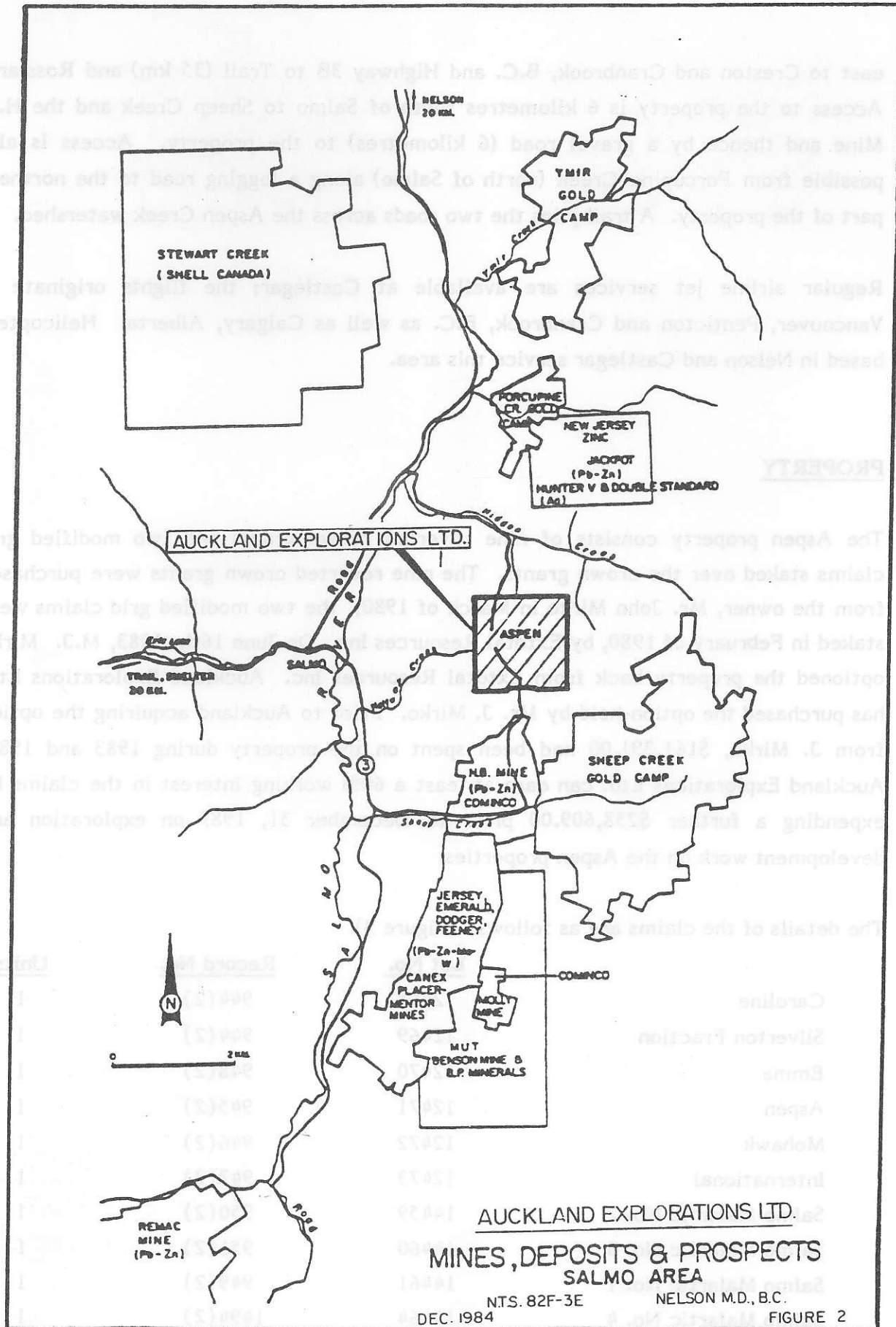
Regular airline jet services are available at Castlegar; the flights originate in Vancouver, Penticton and Cranbrook, B.C. as well as Calgary, Alberta. Helicopters based in Nelson and Castlegar service this area.

