GEOLOGICAL, LITHOGEOCHEMICAL

AND

TRENCHING REPORT

ON THE

CABIN EAST GROUP

(CABIN 1 - 8 CLAIMS)

COLUMBIA PROJECT

N.T.S. 82G/2E

49°05'20" NORTH, 114°35'40" WEST

FLATHEAD RIVER AREA

FORT STEELE MINING DIVISION

SOUTHEASTERN BRITISH COLUMBIA

By

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March 15, 1990

Owner: Formosa Resources Corporation
Operator: Formosa Resources Corporation

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COLUMBIA PROJECT

GEOLOGICAL, LITHOGEOCHEMICAL
AND TRENCHING REPORT
ON THE
CABIN EAST CLAIMS

SUMMARY

The Cabin East claims are located in the Cabin Creek - Flathead River area of the Rocky Mountains, Fort Steele Mining Division, southeastern British Columbia (Figure 1). The claims are approximately 58 kilometres southeast of the town of Fernie, B.C. and are accessed via an extensive network of logging roads.

The Cabin East claims consist of the Cabin 1 to 8 two-post claims. The claims are 100% owned and operated by Formosa Resources Corporation, subject to a 5% retained Net Royalty interest. Boundary Drilling Inc. was enlisted to undertake the exploration program.

The claims were staked as part of the Columbia Project, whose primary objective was to evaluate the grade and continuity of the basal Fernie phosphate horizon in terms of establishing its potential as a large tonnage P_2O_5-Y resource. In 1989, approximately $82,635 were spent on reconnaissance and detailed geological mapping, hand trenching, sampling, backhoe trenching and assaying for the entire Columbia Project. A total of $5,784 were spent on the Cabin East claims. In all, 5 rock samples were taken from outcrop, from 2 hand trenches and 3 back-hoe trenches. Samples were analyzed for P_2O_5 (by gravimetric assay), yttrium (by XRF) and for 34 trace elements, including some of the rare earths (by INAA and/or ICP).

The property is predominantly underlain by a sequence of Late Paleozoic to Mesozoic strata (Permian to Jurassic) that were deposited in the Alberta Trough under marine conditions and were subsequently deformed during the Late Cretaceous. Phosphatic rocks occur in a number of stratigraphic intervals within this sequence; however, the thickest and most continuous phosphate horizon was developed at the base of the Jurassic Fernie Group. The basal Fernie phosphatic strata are generally one to two metres thick and contain unusually high concentrations of yttrium.

Phosphatic basal Fernie strata were located on the property and one grab sample collected contained 30.85% P_2O_5 and 930 ppm Y. Hand trenching and backhoe trenching, however, were unable to expose a complete section and evaluation of the economic potential of the property is therefore difficult at this time.

1. INTRODUCTION - PERSPECTIVES ON THE PHOSPHATE INDUSTRY

Canada imported 2.39 million tonnes of phosphorite in 1986, approximately 80 per cent of which was used in the production of fertilizer. Other products which require the use of phosphorus include organic and inorganic chemicals, soaps and detergents, pesticides, insecticides, alloys, animal food supplements, ceramics, beverages, catalysts, motor lubricants, photographic materials and dental and silicate cements (Barry, 1987). To date, there are no mines producing phosphate rock in Canada; approximately 55 million tonnes per annum are produced in the United States (Stowasser, 1989). Approximately 50 per cent of the phosphate rock imported into western Canada comes from Florida, the remainder being supplied from the Western U.S. (Barry, 1987). The majority of phosphate rock imported into eastern Canada is also from Florida; minor amounts have been imported from Togo, Tunisia and Morocco. Resources in Florida are rapidly being depleted (Stowasser, 1988); some experts feel that the western U.S. sources will not be able to meet the demand when Florida becomes exhausted, which suggests a possible niche for a new producer.

Phosphate rock produced in the U.S. is classified as acid or fertilizer grade, more than 31 per cent P_2O_5; furnace grade, 24 to 31 per cent P_2O_5; and beneficiation grade, 18 to 24 per cent P_2O_5. Acid grade rock is used directly in fertilizer plants, furnace grade rock is charged to electric furnaces and beneficiation grade rock is upgraded to acid or furnace feed (Stowasser, 1985).

Phosphate rock mined in the western United States (Idaho, Montana, Wyoming, Utah) is from the Retort and Meade Peak members of the Permian Phosphoria Formation. The majority of mines are strip mining operations with ore zones ranging from 9 to 18 metres thick, with an average grade of 21.3 per cent P_2O_5. Overburden thickness is commonly 5 to 10 metres (Fantel et al., 1984). Cominco American operates an underground phosphate mine in Montana in which the phosphate horizon is 1 to 1.2 metres thick and has an average grade of >31 per cent P_2O_5. Most western U.S. phosphate ore is beneficiated by crushing, washing, classifying and drying (Stowasser, 1985). Phosphates mined in Florida and south Carolina are from the Miocene Hawthorne Formation and the younger, reworked deposits of the Bone Valley Formation. Ore thickness ranges from 3 to 8 metres, with overburden of 3 to 10 metres. Average grade is 7 per cent P_2O_5. Flotation processes are used to beneficiate the ores. Phosphates mined in Tennessee have a minimum cutoff grade of 16 to 17.2 per cent P_2O_5 and a minimum thickness of 0.6 to 1.2 metres (Fantel et al., 1984).

Currently, there is no byproduct recovery of yttrium from any of the U.S. operations. Phosphoria Formation phosphorites from the western phosphate field contain an average of 300 ppm Y; phosphorites from North Carolina and Florida contain an average of 235-300 ppm Y; and phosphorites from Tennessee contain an average of 63 ppm Y (Altschuler, 1980). The worldwide average yttrium value in phosphorites is 260 ppm (Altschuler, 1980).

The phosphorite beds in the Jurassic Fernie Group are thin (less than 2 metres, Butrenchuk, 1987a) relative to most phosphorites mined in the United States. As with most phosphate ores mined in the United States, Fernie phosphorites would require beneficiation to produce an acid grade product. The Fernie phosphorites have anomalous yttrium concentrations with respect to most other sedimentary phosphate deposits. If it proves feasible to recover yttrium during the production of phosphoric acid (see Appendix 4) as has been suggested by some researchers (Altschuler et al., 1967) the economics of exploiting the Fernie Group basal phosphorite horizon will become significantly more attractive.

2. PROPERTY DESCRIPTION

2.1 LOCATION, ACCESS AND PHYSIOGRAPHY

The Cabin East claims are located in the Cabin Creek - Flathead River area, Fort Steele Mining Division, 58 kilometres southeast of the town of Fernie (Figure 1) in southeastern B.C. The claims are on the north slope of Dally Hill, south of Cabin Creek and can be be accessed by conventional two-wheel drive vehicle. The claims can be reached from Fernie by taking Highway 3 south for 12.5 kilometres to the Morrissey turnoff. Morrissey Road is followed for 5 kilometres to River Road. River Road is then taken for 1.5 kilometres to the Lodgepole Main Haul Road; this road is then followed, south and easterly, for 27 kilometres at which point it goes over a high pass and then follows Harvey Creek (as the Harvey Creek Main Haul Road) for another 16 kilometres. The Harvey Creek Road ends and the Flathead River Main is followed south for 21 kilometres along the west bank of the Flathead River. The Cabin Creek Road heads west from the Flathead River Main about 200 metres before the Flathead Road crosses Howell Creek. Cabin Creek Road is followed for 7.5 to 8 kilometres. A good fork to the south is taken across Cabin Creek for a little over 1

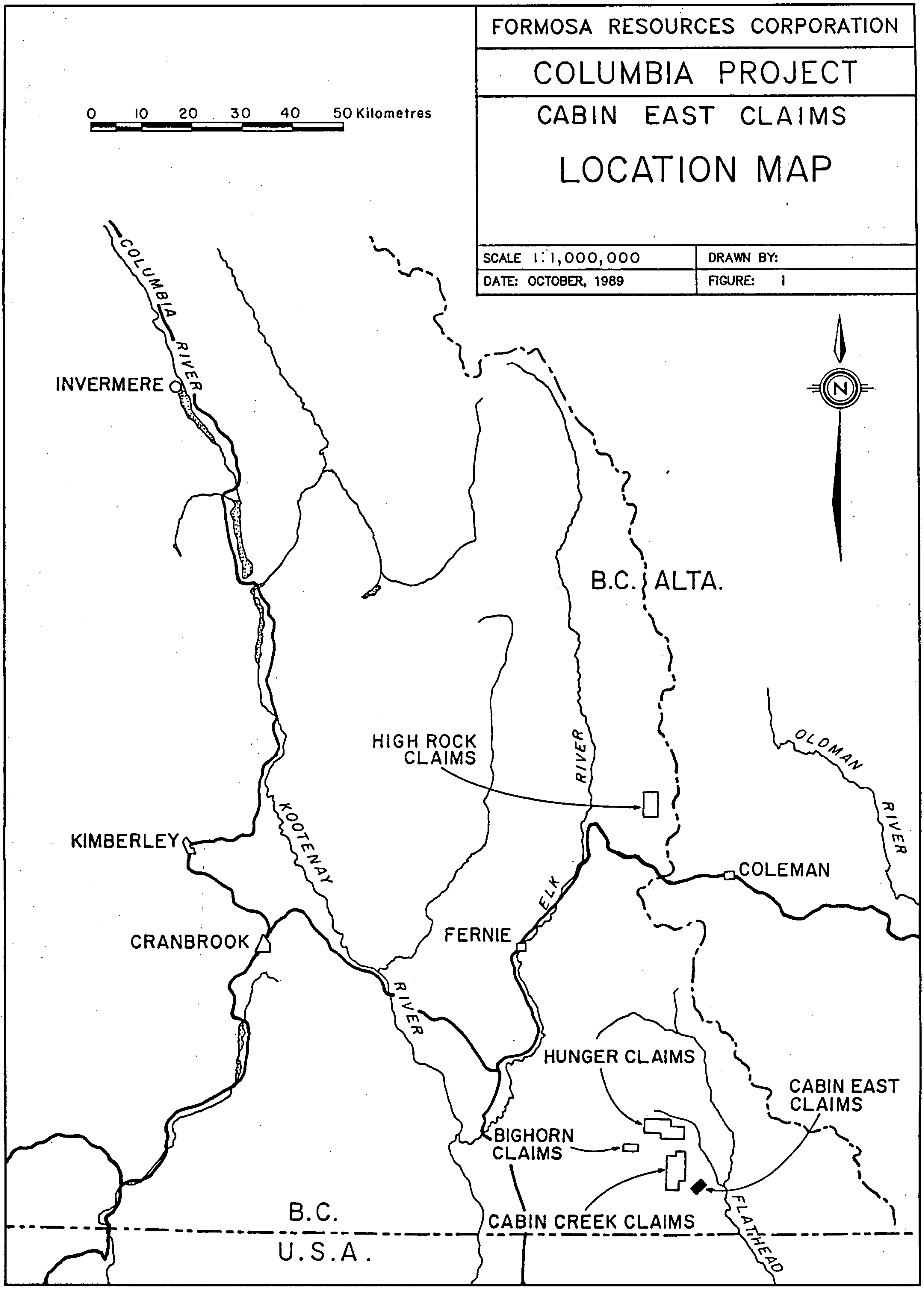
FORMOSA RESOURCES CORPORATION

COLUMBIA PROJECT

CABIN EAST CLAIMS

LOCATION MAP

SCALE 1:1,000,000	DRAWN BY:
DATE: OCTOBER, 1989	FIGURE: 1



kilometre; the first major fork to the southeast (left) is followed for two kilometres to reach the property.

Elevations on the property range from 1550 metres (5100 feet) to 1800 metres (5900 feet). Part of the property has been recently clearcut and now is covered by first growth plants and some alders. Stands of spruce and fir are present on the rest of the property.

