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PROSPECTING, GEOLOGICAL, LITHOGEOCHEMICAL AND TRENCHING REPORT ON THE HUNGER GROUP (HUNGER 1-12 CLAIMS) AND BIGHORN GROUP (BIGHORN 1, 2 CLAIMS) COLUMBIA PROJECT

NTS 82G/2

49^{0}10'00" NORTH, 114^{0}40'30" WEST

FLATHEAD AREA

FORT STEELE MINING DIVISION

SOUTHEASTERN BRITISH COLUMBIA

GEOLOGICAL BRANCH
ASSESSMENT REPORT
19,938

By

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

March 15, 1990

Owner: Formosa Resources Corporation
Operator: Formosa Resources Corporation

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COLUMBIA PROJECT

PROSPECTING, GEOLOGICAL, LITHOGEOCHEMICAL AND TRENCHING REPORT

HUNGER & BIGHORN GROUPS

SUMMARY

The Hunger Lake group and Bighorn claims are located in the Hunger Lake/Cabin Creek area of the Rocky Mountains, Fort Steele Mining Division, southeastern British Columbia. The claims are approximately 45 kilometres south-southeast of the town of Fernie, B.C. and are accessed via an extensive network of logging roads.

The Hunger Lake group consists of the Hunger 1 through 12 claims, totalling 53 units. The Bighorn group consists of two two-post claims. The claims are 100% owned and operated by Formosa Resources Corporation. Boundary Drilling Inc. was enlisted to carry out 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, about $82,635 were spent on reconnaissance and detailed geological mapping, hand trenching, sampling, backhoe trenching and assaying for the entire Columbia Project. On the Hunger claims, a total of 159 samples were collected (including 6 bulk samples) from 8 hand trenches, 9 back-hoe trenches, and outcrop. A total of 10 samples were taken on the Bighorn claims. Samples were analyzed for P_2O_5 (gravimetric), Y (XRF), and 34 trace elements (INAA). Approximately $32,227 were spent on the Hunger group, and $3,307 on the Bighorn group.

The properties are 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 and is the focus of this project. The basal Fernie phosphatic strata are generally one to two metres thick and contain unusually high concentrations of yttrium.

Preliminary results are encouraging. Many intersections containing in excess of 27% P_2O_5 and 750 ppm yttrium were encountered. Average grades are 21 per cent P_2O_5 and 620 ppm yttrium across slightly more than one metre and, in some areas, slightly higher average grades and thicknesses were found.

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).

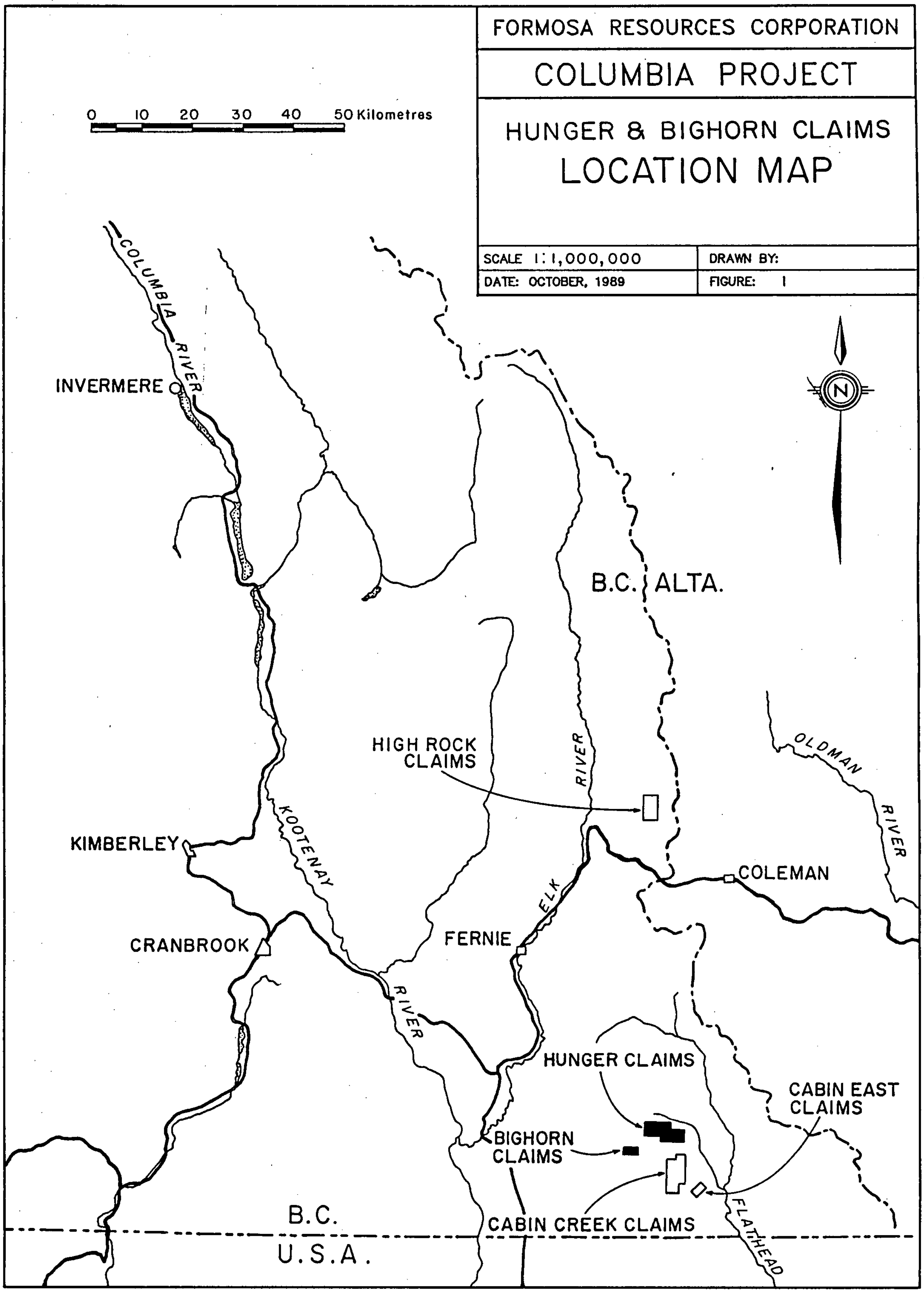
Currently, there is no byproduct recovery of yttrium from any of the U.S. operations. Phosphoria Formation phosphorites from the western phosphate field contain an average of 300 ppm Y; phosphorites from North Carolina and Florida contain an average of 235-300 ppm Y; and phosphorites from Tennessee contain 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 Hunger and Bighorn claims are located in the Hunger Lake - Bighorn Creek area, Fort Steele Mining Division, about 45 kilometres southeast of the town of Fernie in southeastern B.C. 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 the River Road. River Road is then taken for 1.5 kilometres to the Lodgepole Main Haul Road, which is then followed south and easterly for 8 kilometres to the next fork. The south (right) fork, Ram Road, is followed for 32 kilometres to a little-used fork to the south which crosses Bighorn Creek and, in about 2 kilometres, leads on to the Bighorn claims. The Hunger Lake claim group is reached by continuing along the main Ram Road for 500 metres to the next fork; the north (left) Ram Road leads to the Hunger Lake claim group after 4 kilometres. From that point the numerous roads and trails are accessable only by good four-wheel drive or all-terrain vehicles.


FORMOSA RESOURCES CORPORATION
COLUMBIA PROJECT
HUNGER & BIGHORN CLAIMS
LOCATION MAP
SCALE 1:1,000,000
DRAWN BY:
DATE: OCTOBER, 1989
FIGURE: 1
0 10 20 30 40 50 Kilometres
N
COLUMBIA RIVER
INVERMERE
B.C. ALTA.
HIGH ROCK CLAIMS
ELK RIVER
OLDMAN RIVER
KIMBERLEY
KOOTENAY RIVER
COLEMAN
CRANBROOK
FERNIE
HUNGER CLAIMS
CABIN EAST CLAIMS
BIGHORN CLAIMS
CABIN CREEK CLAIMS
FLATHEAD
B.C.
U.S.A.

Elevations on the claims range from 1675 metres (5500 feet) to 2135 metres (7000 feet). Large areas have recently been clearcut; grasses, small plants, fireweed and stumps characterize these areas. Unlogged parts of the claims host stands of spruce and fir.

2.2 CLAIMS

The Hunger Lake Group consists of the Hunger 1 to 12 claims, 53 contiguous two-post and metric four-post claim units (Figure 2), as follows:

CLAIM NAME	UNITS	RECORD NO.	EXPIRY* (D/M/Y)
Hunger 1	18	3400	13/04/1993
Hunger 2	18	3412	14/04/1993
Hunger 3	1	3413	14/04/1993
Hunger 4	1	3414	14/04/1993
Hunger 5	1	3415	14/04/1993
Hunger 6	1	3516	02/07/1993
Hunger 7	1	3517	02/07/1993
Hunger 8	1	3528	08/07/1993
Hunger 9	1	3518	03/07/1993
Hunger 10	1	3519	03/07/1993
Hunger 11	8	3520	03/07/1993
Hunger 12	1	3529	08/07/1993

The Bighorn group consists of two two-post claims as follows:

CLAIM NAME	UNITS	RECORD NO.	EXPIRY* (D/M/Y)
Bighorn 1	1	3530	09/07/1993
Bighorn 2	1	3531	09/07/1993

Formosa Resources Corp. holds 100 per cent interest in these claims subject to a 5% Net Profit Royalty. As the operator, Formosa enlisted Boundary Drilling Inc. to undertake the exploration program.