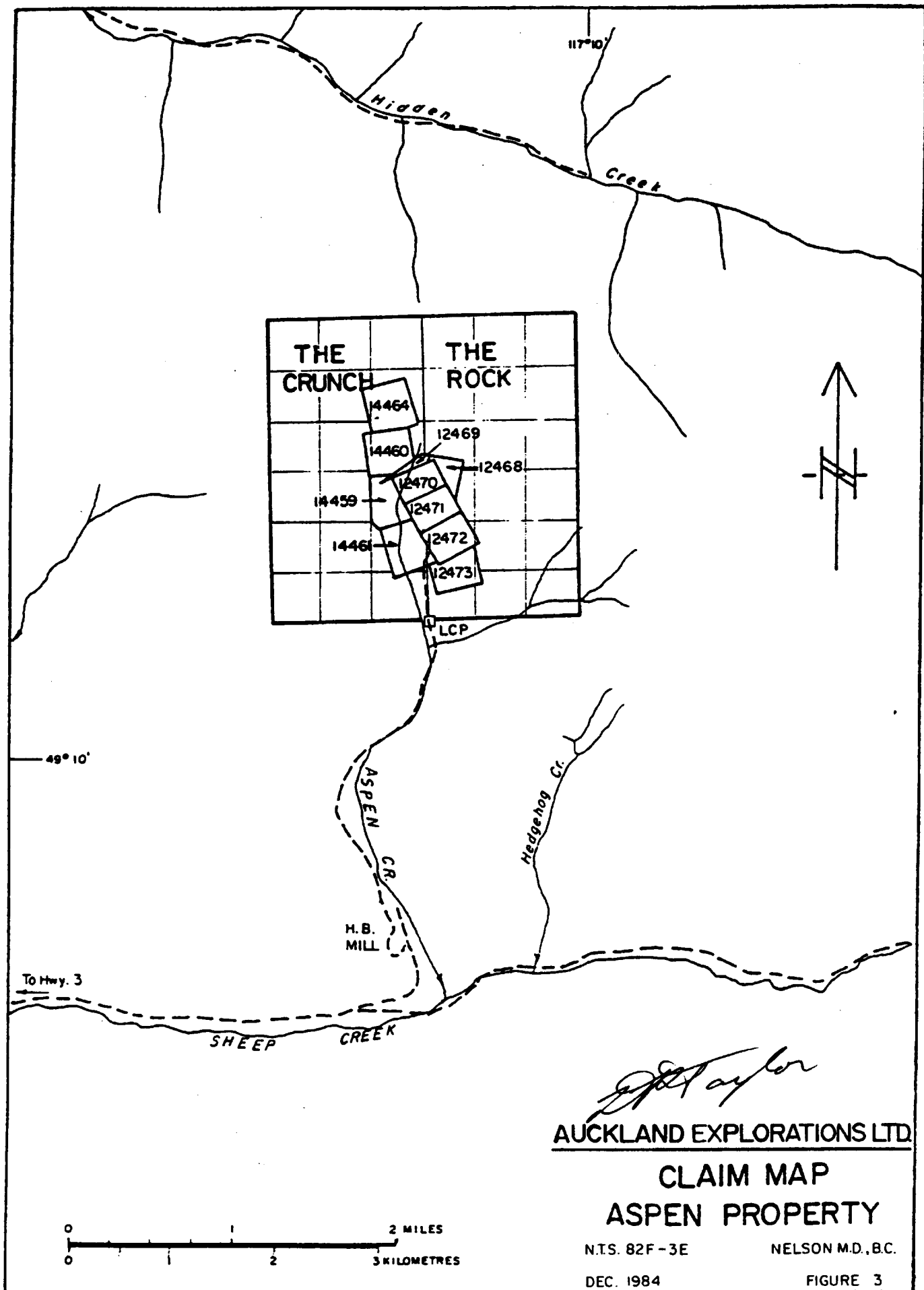
PROPERTY

The Aspen property consists of nine reverted crown grants and two modified grid claims staked over the crown grants. The nine reverted crown grants were purchased from the owner, Mr. John Mirko in March of 1980; the two modified grid claims were staked in February of 1980, by Extotal Resources Inc. On June 16th, 1983, M.J. Mirko optioned the property back from Extotal Resources Inc. Auckland Explorations Ltd. has purchased the option held by Mr. J. Mirko. Prior to Auckland acquiring the option from J. Mirko, \$161,391.00 had been spent on the property during 1983 and 1984. Auckland Explorations Ltd. can earn at least a 60% working interest in the claims by expending a further \$258,609.00 prior to December 31, 1987 on exploration and development work on the Aspen properties.

The details of the claims are as follows: (Figure 3).

	<u>Lot No.</u>	<u>Record No.</u>	<u>Units</u>
Caroline	12468	944(2)	1
Silverton Fraction	12469	944(2)	1
Emma	12470	948(2)	1
Aspen	12471	945(2)	1
Mohawk	12472	946(2)	1
International	12473	947(2)	1
Salmo Malartic No. 2	14459	950(2)	1
Salmo Malartic No. 3	14460	951(2)	1
Salmo Malartic No. 1	14461	949(2)	1
Salmo Malartic No. 4	14464	1494(2)	1





J.P. Taylor

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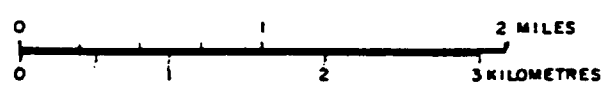
**CLAIM MAP
ASPEN PROPERTY**

N.T.S. 82F-3E

NELSON M.D., B.C.

DEC. 1984

FIGURE 3



The Crunch	--	1508(2)	18
The Rock	--	1507(2)	18

The Salmo Malartic No. 4 claim is owned outright by unregistered Bill of Sale from J.M. Mirko to Auckland Explorations Ltd.

The claims are in good standing by assessment filings until February 14, 1986.

HISTORY

Mineralization on the Aspen Group of crown-granted claims is reported to have been discovered in 1901 by P.F. Horton who was working with his partner, H.M. Billings on the H.B. Mine, three miles to the south. Minor trenching and prospecting was carried out until 1912 when the property was first mentioned in the Annual Report of the B.C. Minister of Mines. Despite the great amount of drifting and sinking, estimated to be about 5,000 feet, and numerous diamond drill holes, the property has produced and shipped only limited quantities of ore.