2.2 CLAIMS

The Cabin East group (Figure 2) consists of the Cabin 1 through 8 two-post claims as follows:

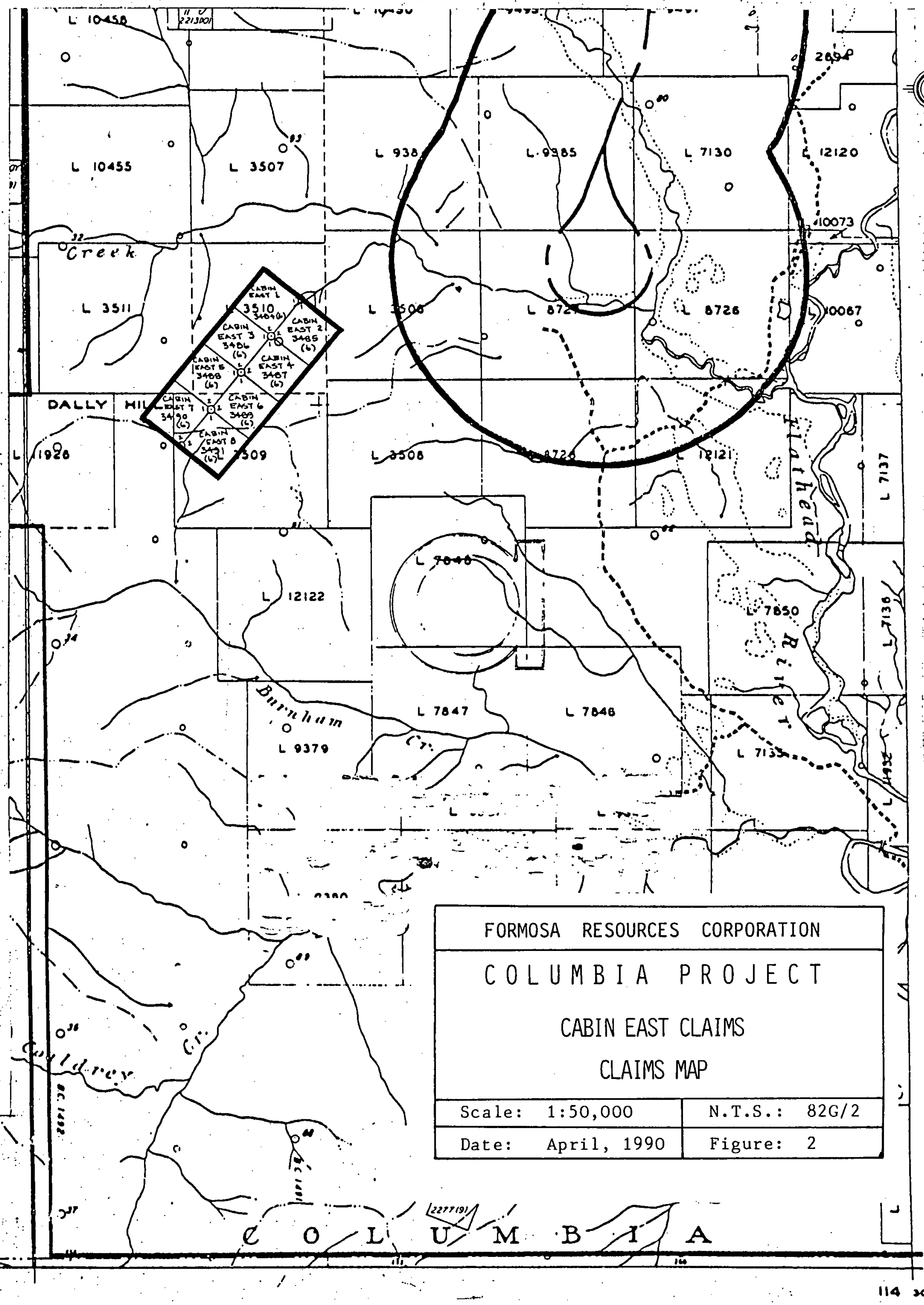
CLAIM NAME	RECORD NO.	EXPIRY* (D/M/Y)
Cabin East 1	3484	12/06/1994
Cabin East 2	3485	12/06/1994
Cabin East 3	3486	12/06/1994
Cabin East 4	3487	12/06/1994
Cabin East 5	3488	12/06/1994
Cabin East 6	3489	12/06/1994
Cabin East 7	3490	12/06/1994
Cabin East 8	3491	12/06/1994

Formosa Resources Corporation is operator of the property and holds 100 per cent title, subject to a 5% retained Net Profits Royalty interest. Boundary Drilling Inc. was enlisted to carry out the exploration program.

2.3 PROPERTY HISTORY

Phosphatic horizons at the base of the Jurassic Fernie Group in southeastern British Columbia were discovered in 1925 (Telfer, 1933) and have been the subject of periodic exploration by Cominco (Kenny, 1977) and others since that time. Phosphate strata in the Cabin Creek area were most recently (in the late 1970's and early 1980's) explored by Imperial Oil Limited (Van Fraassen, 1978) and First Nuclear Corporation Limited (Hartley, 1982). First Nuclear Corporation found a phosphorite section on what are now the Cabin East claims that contained 29.73 per cent P_2O_5 across 1.9 metres and was traceable along strike for approximately

*Upon acceptance of this report



FORMOSA RESOURCES CORPORATION

COLUMBIA PROJECT

CABIN EAST CLAIMS

CLAIMS MAP

Scale: 1:50,000	N.T.S.: 82G/2
Date: April, 1990	Figure: 2

500 metres (Hartley, 1982). The phosphate potential of the area was also addressed in a number of recent academic and government studies (Butrenchuk, 1987a; 1987b; Macdonald, 1985; 1987; Marcille-Kerslake, 1990).

Most previous work solely addressed the phosphate potential of the basal Fernie Group. First Nuclear Corporation (Hartley, 1982) briefly addressed the potential for trace element by-product recovery, concentrating on uranium and vanadium. It was discovered that uranium is generally present in the phosphorites in amounts less than 100 ppm and vanadium values were generally less than 200 ppm. In the course of their work, First Nuclear Corp. discovered anomalous yttrium values (the average of five samples containing in excess of 1% P_2O_5 was 570 ppm yttrium, Hartley, 1982). Later government analytical work confirmed the highly anomalous yttrium concentrations of the basal Fernie phosphorites (Butrenchuk, pers. comm., 1989; and in prep.).

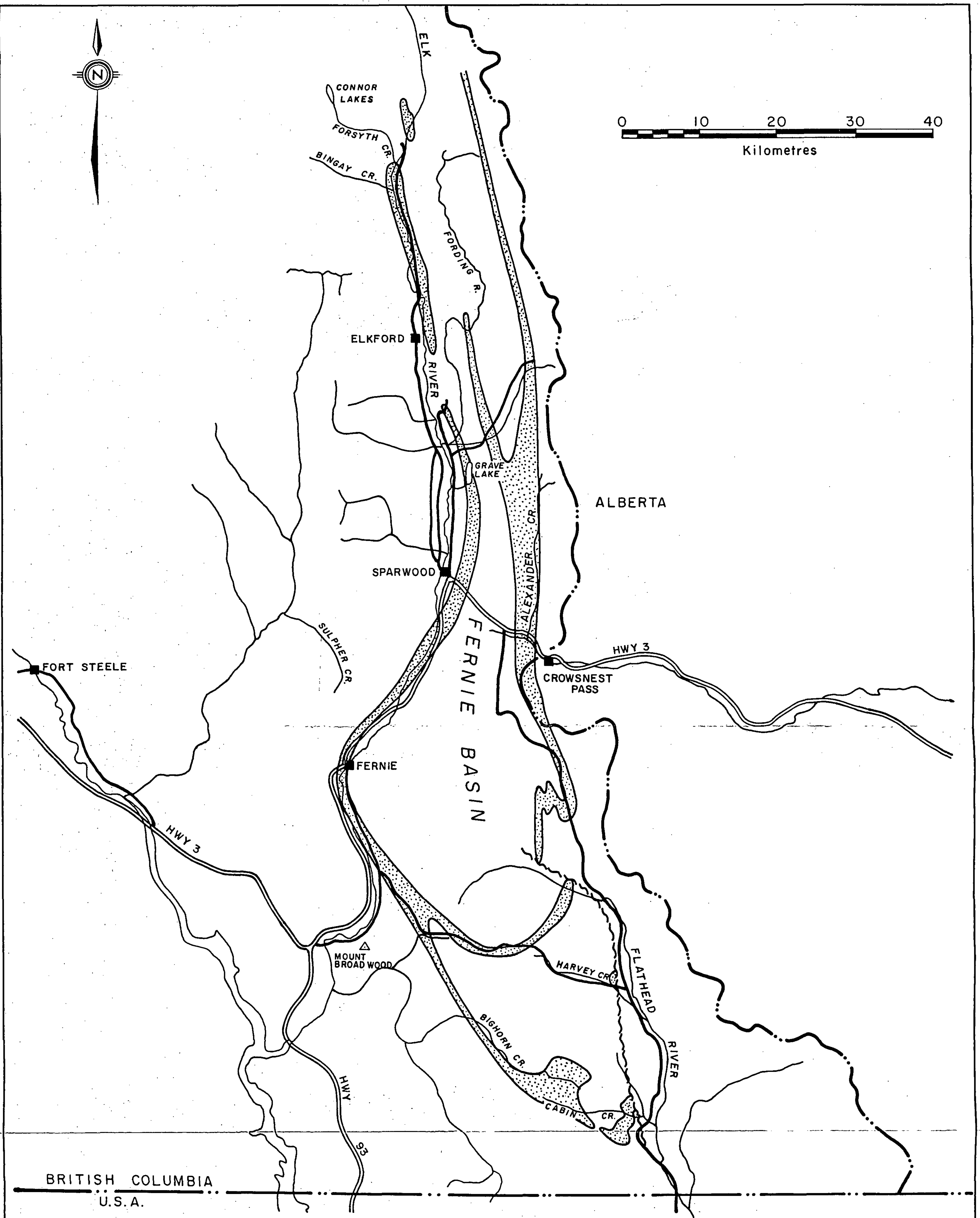
Formosa Resources Corporation began exploration for yttrium and phosphate in the area in the spring of 1989 and staked a number of claims, including the Cabin East claims, as part of the Columbia Project. The primary objective of this project was to evaluate the grade and continuity of the basal Fernie phosphate horizon in terms of establishing its potential as a large tonnage P_2O_5-Y resource.

3. GEOLOGY

3.1 REGIONAL GEOLOGY

The Cabin Creek area is underlain by a series of predominantly marine strata which range in age from Devonian to Jurassic, and non-marine fluvio-deltaic sediments of late Jurassic to Cretaceous age. Reconnaissance geological mapping in the region (Newmarch, 1953; Price, 1965; 1964; 1962; 1961) has shown that these strata are now exposed in a broad, doubly plunging synclinorium, commonly referred to as the Fernie Basin. This synclinorium is broadly delineated by the distribution of the Jurassic Fernie Group in southeastern British Columbia (Figure 3); the structure is complicated by second order folds and later faults, both easterly directed thrusts and west-side-down normal faults.

Phosphatic horizons (Figure 4) are known to occur at a number of intervals within the stratigraphic section (Butrenchuk, 1987a; Kenny, 1977; Macdonald, 1987; Telfer,



LEGEND:

OUTCROP OF FERNIE GROUP

FAULT

FORMOSA RESOURCES CORPORATION

COLUMBIA PROJECT

DISTRIBUTION OF FERNIE GROUP STRATA IN SOUTHEASTERN B.C.