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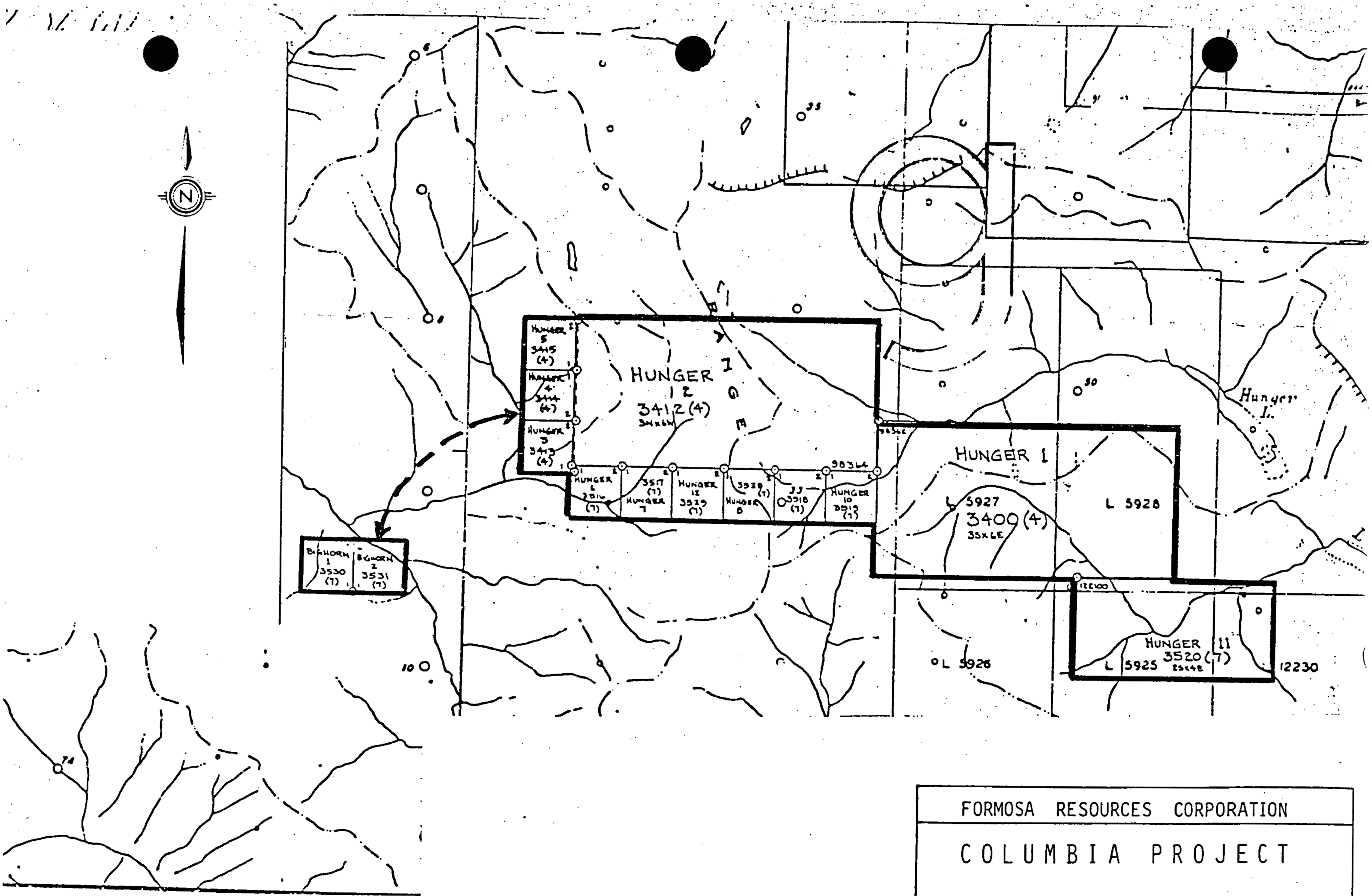
*upon acceptance of this report



FORMOSA RESOURCES CORPORATION

COLUMBIA PROJECT

HUNGER AND BIGHORN CLAIMS

CLAIMS MAP

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

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

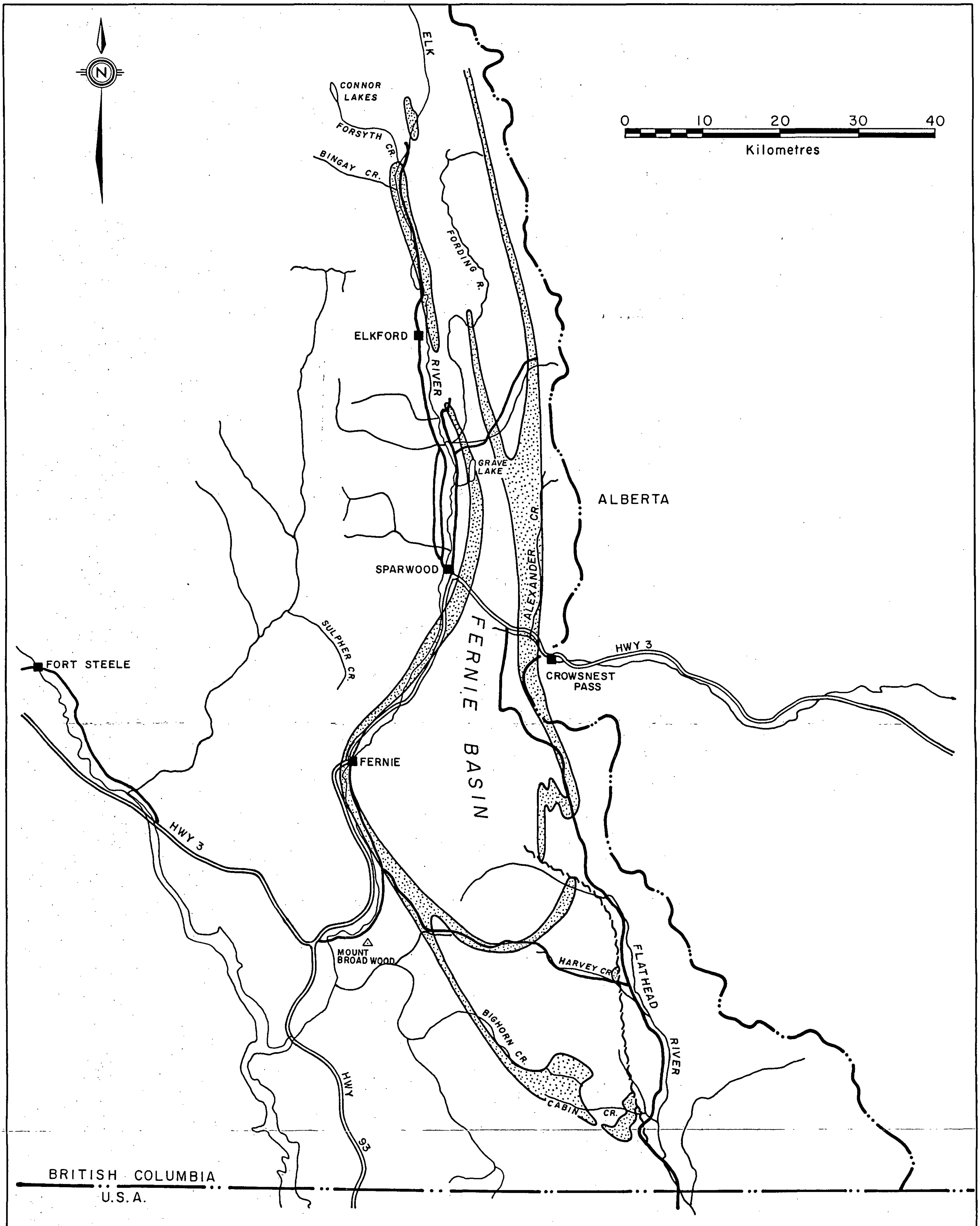
3.1.1 Regional Stratigraphy

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 in thickness (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).

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.



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

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 in thickness (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 can be 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 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 can be from 6 to 418 metres in thickness, 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 in thickness 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 in thickness 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 can be from 150 to 520 metres thick (Price, 1965).

3.2 PROPERTY GEOLOGY

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

3.2.1 Stratigraphy

The Hunger and Bighorn claims are predominantly underlain by strata correlative with the Ranger Canyon Formation of the Permian Ishbel Group, the Sulphur Mountain Formation of the Triassic Spray River Group and the Jurassic Fernie Group (Figures 5, 6). Mississippian Rundle Group limestones are exposed to the north and northeast of the claims and sandstones and siltstones of the Late Jurassic to Cretaceous Kootenay Formation are exposed on ridge-crests to the south of the claims.

Rocks assigned to the Ranger Canyon Formation on the properties are predominantly massive, medium-bedded white, grey or cream weathering, very fine-grained quartzose sandstones, siltstones and dolomitic siltstones. Phosphatic strata were noted within this formation in two localities; west of Bighorn Creek, northwest of the Bighorn claims (Stn. PRR89-1, Fig. 6) and near the eastern margin of the Hunger claims, south of Leslie Creek (Stn. HGR89-32, Fig. 6). West of Bighorn Creek, a roadcut exposes dark grey phosphatic siltstone layers up to 20 cm thick, which form the base of thicker beds and conglomerate layers up to 30 cm thick, with chert and phosphate cobbles in a phosphatic matrix. The highest grade encountered from this location was 21.49% P_2O_5 and 105 ppm Y across 20 cm (Appendix 1). These rocks are probably correlative with strata from the lower part of the Ranger Canyon Formation.

Adjacent to the eastern margin of the Hunger claims, phosphatic horizons in the Ranger Canyon Formation occur near its top, not far from the basal Triassic beds. In this area, phosphate occurs as nodules within cream, buff or brown weathering, calcareous siltstone to fine-grained sandstone beds. In places, the phosphate nodules can comprise as much as 30 to 35 per cent of the rock across 10 to 20 cm. A representative sample of the nodules contained 24.70% P_2O_5 and 190 ppm Y (Appendix 1); the grade of the bed would be much lower. This phosphatic horizon is underlain by a bed of distinctive, light grey weathering, finely fragmented, sandy carbonate rock that contains abundant disseminated black bitumen.

Rocks correlative with the Triassic Spray River Group in the area are predominantly medium- to thin-bedded, light yellowish-brown to medium brown weathering siltstones, and calcareous or dolomitic light grey siltstones. Pyrite or marcasite concretions are developed locally. In some areas, fine sandy beds are present within the siltstones; in others, dark brown shales and silty shales occur. Locally, the top of the Triassic is marked by a light grey weathering silty limestone.