Due to the sporadic nature of the development work at the Aspen Property, the highlights of the work are presented below in tabular form:

1901	Discovery of silver mineralization by P.F. Horton.
1901-1912	Intermittent prospecting and sampling.
1912-1913	Upper A Crosscut (150 feet) driven by the Molly Gibson Company.
1914	Further underground work; no details.
1915	South Drift (Following zinc mineralization) started. Inclined shaft sunk. B Shaft sunk 20 feet. B Crosscut driven 50 feet.
1917	Stockpile of 7 tons of hand sorted ore. Department of Mines gives the following assay: gold - 0.68 oz/ton; silver 123.4 oz/ton; zinc 6%. Government road built. Work on the H Adit Area.
1918	Shipment of 7 tons of ore to Trail Smelter. Gold - 0.18 oz/ton, silver 62 oz/ton, zinc - 2.3%, copper 0.2%, lead - trace.
1920	Shipment of 7 tons of ore to Trail Smelter. Silver - 20 oz/ton.

- 1926 Shipment of 10 to 15 tons from H Adits; details unclear.
Silver - 60.4 oz/ton, lead 2%, zinc - 3%.
Road upgraded for truck use.
- 1926 Department of Mines reports a grab sample from H Adit: gold 0.02 oz/ton, silver 8.5 oz/ton, lead 24.2%, zinc - 6.6%.
Mineralization in the Winze reported to be "disseminated grey copper, chalcopyrite, galena and occasional native silver in a calcareous gangue".
- 1928-1929 2,000 feet of diamond drilling following a Radiore survey; details unavailable.
2,137 feet of adits completed.
- 1934 Work resumed.
Shipment of 18 tons to Trail Smelter.
Silver - 3.3 oz/ton, lead 4.2%, zinc - 3.6%.
(Northern Miner, September 27, 1934 reports net better than \$20/ton).
- 1934-1936 Work continues; bulk samples taken in 1936.
Salmo Malartic decides that sufficient ore blocked out and announces it is considering a mill (Northern Miner, December 31, 1936).
- 1947 The Deputy Minister of Mines of B.C. releases a report by Hartley Sargent, Government Geologist, disputing grades and tonnages of ore at Aspen. Report concludes that "low grade silver values extend over considerable widths but the grade appears to be subcommercial and there is an obvious lack of continuity. Higher grade siliceous ore limited to small widely spaced occurrences, too low grade and too small to be regarded as commercial ore bodies." (Northern Miner, February 11, 1937).
- Above refuted by Victor A. James, consultant to Salmo Malartic, with a release of metallurgical bulk sampling which indicates about 32,000 ton grading about 13 oz/ton silver.
- Further drifting and diamond drilling, details unknown.
- 1951 Sheep Creek Gold Mines Option, 3,019 feet of diamond drilling in four surface and seven underground holes.
- 1952 Cominco option; mapping and plane table survey.
- 1959 Cominco option.
Revised mapping.
Surface diamond drilling, three holes - 1,774 feet.
Underground diamond drilling, 20 holes - 1,596 feet.
- 1979 Lapsed crown grants acquired by John Mirko.
Research leads to rediscovery of the silver-bearing zone.

- 1980 February: Hartley Sargent's assays confirmed.
 March: Property acquired by Extotal Resources Inc. of Vancouver;
 further drilling, mapping and sampling delineate blocked out ore plus
 increase possible and probable reserves.
- 1983 Chopper Mines Ltd. and J. Mirko carry out extensive road
 rehabilitation, rebuild camp, rebuild portal area, lay track to first ore
 chute, take 5 bulk samples, one of which is metallurgically tested.
 April, Chopper Mines relinquishes option.
- 1984 Mr. J. Mirko resumes work on 'B' level. Construction of trestles at
 portal. Portal completed, track laid to second ore pass. 'B' level
 slashed and ditched to second ore pass. Camp and road, etc.
 rehabilitated. Option held by Mr. J. Mirko sold to Auckland
 Explorations Ltd.