(Note: Modified from Butrenchuk, 1987a)

NTS: 82 G/2	DRAWN BY:
DATE: MARCH, 1990	FIGURE: 3

Age	Group/Formation (Thickness,metres)	Lithology	Phosphatic Horizons	Thickness (metres)	Grade (% P_2O_5)
Cretaceous	Kootenay Fm.	-grey to black carbonaceous siltstone and sandstone; nonmarine;coal			
Jurassic	Fernie Gp. (+244)	-black shale,siltstone,limestone; marine to nonmarine at top -glauconitic shale in upper section -belemnites; common fossil	-approximately 60 metres above base low-grade phosphate bearing calcareous sandstone horizon or phosphatic shale -Bajocian -basal phosphate in Sinemurian strata; generally pelletal/oolitic; rarely nodular;1-2 metres thick; locally two phosphate horizons; top of phosphate may be marked by a yellowish-orange weathering marker bed.	1-2	11-30
		regional uncomformity			
Triassic	SPRAY RIVER GP.: Whitehorse Fm.	-dolomite,limestone,siltstone			
	SPRAY RIVER GP.: Sulphur Mntn. Fm. (100-496)	-grey to rusty brown weathering sequence of siltstone, calcareous siltstone and sandstone,shale, silty dolomite and limestone	-nonphosphatic in southeastern British Columbia		
		regional unconformity			
Permian	ROCKY MOUNTAIN SUPERGROUP; ISHBEL GROUP: Ranger Canyon Fm. (1-60)	-sequence of chert,sandstone and siltstone;minor dolomite and gypsum;conglomerate at base -shallow marine deposition	-upper portion-brown,nodular phosphatic sandstone;also rare pelletal phosphatic sandstone (few centimetres to +4 metres) -basal conglomerate-chert with phosphate pebbles present (≤1 metre)	0.6 0.5-1.0	9.5 13-18
		unconformity			
	Ross Creek Fm.(90-150)	-sequence of siltstone,shale chert,carbonate and phosphatic horizons areally restricted to Telford thrust sheet -west of Elk River,shallow marine deposition	-phosphate in a number of horizons as nodules and finely disseminated granules within the matrix -phosphatic coquinoid horizons present	0.4-1.0	1.7-6.0
	Telford Fm. (210-225)	-sequence of sandy carbonate containing abundant brachiopod fauna;minor sandstone -shallow marine deposition	-rare,very thin beds or laminae of phosphate;rare phosphatized coquinoid horizon	0.3	11.4
	Johnson Canyon Fm. (1-60)	-thinly bedded,rhythmic sequence of siltstone,chert,shale, sandstone and minor carbonate; basal conglomerate -shallow marine deposition	-locally present as a black phosphatic siltstone or pelletal phosphate -phosphate generally present as black ovoid nodules in light coloured siltstone;phosphatic interval ranges in thickness from 1-22 metres -basal conglomerate (maximum 30 cm thick) contains chert and phosphate pebbles	0.2-0.3 1-22 1-2	3.0-4.0 0.1-11.0 14.2-21.2
		regional unconformity			
Pennsylvanian	SPRAY LAKES GP.: Kananaskis Fm. (±55)	-dolomite,silty,commonly contains chert nodules or beds	-locally,minor phosphatic siltstone in uppermost part of section		
	SPRAY LAKES GP.: Tunnel Mntn Fm. (±500)	-dolomitic sandstone and siltstone			
Mississippian	Rundle Gp. (±700)	-limestone,dolomite,minor shale, sandstone and cherty limestone			
	Banff Fm. (280-430)	-shale,dolomite,limestone			
Devonian-Mississippian	Exshaw Fm. (6-30)	-black shale,limestone -areally restricted in south-eastern British Columbia	-an upper nodular horizon -phosphatic shale and pelletal phosphate 2-3 metres above base -basal phosphate <1 metre thick		
Devonian	Palliser Fm.	-limestone			

FIGURE 4: STRATIGRAPHIC SUMMARY INCLUDING PHOSPHATE-BEARING HORIZONS IN SOUTHEASTERN BRITISH COLUMBIA (modified from Butrenchuk, 1987a). Thickness not to scale.

1933). Phosphatic strata at the base of the Fernie Group are considered to have the best potential (Butrenchuk, 1987a; Macdonald, 1987).

3.1.1 Regional Stratigraphy

Upper Devonian strata exposed in the vicinity of the Fernie Basin consist of massive grey, fine-grained, cliff-forming limestones of the Palliser Formation. These limestones are commonly mottled and locally interbedded with brown dolostones. They are overlain by the Devono-Mississippian Exshaw Formation, which predominantly consists of black, fissile shale, cherty shale, siltstone and minor limestone (Kenny, 1977). The Exshaw Formation is generally 6 to 30 metres thick (Figure 4). Four phosphatic horizons exist within the Exshaw Formation: the lowest is less than 50 cm thick and has grades of less than 9 per cent P_2O_5; the middle two horizons are both around one metre thick, have grades of up to 10 per cent P_2O_5 and are separated by approximately two metres of shale; and the uppermost phosphatic zone, which has very limited extent, contains grades which always exceed 15 per cent P_2O_5 and is always less than 15 cm thick (Macdonald, 1987).

The Mississippian Banff Formation has a gradational contact with the underlying Exshaw Formation. It is 280 to 430 metres thick and consists of dark grey, fissile shale, and bands of argillaceous limestone that grade upwards into dark grey, massive, finely crystalline limestone and dolostone. The Rundle Group, also Mississippian in age, conformably overlies the Banff Formation and attains a thickness of approximately 700 metres. It consists of a series of resistant, thick-bedded crinoidal limestones, grey and black finely crystalline limestones, dark, argillaceous limestones, dolostones, and minor black and green shale (Butrenchuk, 1987a; Kenny, 1977).

Conformably overlying the Mississippian carbonates are Pennsylvanian strata of the Spray Lakes Group which consist of a lower unit, the Tunnel Mountain Formation, and an upper unit, the Kananaskis Formation. The Tunnel Mountain Formation comprises a monotonous sequence of reddish-brown weathering dolomitic sandstone and siltstone that attains a maximum thickness of 500 metres at its western margin, near the Elk River. The Tunnel Mountain Formation is disconformably overlain by the Kananaskis Formation which consists of light grey, silty dolostones and dolomitic siltstones and is generally around 55 metres thick. Chert nodules and intraformational chert breccias are found in the upper part of the section. Slightly phosphatic horizons, containing up to 9 per cent P_2O_5, are reported as rare occurrences within the Kananaskis Formation (Macdonald, 1987).

The Kananaskis Formation of the Spray Lakes Group is unconformably overlain by Permian strata of the Ishbel Group. Together, the Spray Lake Group and the Ishbel Group comprise the Rocky Mountain Supergroup (Figure 4). The Ishbel Group, which has been correlated with the Phosphoria Formation in the western United States, consists of the Johnston Canyon, Telford, Ross Creek and Ranger Canyon formations, from oldest to youngest respectively.

The Johnston Canyon Formation comprises a series of recessive weathering, thin- to medium-bedded siltstones, silty carbonate rocks and sandstones, with minor shale and chert. It varies from 1 to 60 metres in thickness and commonly contains phosphatic rocks. Thin intraformational phosphate-pebble conglomerate beds are common throughout the formation and locally mark its base. Phosphate is present as black nodules in distinct horizons within the siltstones, locally cements siltstone beds, and locally occurs in pelletal siltstone or pelletal silty phosphorite beds which are slightly greater than 1 metre thick (Butrenchuk, 1987a; Macdonald, 1987). The pelletal phosphorites can contain up to 21 per cent P_2O_5, but are of limited distribution; the basal conglomerate is less than 50 centimetres thick and generally contains 3-4 per cent P_2O_5, only; the nodular and phosphate pebble-conglomerate beds can have cumulate thicknesses of up to 22 metres, but grades rarely exceed 10 per cent P_2O_5 over a few 10's of centimetres.

The Telford and Ross Creek Formations, which attain thicknesses of 210-225 and 90-150 metres respectively, are of limited distribution, exposed only in the Telford Thrust, west of the Elk Valley in the Sparwood region. The Telford Formation consists of resistant-weathering, thick-bedded, sandy, oolitic and fossiliferous rocks. Rarely, slightly phosphatic horizons are present, with grades commonly around 11 per cent P_2O_5 across 30 centimetres. The Ross Creek Formation is composed of recessive thin-bedded siltstone, argillaceous siltstone, minor carbonate and chert. Nodular phosphate horizons are present throughout this unit and are best developed in the upper portions. Locally, phosphatic coquinoid beds are also present. Reported phosphate grades are only 1.7 to 6 per cent P_2O_5 (Butrenchuk, 1987a; Macdonald, 1987).

The Ranger Canyon Formation, which is up to 60 metres thick, paraconformably to disconformably overlies the Ross Creek Formation. It predominantly consists of resistant cliff-forming, thick-bedded, blue-grey cherts, cherty sandstones, siltstones, fine-grained sandstones and conglomerates. Minor gypsum and dolomite are also present. The base of the formation is marked by thin phosphate-cemented chert-pebble conglomerates that locally contain massive, phosphatic intraclasts. Phosphate also occurs as nodules in brownish weathering sandstone beds in the upper part of the formation. With the exception of phosphatic strata near the Fernie ski hill, most of the horizons are reportedly low grade; the highest values reported are 13.3 per cent P_2O_5 across 0.5 metres (Butrenchuk, 1987a; Macdonald, 1987).

Permian strata are unconformably overlain by the Triassic Sulphur Mountain Formation of the Spray River Group. The Sulphur Mountain Formation is between 100 and 496 metres thick and typically consists of rusty brown weathering, medium-bedded siltstones, calcareous and dolomitic siltstones, silty dolostones and limestones and minor shale. Locally, the Sulphur Mountain Formation is overlain by pale weathering, variegated dolostones, limestones, sandstones and intraformational breccias of the Whitehorse Formation. The Whitehorse Formation, which is from 6 to 418 metres thick, is middle to upper Triassic in age and is the upper member of the Spray River Group. It is not present in most areas (Butrenchuk, 1987a).

The Jurassic Fernie Group unconformably overlies the Triassic strata. It consists of a lower zone of dark grey to black shales, dark brown shales, phosphates and minor limestones, siltstones and sandstones (the basal phosphate zone and equivalent Nordegg Member, Poker Chip Shales and the Rock Creek Member), a middle unit of light grey shale, calcareous sandstone and sandy limestone (the Grey Beds) and an upper unit of yellowish-grey to pale brown or dark grey weathering glauconitic sandstone and shale grading upwards into interbedded fine-grained sandstone, siltstone and black shales (the Green and Passage beds). In southeastern British Columbia, the Fernie Group is 70 to 376 metres thick and generally thickens to the west (Freebold, 1957; Kenny, 1977; Macdonald, 1987; Price, 1965).

The base of the Fernie Group is marked by a persistent pelletal phosphorite horizon that is 1 to 2 metres thick and generally contains greater than 15 per cent P_2O_5; grades up to 30 per cent P_2O_5 have been found. It commonly consists of two pelletal phosphorite beds separated by a thin, chocolate brown to black phosphatic shale bed. The basal phosphorite rests either directly on Triassic strata or is separated from the underlying rocks by a thin phosphatic conglomerate. Phosphatic shales of variable thickness, generally less than 3 metres, overlie the phosphorites. The top of this sequence is locally marked by a yellow-orange bentonite bed. This part of the formation is Sinemurian in age and generally considered to be a lateral facies of the Nordegg Member and Nordegg equivalent beds. A second phosphatic horizon is present in the Bajocian Rock Creek Member, approximately 60 metres above the base of the Fernie

Group. This zone is extremely low grade, generally containing less than 1 per cent P_2O_5 and is often associated with belemnite-bearing calcareous sandstone beds (Butrenchuk, 1987a; Freebold, 1957; Macdonald, 1987).

The Kootenay Formation, of upper Jurassic to Cretaceous age, overlies rocks of the Fernie Group. It consists of dark grey carbonaceous sandstone, gritty to conglomeratic sandstone, siltstone, shale and coal and is from 150 to 520 metres thick (Price, 1965).

3.2 PROPERTY GEOLOGY

The Cabin Creek East area is underlain by a sequence of sedimentary rocks which range from Mississippian to Lower Cretaceous in age (Figure 5). Geological mapping at a scale of 1:12,500 (Figure 6), using topographic base map and altimeter with air photo control, concentrated on locating the basal Fernie Group phosphorite horizon, which marks the Triassic/Jurassic boundary in this region.

3.2.1 Stratigraphy

The Cabin East claims are predominantly underlain by strata correlative with the Sulphur Mountain Formation of the Triassic Spray River Group and the Jurassic Fernie Group (Figures 5, 6). Quartzose siltstones and fine-grained sandstones of the Permian Ranger Canyon Formation and Mississippian Rundle Group limestones are exposed to the north of the property and late Jurassic to early Cretaceous sandstones and siltstones of the Kootenay Formation are exposed on Dally Hill to the south and east of the claims (Figures 5, 6).

Rocks correlative with the Triassic Sulphur Mountain Formation in the Cabin Creek East area are predominantly buff to brown weathering, medium- to thick-bedded siltstones and calcareous siltstones with grey to buff fresh surfaces. Shaley laminae are often present between the thicker siltstone layers. Grey limestone beds are present at the top of the Triassic sequence.