Fernie Group rocks are recessive weathering and, for the most part, not well exposed. Where exposed, the base of the Fernie is marked by a phosphorite horizon of Sinemurian age that can be in excess of 1.5 m in thickness. It generally consists of two gritty, pelletal phosphorite horizons separated by 5 to 25 cm of chocolate shale. In the outcrops and sections examined, the upper contact of the phosphorite horizon is often eroded away or mixed, by glaciation or other surface phenomenon, with shale or shale and till. The phosphorite layers are usually very poorly consolidated and can be sampled with a trowel or shovel; occasionally, however, well indurated layers were encountered. Overlying the basal phosphorite and comprising the greatest part of the Fernie Group observed in the area, are monotonous fissile black shales. Much further up in the sequence, cream to light grey weathering siltstones and silty limestones as well as shales and silty shales are present. Near the southeastern corner of the Hunger claims (Figure 6), buff weathering, fossiliferous calcareous sandstone and sandy limestone beds are present within the black shales. Brachiopods and belemnites both occur within these beds which are probably correlative with the belemnite beds of the Bajocian Rock Creek Member of the Fernie Group.

3.2.2 Structure

The structure in the Hunger Lake - Bighorn Creek area is dominated by a series of northwest-southeast trending folds and thrust faults (Figures 5, 6). The western margin of the area examined is marked by the MacDonald Thrust, a major regional structure. The Bighorn claims, immediately east of the MacDonald Thrust, are underlain by a small anticline/syncline pair outlined by the basal Fernie phosphorite, which are parasitic on the southwest limb of a larger anticlinal structure. The northeast limb of this major anticline is faulted; the Storm Creek thrust, which is a relatively local structure, juxtaposes it against the adjacent major syncline to the northeast. The Hunger claims are along the northeastern limb of this major syncline; small second order parasitic folds complicate the outcrop pattern. Along the eastern margin of the Hunger claims, another small thrust truncates the phosphorite horizon and places Fernie shales over Triassic and Permian strata (Figures 5, 6).

Stereonet analysis of structural measurements taken from the area indicates that the folds are conical rather than cylindrical in nature (Appendix 2). The folds are best defined by a cone axis plunging approximately 30^{o} towards the southeast (135^{o}) and a half apical angle of 72^{o}. The stereonet pattern suggests that the synclinal structures open in an up-plunge direction (to the northwest) and that anticlinal structures open in a down plunge direction (to the southeast). There is a significant clustering of bedding data, resulting from the fact that most of the measurements were taken from the northeast limb of the major synclinal structure on the Hunger claims; in this region the average bedding orientation is 121/18 (Appendix 2).

4. TRENCHING AND ASSAY RESULTS

The Fernie Group rocks are poorly exposed; in order to measure sections through the basal phosphorite horizon it was necessary to dig trenches or pits. In the course of evaluating the economic potential of this horizon, 159 samples (including 6 bulk samples) were collected from 8 hand trenches, 9 backhoe trenches and 3 outcrops on the Hunger claims, and 10 samples from the Bighorn claims (Figure 6, *, *, *, and Appendix 1). Samples were analyzed for P_2O_5 using a gravimetric assay method, for yttrium using X-ray fluorescence (XRF) and for 34 trace elements, including some of the rare earths, using induced neutron activation analysis (INAA).

Hand trenches were dug with a pick and shovel; in most cases they involved digging into a bank and removing earth and slumped material to provide a well exposed section. One hand trench (Stn. HGR89-1), dug on relatively flat ground, was approximately 40 cm wide, 40 cm deep and 2 metres long. In most cases, hand trenched areas were revisited with a John Deere 555 backhoe and enlarged to give more complete sections. Continuous samples across measured intervals were collected. Maximum depth attainable by the backhoe was 4 metres; all samples collected may have been affected to some degree by surface weathering. Phosphate and yttrium results from measured sections are summarized as follows:

Summary of Measured Sections, Hunger Claims

SECTION	TRUE THICKNESS METRES	WEIGHTED AVERAGES* P_2O_5 %	Y PPM
HAND TRENCHES			
HGR89-1	1.32	14.25	399
HGR89-19	1.13	25.16	722
HGR89-21(1)	1.06	19.44	545
HGR89-21(2)	1.10	23.76	605
HGR89-24(1)	0.66	30.05	825
HGR89-24(2)	0.98	25.07	701
HGR89-28	0.59	14.13	327
BACKHOE TRENCHES			
TR89-1-1	1.44	21.95	665
TR89-1-2	1.22	23.02	679
TR89-1-3	1.98	14.95	526
(CONTAINS	1.06	21.17	589)
TR89-1-4	0.78	14.53	409
TR89-1-5	0.90	21.26	655
TR89-2-1	0.91	19.15	526
TR89-2-2	0.77	18.90	550
TR89-2-3	0.84	16.01	531

TR89-3-1	1.42	21.88	628
TR89-3-2	1.39	22.44	621
TR89-3-3	2.18	21.21	649
(CONTAINS	1.18	26.16	791)
TR89-4-1	0.77	25.89	717
TR89-4-2	0.78	19.22	588
TR89-5-1	1.66	24.52	669
TR89-5-2	0.82	23.66	661
TR89-5-3	1.28	21.70	521
(CONTAINS	1.06	23.15	605)
TR89-5-4	1.24	27.21	887
TR89-5-5	1.10	21.89	629
(CONTAINS	0.71	23.76	751)
TR89-5-6	0.40	26.82	796
TR89-5-7	1.02	13.75	520
TR89-6-1	1.00	21.16	581
TR89-6-2	0.96	19.17	474
TR89-7-1	1.20	16.25	508
(CONTAINS	0.97	17.89	558)
TR89-8-1	0.46	22.36	665
TR89-9-1	1.08	17.25	559
(CONTAINS	0.52	22.47	684)

Summary of Measured Sections, Bighorn Claims

SECTION	TRUE THICKNESS METRES	WEIGHTED AVERAGES* P_2O_5 %	Y PPM
INV89-1A	0.60	17.87	NA
IVR89-2	0.51	23.74	690

*Measured sections are generally composed of a number of smaller interval samples; weighted averages, based on proportional sample thicknesses, were calculated to represent the yttrium and phosphate content of the entire section.

On the Hunger claims, measured sections average 21.31 per cent P_2O_5 and 621 ppm yttrium across an average thickness of 1.06 metres. The values range from 2.4 per cent P_2O_5 and 140 ppm yttrium in shale layers within the phosphorite section to 30.5 per cent P_2O_5 and 970 ppm yttrium (Appendix 1). Phosphorite beds on the Bighorn claims were not examined in detail; however, in the outcrops examined the phosphorite seems to be thinner and/or lower grade than on the Hunger claims.

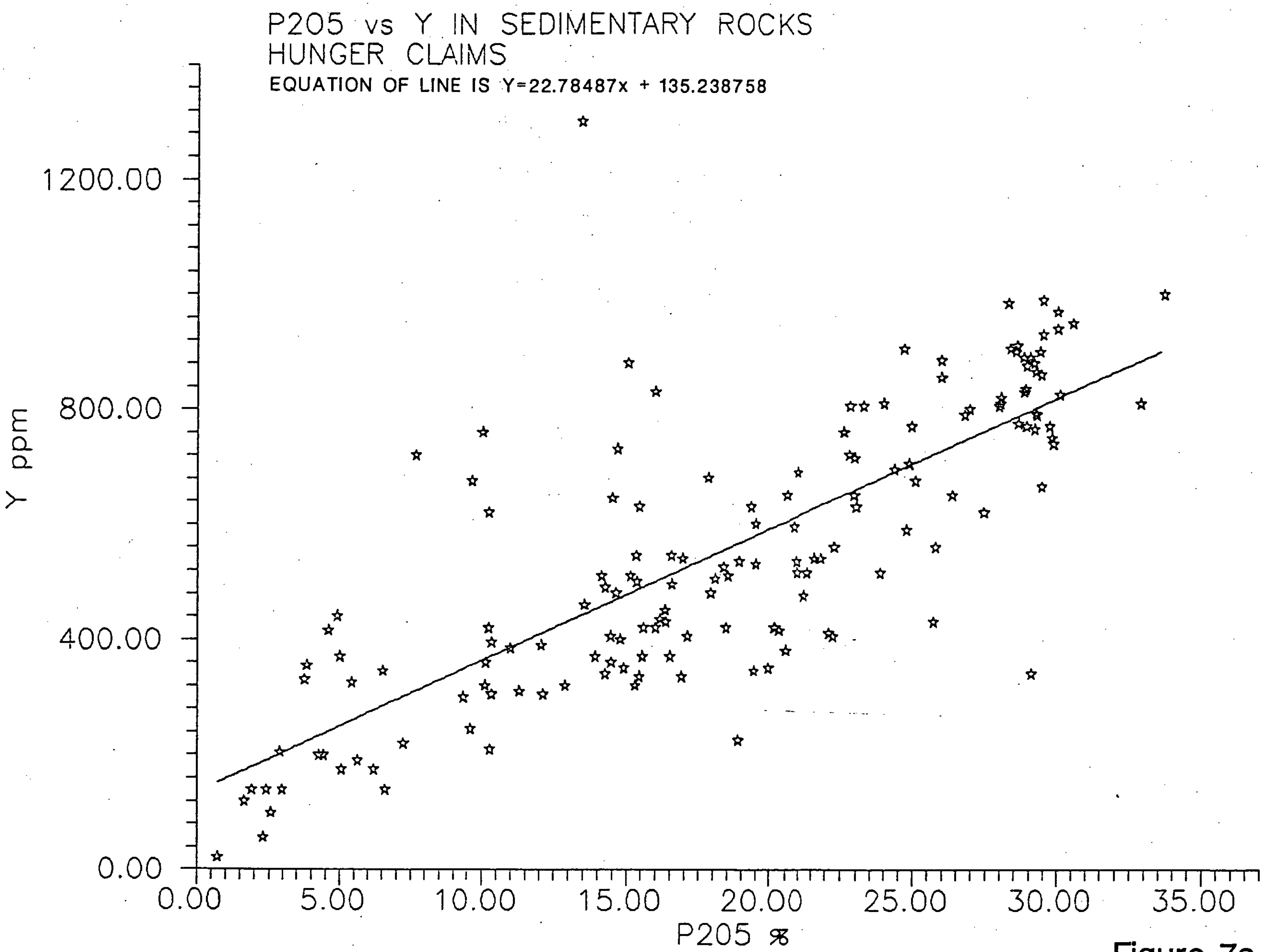
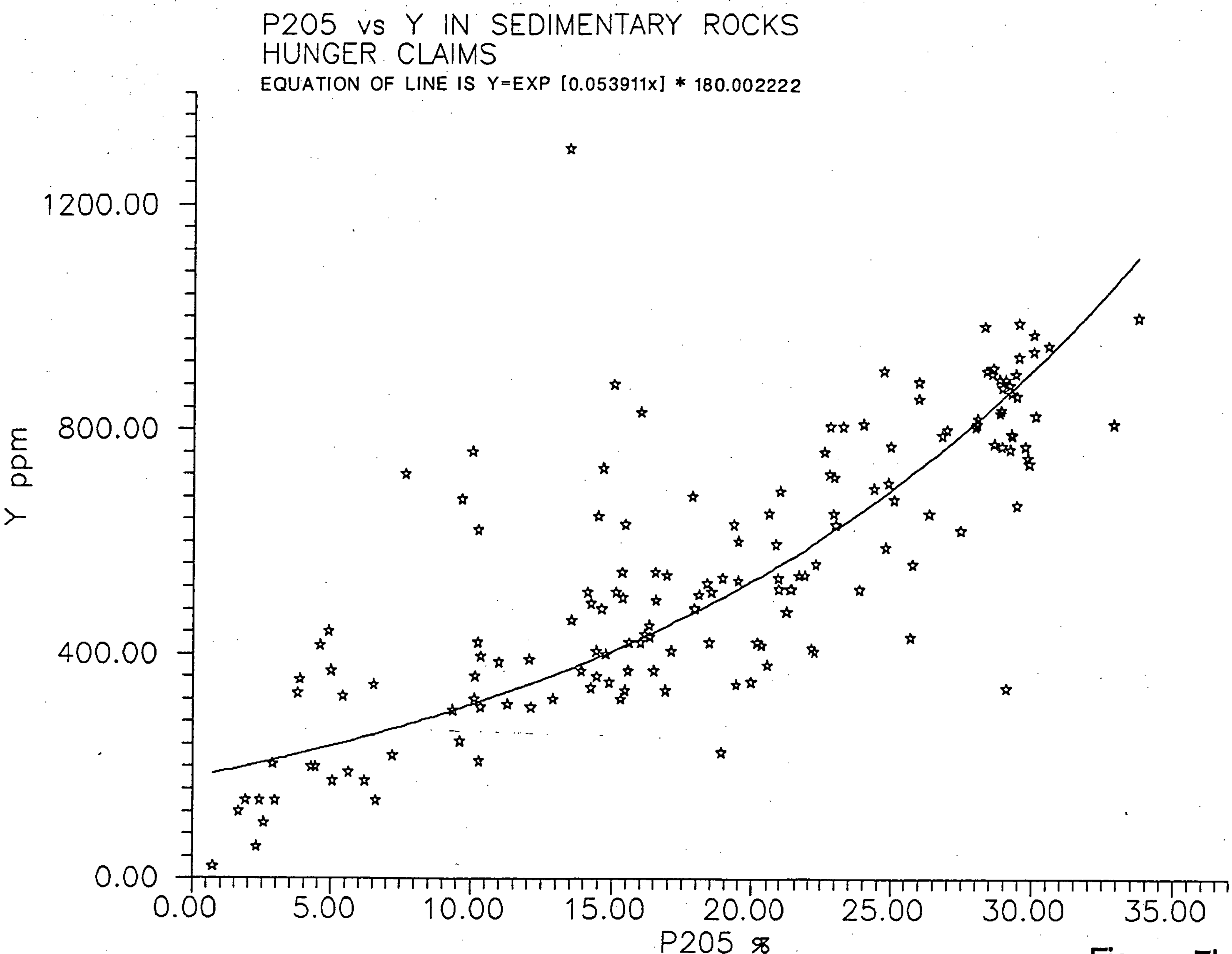