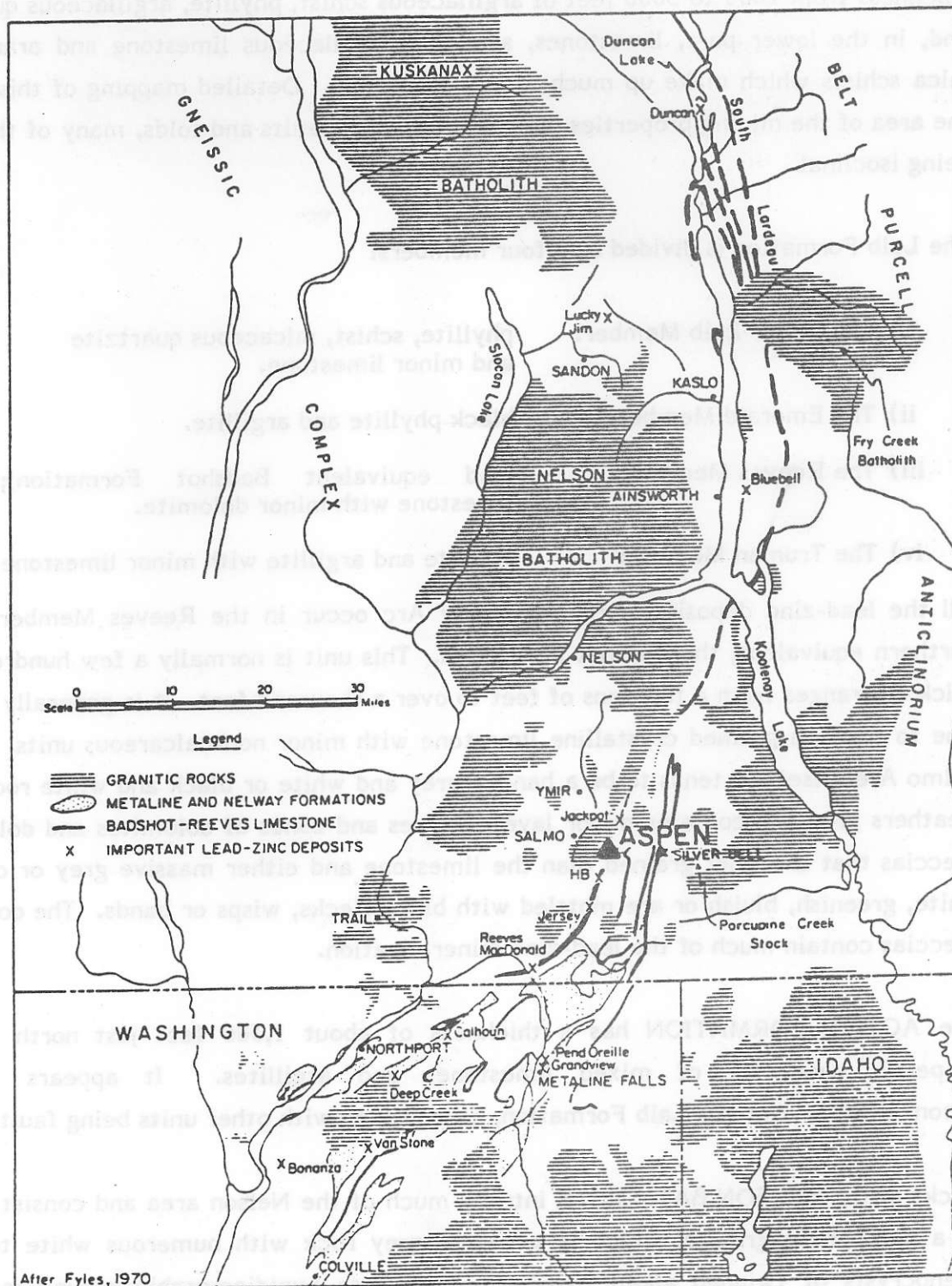
REGIONAL GEOLOGY

Lithology:

The Aspen Property is one of the many lead-zinc deposits and occurrences restricted to the Reeves Members of the Cambrian Laib Formation; this unit extends through the length of the Kootenay Arc for about 300 kilometres from Colville, Washington to north of Revelstoke, B.C. (Figure 4). The regional geology has been described extensively by Walker (1930), Fyles and Hewlett (1959), Little (1950, 1960) and Fyles (1970); much of the description below is derived from these sources.

The area contains sedimentary and igneous rocks, both intrusive and extrusive, ranging in age from Precambrian and Tertiary; the classification of the rocks in the area is largely the work of Fyles and Hewlett (1959). Though the description below is limited to the units that occur on the Aspen Property.

The RENO FORMATION is a 50 to 1000 foot thick unit, consisting for the most part of dark massive argillaceous quartzite, argillite and light brown micaceous schist. For the most part, quartzite tends to predominate in the lower part of the formation and the argillite and mica schist near the top. They are almost always exposed on the limbs of isoclinal folds that are overturned to the west so that the beds tend to strike northerly and dip steeply eastward.



Geologic map of the southern part of the Kootenay Arc. (Fyles,1970)

The satellite stocks of the Nelson batholith are more varied. The stock between Salmo and Hidden Creek is a coarse to medium grained non-porphyritic granite, containing abundant white to pink orthoclase and quartz with oligoclase and microcline with accessory hornblende biotite, muscovite, apatite, sphene, magnetite and pyrite.

The Nelson Plutonic rocks are generally considered to be Late Jurassic or Early Cretaceous.

Structure

On the regional scale, the Reeves Member of the Laib Formation appears to be on the western limb of a northeasterly-trending syncline but in detail the structure is extremely complex, characterized by minor folds related to more than one age of folding. The many limestone bands that occur in the mine belt are considered by Fyles and Hewlett (1959) to represent one or two bands repeated by folding. Folding in the area is believed to have commenced with isoclinal folding on north-trending axes. Fyles (1980) assigns the folding to two phases which have essentially parallel axes with low plunges. In the Salmo area, the Phase II folds are the most obvious, the Phase I folds being fairly obscure.