Fernie Group rocks are recessive weathering and, for the most part, not well exposed. Where the base of the Fernie is exposed, it is marked by a phosphorite horizon that was not observed in its entirety. An extremely hard and competent dark grey to black siltstone layer is present near the base of the sequence, apparently overlying the phosphorite horizon, and is overlain by brown and black shales and a yellow bentonite bed. Monotonous fissile black shales and silty shales overlie the basal Fernie strata in the Cabin East area. Higher up in the sequence, laminated dark grey to brown siltstones and black shales occur within the Fernie Group.

3.2.2 Structure

Strata in the Cabin East area are predominantly dipping shallowly to the southeast. They are folded by a series of low-amplitude synclines and anticlines, possibly minor folds near the crest of a major structure (Figures 5, 6). Stereonet patterns indicate that the folds are conical in nature, with a cone axis plunging moderately to the southeast (154/65) and a half apical angle of 65^{o} (Appendix 2).

4. TRENCHING AND ASSAY RESULTS

The Fernie Group rocks are poorly exposed; in order to examine the basal phosphorite horizon it was necessary to dig trenches or pits. In the course of evaluating the economic potential of this horizon in the Cabin East area, 5 rock samples were collected from one hand pit, two backhoe trenches and outcrop (Figure 6, Appendix 1). Samples were analyzed by Bondar-Clegg of North Vancouver for P_2O_5 using a gravimetric assay method; three samples were analyzed for yttrium using X-ray fluorescence (XRF) and for 34 trace elements, including some of the rare earths, using induced neutron activation analysis (INAA). Four samples were analyzed for trace elements using induced coupled plasma spectroscopy (ICP); this method was abandoned when it was learned that the digestion used was incomplete for yttrium and rare earths and that the values obtained, although proportionally correct, did not represent total amounts in the samples.

The hand pit was dug into a bank using a pick and shovel and earth and slumped material removed to provide an exposed section. This pit was revisited with a John Deere 555 backhoe and a larger trench dug. The original phosphorite bed found in the hand pit did not seem to continue into the bank and a good section could not be exposed, although a small pocket of high grade phosphate was encountered. The trenching uncovered a hard, dark grey to black siltstone bed overlain by black shales which were in turn overlain by a yellow bentonite marker horizon and more shale. The backhoe could not break through the siltstone layer, which the phosphorite horizon may have underlain. A second trench and a smaller test pit were also dug in the same vicinity (Stn. DLY89-1 & 13) but did not intersect the phosphorite.

The dimensions of individual backhoe trenches and test pits are summarized as follows:

TRENCH	LENGTH METRES	WIDTH METRES	DEPTH METRES	MATERIAL MOVED, m3
A	5	1.75	2-3	18.9
B	4	1.25	2	10
C	2	1	2.5	5
TOTAL VOLUME OF MATERIAL MOVED				33.5 m3

5. CONCLUSIONS

The Cabin East claims, which can be reached by road from Fernie, B.C., are underlain by a series of Upper Paleozoic and Mesozoic strata that were deposited off the western margin of North America between the Permian and late Jurassic. In the vicinity of the claims, phosphatic horizons occur within the Permian Ranger Canyon Formation of the Ishbel Group and at the base of the Jurassic Fernie Group. The thickest and most continuous phosphorite horizon is the one at the base of the Fernie Group and in addition to P_2O_5, it contains anomalous concentrations of yttrium. The basal Fernie phosphorite was the focus of this project.

Previous workers reported that a phosphorite bed, 1.9 metres thick and containing 29.73 per cent P_2O_5 was traceable, on what are now the Cabin East claims, for approximately 500 metres along strike (Hartley, 1982). Work done in the course of this project could not duplicate the previous results, although some high grade grab samples were collected. Trenching was unable to break through a hard, black siltstone layer that underlies the yellow bentonite marker in this area and may cap the phosphorite horizon. Since hand trenching and backhoe trenching were unable to expose a complete section, evaluation of the economic potential of the property is difficult at this time.

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7. STATEMENT OF COSTS

COLUMBIA PROJECT 1989

Wages and Professional Fees*

Field work (May 26-July 26, 1989)	$32,073	
Benefits @ 25%	8,018	
		$40,091
Disbursements:		
Truck Rental	2,409	
Gas	1,584	
Meals	3,845	
Accomodation	1,464	
Helicopter charter	5,923	
Assays	15,528	
Miscellaneous rentals	1,200	
Backhoe rental**	4,076	
Expendible supplies	1,515	
Compilation and reports	5,000	
		$42,544
TOTAL ALL CLAIMS		**$82,635**

CLAIM BLOCK ALLOCATION OF EXPENDITURES:

	Hunger Group	39%	$32,227
	Bighorn Group	4%	$ 3,307
	Cabin Group	26%	$21,485
->	**Cabin East Group**	**7%**	**$ 5,784**
	High Rock Group	6%	$ 4,958
	Regional	18%	$14,874
TOTAL			**$82,635**

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*Breakdown showing pay rates and days worked follows (Appendix 3).

**Breakdown showing trench work distribution follows (Appendix 3).

8. CERTIFICATE OF QUALIFICATIONS

I, Jennifer A. Pell, of 3011 Quadra Street, Victoria, British Columbia, do hereby certify that:

1. I was in the field in the Fernie area from late May until late July, 1989 and personally supervised the exploration on the Cabin East claims.

2. I am a graduate of the University of Ottawa with a Bachelor of Science Honours degree in Geology, 1979.

3. I am a graduate of the University of Calgary with a Doctorate of Philosophy degree in Geology, 1984.

4. I am a Fellow of the Geological Association of Canada.

5. I was employed as an Assistant Professor in the Department of Geology, University of Windsor, teaching Economic Geology, Mineralogy, Structural Geology and Historical Geology from July, 1985 to July, 1986 and as a sessional lecturer at University of British Columbia, teaching Introductory Geology from January to April of 1987.

6. I have been engaged in mineral exploration, geologic mapping and geological research in British Columbia, the Northwest Territories, Manitoba and Ontario since 1977.

7. This report is true and factual, to the best of my knowledge. It is based on my work and work done directly under my supervision as well as a study of available literature.

8. I retain a 5% Net Profit royalty on the properties described in this report.

March, 1990
Victoria, B.C.

Jennifer Pell, Ph.D., F.G.A.C.

APPENDIX 1

SUMMARY OF ANALYTICAL RESULTS AND ASSAYS

ANALYTICAL RESULTS, CABIN EAST CLAIMS

SAMPLE NO.	P_2O_5 %	Y PPM	CE PPM	LA PPM	T M	DESCRIPTION
DLY89-1A	0.90				0.15	BROWN SILTSTONE
DLY89-1B	8.26	420	180	150	0.20	PELLETAL PHOSPHATE, OILY SMELL
DLY89-1C	25.60	450	290	300	0.47	PELLETAL PHOSPHATE
DLY89-5	0.40				GRAB	BLACK SILTSTONE TO SILTY SHALE
DLY89-13	30.85	930	370	360	0.15	BLACK, MASSIVE PHOSPHATE

89-7 ANCOMP.

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SAMPLE NUMBER	ELEMENT UNITS	P2O5 PCT
R2 CBC-89-35A		6.14
R2 CBC-89-35B		13.27
R2 CBC-89-35C		26.24
R2 CBC-89-35D		5.10
R2 CBC-89-35E		24.63
R2 CBC-89-35F		3.03
R2 CBC-89-35G		27.96
R2 CBC-89-35H		27.64
R2 CBC-89-35I		3.20
R2 CBC-89-35J		23.82
R2 DLY-89-13		30.85 — CABIN EAST
R2 TR89-11-1A		6.55
R2 TR89-11-1B		24.99
R2 TR89-11-1C		20.51
R2 TR89-11-1D		3.76
R2 TR89-11-1E		20.72
R2 TR89-11-1F		1.00
R2 TR89-12-1A		12.59
R2 TR89-12-1B		25.23
R2 TR89-12-1C		7.56
R2 TR89-12-1D		21.30
R2 TR89-12-1E		9.12
R2 TR89-14-1		26.53
R2 TR89-14-2		12.83

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ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	P205	Phosphorous	24	0.01 PCT		Gravimetric

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	24	2 -150	24	ASSAY PREP	24

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SAMPLE NUMBER	ELEMENT UNITS	Y PPM
R2 CBC-89-35A		450
R2 CBC-89-35B		515
R2 CBC-89-35C		855
R2 CBC-89-35D		190
R2 CBC-89-35E		340
R2 CBC-89-35F		135
R2 CBC-89-35G		1100
R2 CBC-89-35H		945
R2 CBC-89-35I		135
R2 CBC-89-35J		305
R2 DLY-89-13		930 — CABIN EAST
R2 TR89-11-1A		215
R2 TR89-11-1B		830
R2 TR89-11-1C		760
R2 TR89-11-1D		95
R2 TR89-11-1E		415
R2 TR89-11-1F		74
R2 TR89-12-1A		345
R2 TR89-12-1B		780
R2 TR89-12-1C		185
R2 TR89-12-1D		510
R2 TR89-12-1E		170
R2 TR89-14-1		805
R2 TR89-14-2		560

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ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Y	Yttrium	24	5 PPM		X-Ray Fluorescence

RESULTS TO FOLLOW FOR: Ag As Au Ba Br Cd Ce Co Cr Cs Eu Fe Hf Ir La Lu Mo Na Ni
Rb Sb Sc Se Sm Sn Ta Tb Te Th U W Yb Zn Zr

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	24	2 -150	24	ASSAY PREP	24

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SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Ag PPM	As PPM	Ba PPM	Br PPM	Cd PPM	Ce PPM	Co PPM	Cr PPM	Cs PPM	Eu PPM	Fe PCT
R2 CBC-89-35A		29	<5	11	170	<1	<10	210	<10	300	<1	5	<0.5
R2 CBC-89-35B		44	<5	17	150	<1	<10	220	<10	230	3	6	1.2
R2 CBC-89-35C		30	<5	15	<100	<1	<10	350	<10	240	<1	11	1.0
R2 CBC-89-35D		17	<5	22	460	2	<10	140	10	220	6	2	2.8
R2 CBC-89-35E		25	<5	37	<100	2	<10	200	<10	150	1	5	1.8
R2 CBC-89-35F		21	<5	22	380	2	<10	120	10	230	7	3	2.7
R2 CBC-89-35G		14	<5	13	2300	1	<10	440	<10	270	<1	16	<0.5
R2 CBC-89-35H		14	<5	14	240	1	<10	390	<10	220	2	11	<0.5
R2 CBC-89-35I		15	<5	24	500	3	<10	110	10	200	7	2	2.9
R2 CBC-89-35J		17	<5	31	430	2	<10	210	<10	130	2	6	1.8
R2 DLY-89-13	—CABIN EAST	33	<5	16	350	<1	<10	370	<10	210	1	12	0.8
R2 TR89-11-1A		19	<5	34	380	<1	<10	100	<10	180	4	2	2.3
R2 TR89-11-1B		14	<5	13	200	1	<10	350	<10	230	<1	14	1.0
R2 TR89-11-1C		24	<5	10	170	<1	<10	360	<10	170	1	11	<0.5
R2 TR89-11-1D		20	<5	19	690	1	<10	85	<10	170	6	2	2.4
R2 TR89-11-1E		21	<5	36	790	2	<10	260	<10	160	2	5	1.6
R2 TR89-11-1F		13	<5	16	1000	<1	<10	86	<10	140	14	<2	1.8
R2 TR89-12-1A		18	<5	19	300	<1	<10	180	<10	240	3	4	1.5
R2 TR89-12-1B		15	<5	14	230	<1	<10	360	<10	200	2	10	0.6
R2 TR89-12-1C		12	<5	20	440	4	<10	150	<10	210	6	4	2.6
R2 TR89-12-1D		18	<5	32	240	3	<10	310	<10	190	2	8	1.5
R2 TR89-12-1F		22	<5	47	550	1	<10	210	28	140	8	5	4.3
R2 TR89-14-1		31	<5	16	<100	<1	<10	410	<10	250	<1	13	0.5
R2 TR89-14-2		22	<5	16	390	<1	<10	220	<10	230	3	5	0.8