P205 vs Y IN SEDIMENTARY ROCKS
HUNGER CLAIMS
EQUATION OF LINE IS Y=22.78487x + 135.238758
Y ppm
1200.00
800.00
400.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
P205 %

Figure 7a



P205 vs Y IN SEDIMENTARY ROCKS
HUNGER CLAIMS
EQUATION OF LINE IS Y=EXP [0.053911x] * 180.002222
Y ppm
1200.00
800.00
400.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
P205 %

Figure 7b

There is a direct relationship between yttrium and phosphate values in the basal Fernie Group strata (Figures 7a, 7b). It can be crudely expressed as a line with the equation:

$$Y(ppm) = 22.78487P_2O_5(\%) + 135.238758 \text{ (Figure 7A);}$$

however, an exponential equation gives a much better fit and more accurately describes the relationship between yttrium and phosphate. The exponential equation is:

$$Y(ppm) = EXP[0.053911P_2O_5(\%)] * 180.002222 \text{ (Figure 7B).}$$

In the simplest of terms, as the phosphate content of the rock increases, so does the yttrium.

4.1 BACKHOE TRENCH SECTIONS

Nine trenches were dug using a John Deere 555 Backhoe (Figure 6, 8a to 8c); they ranged from 8 to 32 metres in length, 1 to 3 metres in width and up to 4 metres in depth. The dimensions of individual trenches are summarized as follows:

TRENCH	LENGTH (METRES)	WIDTH (METRES)	DEPTH (METRES)	MATERIAL MOVED (m^3)
89-1	28.2	1.75	0-4	98.7
89-2	27	1	0-4	54
89-3	10.2	3	2.5-4	99.5
89-4	12.5	1	1.85-4	36.6
89-5(A)	32	1	1.5	48
89-5(B)	9.6	1	1.5-4	36.4
89-6	10	1	0.75-2.25	15
89-7	8	1	3	24
89-8	11.6	1	0-2	11.6
89-9	8.7	1	2-4	26.1
TOTAL VOLUME OF MATERIAL MOVED				449.9 m3

In most of the trenches the stratigraphy of the phosphorite horizons was similar: a bipartite division consisting of a pelletal phosphorite to phosphatic shale horizon, 25 to 84 cm thick, sitting either directly on hard Triassic siltstones or on a weathered, clay-rich Triassic base mixed with some phosphate, and overlain by 5 to 23 cm of chocolate to black shale which is in turn overlain by a second pelletal, or in some cases, nodular phosphorite which is generally between 18 and 77 cm thick. The upper phosphorite horizon is overlain by slightly phosphatic black or brown shales that grade upwards into non-phosphatic rocks. This bipartite stratigraphy is exhibited in TR89-1, sections 1-3, TR89-4, sections 1 & 2, TR89-5, sections 3-7, TR89-6, 7 and 9 (Figures 8a to 8c). In some cases, the stratigraphy differs. The section may be incomplete due to the top of the section being removed by erosion or mixed with shale and glacial till (see sections TR89-5-1 and TR89-8-1, Figure 8c). In other cases, it is difficult to determine the reason for the apparent differences; mixing and disruption during glaciation or simply, original stratigraphic variations may account for the observed stratigraphy (see TR89-1, section 5, TR98-2, 3, and TR89-5, section 2, Figures 8a to 8c). In trenches TR89-1 and 2, the phosphatic horizon seems to thin and decrease somewhat in grade with depth; however, even at the maximum depth reached by the hoe, surface processes can affect the stratigraphy and this apparent thinning is difficult to evaluate.

Phosphorites exposed in backhoe trenches on the Hunger claims averaged approximately 1 metre thick, with grades of around 21 per cent P_2O_5 and 620 ppm yttrium. The highest grade intersections encountered were along a 1.7 kilometre stretch, in trenches TR89-3, 4 and 5, near the headwaters of Leslie Creek (Figures 6, 8a, 8b); values of 30 per cent P_2O_5 and 940 ppm yttrium across 40 cm were returned (Appendix 1). Average thickness and grade of the phosphorite horizon in these trenches is 22.52 per cent P_2O_5 and 657 ppm yttrium across 1.17 metres. In that region, the phosphorite strata dip, in a downslope direction, slightly steeper than the hillside.

4.2 BULK SAMPLING

Bulk samples of good pelletal phosphorite were collected from two trenches (TR89-3 and TR89-5). Two splits and one washed sample from each were analyzed for phosphate, yttrium and trace elements (as above). One split and the washed sample were also analyzed for major element oxides (direct coupled plasma emission analysis) and fluorine (distillation assay, Appendix 3). Results are summarized as follows:

SAMPLE	P_2O_5 %	Y ppm	CaO/ P_2O_5	R_2O_3**/ P_2O_5	MgO %
TR89-3-B1 (SPLIT 1)	29.83	740	1.44	0.18	0.39
TR89-3-B2 (SPLIT 2)	29.69	770	--	--	--
TR89-3-BP (WASHED)	32.83	810	1.37	0.10	0.29
TR89-5-B1 (SPLIT 1)	28.80	830	--	--	--
TR89-5-B2 (SPLIT 2)	29.39	860	1.36	0.19	0.39
TR89-5-BP (WASHED)	33.66	1000	1.36	0.10	0.25

** $R_2O_3 = Al_2O_3 + MgO + Fe_2O_3$

Splits from the bulk samples are internally consistent; the variance in phosphate values was approximately 0.5 to 2 relative per cent and the variance in yttrium content was 3.5 to 4 relative per cent. A simple washing procedure (removing silts by crude panning) resulted in an increase in both phosphate and yttrium values by 9-13.5 relative per cent and 7-15.5 relative per cent, respectively. The samples meet industry specifications for major element concentrations, with the exception of the R_2O_3/P_2O_5 values (see Appendix 4). In the unwashed samples the R_2O_3/P_2O_5 values are higher than desired; however, the washed samples meet cutoff specifications (0.1). Additional material from the bulk samples (approximately 30 kg from TR89-3 and 50 kg from TR89-5) have been submitted for mineralogical and preliminary metallurgical tests.

5. CONCLUSIONS

The Hunger and Bighorn 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, averaging around 600-650 ppm Y, versus 260 ppm, which is the worldwide phosphorite average. The basal Fernie phosphorite was the focus of this project, the main conclusions of which may be summarized as follows:

1. On the Hunger claims, the phosphatic strata are continuous, average slightly over 1 metre in thickness and contain, on average, 21 per cent P_2O_5 and 620 ppm yttrium. Some slightly thicker and higher grade sections have been located, but their lateral continuity has not been established. Thicknesses and/or grade on the Bighorn claims does not appear to be as high as on the Hunger claims.

2. Yttrium and phosphate concentrations increase proportionally.

3. Simple washing tests were able to upgrade material from bulk samples to a product which would be acceptable to industry; however, proper beneficiation tests are still required.