The Nelson batholith and satellite stocks have local zones of extreme deformation around their margins. In the vicinity of the Aspen Property, the Hidden Creek stock is surrounded by a zone in which the regional strike is deflected into near parallelism with the margin of the stock. Fyles (1970) suggests that the warps preceded and controlled the emplacement of the granite masses and that forceful intrusion deformed the wall rocks and produced local marginal zones of faults.

Metamorphism

The rocks of the Kootenay Arc range from a low to a high grade of regional metamorphism. Most of the Salmo Area rocks lie between the garnet and biotite isograd in the greenschist facies.

The zones of regional metamorphism are truncated by the plutons, each of which is surrounded by margins of thermal contact metamorphism. The calcareous rocks are

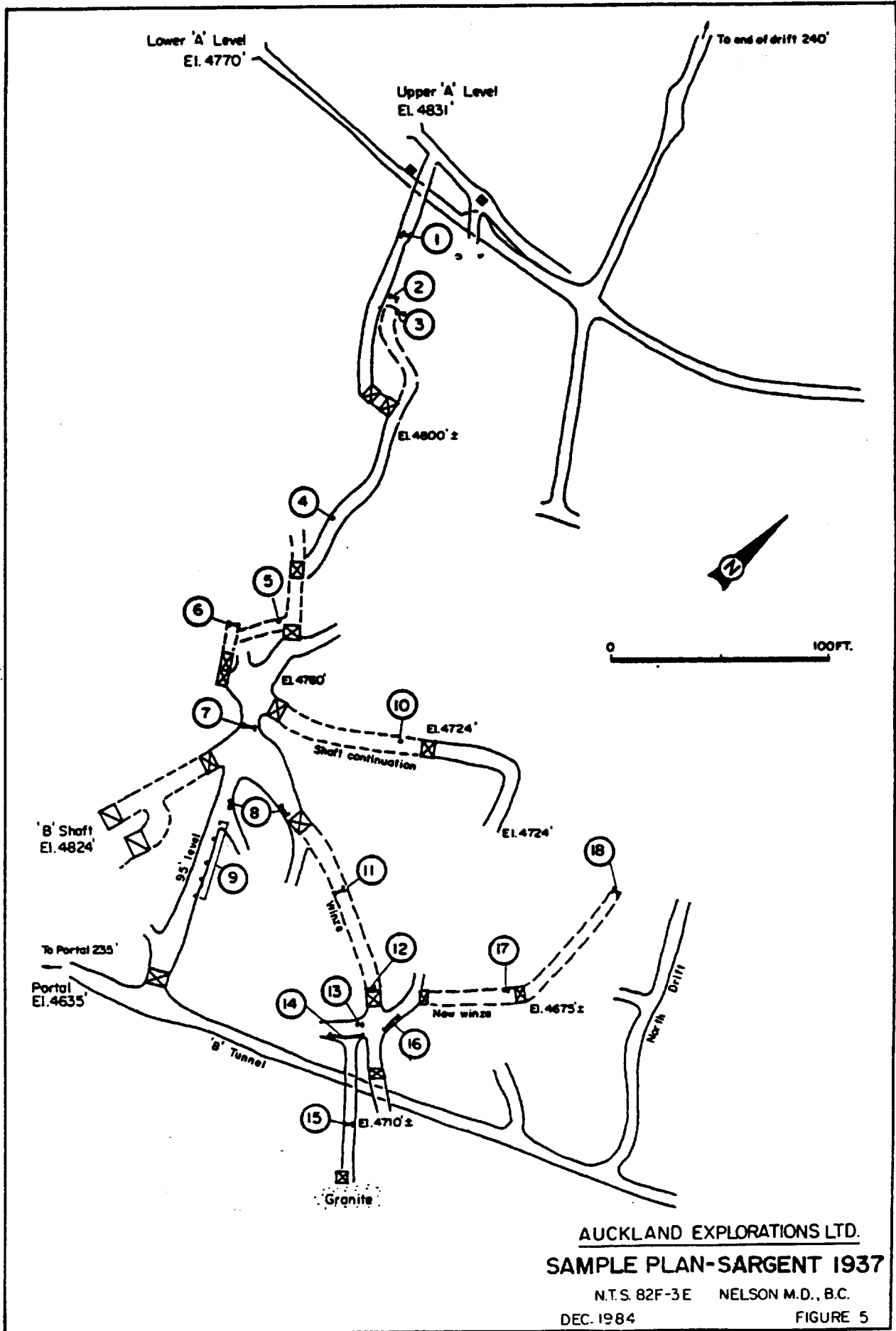
generally metamorphosed to medium to coarse grained crystalline limestone with a variety of silicate minerals such as garnets, diopside, tremolite, wollastonite and forsterite. These zones of thermal metamorphism may extend from a few hundred feet to as much as half a mile from the contact zone.