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SAMPLE NUMBER	ELEMENT UNITS	Hf PPM	Ir PPB	La PPM	Lu PPM	Mo PPM	Na PCT	Ni PPM	Rb PPM	Sb PPM	Sc PPM	Se PPM	Sm PPM
R2 CBC-89-35A		11	<100	130	<0.5	<2	0.20	<50	41	0.6	8.9	<10	37.0
R2 CBC-89-35B		11	<100	180	<0.5	22	0.27	73	72	1.1	21.0	<10	35.2
R2 CBC-89-35C		5	<100	330	<0.5	10	0.17	68	22	0.7	34.0	<10	62.6
R2 CBC-89-35D		7	<100	92	<0.5	81	0.63	300	110	1.3	21.0	<10	18.0
R2 CBC-89-35E		5	<100	170	<0.5	44	0.31	180	36	0.9	24.0	<10	30.9
R2 CBC-89-35F		8	<100	76	<0.5	77	0.68	200	110	1.2	21.0	<10	16.0
R2 CBC-89-35G		5	<100	420	<0.5	<2	0.15	<50	22	0.6	43.0	<10	86.1
R2 CBC-89-35H		5	<100	360	<0.5	5	0.14	<50	26	0.7	39.0	<10	70.9
R2 CBC-89-35I		7	<100	68	<0.5	98	0.68	240	120	1.4	19.0	<10	14.0
R2 CBC-89-35J		5	<100	170	<0.5	29	0.39	120	37	0.7	20.0	<10	30.6
R2 DLY-89-13	— CABIN EAST	3	<100	360	<0.5	5	0.11	110	44	0.9	35.0	<10	71.2
R2 TR89-11-1A		9	<100	71	<0.5	86	0.40	120	110	1.7	14.0	<10	13.0
R2 TR89-11-1B		3	<100	340	0.7	<2	0.16	77	21	0.7	35.0	<10	65.3
R2 TR89-11-1C		3	<100	300	<0.5	<2	0.13	<50	20	0.5	31.0	<10	65.5
R2 TR89-11-1D		6	<100	56	<0.5	92	0.52	180	85	1.4	14.0	<10	11.0
R2 TR89-11-1E		5	<100	200	<0.5	34	0.36	160	45	1.3	25.0	<10	34.8
R2 TR89-11-1F		4	<100	48	<0.5	67	0.74	120	120	2.7	16.0	<10	7.3
R2 TR89-12-1A		10	<100	140	<0.5	23	0.30	70	71	1.1	19.0	<10	26.3
R2 TR89-12-1B		5	<100	330	<0.5	<2	0.18	70	20	0.6	33.0	<10	69.4
R2 TR89-12-1C		7	<100	110	<0.5	76	0.58	170	100	1.1	23.0	<10	20.0
R2 TR89-12-1D		6	<100	240	<0.5	29	0.33	100	44	0.9	29.0	<10	44.0
R2 TR89-12-1F		6	<100	120	<0.5	42	0.36	280	120	2.5	20.0	<10	24.2
R2 TR89-14-1		3	<100	360	<0.5	8	0.12	<50	31	0.9	37.0	<10	72.2
R2 TR89-14-2		11	<100	190	<0.5	7	0.27	<50	73	1.0	20.0	<10	34.4

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SAMPLE NUMBER	ELEMENT UNITS	Sn PPM	Ta PPM	Tb PPM	Te PPM	Th PPM	U PPM	W PPM	Yb PPM	Zn PPM	Zr PPM	Y PPM
R2 CBC-89-35A		<200	<1	7	<20	10.0	25.0	<2	14	<200	690	450
R2 CBC-89-35B		<200	<1	7	<20	15.0	36.0	<2	24	210	800	515
R2 CBC-89-35C		<200	<1	14	<20	11.0	58.8	<2	43	<200	<500	855
R2 CBC-89-35D		<200	1	4	<20	10.0	22.0	<2	12	290	520	190
R2 CBC-89-35E		<200	<1	6	<20	7.4	67.4	<2	22	280	<500	340
R2 CBC-89-35F		<200	1	3	<20	11.0	18.0	<2	9	280	<500	135
R2 CBC-89-35G		<200	<1	18	<20	15.0	67.1	<2	56	<200	<500	1100
R2 CBC-89-35H		<200	<1	14	<20	12.0	64.4	<2	50	<200	<500	945
R2 CBC-89-35I		<200	1	3	<20	10.0	21.0	<2	9	330	<500	135
R2 CBC-89-35J		<200	<1	6	<20	7.9	54.4	<2	19	<200	600	305
R2 DLY-89-13 - CABIN E		<200	<1	15	<20	13.0	79.7	<2	49	<200	<500	930
R2 TR89-11-1A		<200	<1	3	<20	10.0	33.0	<2	10	340	<500	215
R2 TR89-11-1B		<200	<1	14	<20	11.0	45.0	<2	46	<200	840	830
R2 TR89-11-1C		<200	<1	12	<20	12.0	50.7	<2	39	<200	860	760
R2 TR89-11-1D		<200	<1	2	<20	7.0	16.0	<2	7	<200	<500	95
R2 TR89-11-1F		<200	<1	7	<20	8.9	62.6	<2	23	240	<500	415
R2 TR89-11-1F		<200	2	1	<20	16.0	13.0	<2	<5	250	<500	74
R2 TR89-12-1A		<200	1	6	<20	13.0	27.0	<2	20	<200	850	345
R2 TR89-12-1B		<200	<1	14	<20	12.0	50.1	<2	43	<200	<500	780
R2 TR89-12-1C		<200	<1	4	<20	8.7	29.0	<2	14	230	540	185
R2 TR89-12-1D		<200	<1	9	<20	9.4	66.6	<2	29	200	<500	510
R2 TR89-12-1F		<200	1	5	<20	10.0	40.0	<2	13	220	<500	170
R2 TR89-14-1		<200	<1	15	<20	13.0	56.7	<2	49	<200	<500	805
R2 TR89-14-2		<200	1	8	<20	14.0	30.0	<2	26	<200	760	560

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1	Au	Gold	24	5 PPB	NOT APPLICABLE	Inst. Neutron Activ.
2	Ag	Silver	24	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
3	As	Arsenic	24	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
4	Ba	Barium	24	100 PPM	NOT APPLICABLE	Inst. Neutron Activ.
5	Br	Bromine	24	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
6	Cd	Cadmium	24	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
7	Ce	Cerium	24	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
8	Co	Cobalt	24	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
9	Cr	Chromium	24	50 PPM	NOT APPLICABLE	Inst. Neutron Activ.
10	Cs	Cesium	24	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
11	Eu	Europium	24	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
12	Fe	Iron	24	0.5 PCT	NOT APPLICABLE	Inst. Neutron Activ.
13	Hf	Hafnium	24	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
14	Ir	Iridium	24	100 PPB	NOT APPLICABLE	Inst. Neutron Activ.
15	La	Lanthanum	24	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
16	Lu	Lutetium	24	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
17	Mo	Molybdenum	24	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
18	Na	Sodium	24	0.05 PCT	NOT APPLICABLE	Inst. Neutron Activ.
19	Ni	Nickel	24	50 PPM	NOT APPLICABLE	Inst. Neutron Activ.
20	Rb	Rubidium	24	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
21	Sb	Antimony	24	0.2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
22	Sc	Scandium	24	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
23	Se	Selenium	24	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
24	Sm	Samarium	24	0.1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
25	Sn	Tin	24	200 PPM	NOT APPLICABLE	Inst. Neutron Activ.
26	Ta	Tantalum	24	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
27	Tb	Terbium	24	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
28	Te	Tellurium	24	20 PPM	NOT APPLICABLE	Inst. Neutron Activ.
29	Th	Thorium	24	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
30	U	Uranium	24	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
31	W	Tungsten	24	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
32	Yb	Ytterbium	24	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
33	Zn	Zinc	24	200 PPM	NOT APPLICABLE	Inst. Neutron Activ.
34	Zr	Zirconium	24	500 PPM	NOT APPLICABLE	Inst. Neutron Activ.
35	Y	Yttrium	24	5 PPM		X-Ray Fluorescence

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03911.0 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-7

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 9-AUG-89

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	24	2 -150	24	ASSAY PREP	24

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INVOICE TO: MR. DOUG LEIGHTON

89-1 COMP.

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Certificate of Analysis

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89 02953.4

DATE PRINTED: 30-JUN-89
PROJECT: 110 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	P205 PCT
R2 CBC89-1A		0.50
R2 CBC89-1B		3.44
R2 CBC89-1C		19.04
R2 CBC89-1D		23.09
R2 CBC89-1E		9.25
R2 CBC89-1F		0.58
R2 CBC89-18A		11.44
R2 CBC89-18B		27.73
R2 CBC89-18C		18.69
R2 CBC89-610A		15.45
R2 CBC89-610B		24.58
R2 CBC89-610C		25.87
R2 CBC89-610D		3.52
R2 CBC89-610E		16.53
R2 CBC89-610F		0.42
R2 CBC89-611		23.09
R2 CBC89-611B		27.25
R2 CRW89-600A		22.10
R2 CRW89-600B		23.77
R2 CRW89-600C		21.71
R2 CRW89-600D		10.05
R2 CRW89-600E		22.80
R2 CRW89-600F		8.83
R2 CRW89-600G		11.11
R2 CRW89-600H		25.04
R2 CRW89-600I		27.07
R2 CRW89-600J		20.30
R2 DLY89-1A		1.00
R2 DLY89-1B		8.26
R2 DLY89-1C		25.60
R2 DLY89-5		0.35
R2 INV89-1A		17.87
R2 INV89-1B		12.93

CABIN E. (DLY89-1A to DLY89-5)

Registered Assayer, Province of British Columbia

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Certificate of Analysis

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-02953.4 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-1

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 30-JUN-89

ORDER	ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	P205 Phosphorous	33	0.01 PCT		Gravimetric

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	33	2 -150	33	ASSAY PREP	33
				FAX CHARGE	1

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Geochemical Lab Report

DATE PRINTED: 21-JUL-89

REPORT: V89-02953.1

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SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Ag PPM	As PPM	Ba PPM	Br PPM	Cd PPM	Ce PPM	Co PPM	Cr PPM	Cs PPM	Eu PPM	Fe PCT
R2 CBC89-18A		<5	<5	20	200	2	<10	150	<10	160	3	4	1.6
R2 CBC89-18B		<5	<5	17	<100	2	<10	260	<10	200	2	11	1.0
R2 CBC89-18C		<5	<5	18	<100	3	<10	200	<10	200	2	7	1.4
R2 DLY89-1B		<5	<5	17	710	1	<10	180	<10	220	<1	9	0.9
R2 DLY89-1C		<5	<5	21	1800	2	<10	290	<10	250	3	10	1.5

CABIN E.

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PROJECT: 110 PAGE 1B

SAMPLE NUMBER	ELEMENT UNITS	Hf PPM	Ir PPB	Ta PPM	Lu PPM	Mo PPM	Na PCT	Ni PPM	Rb PPM	Sb PPM	Sc PPM	Se PPM	Sm PPM
R2 CBC89-18A		9	<100	120	<0.5	13	0.26	54	89	1.3	16.0	<10	26.5
R2 CBC89-18B		7	<100	330	<0.5	<2	0.12	86	46	1.0	34.0	<10	67.1
R2 CBC89-18C		8	<100	200	<0.5	8	0.25	72	60	1.1	26.0	<10	36.1
R2 DLY89-1B		12	<100	150	<0.5	7	0.10	82	49	0.9	12.0	<10	35.0
R2 DLY89-1C		4	<100	300	<0.5	15	0.11	200	61	1.2	34.0	<10	59.3

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Geochemical Lab Report

DATE PRINTED: 21-JUL-89

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PROJECT: 110 PAGE 1C

SAMPLE NUMBER	ELEMENT UNITS	Sn PPM	Ta PPM	Tb PPM	Te PPM	Th PPM	U PPM	W PPM	Yb PPM	Zn PPM	Zr PPM	Y PPM
R2 CBC89-18A		<200	<1	6	<20	14.0	30.0	<2	16	<200	<500	400
R2 CBC89-18B		<200	<1	14	<20	11.0	62.6	<2	43	240	<500	840
R2 CBC89-18C		<200	<1	8	<20	12.0	43.0	<2	26	220	<500	535
R2 DLY89-1B		<200	<1	7	<20	12.0	32.0	<2	17	<200	760	420
R2 DLY89-1C		<200	<1	12	<20	13.0	74.5	<2	39	330	<500	750