Based solely on the phosphate content and thickness, the basal Fernie phosphorites are currently subeconomic, as previous workers decided; however, significant amounts of yttrium are present in these rocks and if this is feasible to extract at a reasonable cost, it could change the status from subeconomic to economically exploitable. To date, the work done has been preliminary and has not addressed questions such as the effects of surface weathering and the potential of changes in grade with depth. As well, it will be necessary to examine the reality of extracting yttrium during phosphoric acid process before a final assessment can be made.

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8. 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 Creek Group	26%	$21,485
Cabin East Group	7%	$ 5,784
Highrock Group	6%	$ 4,958
Regional	18%	$14,874
TOTAL		**$82,635**

*Breakdown showing pay rates and days worked follows.
**Breakdown showing trench work distribution follows.

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 Hunger and Bighorn 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 interest 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, HUNGER CLAIMS

SAMPLE NO.	P_2O_5 %	Y PPM	CE PPM	LA PPM	T M	DESCRIPTION
HGR89-1A	2.30	57	75	40	0.58	WEATHERED, RUSTY BROWN SILTSTONE
HGR89-1B	16.33	430	160	160	0.24	BROWNISH, GRITTY PHOSPHATIC SHALE
HGR89-1C	14.60	480	170	190	0.55	GRITTY, PELLETAL PHOSPHATE & SHALE
HGR89-1D	6.61	140	85	87	0.21	DARK CHOCOLATE SHALE
HGR89-1E	17.09	405	260	220	0.32	GRITTY, PELLETAL PHOSPHATE
HGR89-1F	4.42	200	170	130	0.63	BLACK SHALE
HGR89-19A	20.83	595	240	250	0.18	MIXED WEATHERED SILTSTONE & P205
HGR89-19B	27.98	810	260	350	0.42	PELLETAL PHOSPHATE
HGR89-19C	24.34	695	250	300	0.53	PHOSPHATE, W/ MINOR INTERMIXED SHALE
HGR89-19D	10.09	320	160	150	0.44	WEATHERED SHALE
HGR89-21A	14.23	490	210	200	*0.18	MIXED P205 & LIGHT BROWN CLAY
HGR89-21B	15.54	370	140	140	*0.49	GRITTY PHOSPHATE, WEATHERED
HGR89-21C	26.75	790	230	310	*0.39	GRITTY PHOSPHATE
HGR89-21D	20.29	415	240	180	*0.30	SHALEY TO GRITTY PHOSPHATE
HGR89-21E	21.82	540	180	200	*0.43	VERY BLACK, PELLETAL PHOSPHATE
HGR89-21F	28.83	835	290	370	*0.37	GRITTY, BLACK, WEATHERED PHOSPHATE
HGR89-21G	16.89	335	130	140	GRAB	FRESH, HARD PHOSPHATE
HGR89-23	29.41	665	170	250	GRAB	VERY BLACK, PELLETAL PHOSPHATE
HGR89-24-1A	30.05	825	270	350	0.66	BLACK, GRITTY PHOSPHATE
HGR89-24-2A	27.43	620	220	280	0.17	PURE, GRITTY PHOSPHATE
HGR89-24-2B	28.88	875	310	400	0.36	PURE PHOSPHATE
HGR89-24-2C	5.61	190	130	100	0.08	CHOCOLATE SHALE
HGR89-24-2D	21.60	540	180	210	0.17	MIXED PHOSPHATE AND SHALE
HGR89-24-2E	26.93	800	270	320	0.20	MIXED PHOSPHATE AND SHALE
HGR89-24-2F	6.20	175	140	96	0.36	SHALE
HGR89-28A	10.32	305	150	120	0.14	SILTSTONE, MINOR INTERMIXED P205
HGR89-28B	15.43	335	130	140	0.40	FISSILE, PELLETAL PHOSPHATE
HGR89-28C	2.40	140	120	73	0.30	HIGHLY WEATHERED PHOSPHATE & SHALE
HGR89-28D	16.92	540	170	190	GRAB	WEATHERED PHOSPHATE
TR89-1-1A	19.30	630	160	190	0.38	MIXED WEATHERED BROWN CLAY & P205
TR89-1-1B	25.06	675	180	270	0.24	GRITTY PHOSPHATE
TR89-1-1C	10.21	420	160	160	0.05	BLACK SHALE
TR89-1-1D	28.56	910	240	330	0.33	GRITTY P205, SOME DISTINCT NODULES
TR89-1-1E	18.90	535	210	230	0.44	MIXED SHALE AND PHOSPHATE (& TILL?)
TR89-1-2A	20.56	650	190	230	0.41	WEATHERED BROWN SILTSTONE & P205
TR89-1-2B	29.13	880	220	340	0.47	GRITTY PHOSPHATE
TR89-1-2C	13.53	460	150	170	0.08	SHALE W/SOME PHOSPHATE
TR89-1-2D	14.87	350	150	150	0.10	THIN NODULAR OR LENTICULAR PHOSPHATE
TR89-1-2E	21.20	475	220	200	0.16	MIXED PHOSPHATE AND SHALE
TR89-1-2F	4.89	440	280	180	0.13	SHALE & ?SOME PHOSPHATE
TR89-1-2G	1.90	140	110	77	0.68	BLACK SHALE

TR89-1-3A	20.92	535	140	200	0.22	MIXED WEATHERED SILTSTONE & P2O5
TR89-1-3B	22.95	715	200	260	0.52	GOOD GRITTY P2O5, SOME SHALE
TR89-1-3C	18.44	420	170	180	0.32	P2O5 W/SHALEY MATRIX & CALCITE VEINS
TR89-1-3D	2.96	140	130	82	0.23	CHOCOLATE SHALE
TR89-1-3E	12.10	305	220	150	0.27	MIXED SHALE & FRAGMENTS OF GRITTY P2O5
TR89-1-3F	7.65	720	500	350	0.42	SHALE FRAGMENTS W/SOME PHOSPHATE
TR89-1-4A	18.35	525	190	200	0.36	PHOSPHATE, BLACK
TR89-1-4B	11.28	310	130	120	0.42	PHOSPHATE W/SOME SHALE
TR89-1-4C	0.72	22	34	24	0.45	CHOCOLATE SHALE
TR89-1-5A	24.86	705	210	290	0.68	GRITTY, OILY SMELLING P2O5, CALCITE VEINS
TR89-1-5B	10.12	360	180	150	0.22	MIXED PHOSPHATE AND SHALE
TR89-1-5C	3.83	355	200	150	0.18	SHALE, WITH MINOR PHOSPHATE
TR89-1-5D	3.76	330	210	150	0.36	WEATHERED SHALE
TR89-1-5E	4.58	415	270	210	0.27	WEATHERED SHALE
TR89-2-1A	22.93	650	200	260	0.29	MIXED WEATHERED SILTSTONE & P2O5
TR89-2-1B	20.51	380	180	170	0.26	PHOSPHATE WITH NODULES
TR89-2-1C	17.90	480	200	190	0.23	PHOSPHATE WITH MINOR CLAY
TR89-2-1D	10.22	620	370	280	0.13	PHOSPHATE
TR89-2-1E	2.88	205	130	98	0.18	SHALE
TR89-2-2A	16.13	435	130	160	0.06	MIXED PHOSPHATE & SILTSTONE
TR89-2-2B	20.97	690	170	240	0.42	GRITTY, MASSIVE PHOSPHATE
TR89-2-2C	16.47	370	130	140	0.29	GRITTY, MASSIVE PHOSPHATE
TR89-2-2D	4.26	200	160	120	0.12	CHOCOLATE SHALE
TR89-2-3A	18.05	505	150	170	0.09	WEATHERED SILTSTONE AND PHOSPHATE
TR89-2-3B	22.80	805	210	270	0.26	WEATHERED P2O5 FRAGMENTS IN CLAYEY MATRIX
TR89-2-3C	12.04	390	150	140	0.49	WEATHERED PHOSPHATE AND SHALE
TR89-2-3D	2.56	100	70	37	0.54	SHALE
TR89-3-1A	16.54	495	120	160	0.26	SHALEY P2O5
TR89-3-1B	27.93	805	210	290	0.31	GRITTY, VERY FISSILE P2O5
TR89-3-1C	23.95	810	260	300	0.21	SLIGHTLY MORE MASSIVE P2O5
TR89-3-1D	16.52	545	140	170	0.13	CLAY-RICH P2O5
TR89-3-1E	24.76	590	130	210	0.31	FISSILE, DISRUPTED, BRECCIATED P2O5
TR89-3-1F	16.31	450	160	150	0.20	CLAYEY P2O5 (MIXED W/TILL ?)
TR89-3-2A	21.33	515	130	180	0.54	CLAYEY OR SHALEY PHOSPHATE
TR89-3-2B	29.34	900	280	340	0.28	GRITTY, FISSILE PHOSPHATE
TR89-3-2C	28.59	775	220	300	0.14	GRITTY, FISSILE P2O5, SHALEY AT THE TOP
TR89-3-2D	19.48	530	140	180	0.26	DISRUPTED PHOSPHATE, MIXED, CLAYEY
TR89-3-2E	14.10	510	180	180	0.17	DISRUPTED SHALE AND PHOSPHATE
TR89-3-3A	17.80	680	190	210	0.23	CLAYEY P2O5 (?W/SOME SILTSTONE?)
TR89-3-3B	14.41	405	100	120	0.24	SHALEY PHOSPHATE
TR89-3-3C	29.78	750	200	260	0.32	FISSILE, GRITTY PHOSPHATE
TR89-3-3D	25.95	855	220	270	0.55	FISSILE, GRITTY PHOSPHATE
TR89-3-3E	22.78	720	210	260	0.31	DISRUPTED P2O5, BRECCIATED & CLAYEY
TR89-3-3F	14.75	400	120	120	0.53	DISRUPTED P2O5, MIXED W/SHALE-CLAY