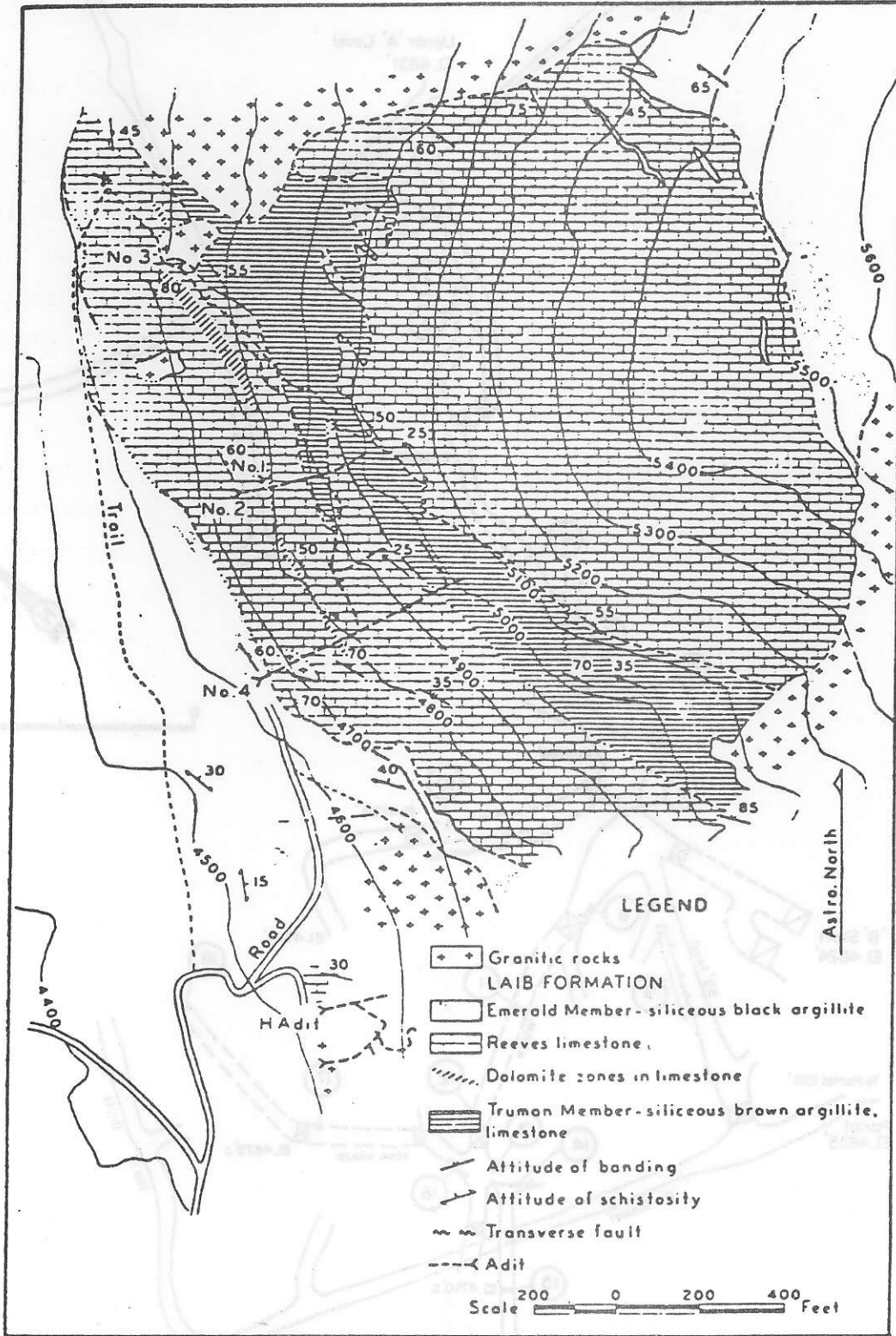
PROPERTY GEOLOGY

The Aspen Mine has a long history of work and of publications on that work dating back to its first mention in the 1912 B.C. Minister of Mines Annual Report. Various interpretations of the property have been forthcoming due to two facts; first, the property has variously been considered as a silver and as a zinc prospect, second, the mineralization had been considered to be of syngenetic and as of metasomatic origin. This report considers the property as a silver prospect and approaches the mineralization as a primarily syngenetic phenomenon.

The property is underlain by an overturned isoclinal syncline of Reeves Formation limestone with interbedded argillite and shale. The synclinal axis is northwesterly trending and appears to have a gentle plunge to the southeast. The entire property appears to be underlain at depth by granite, which outcrops in many areas around the periphery of the property and has been encountered in the underground workings and drill holes. The presence of this granite has led many people to postulate the mineralization on the property to be of metasomatic origin, particularly as it is often associated with silicification and diopside-tremolite alteration. Although there are very localised occurrences of high grade lead-zinc and skarn of definite metasomatic origin the bulk of the mineralization is almost certainly syngenetic in origin.

There are at present two distinct zones of mineralization known on the property, the silver zone and the zinc zone. The zinc zone lies in the northwestern part of the underground workings and has received considerable attention from Cominco in its exploration efforts. Cominco's work on this area outlined a gradationally defined zone containing some 40,000 tons of 3.16% zinc drill indicated material (Spence, 1959). The silver zone of current interest was for years essentially ignored prior to the 1980-1981 work programme of Extotal Resources Inc. Extotal performed extensive underground drilling and sampling of the silver zone which effectively defined and





Geological map of the Aspen property.
 (Fyles & Hewlett, 1959)

AUCKLAND EXPLORATIONS LTD.
 SAMPLE PLAN - ARGENT 1937
 H.T. 288-32 NELSON D.C.
 FIGURE 2

limited the silver mineralization and allowed fairly precise ore grade and tonnage calculations.