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Geochemical Lab Report

REPORT: V89-02953.1 (COMPLETE) | REFERENCE INFO: SHIPMENT #89-1

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 21-JUL-89

ORDER		ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Au	Gold	5	5 PPB	NOT APPLICABLE	Inst. Neutron Activ.
2	Ag	Silver	5	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
3	As	Arsenic	5	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
4	Ba	Barium	5	100 PPM	NOT APPLICABLE	Inst. Neutron Activ.
5	Br	Bromine	5	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
6	Cd	Cadmium	5	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
7	Ce	Cerium	5	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
8	Co	Cobalt	5	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
9	Cr	Chromium	5	50 PPM	NOT APPLICABLE	Inst. Neutron Activ.
10	Cs	Cesium	5	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
11	Eu	Europium	5	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
12	Fe	Iron	5	0.5 PCT	NOT APPLICABLE	Inst. Neutron Activ.
13	Hf	Hafnium	5	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
14	Ir	Iridium	5	100 PPB	NOT APPLICABLE	Inst. Neutron Activ.
15	La	Lanthanum	5	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
16	Lu	Lutetium	5	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
17	Mo	Molybdenum	5	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
18	Na	Sodium	5	0.05 PCT	NOT APPLICABLE	Inst. Neutron Activ.
19	Ni	Nickel	5	50 PPM	NOT APPLICABLE	Inst. Neutron Activ.
20	Rb	Rubidium	5	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
21	Sb	Antimony	5	0.2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
22	Sc	Scandium	5	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
23	Se	Selenium	5	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
24	Sm	Samarium	5	0.1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
25	Sn	Tin	5	200 PPM	NOT APPLICABLE	Inst. Neutron Activ.
26	Ta	Tantalum	5	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
27	Tb	Terbium	5	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
28	Te	Tellurium	5	20 PPM	NOT APPLICABLE	Inst. Neutron Activ.
29	Th	Thorium	5	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
30	U	Uranium	5	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
31	W	Tungsten	5	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
32	Yb	Ytterbium	5	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
33	Zn	Zinc	5	200 PPM	NOT APPLICABLE	Inst. Neutron Activ.
34	Zr	Zirconium	5	500 PPM	NOT APPLICABLE	Inst. Neutron Activ.
35	Y	Yttrium	5	5 PPM		X-Ray Fluorescence

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PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 21-JUL-89

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	5	2 -150	5	CRUSH,PULVERIZE -150	5
				BATCH SURCHARGE	5

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 21-JUN-89

REPORT: V89-02953.0

PROJECT: 110 PAGE 1A

SAMPLE NUMBER	ELEMENT UNITS	Ag PPM	As PPM	Ba PPM	Be PPM	Bi PPM	Cd PPM	Ce PPM	Co PPM	Cr PPM	Cu PPM	Ga PPM
R2 CBC89-1A		0.2	63	306	18.8	3	2	48	18	20	88	<2
R2 CBC89-1B		1.2	99	1248	20.7	11	7	214	27	61	191	<2
R2 CBC89-1C		2.8	189	703	21.9	<2	10	451	19	109	265	<2
R2 CBC89-1D		<0.2	44	529	7.3	<2	2	167	3	97	43	<2
R2 CBC89-1E		<0.2	54	253	12.8	<2	1	104	5	78	48	<2
R2 CBC89-1F		<0.2	246	55	6.9	81	<1	11	2	15	19	89
R2 CBC89-18A		<0.2	48	147	11.3	<2	<1	120	4	108	35	<2
R2 CBC89-18B		<0.2	36	216	5.6	<2	<1	175	2	121	32	<2
R2 CBC89-18C		<0.2	43	165	7.5	<2	<1	119	3	93	32	<2
R2 CBC89-610A		<0.2	49	199	9.9	<2	1	104	4	78	37	<2
R2 CBC89-610B		<0.2	25	180	5.0	<2	1	131	2	103	32	<2
R2 CBC89-610C		<0.2	33	215	5.4	<2	1	225	2	105	33	<2
R2 CBC89-610D		0.3	44	198	14.2	4	2	74	8	85	104	<2
R2 CBC89-610E		1.0	67	315	12.6	<2	1	284	10	79	89	<2
R2 CBC89-610F		0.3	78	424	26.0	15	3	47	25	29	123	8
R2 CBC89-611		<0.2	34	143	7.3	<2	2	166	3	102	45	<2
R2 CBC89-611B		<0.2	35	166	4.5	<2	<1	207	2	112	30	<2
R2 CRW89-600A		<0.2	30	466	9.1	<2	<1	87	2	79	45	<2
R2 CRW89-600B		<0.2	37	814	7.0	<2	1	94	2	112	49	<2
R2 CRW89-600C		<0.2	45	1014	4.5	<2	<1	194	1	104	33	<2
R2 CRW89-600D		<0.2	45	487	7.1	<2	<1	72	3	77	37	<2
R2 CRW89-600E		<0.2	44	929	5.0	<2	2	180	2	108	37	<2
R2 CRW89-600F		<0.2	43	590	8.0	<2	<1	66	3	71	41	<2
R2 CRW89-600G		<0.2	54	512	6.7	<2	<1	71	3	64	38	<2
R2 CRW89-600H		<0.2	36	1131	5.3	<2	2	154	1	115	35	<2
R2 CRW89-600I		<0.2	43	1308	5.5	<2	1	170	1	134	39	<2
R2 CRW89-600J		<0.2	44	1025	7.9	<2	1	185	3	122	45	<2
R2 DLY89-1A	CABIN E.	<0.2	108	804	5.8	18	<1	21	2	32	5	<2
R2 DLY89-1B	CABIN E.	<0.2	70	594	9.0	<2	<1	136	3	116	17	<2
R2 DLY89-1C	CABIN E.	<0.2	55	1535	10.7	<2	2	209	3	114	53	<2
R2 DLY89-5	CABIN E.	<0.2	10	287	5.9	2	<1	22	2	144	7	<2
R2 INV89-1A		<0.2	42	355	7.0	<2	<1	147	2	180	28	<2
R2 INV89-1B		<0.2	39	215	8.4	<2	<1	108	2	230	19	<2

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A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical Lab Report

DATE PRINTED: 21-JUN-89

REPORT: V89-02953.0

PROJECT: 110 PAGE 1B

SAMPLE NUMBER	ELEMENT UNITS	La PPM	Li PPM	Mo PPM	Nb PPM	Ni PPM	Pb PPM	Rb PPM	Sb PPM	Sc PPM	Sn PPM	Sr PPM
R2 CBC89-1A		19	12	20	10	143	36	<20	21	7	<20	202
R2 CBC89-1B		137	27	113	9	668	43	36	28	15	<20	346
R2 CBC89-1C		338	17	256	22	927	59	<20	39	27	<20	796
R2 CBC89-1D		229	23	25	24	118	39	<20	24	25	<20	619
R2 CBC89-1E		103	23	42	15	175	40	<20	28	11	<20	283
R2 CBC89-1F		2	22	6	60	59	137	<20	164	4	<20	125
R2 CBC89-18A		133	19	19	17	73	37	<20	27	13	<20	279
R2 CBC89-18B		262	20	6	27	60	41	<20	27	25	<20	608
R2 CBC89-18C		159	21	15	20	54	36	<20	24	19	<20	387
R2 CBC89-610A		120	19	25	19	76	36	<20	23	14	<20	298
R2 CBC89-610B		199	14	13	23	53	33	<20	21	22	<20	432
R2 CBC89-610C		300	16	11	25	61	37	<20	24	25	<20	515
R2 CBC89-610D		55	38	68	7	176	20	65	17	12	<20	196
R2 CBC89-610E		232	21	45	18	222	36	42	23	17	<20	474
R2 CBC89-610F		16	13	36	3	188	31	<20	20	6	<20	76
R2 CBC89-611		215	18	24	22	101	35	55	24	22	<20	377
R2 CBC89-611B		301	13	7	27	43	39	<20	23	24	<20	451
R2 CRW89-600A		119	12	10	21	45	31	23	22	14	<20	550
R2 CRW89-600B		144	15	18	24	68	36	<20	24	18	<20	828
R2 CRW89-600C		264	14	8	28	48	40	<20	27	31	<20	1073
R2 CRW89-600D		83	20	14	20	59	30	40	24	14	<20	646
R2 CRW89-600E		251	15	13	28	60	39	29	28	29	<20	1068
R2 CRW89-600F		75	17	19	20	64	31	<20	25	13	<20	673
R2 CRW89-600G		74	16	33	20	57	32	<20	28	13	<20	655
R2 CRW89-600H		222	14	14	27	57	38	<20	26	27	<20	1054
R2 CRW89-600I		254	14	14	29	61	42	<20	27	31	<20	1150
R2 CRW89-600J		244	20	12	26	69	38	<20	27	33	<20	1099
R2 DLY89-1A		11	11	8	20	23	48	<20	57	4	<20	109
R2 DLY89-1B CABIN E		139	13	17	17	71	34	<20	31	11	<20	207
R2 DLY89-1C		277	18	30	28	144	46	<20	32	28	<20	594
R2 DLY89-5		8	3	2	3	12	12	<20	6	2	<20	51
R2 INV89-1A		199	10	15	21	50	31	<20	18	13	<20	403
R2 INV89-1B		141	11	14	17	41	26	21	17	10	<20	287

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REPORT: V89-02953.0

DATE PRINTED: 21-JUN-89

PROJECT: 110 PAGE 1C

SAMPLE NUMBER	ELEMENT UNITS	Ta PPM	Te PPM	V PPM	W PPM	Y PPM	Zn PPM	Zr PPM
R2 CBC89-1A		<10	<10	62	<10	31	212	5
R2 CBC89-1B		<10	10	138	<10	226	1061	7
R2 CBC89-1C		<10	28	132	<10	543	1343	6
R2 CBC89-1D		<10	29	64	<10	479	196	11
R2 CBC89-1E		<10	19	43	<10	208	240	5
R2 CBC89-1F		25	86	18	<10	16	158	5
R2 CBC89-18A		<10	20	44	<10	284	149	10
R2 CBC89-18B		<10	34	60	<10	541	131	12
R2 CBC89-18C		<10	22	48	<10	344	125	13
R2 CBC89-610A		<10	19	38	<10	252	154	9
R2 CBC89-610B		<10	26	56	<10	424	98	10
R2 CBC89-610C		<10	30	58	<10	601	103	12
R2 CBC89-610D		<10	<10	90	<10	93	268	10
R2 CBC89-610E		<10	18	77	<10	374	241	8
R2 CBC89-610F		<10	<10	90	<10	29	226	9
R2 CBC89-611		<10	25	58	<10	448	155	11
R2 CBC89-611B		<10	32	41	<10	604	93	12
R2 CRW89-600A		<10	25	28	<10	268	214	8
R2 CRW89-600B		<10	28	48	<10	325	335	10
R2 CRW89-600C		<10	30	45	<10	557	104	9
R2 CRW89-600D		<10	15	34	<10	163	85	4
R2 CRW89-600E		<10	30	49	<10	536	163	7
R2 CRW89-600F		<10	15	31	<10	146	107	6
R2 CRW89-600G		<10	18	32	<10	138	125	4
R2 CRW89-600H		<10	30	52	<10	477	125	10
R2 CRW89-600I		<10	33	61	<10	527	97	12
R2 CRW89-600J		<10	28	57	<10	500	129	8
R2 DLY89-1A	CABIN E.	<10	25	18	<10	21	14	4
R2 DLY89-1B		<10	18	30	<10	282	54	3
R2 DLY89-1C		<10	35	77	<10	573	233	13
R2 DLY89-5		<10	<10	6	<10	17	22	3
R2 INV89-1A		<10	23	59	<10	407	66	6
R2 INV89-1B		<10	17	65	<10	291	64	7

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A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical Lab Report

REPORT: V89-02953.0 (COMPLETE)

REFERENCE INFO:

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 21-JUN-89

ORDER		ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Ag	Silver	33	0.2 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
2	As	Arsenic	33	5 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
3	Ba	Barium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
4	Be	Beryllium	33	0.5 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
5	Bi	Bismuth	33	2 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
6	Cd	Cadmium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
7	Ce	Cerium	33	5 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
8	Co	Cobalt	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
9	Cr	Chromium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
10	Cu	Copper	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
11	Ga	Gallium	33	2 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
12	La	Lanthanum	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
13	Li	Lithium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
14	Mo	Molybdenum	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
15	Nb	Niobium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
16	Ni	Nickel	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
17	Pb	Lead	33	2 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
18	Rb	Rubidium	33	20 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
19	Sb	Antimony	33	5 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
20	Sc	Scandium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
21	Sn	Tin	33	20 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
22	Sr	Strontium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
23	Ta	Tantalum	33	10 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
24	Te	Tellurium	33	10 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
25	V	Vanadium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
26	W	Tungsten	33	10 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
27	Y	Yttrium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
28	Zn	Zinc	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma
29	Zr	Zirconium	33	1 PPM	HNO3-HCL HOT EXTR	Ind. Coupled Plasma

Bondar-Clegg & Company Ltd.
130 Pemberton Ave.
North Vancouver, B.C.
V7P 2R5
(604) 985-0681 Telex 04-352667

BONDAR-CLEGG

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical Lab Report

REPORT: V89-02953.0 (COMPLETE)

REFERENCE INFO:

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 21-JUN-89

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	33	2 -150	33	ASSAY PREP	33

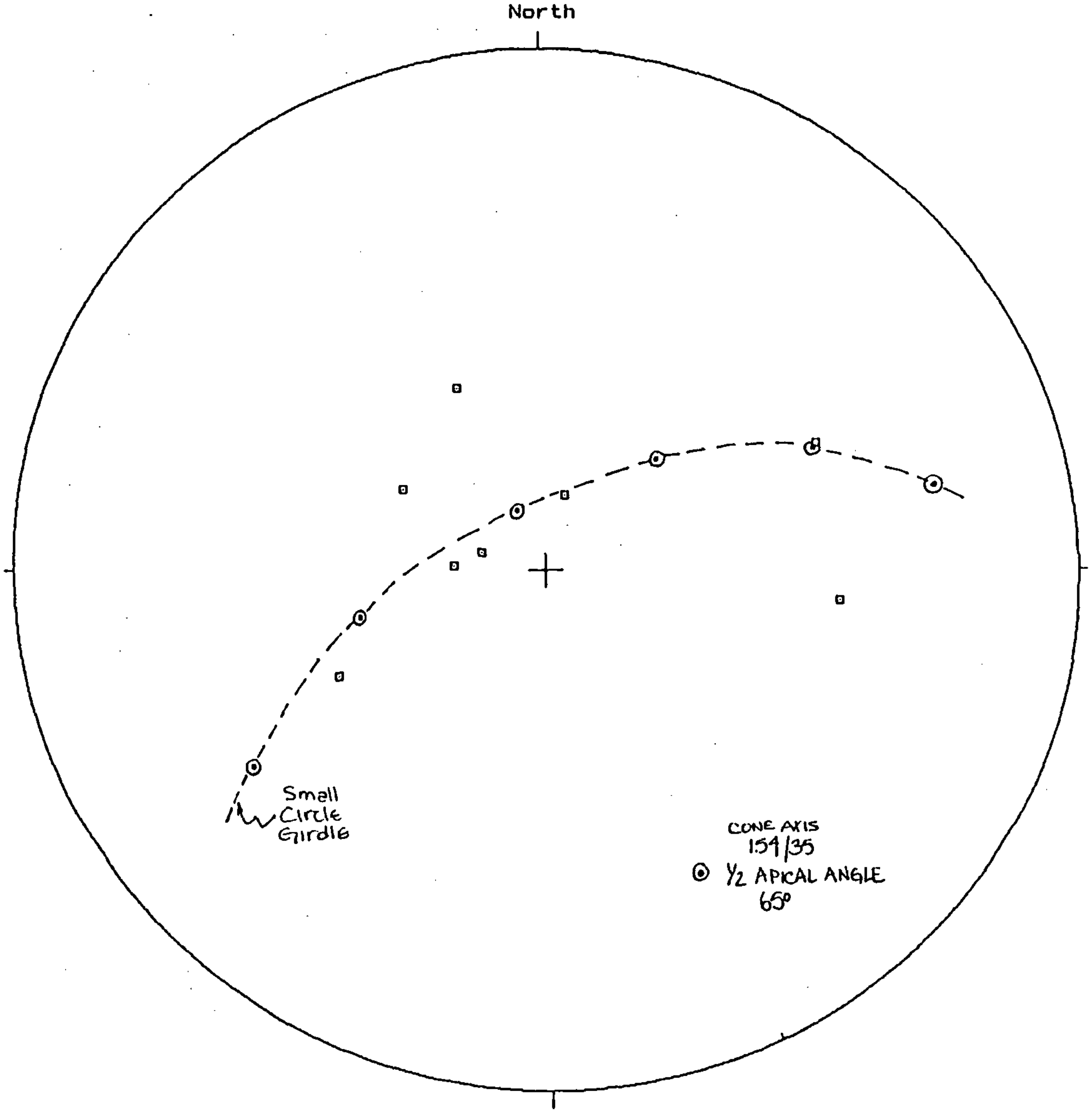
REPORT COPIES TO: MR. DOUG LEIGHTON
MS. J. PELL

INVOICE TO: MR. DOUG LEIGHTON

APPENDIX 2

STRUCTURAL ANALYSIS

CABIN EAST BEDDING



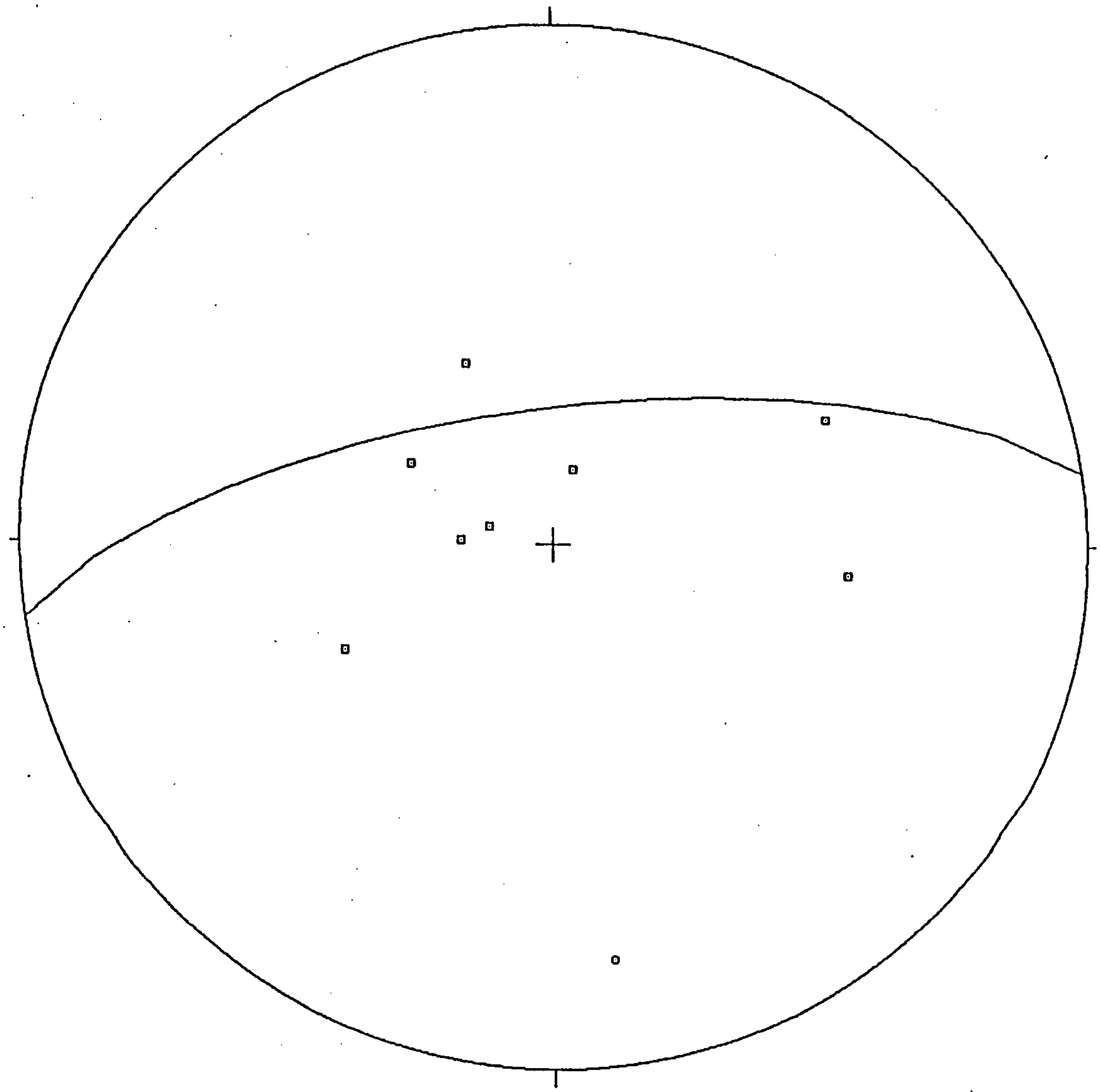
EQUAL AREA PROJECTION

CABIN EAST BEDDING

SPLOT by Darton Software

	Symbol
8 Points	□
8 Points Total	

CABIN EAST BEDDING
North



EQUAL AREA PROJECTION

CABIN EAST BEDDING

SPLOT by Darton Software

	Symbol
8 Points	□
8 Points Total	

SPLOT Statistical Summary

DataType : PLANAR
Number of Data Pairs : 8

Test of Uniformity :
The data differ significantly from uniform at the 95% level

Test of Distribution
Ak = 0.96578
Expected Type of Distribution : Girdle or Cluster
Cstat = 2.88066
Data have weak preferential orientation

Test of Rotational Symmetry S(G)
SG = 6.44752
This differs significantly from a girdle at the .95 level

Best-Fit Gridle on Data:
Strike = 82 Dip = 69
Dip Azimuth = 352
Pi-Point = 172
21

Directional Cosine
L = 0.9065
M = -0.0838
E = 6.8824

Directional Cosine Matrix

0.4777	0.1116	0.7902
0.1116	1.4959	-0.3391
0.7902	-0.3391	6.0264

Eigenvalues
0.3455
1.4957
6.1588

Eigenvectors
0.9799
-0.1377
-0.1445

APPENDIX 3

COLUMBIA PROJECT

COSTS BREAKDOWN

COLUMBIA PROJECT

PAYROLL DISTRIBUTION FOR ASSESSMENT PURPOSES

1989 Field Work

Jennifer Pell - JP @ $275/day
Ray Morris - RM @ $175/day
Randy Lowery - RL @ $150/day

LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Mob/Demobilization Travel/Exp./Etc.	JP	MAY																									X	X	X					3
																											X	X	X					
Cabin Creek	JP	MAY																												X			X	2
																														X			X	
Bighorn	JP	MAY																																½
																																½		
Hunger	JP	MAY																														½		½
Regional Recy/ Mapping	JP	MAY																																½
																															½			
Mob/Demobilization Travel/Exp./Etc.	RM	MAY																									X	X	X		X			4
																											X	X	X		X			
Cabin Creek	RM	MAY																												X			X	2
																														X			X	
Bighorn	RM	MAY																																½
																																½		
Hunger	RM	MAY																														½		½
High Rock	JP	MAY																													½			½
Total chargeable																																		

LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Mob/Demobilization Travel/Exp./Etc.	RL	MAY																													X			1
																															X			
Hunger	RL	MAY																																½
																																½		
Bighorn	RL	MAY																														½		½
Cabin Creek	RL	MAY																															X	1
																																	X	
Total chargeable																																		

LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Expediting/Organize Etc. - Office Work	JP	JUNE									X			X			X				½							½		½	½	X		6
											X			X			X															X		
Cabin Creek	JP	JUNE		X	X	½				X		X																						6½
				X	X					X		X															½		½	½	½			
Hunger	JP	JUNE					X											X	X	X							½							4½
							X											X	X	X														
Highrock & General Area	JP	JUNE	X					X																										2
			X					X																										
Regional Recy./ Mapping	JP	JUNE											X		X	X																		3
													X		X	X																		
Cabin East	JP	JUNE							X																									1½
						½			X																									
Visiting U.S. Phosphates	JP	JUNE																				X	X	X	X	X								5
																						X	X	X	X	X								
Total chargeable																																		

LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Expediting/ Organizing, etc.	RM	June									X				X	X					X								X	X	X	X		8
											X				X	X					X								X	X	X	X		
Cabin Creek	RM	June		X	X	½						X																						4
				X	X							X															½							
Hunger	RM	June					X											X	X	X							½							4½
							X											X	X	X														
Highrock/ Alexander Creek	RM	June	X					X		X																								3
			X					X		X																								
Regional Recy./ Mapping, etc.	RM	June											X				X																	2
													X				X																	
Cabin East	RM	June							X					X																				2½
						½			X					X																				
Visiting U.S. Phosphates	RM	June																				X	X	X	X	X								5
																						X	X	X	X	X								
Bighorn	RM	June																										X						1
																												X						
Total chargeable																																		

LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Expediting/ Organizing/Errands	RL	June	X					½			X				X						X								X	X	X	X		8½
			X								X				X						X								X	X	X	X		
Cabin Creek	RL	June		X	X	X						X																						4½
				X	X	X						X															½							
Hunger	RL	June					X											X	X	X							½							4½
							X											X	X	X														
Highrock & Alexander Creek	RL	June								X																								1½
								½		X																								
Regional Recy./ Prospecting, etc.	RL	June											X			X	X																	3
													X			X	X																	
Cabin East	RL	June							X					X																				2
									X					X																				
Visiting U.S. Phosphates	RL	June																				X	X	X	X	X								5
																						X	X	X	X	X								
Bighorn	RL	June																										X						1
																												X						
Total chargeable																																		

LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Office Work/ Expediting/Demob, etc.	JP	JULY	½					X				X	½						X					X										5½
								X				X							X					X										
Cabin Creek	JP	JULY															½	X		X	X		X											4½
																		X		X	X		X											
Hunger	JP	JULY		X	X	½	X		X	X				½		X																		8
			½	X	X		X		X	X					½	X																		
Bighorn	JP	JULY									X																							1
											X																							
Cabin East	JP	JULY																				X												1
																						X												
Total chargeable																																		

LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Expediting/ Demob., etc.	RM	JULY																					X	X	½	X	X	½						6
														½							½		X	X		X	X							
Cabin Creek	RM	JULY															X			X	½													3
																	X			X					½									
Hunger	RM	JULY	X	X	X	X	X	X	X	X	X	X	X	½	X	X																		13½
			X	X	X	X	X	X	X	X	X	X	X		X	X																		
Cabin East	RM	JULY																				X												1
																						X												
Trenching for Westrock	RM	JULY																X	X															2
																		X	X															
Total chargeable																																		

:

LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Expediting/ Demob., etc.	RL	JULY	X																					X	½	X	X	½						5½
			X																½					X		X	X							
Cabin Creek	RL	JULY															X	X	½	X	X		X											6
																	X	X		X	X		X		½									
Hunger	RL	JULY		X	X	X	X	X	X	X		X	X	X	X	X																		12½
				X	X	X	X	X	X	X	½	X	X	X	X	X																		
Bighorn	RL	JULY									½																							½
Cabin East	RL	JULY																				X												1
																						X												
Total chargeable																																		

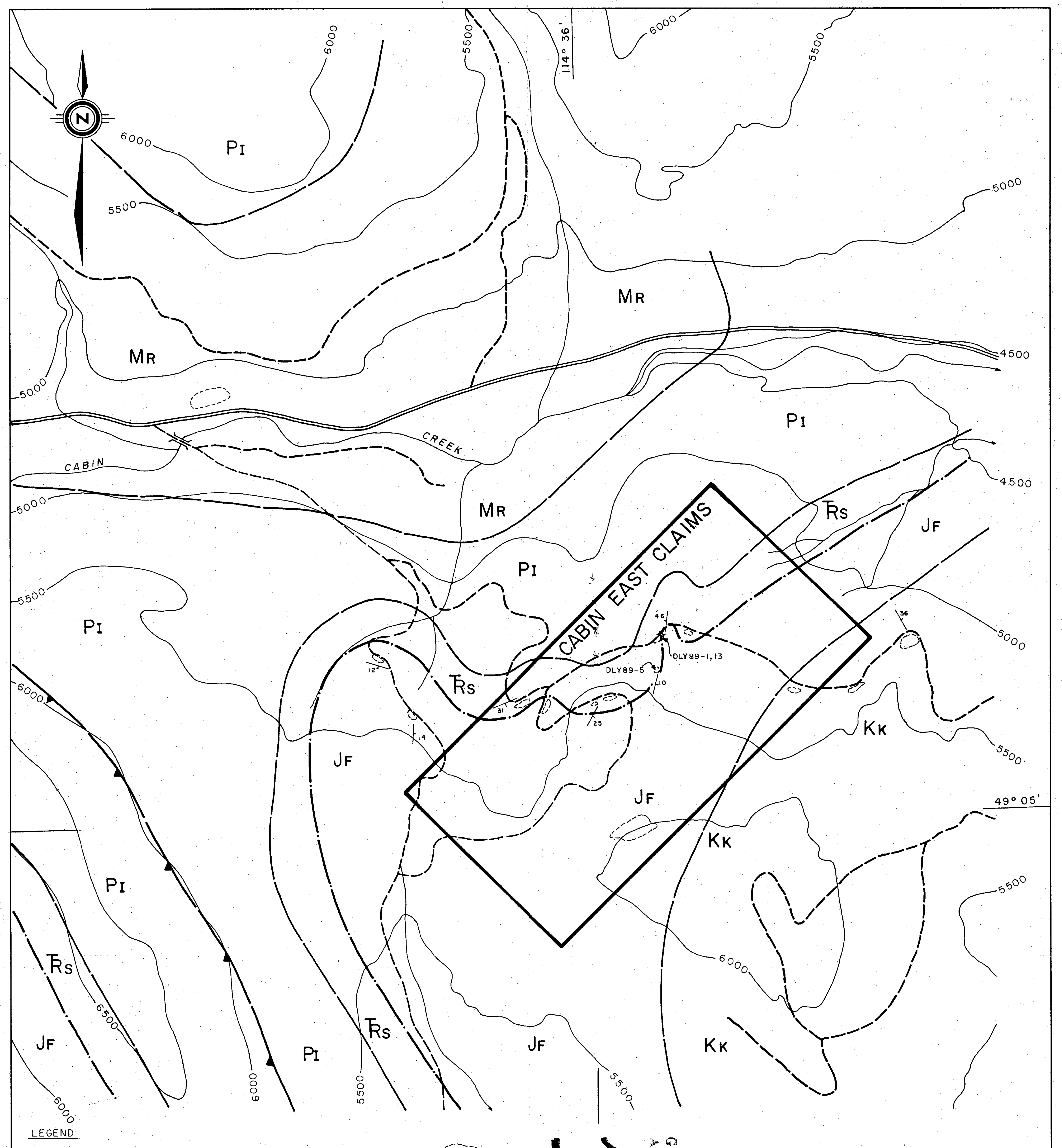
TRENCHING RECLAMATION
W/JD SS5 BACKHOE

TIME SHEET SUMMARY

Year 1989

LOCATION		MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Mob/Demobilization etc.		JUNE																												X	X	X		
																														X	X	X		
HUNGER		JULY				X	X	X	X	X	X	X	X	X	X	½																		
						X	X	X	X	X	X	X	X	X	X																			
CABIN CREEK		JULY															X			X	X		X		½									
																½	X			X	X		X											
CABIN EAST		JULY																				X												
																						X												
IDLE		JULY			X																			X										
					X																			X										
MOBILIZATION/ DEMOBILIZATION		JULY	X	X																							X							
			X	X																						½	X							
Contracted to WESTROCK		JULY																X	X															
																		X	X															
Total chargeable																																		


LEGEND
Kk JURASSIC & (?) CRETACEOUS KOOTENAY FORMATION - DARK GREY CARBONACEOUS SANDSTONE & CONGLOMERATE SANDSTONE, SILTSTONE, SHALE, COAL.
JF JURASSIC FERNIE GROUP - GREY CALCAREOUS SHALE, SHALEY LIMESTONE, SILTY LIMESTONE, DARK GREY TO BLACK SHALE, LIMESTONE, SANDSTONE.
JURASSIC FERNIE GROUP - BASAL PHOSPHORITE BEDS.
TRS TRIASSIC SPRAY RIVER GROUP - GREY DOLOMITE SILTSTONE & SANDSTONE, BROWN SILTSTONE & SILTY SHALE.
PI PERMIAN ISHBEL GROUP - WHITE & GREY SILTSTONE, SHALE, CHERT, FINEGRAINED SANDSTONE, MINOR DOLOMITE, SOME NODULAR PHOSPHATE ROCK.
MR MISSISSIPPIAN RUNDLE GROUP - LIMESTONE, DOLOMITE, MINOR SHALE, SANDSTONE & CHERTY LIMESTONE
THRUST FAULT (approximate, assumed)
FAULT
GEOLOGICAL CONTACT (approximate)
ROAD, TRAIL
x TR89-5 TRENCH
x HGR89-23 HAND TRENCH
114°45'
114°40'
49°10'
HUNGER CLAIMS
BIGHORN CLAIMS
CABIN CREEK CLAIMS
CABIN EAST CLAIMS
STORM CREEK THRUST
MACDONALD THRUST
LESLIE CREEK
STORM CREEK
CABIN CREEK
CABIN PASS
STAKED
DALLY HILL
TR89-8,9
HGR89-1
TR89-5
HGR89-24
HGR89-23
TR89-4
HGR89-28
TR8-6
TR89-7
HGR89-21
TR89-3
TR89-1,2
HGR89-19
INV89-1
INV89-2
TR89-14
CBC89-18
TR89-10
CBC89-22
TR89-11
TR89-12
CBC-89-35
DLY89-1,13
LOCATION MAP
0 10 20 30 kilometres
INVERMERE
COLUMBIA RIVER
KOOTENAY RIVER
ELK RIVER
OLDMAN RIVER
FLATHEAD
B.C. ALTA.
HIGH ROCK CLAIMS
KIMBERLEY
CRANBROOK
FERNIE
COLEMAN
HUNGER CLAIMS
BIGHORN CLAIMS
CABIN EAST CLAIMS
CABIN CREEK CLAIMS
B.C.
U.S.A.
MAPPING BY: PELL, MORRIS & LOWERY, 1989; HARTLEY, 1982 & PRICE, 1965. COMPILED BY: PELL, 1989
FORMOSA RESOURCES CORPORATION
COLUMBIA PROJECT
FERNIE, BRITISH COLUMBIA
GEOLOGY OF THE
HUNGER LAKE-CABIN CREEK AREA
S.E. BRITISH COLUMBIA
0 500 1000 1500 2000
SCALE 1: 25,000
DRAWN BY:
DATE: OCTOBER, 1989
FIGURE: 5



LEGEND:

KK	JURASSIC & (?) CRETACEOUS KOOTENAY FORMATION - DARK GREY CARBONACEOUS SANDSTONE & CONGLOMERATE SANDSTONE, SILTSTONE, SHALE, COAL.
JF	JURASSIC FERNIE GROUP - GREY CALCAREOUS SHALE, SHALEY LIMESTONE, SILTY LIMESTONE, DARK GREY TO BLACK SHALE, LIMESTONE, SANDSTONE.
	JURASSIC FERNIE GROUP - BASAL PHOSPHORITE BEDS
TRS	TRIASSIC SPRAY RIVER GROUP - GREY DOLOMITE SILTSTONE & SANDSTONE, BROWN SILTSTONE & SILTY SHALE.
PI	PERMIAN ISHBEL GROUP - WHITE & GREY SILTSTONE, SHALE CHERT, FINEGRAINED SANDSTONE, MINOR DOLOMITE, SOME NODULAR PHOSPHATE ROCK.
MR	MISSISSIPPIAN RUNDLE GROUP - LIMESTONE, DOLOMITE, MINOR SHALE, SANDSTONE, CHERTY LIMESTONE

OUTCROP

45 BEDDING STRIKE & DIP

GEOLOGICAL CONTACT approximate

THRUST FAULT

DLY89-5 SAMPLE NUMBER

TRENCH

ROAD

0 200 400 600 800 1000 METRES

SCALE 1:12,500

FORMOSA RESOURCES CORPORATION

COLUMBIA PROJECT

CABIN EAST CLAIMS

GEOLOGY MAP

NTS: 82 G/2

DRAWN BY: PELL /rwr

DATE: MARCH, 1990

FIGURE: 6