TR89-3-4	14.64	730	190	240	GRAB	GRITTY PHOSPHATIC SILTSTONE
TR89-4-1A	23.00	630	160	210	0.29	GRITTY, BLACK PHOSPHATE
TR89-4-1B	29.97	970	240	380	0.20	GRITTY, BLACK PHOSPHATE
TR89-4-1C	29.16	765	220	330	0.09	PHOSPHATE, HOT
TR89-4-1D	22.28	560	220	220	0.07	BROWN SHALE
TR89-4-1E	25.75	560	270	270	0.12	PHOSPHATE
TR89-4-1F	4.98	370	250	170	0.32	BROWN SHALE
TR89-4-2A	15.11	510	140	170	0.22	GRITTY P205, MIXED HARD & SOFT
TR89-4-2B	28.00	820	220	330	0.13	BLACK, GRITTY PHOSPHATE
TR89-4-2C	23.25	805	210	300	0.12	GRITTY BLACK PHOSPHATE
TR89-4-2D	6.51	345	110	110	0.13	DARK BROWN SHALE
TR89-4-2E	26.32	650	250	270	0.04	BLACK PHOSPHATE
TR89-4-2F	23.84	515	250	240	0.14	GRITTY BLACK P205, W/MINOR CLAY
TR89-4-2G	5.40	325	190	140	0.25	CHOCOLATE BROWN TO BLACK SHALE
TR89-5-1A	28.25	985	260	360	0.31	GRITTY, BLACK PHOSPHATE
TR89-5-1B	24.94	770	210	280	0.71	MIXED P205 AND BROWN SILTSTONE FRAGMENTS
TR89-5-1C	22.24	405	150	140	0.64	P205 & BROWN SILTSTONE & SHALE FRAGMENTS
TR89-5-2A	19.41	345	140	120	0.20	MIXED P205 & BROWN CLAY
TR89-5-2B	15.31	545	170	180	0.13	WEATHERED & FRAGMENTAL P205
TR89-5-2C	29.23	790	200	300	0.33	MASSIVE PHOSPHATE
TR89-5-2D	25.94	885	240	340	0.16	SHALEY PHOSPHATE
TR89-5-3A	18.87	225	110	110	0.22	MIXED WEATHERED SILTSTONE & P205
TR89-5-3B	15.99	420	130	140	0.46	SHALEY P205, FRAGMENTAL P205 IN SHALE
TR89-5-3C	14.43	360	96	120	0.08	SHALE
TR89-5-3D	29.07	760	230	290	0.52	GRITTY P205, SOFT @BASE, HARD @TOP
TR89-5-3E	10.00	340	160	130	0.33	FRAGMENTAL, MIXED BROWN SHALE & P205
TR89-5-4A	29.45	930	220	350	0.24	GRITTY, BLACK P205
TR89-5-4B	28.52	900	250	330	0.18	BROWNISH-BLACK, GRITTY P205
TR89-5-4C	7.23	220	140	110	0.14	CHOCOLATE SHALE
TR89-5-4D	29.45	990	290	370	0.35	MIXED, BROWNISH, CLAYEY P205
TR89-5-4E	22.59	760	250	280	0.33	GRITTY TO PHOSPHATIC SHALE
TR89-5-5A	15.33	500	130	160	0.31	BROWNISH P205 MIXED W CLAY
TR89-5-5B	29.98	940	210	330	0.16	SOFT, GRITTY, BLACK P205
TR89-5-5C	30.50	950	240	350	0.24	HARD, GRITTY, MASSIVE P205
TR89-5-5D	10.32	395	160	140	0.12	BROWN SHALE
TR89-5-5E	22.11	410	190	190	0.27	MIXED GRANULAR P205 W/SHALE
TR89-5-6A	20.94	515	140	180	0.10	MIXED BROWN SILTSTONE/CLAY & P205
TR89-5-6B	28.78	890	200	320	0.30	MASSIVE, BLACK, GRITTY P205
TR89-5-7A	9.60	245	110	110	0.25	MIXED BROWN SILTSTONE/CLAY & P205
TR89-5-7B	15.01	880	560	450	0.28	SHALEY OR CLAYEY P205
TR89-5-7C	9.64	675	420	310	0.10	MIXED SHALE AND P205
TR89-5-7D	1.65	120	130	72	0.13	BROWN SHALE
TR89-5-7E	20.15	420	190	180	0.25	FRAGMENTALLY MIXED SHALE & P205
TR89-5-7F	13.88	370	140	150	0.26	MIXED SHALE AND P205

TR89-6-1A	14.47	645	110	230	0.09	MIXED BROWN SILTSTONE AND P205
TR89-6-1B	15.27	320	78	120	0.24	HARD, BLACK PHOSPHATE
TR89-6-1C	29.20	865	140	320	0.38	HARD, BLACK PHOSPHATE
TR89-6-1D	10.97	385	100	140	0.16	BROWN SHALE
TR89-6-1E	25.69	430	130	180	0.13	GRANULAR, SOFT MIXED P205 & SHALE
TR89-6-2A	14.23	340	82	120	0.25	BLACK, SOFT PHOSPHATE
TR89-6-2B	28.87	770-	130	270	0.36	BLACK, HARD PHOSPHATE
TR89-6-2C	5.04	175	87	81	0.17	BROWN SHALE
TR89-6-2D	19.95	350	150	170	0.18	MIXED PHOSPHATE & SHALE
TR89-7-1A	9.35	300	90	110	0.23	MIXED BROWN CLAY AND PHOSPHATE
TR89-7-1B	15.42	630	120	230	0.12	HARD PHOSPHATE
TR89-7-1C	12.87	320	110	110	0.16	SOFT BLACK PHOSPHATE
TR89-7-1D	19.48	600	130	200	0.69	MIXED PHOSPHATE AND SHALE
TR89-8-1A	18.52	510	55	160	0.28	MIXED P205 & BROWN SILTSTONE
TR89-8-1B	28.33	905	150	310	0.18	P205, LOCALLY NODULAR & RUSTY
TR89-9-1A	15.57	420	86	130	0.23	P205, MINOR INTERMIXED SILTSTONE
TR89-9-1B	28.98	890	150	330	0.22	HARD PHOSPHATE
TR89-9-1C	24.67	905	160	340	0.07	SOFT, BLACK PHOSPHATE
TR89-9-1D	10.26	210	120	110	0.35	SHALE & CLAY, SOME PHOSPHATE
TR89-9-1E	15.97	830	340	390	0.21	PHOSPHATE W/YELLOW-ORANGE STAIN
TR89-9-6	13.39	1300	830	691	NA	RUST-STAINED PHOSPHATE

ANALYTICAL RESULTS, BIGHORN CLAIMS

SAMPLE NO.	P_2O_5 %	Y PPM	CE PPM	LA PPM	T M	DESCRIPTION
INV89-1A	17.87				0.60	UNWEATHERED PELLETAL PHOSPHATE
INV89-1B	12.93				0.50	WEATHERED PELLETAL PHOSPHATE
INV89-2A	20.11	555	100	230	GRAB	HARD PHOSPHATE, CANNOT DIG THROUGH
INV89-2B	21.92	710	120	270	GRAB	WEATHERED, SOFT PHOSPHATE
INV89-2C	23.74	690	130	280	0.51	PHOSPHATE
INV89-2D	7.82	170	92	99	0.14	BROWN SHALE
INV89-2E	3.96	365	160	150	0.15	MIXED PHOSPHATE & SHALE
INV89-2F	3.07	250	140	130	0.16	MIXED SHALE & PHOSPHATE
INV89-2G	3.22	220	160	140	0.19	MIXED SHALE & PHOSPHATE
INV89-2H	1.38	130	85	69	0.30	BLACK SHALE

89-3 COMP.

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Certificate of Analysis

REPORT: V89-03651.4

~~DATE PRINTED: 6-JUL-89~~
PROJECT: 110

SAMPLE NUMBER	ELEMENT UNITS	P2O5 PCT
X2 HGR-89-1A		2.30
X2 HGR-89-1B		16.33
X2 HGR-89-1C		14.60
X2 HGR-89-1D		6.61
X2 HGR-89-1E		17.09
X2 HGR-89-1F		4.42
X2 HGR-89-19A		20.83
X2 HGR-89-19B		27.98
X2 HGR-89-19C		24.34
X2 HGR-89-19D		10.09
X2 HGR-89-21A		14.23
X2 HGR-89-21B		15.54
X2 HGR-89-21C		26.75
X2 HGR-89-21D		20.29
X2 HGR-89-21E		21.82
X2 HGR-89-21F		28.83
X2 HGR-89-21G		16.89
X2 HGR-89-23		29.41
X2 HGR-89-24-1A		30.05
X2 HGR-89-24-2A		27.43
X2 HGR-89-24-2B		28.88
X2 HGR-89-24-2C		5.61
X2 HGR-89-24-2D		21.60
X2 HGR-89-24-2E		26.93
X2 HGR-89-24-2F		6.20
X2 HGR-89-28A		10.32
X2 HGR-89-28B		15.43
X2 HGR-89-28C		2.40
X2 HGR-89-28D		16.92

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REPORT: V89-03651.4 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-3

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 6-JUL-89

ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	P2O5	Phosphorous	29	0.01 PCT		Gravimetric

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
X OTHER	29	2 -150	29	ASSAY PREP	29
				FAX CHARGE	1

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

INVOICE TO: MR. DOUG LEIGHTON

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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
X2 HGR-89-1A		<5	<5	33	280	4	<10	75	<10	110	3	<2	2.6
X2 HGR-89-1B		<5	<5	30	<100	1	<10	160	<10	230	3	5	1.6
X2 HGR-89-1C		9	<5	24	100	1	<10	170	<10	220	4	6	2.0
X2 HGR-89-1D		8	<5	28	230	2	<10	85	<10	210	7	4	3.4
X2 HGR-89-1E		22	<5	80	570	4	<10	260	11	170	2	7	2.9
X2 HGR-89-1F		12	<5	42	490	2	<10	170	11	290	7	5	3.9
X2 HGR-89-19A		<5	<5	38	<230	1	<10	240	<10	220	2	8	1.9
X2 HGR-89-19B		<5	<5	25	<230	<1	<10	260	<10	230	1	12	1.0
X2 HGR-89-19C		<5	<5	26	<220	1	16	250	<10	210	3	10	1.2
X2 HGR-89-19D		9	<5	32	170	3	11	160	<10	230	7	5	2.2
X2 HGR-89-21A		<5	<5	22	170	2	<10	210	<10	220	4	7	2.1
X2 HGR-89-21B		<5	<5	24	170	2	<10	140	<10	180	3	4	1.5
X2 HGR-89-21C		<5	<5	19	<100	<1	<10	230	<10	250	3	11	1.1
X2 HGR-89-21D		10	<5	68	<280	2	<10	240	<10	160	2	6	2.3
X2 HGR-89-21E		<5	<5	22	<100	1	<10	180	<10	190	2	7	1.2
X2 HGR-89-21F		<5	<5	23	<210	<1	<10	290	<10	190	<1	10	1.2
X2 HGR-89-21G		<5	<5	25	<100	<1	<10	130	<10	150	2	3	1.4
X2 HGR-89-23		<5	<5	23	<240	<1	<10	170	<10	200	1	7	0.6
X2 HGR-89-24-1A		<5	<5	23	<220	<1	<10	270	<10	250	<1	10	1.2
X2 HGR-89-24-2A		<5	<5	19	<230	1	<10	220	<10	230	2	7	1.2
X2 HGR-89-24-2B		<5	<5	17	<220	2	<10	310	<10	240	<1	13	1.0
X2 HGR-89-24-2C		10	<5	32	220	4	<10	130	<10	220	8	3	2.5
X2 HGR-89-24-2D		9	<5	20	<100	1	<10	180	<10	170	3	4	1.2
X2 HGR-89-24-2F		<5	<5	20	<200	<1	<10	270	<10	210	2	11	1.0
X2 HGR-89-24-2F		<5	<5	35	150	3	<10	140	20	120	9	3	3.1
X2 HGR-89-28A		<5	<5	47	<210	3	<10	150	<10	200	1	5	2.8
X2 HGR-89-28B		<5	<5	19	140	<1	<10	130	<10	160	3	2	1.4
X2 HGR-89-28C		<5	<5	23	280	4	<10	120	16	120	7	2	3.3
X2 HGR-89-28D		10	<5	15	<100	1	<10	170	<10	190	2	5	1.2