Dr. A.M. de Quadros, P.Eng., in his 1981 report calculates the reserves at 54,146 tons of 6.85 oz/ton of drill proven ore with minor lead-zinc and trace copper and gold values. The average thickness of this zone is 11.17 feet. Dr. de Quadros also specifies 13,428 tons of indicated tonnage of similar grade material. Checks by the author confirm Dr. de Quadros' figures.

The ore occurs in a dolomitised, silicified, occasionally brecciated limestone, basically conformable to the overall bedding. Mineralization is generally as distinct blebs of lead-zinc-silver mineralization (sphalerite, galena, tetrahedrite, pyrite and pyrrhotite) finely scattered through the rock; in places a certain amount of tectonic remobilisation on bedding has led to the formation of high grade pods of ore.

It is believed that the mineralization was emplaced in an offshore reef where diagenetic action caused dolomitisation and where microenvironmentally controlled silica fixing organisms contributed to the silicification of the rocks. Sulphide mineralization was deposited in the open spaces in the reef from charged water passing through the reef. Subsequent tectonic movement has concentrated mineralization in certain intrastratal formations in the whole rock. If the aforesaid is indeed the case, a new model for ore genesis may be defined in the Kootenay Arc carbonates.

In view of the above model further exploration work must be concentrated in the area of coincidental strata within the carbonates. The core area of argillites in the syncline serve as a useful marker and suggest continued exploration off both flanks of the argillite both to the northeast and southwest for similar mineralization. The likelihood of the discovery of further bodies of ore similar to the currently known silver zone should be considered good and probably achievable by surface prospecting and diamond drilling techniques.

One obvious additional place to conduct further exploration work is in the H Adit area where limited occurrences of relatively high grade material are recorded. The H adit area is currently completely caved and inaccessible.

Recent Work Programmes

Since the shift of emphasis of interest on the Aspen Property to the silver-zone in 1980, considerable work has been performed both geologically and physically.

Extotal Resources Inc. in their 1980-81 programme spent some \$320,000 on geological mapping, sampling, petrological and diamond drilling work. A total of 6,820 feet of drilling in 74 underground holes was completed by Extotal. The camp and the mine were rehabilitated to allow for this work. A complete programme of underground sampling and mapping was also conducted.

The property was then idle until 1983 when Chopper Mines Ltd. re-evaluated the Extotal work and rehabilitated the camp. At this time the B portal timbering was completely replaced after slashing the portal to allow for the installation of 400 feet of rail to the first ore pass and facilitate muck haulage. At this time five bulk samples were taken and one was run by Bacon Donaldson and Associates. The bench test showed that a 300 mesh grind should be used on this ore and that a concentration ratio of 25:1 could be expected on milling the ore. Expenditures on this programme by Chopper and J. Mirko amounted to \$79,000.

In 1984 a work programme was initiated by J. Mirko to completely weather and snowslide proof the B adit and a trestle was built to the ore dump. About 150 tons of waste was removed from the first ore pass and track was extended 100 feet to the second ore pass which was partially cleaned out. The road to the mine was also much improved in 1984. Expenditures in 1984 were \$83,000 on the Aspen property.

Unfortunately, all of the work programmes to date have been in the colder months precluding any significant prospecting work - a much needed contingency on this ground.

CONCLUSIONS

The Aspen property is located in the Reeves limestone which is generally underlain by Nelson Batholith granites.

Zinc-lead and silver-lead-zinc mineral zones have been opened by underground workings on the Aspen Property. The silver zone is known to have 54,000 tons of 6.85 oz/ton silver ore drill proven and 13,400 tons of ore drill indicated.

The property has never been thoroughly prospected on surface for ore bodies such as the silver zone is now understood to be. There is considered to be a good possibility of discovering further mineralized zones similar to the silver zone in strata stratigraphically similar to the silver zone host rocks. The argillite core portion of the Reeves limestone syncline will serve as a useful marker bed in directing further prospecting. Prospecting and geochemical soil and rock sampling discoveries should be trenched and/or diamond drilled to further define them. All further work should be directed toward the search for new zones of silver mineralization.

The surface and underground equipment needs for further search are essentially in place on the property.

Preliminary bench testing of a bulk sample has shown the ore to be amenable to flotation milling. Further bench testing of available bulk samples collected in 1983 particularly at finer grinds should further refine mill planning.

RECOMMENDATIONS

A programme of limited expenditure should first be implemented on the Aspen property directed to the location of bodies of mineralization similar to the known ore-body now called the silver zone.

Sufficient surface mapping is available to direct such work. Projected work should consist of very careful and systematic surface prospecting in conjunction with limited geochemical and fairly extensive rock geochemical and rock sampling surveys. It is essential that this work be initiated during the summer months.

Proficient and experienced prospectors should be made familiar with the characteristics of the present ore and put to work in the suggested areas in the appropriate stratigraphic section. The section of the property in the H adit area and due south from there should also be thoroughly prospected and soil sampled (there is considerable overburden in this lower elevation area). Whole rock geochemical surveying should be performed in favourable areas of outcrop in the favourable strata of the higher parts of the property.

Some provision should be made for surface trenching (with plugger and powder) of any areas of interest discovered and a limited provision should be made for some rehabilitation, opening, and drilling in the H adit area.

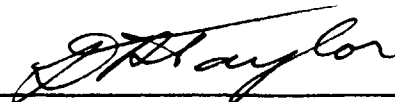
Further metallurgical testing of a more sophisticated type should be performed on the bulk samples taken in the 1983 work programme.

Conditional to the results of the above programme further work will be warranted on the recommendation of a Consulting Geologist for further diamond drilling and the possible underground opening of any newly discovered silver mineralization.

Cost Estimates of the Phase I Programme Recommended are:

2 Prospectors (3 weeks)	\$ 6,000
2 Helpers (3 weeks)	4,000
1 Geologist (2 weeks)	4,000
Assays - rock and geochemical	8,000
Bulldozer - say 20 hours @ \$80/hour	1,600
Drilling - say 250 feet @ \$15/foot	3,750
Equipment	3,000
H adit Opening	4,000
Explosives	1,000
Geochemical Survey	3,000
Food and Supplies	5,000
Supervision	3,000
Engineering	4,000
Metallurgical Testing	<u>3,500</u>
	53,850
Contingencies @ 10%	<u>5,385</u>
Total	\$ 59,235
Say	<u><u>\$ 60,000</u></u>

Respectfully Submitted



D.P. Taylor, P.Eng.

Vancouver, B.C.
20 December, 1984

CERTIFICATE

I, DAVID P. TAYLOR, maintaining offices at Suite 480, 625 Howe Street, Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geologist, conducting business from the above address.
2. I have practiced as an exploration geologist for the past sixteen years.
3. I am a graduate, (M.Sc.) of the Royal School of Mines, University of London, England, 1971.
4. I am a member, in good standing, of the Association of Professional Engineers of British Columbia.
5. I have no interest, either direct or indirect, nor do I expect to receive any interest, in the property subject of this report, nor in the securities of Auckland Explorations Ltd.
6. I consent to the use of this report in any Statements of Material Facts by Auckland Exploration Ltd.

DATED at Vancouver, British Columbia, this 20th day of December, 1984.



David P. Taylor, P.Eng.
Consulting Geologist

BIBLIOGRAPHY

- de Quadros, A.M. (1980): Report on the Aspen Reverted Crown Grants for Extotal Resources Inc. Prospectus August 11, 1980.
- Drysdale, C.W. (1917): Ymir Mining Camp, British Columbia, Memoir 94, Geol. Surv. Canada.
- Fyles, J.T. (1970): Geological Setting of the Lead-Zinc Deposits in the Kootenay Lake and Salmo Areas of British Columbia in Lead Zinc Deposits in the Kootenay Arc, editor: A.E. Weissenborn, Bull 61, Washington Dept. of Mines and Geology, pp. 45-53. Olympia.
- Fyles, J.T. and C.G. Hewlett (1959): Stratigraphy and Structure of the Salmo Lead-Zinc Area. Bull 41, B.C. Dept. of Mines, Victoria.
- Green, L.H. (1954): Wall rock alteration at certain lead zinc replacement deposits in limestone, Salmo Map Area. Bull. 29, Geol. Surv. of Canada, Ottawa.
- James, V.A. (1937): Letter to Mr. R.V. Arntfield, President, Salmo Malartic Mines
b) Letter to Editor, Northern Miner, Northern Miner, February 18, 1937.
- Little, H.W. (1950): Salmo Map Area, British Columbia. Paper 50 - 19, Geol. Surv. of Canada, Ottawa.
- _____ (1960): Nelson Map Area, West Half British Columbia (82F W½). Memoir 308, Geol. Surv. of Canada, Ottawa.
- McKinstry, H.E. (1948): Mining Geology, Prentice-Hall, New York.
- Nelson, J. (1980): Petrological Report, Aspen Rock Samples, unpublished (Appendix II).
- Ohle, E.L. (1970): Mississippi Valley Type Ore Deposits - A General Review in Lead-Zinc Deposits of the Kootenay Arc, editor A.E. Weissenborn, Bull 61, Washington Department of Mines and Geology, pp. 5-16; Olympia.
- Sargent, H. (1936): Aspen Mine, Unpublished Report, B.C. Dept. of Mines Open File NTS 82F/SW-1. Victoria.
- Sheppard, E.P. (1983): Report on the Aspen Silver Property, Salmo, Nelson Mining District, B.C., Prepared for Chopper Mines Ltd.
- Spencer, B.E. (1959): Aspen Property - 1959 Exploration. Unpublished Report, Cominco, Vancouver.
- Walker, J.F. (1929): Mineral Developments in the Salmo Map Area. Summary Report. Geol. Surv. of Canada, pp. 266-268.
- _____ (1934): Geology and Mineral Deposits of the Salmo Map Area. Geol. Surv. of Canada, Memoir 172, pp. 65-67.