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Geochemical Lab Report

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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
X2 HGR-89-1A		13	<100	40	<0.5	12	0.61	200	78	1.6	7.7	<10	8.8
X2 HGR-89-1B		10	<100	160	<0.5	32	0.24	56	46	2.1	17.0	<10	29.2
X2 HGR-89-1C		9	<100	190	<0.5	38	0.44	150	84	2.0	24.0	<10	38.9
X2 HGR-89-1D		10	<100	87	<0.5	140	0.58	320	120	2.3	19.0	<10	17.0
X2 HGR-89-1E		6	<100	220	<0.5	100	0.32	540	54	9.2	26.0	<10	43.3
X2 HGR-89-1F		3	<100	130	<0.5	130	0.40	600	120	4.7	26.0	<10	27.3
X2 HGR-89-19A		6	<100	250	<0.5	31	0.29	250	57	3.3	30.0	<10	46.3
X2 HGR-89-19B		3	<100	350	<0.5	6	0.19	85	51	3.1	40.0	<10	69.4
X2 HGR-89-19C		4	<100	300	<0.5	31	0.29	180	34	2.9	35.0	<10	61.3
X2 HGR-89-19D		4	<100	150	<0.5	100	0.42	440	100	2.5	27.0	<10	31.3
X2 HGR-89-21A		5	<100	200	<0.5	33	0.45	160	99	1.8	29.0	<10	39.5
X2 HGR-89-21B		10	<100	140	<0.5	36	0.37	130	70	2.1	23.0	<10	22.1
X2 HGR-89-21C		6	<100	310	<0.5	6	0.15	90	39	1.6	35.0	<10	55.3
X2 HGR-89-21D		4	<100	180	<0.5	81	0.25	680	51	4.1	25.0	<10	36.0
X2 HGR-89-21E		7	<100	200	<0.5	28	0.31	100	48	1.8	28.0	<10	34.3
X2 HGR-89-21F		5	<100	370	0.9	<2	0.22	91	21	1.9	39.0	<10	72.3
X2 HGR-89-21G		11	<100	140	<0.5	30	0.34	88	80	2.2	22.0	<10	20.5
X2 HGR-89-23		7	<100	250	<0.5	<2	0.21	74	34	1.3	35.0	<10	42.1
X2 HGR-89-24-1A		5	<100	350	<0.5	<2	0.14	110	28	1.5	35.0	<10	71.6
X2 HGR-89-24-2A		6	<100	280	<0.5	18	0.18	110	24	1.4	32.0	<10	44.5
X2 HGR-89-24-2B		5	<100	400	<0.5	<2	0.15	93	40	1.1	39.0	<10	80.6
X2 HGR-89-24-2C		8	<100	100	<0.5	110	0.60	200	110	2.1	28.0	<10	22.8
X2 HGR-89-24-2D		6	<100	210	<0.5	28	0.24	93	55	1.3	29.0	<10	34.4
X2 HGR-89-24-2E		6	<100	320	<0.5	<2	0.18	98	44	1.3	34.0	<10	60.6
X2 HGR-89-24-2F		5	<100	96	<0.5	51	0.33	310	100	3.1	18.0	<10	19.0
X2 HGR-89-28A		9	<100	120	<0.5	7	0.26	78	42	1.3	12.0	<10	25.0
X2 HGR-89-28B		10	<100	140	<0.5	19	0.36	<50	66	1.3	21.0	<10	21.0
X2 HGR-89-28C		5	<100	73	<0.5	33	0.40	210	140	1.9	15.0	<10	16.0
X2 HGR-89-28D		9	<100	190	<0.5	5	0.30	57	32	1.0	22.0	<10	36.5

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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
X2 HGR-89-1A		<200	1	2	<20	8.2	22.0	<2	<5	260	840	57
X2 HGR-89-1B		<200	<1	6	<20	10.0	50.4	<2	21	<200	<500	430
X2 HGR-89-1C		<200	<1	8	<20	12.0	39.0	<2	23	260	<500	480
X2 HGR-89-1D		<200	1	3	<20	9.2	29.0	<2	11	390	<500	140
X2 HGR-89-1E		<200	<1	7	<20	10.0	80.0	<2	24	460	<500	405
X2 HGR-89-1F		<200	1	5	<20	14.0	30.0	<2	14	1200	<500	200
X2 HGR-89-19A		<200	<1	9	<20	12.0	68.3	<2	32	260	<500	595
X2 HGR-89-19B		<200	<1	14	<20	14.0	69.0	<2	47	<200	1100	810
X2 HGR-89-19C		<200	<1	12	<20	13.0	67.2	<2	42	<200	<500	695
X2 HGR-89-19D		<200	<1	6	<20	11.0	39.0	<2	19	830	<500	320
X2 HGR-89-21A		<200	<1	7	<20	12.0	38.0	<2	27	<200	810	490
X2 HGR-89-21B		<200	<1	5	<20	13.0	33.0	<2	20	<200	<500	370
X2 HGR-89-21C		<200	<1	11	<20	11.0	57.1	<2	42	220	890	790
X2 HGR-89-21D		<200	<1	7	<20	10.0	85.1	<2	21	370	<500	415
X2 HGR-89-21E		<200	<1	7	<20	10.0	55.6	<2	28	<200	<500	540
X2 HGR-89-21F		<200	<1	15	<20	13.0	61.8	<2	52	<200	940	835
X2 HGR-89-21G		<200	<1	5	<20	12.0	30.0	<2	21	<200	780	335
X2 HGR-89-23		<200	<1	10	<20	7.6	72.0	<2	38	<200	<500	665
X2 HGR-89-24-1A		<200	<1	15	<20	12.0	64.7	<2	47	<200	<500	825
X2 HGR-89-24-2A		<200	<1	10	<20	7.6	68.0	<2	39	<200	<500	620
X2 HGR-89-24-2B		490	<1	16	<20	14.0	65.3	<2	51	<200	<500	875
X2 HGR-89-24-2C		<200	1	4	<20	12.0	23.0	<2	14	330	<500	190
X2 HGR-89-24-2D		<200	<1	7	<20	8.2	56.6	<2	27	<200	<500	540
X2 HGR-89-24-2F		<200	<1	13	<20	11.0	60.5	<2	43	<200	970	800
X2 HGR-89-24-2F		<200	<1	3	<20	10.0	26.0	<2	10	330	<500	175
X2 HGR-89-28A		<200	<1	5	<20	8.3	63.4	<2	12	<200	540	305
X2 HGR-89-28B		<200	<1	5	<20	13.0	30.0	<2	19	<200	<500	335
X2 HGR-89-28C		<200	1	3	<20	11.0	17.0	<2	8	270	<500	140
X2 HGR-89-28D		<200	<1	8	<20	9.3	58.0	<2	26	<200	<500	540

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130 Pemberton Ave.
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(604) 985-0681 Telex 04-352667

BONDAR-CLEGG

Geochemical Lab Report

REPORT: V89-03651.1 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-3

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

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

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

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Geochemical Lab Report

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CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

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

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
X OTHER	29	2 -150	29	CRUSH,PULVERIZE -150	29

REMARKS: ELEVATED Ba DETECTION LIMITS DUE TO HIGH
U CONTENT.

REPORT COPIES TO: MR. DOUG LEIGHTON
~~MS. J. PFLL~~

INVOICE TO: MR. DOUG LEIGHTON

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03651.0

DATE PRINTED: 4-JUL-89

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
X2 HGR-89-1A		1.5	42	102	<0.5	3	1	71	7	114	32	15
X2 HGR-89-1B		<0.2	28	101	<0.5	6	<1	110	3	133	29	<2
X2 HGR-89-1C		<0.2	25	112	<0.5	5	1	125	5	139	63	5
X2 HGR-89-1D		1.2	30	135	<0.5	3	5	80	8	142	98	14
X2 HGR-89-1E		0.5	81	699	<0.5	9	4	215	7	137	87	4
X2 HGR-89-1F		3.0	47	337	<0.5	7	9	144	9	163	229	17
X2 HGR-89-19A		<0.2	36	180	<0.5	7	3	157	4	126	55	<2
X2 HGR-89-19B		15.9	49	208	<0.5	33	4	250	5	162	62	110
X2 HGR-89-19C		<0.2	35	188	<0.5	8	3	195	3	140	53	<2
X2 HGR-89-19D		1.4	39	234	<0.5	4	9	140	8	159	129	9
X2 HGR-89-21A		<0.2	21	189	<0.5	6	1	144	7	131	66	6
X2 HGR-89-21B		<0.2	24	155	<0.5	6	2	103	4	111	43	<2
X2 HGR-89-21C		<0.2	16	202	<0.5	7	1	177	3	160	43	<2
X2 HGR-89-21D		<0.2	72	166	<0.5	8	2	173	9	106	89	<2
X2 HGR-89-21E		<0.2	25	146	<0.5	9	<1	128	4	141	43	<2
X2 HGR-89-21F		<0.2	24	142	<0.5	8	1	213	3	167	38	<2
X2 HGR-89-21G		<0.2	22	175	<0.5	6	<1	112	3	118	35	<2
X2 HGR-89-23		<0.2	21	127	<0.5	8	1	142	2	163	46	<2
X2 HGR-89-24-1A		<0.2	17	146	<0.5	7	1	211	2	177	41	<2
X2 HGR-89-24-2A		<0.2	21	131	<0.5	8	<1	147	3	169	43	<2
X2 HGR-89-24-2B		<0.2	14	128	<0.5	7	<1	245	2	159	40	<2
X2 HGR-89-24-2C		1.5	33	86	<0.5	4	3	91	9	143	106	15
X2 HGR-89-24-2D		<0.2	25	127	<0.5	7	2	144	5	122	58	<2
X2 HGR-89-24-2E		<0.2	22	121	<0.5	7	2	190	3	144	40	<2
X2 HGR-89-24-2F		1.5	52	82	<0.5	5	4	105	18	74	96	17
X2 HGR-89-28A		1.9	37	68	<0.5	6	<1	74	2	112	15	15
X2 HGR-89-28B		<0.2	23	115	<0.5	6	<1	108	4	109	31	3
X2 HGR-89-28C		<0.2	31	152	<0.5	4	2	70	14	55	70	15
X2 HGR-89-28D		<0.2	20	123	<0.5	6	<1	142	4	140	29	<2

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 4-JUL-89

REPORT: V89-03651.0

PROJECT: 110

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
X2 HGR-89-1A		38	19	17	5	168	15	60	6	7	<20	43
X2 HGR-89-1B		149	16	42	21	61	16	93	8	12	<20	309
X2 HGR-89-1C		171	27	51	20	118	14	122	8	17	<20	258
X2 HGR-89-1D		75	38	151	11	212	13	64	7	12	<20	190
X2 HGR-89-1E		200	23	125	21	329	22	102	17	20	<20	331
X2 HGR-89-1F		121	31	166	10	467	27	40	10	20	<20	325
X2 HGR-89-19A		218	20	44	25	159	23	91	13	22	<20	400
X2 HGR-89-19B		346	22	31	73	154	63	442	44	36	<20	604
X2 HGR-89-19C		285	19	50	30	141	22	84	14	29	<20	490
X2 HGR-89-19D		145	39	126	18	337	22	98	12	20	<20	314
X2 HGR-89-21A		185	32	48	19	124	19	69	10	22	<20	388
X2 HGR-89-21B		132	21	45	20	75	20	44	8	16	<20	369
X2 HGR-89-21C		277	16	27	29	83	17	126	14	27	<20	620
X2 HGR-89-21D		179	18	93	24	478	22	108	15	20	<20	438
X2 HGR-89-21F		194	20	40	26	82	21	58	14	23	<20	501
X2 HGR-89-21F		336	15	27	32	93	20	111	12	29	<20	595
X2 HGR-89-21G		145	20	39	23	59	21	142	12	17	<20	452
X2 HGR-89-23		239	14	14	33	62	21	77	14	27	<20	634
X2 HGR-89-24-1A		332	14	17	33	77	20	71	14	28	<20	744
X2 HGR-89-24-2A		244	17	28	30	100	21	78	12	25	<20	609
X2 HGR-89-24-2B		362	16	20	33	73	21	69	14	30	<20	615
X2 HGR-89-24-2C		89	45	132	11	156	17	98	7	21	<20	189
X2 HGR-89-24-2D		203	25	41	27	115	20	84	13	27	<20	598
X2 HGR-89-24-2E		285	17	17	30	89	20	55	15	27	<20	650
X2 HGR-89-24-2F		85	42	65	11	263	25	93	11	14	<20	218
X2 HGR-89-28A		80	12	8	15	33	15	80	7	8	<20	130
X2 HGR-89-28B		131	19	29	21	40	19	137	11	15	<20	421
X2 HGR-89-28C		58	23	39	6	131	24	58	7	10	<20	110
X2 HGR-89-28D		193	17	18	23	56	17	91	11	20	<20	422

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Geochemical Lab Report

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DATE PRINTED: 4-JUL-89

REPORT: V89-03651.0

PROJECT: 110 PAGE 1C

SAMPLE NUMBER	ELEMENT UNITS	Ta PPM	Te PPM	V PPM	W PPM	Y PPM	Zn PPM	Zr PPM
X2 HGR-89-1A		<10	<10	65	<10	46	278	13
X2 HGR-89-1B		<10	19	56	<10	306	135	6
X2 HGR-89-1C		<10	17	89	<10	331	251	5
X2 HGR-89-1D		<10	<10	104	<10	121	369	5
X2 HGR-89-1E		<10	19	123	<10	308	492	6
X2 HGR-89-1F		<10	<10	220	<10	185	1251	7
X2 HGR-89-19A		<10	24	90	<10	438	223	7
X2 HGR-89-19B		17	53	96	25	734	266	20
X2 HGR-89-19C		<10	31	90	<10	572	203	10
X2 HGR-89-19D		<10	12	196	<10	254	796	6
X2 HGR-89-21A		<10	17	87	<10	353	192	7
X2 HGR-89-21B		<10	17	62	<10	258	129	8
X2 HGR-89-21C		<10	31	75	<10	561	137	15
X2 HGR-89-21D		<10	24	79	<10	305	313	9
X2 HGR-89-21E		<10	28	77	<10	414	115	10
X2 HGR-89-21F		<10	35	70	<10	660	131	13
X2 HGR-89-21G		<10	23	52	<10	281	92	7
X2 HGR-89-23		<10	37	81	<10	483	101	14
X2 HGR-89-24-1A		<10	37	80	<10	649	128	14
X2 HGR-89-24-2A		<10	32	87	<10	492	130	8
X2 HGR-89-24-2B		<10	37	73	<10	687	130	12
X2 HGR-89-24-2C		<10	<10	117	<10	174	247	6
X2 HGR-89-24-2D		<10	28	89	<10	419	190	6
X2 HGR-89-24-2F		<10	33	77	<10	558	149	10
X2 HGR-89-24-2F		<10	<10	112	<10	138	386	8
X2 HGR-89-28A		<10	11	44	<10	139	62	5
X2 HGR-89-28B		<10	20	43	<10	259	77	7
X2 HGR-89-28C		<10	<10	83	<10	105	261	8
X2 HGR-89-28D		<10	22	68	<10	423	93	12

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03651.0 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-3

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 4-JUL-89

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

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Geochemical Lab Report

REPORT: V89-03651.0 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-3

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PFLL
DATE PRINTED: 4-JUL-89

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
X OTHER	29	2 -150	29	ASSAY PREP	29

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MS. J. PFLL

INVOICE TO: MR. DOUG LEIGHTON

89-4 COMP.

Bondar-Clegg & Company Ltd.
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BONDAR-CLEGG

Certificate of Analysis

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03751.4

DATE PRINTED: 14-JUL-89
PROJECT: 110 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	P205 PCT	
R2 COM89-1		22.21	
R2 COM89-2		34.12	
R2 COM89-3		32.15	
R2 COM89-4		21.60	
R2 COM89-5		29.81	
R2 COM89-6		32.48	
R2 COM89-7		26.08	
R2 COM89-8		33.06	
R2 COM89-9		33.16	
R2 COM89-10A		36.32	
R2 COM89-10B		32.68	
R2 COM89-10C		20.37	
R2 COM89-11A		24.58	
R2 COM89-11B		0.81	
R2 COM89-11C		30.20	
R2 COM89-12		38.34	
R2 HGR89-32A		24.70	HUNGER
R2 HGR89-32B		20.10	HUNGER
R2 HGR89-32C		4.42	HUNGER
R2 IDH89-1		35.23	
R2 IVR89-2A		20.11	BIGHORN
R2 IVR89-2B		21.92	BIGHORN
R2 IVR89-2C		23.74	BIGHORN
R2 IVR89-2D		7.82	BIGHORN
R2 IVR89-2E		3.96	BIGHORN
R2 IVR89-2F		3.07	BIGHORN
R2 IVR89-2G		3.22	BIGHORN
R2 IVR89-2H		1.38	BIGHORN
R2 MON89-1A		0.04	
R2 MON89-1B		32.23	
R2 MON89-1C		35.41	
R2 MON89-1D		37.83	
R2 PRR89-1A		16.81	BIGHORN
R2 PRR89-1B		21.49	BIGHORN

Registered Assayer, Province of British Columbia

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Certificate of Analysis

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03751.4 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-4

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 14-JUL-89

ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	P205	Phosphorous	34	0.01 PCT		Gravimetric

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	34	2 -150	34	ASSAY PREP	34

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

INVOICE TO: MR. DOUG LEIGHTON

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(604) 985-0681 Telex 04-352667

BONDAR-CLEGG

Geochemical Lab Report

DATE PRINTED: 17-JUL-89

REPORT: V89-03751.0

PROJECT: 110 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Y PPM	
R2 COM89-1		350	
R2 COM89-2		480	
R2 COM89-3		385	
R2 COM89-4		300	
R2 COM89-5		430	
R2 COM89-6		370	
R2 COM89-7		375	
R2 COM89-8		610	
R2 COM89-9		490	
R2 COM89-10A		390	
R2 COM89-10B		595	
R2 COM89-10C		545	
R2 COM89-11A		450	
R2 COM89-11B		86	
R2 COM89-11C		540	
R2 COM89-12		495	
R2 HGR89-32A		190	HUNGER
R2 HGR89-32B		180	HUNGER
R2 HGR89-32C		215	HUNGER
R2 IDH89-1		150	
R2 IVR89-2A		555	BIGHORN
R2 IVR89-2B		710	BIGHORN
R2 IVR89-2C		690	BIGHORN
R2 IVR89-2D		170	BIGHORN
R2 IVR89-2E		365	BIGHORN
R2 IVR89-2F		250	BIGHORN
R2 IVR89-2G		220	BIGHORN
R2 IVR89-2H		130	BIGHORN
R2 MON89-1A		32	
R2 MON89-1B		1100	
R2 MON89-1C		700	
R2 MON89-1D		730	
R2 PRR89-1A		115	BIGHORN
R2 PRR89-1B		105	BIGHORN

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Geochemical Lab Report

REPORT: V89-03751.0 (PARTIAL)

REFERENCE INFO: SHIPMENT #89-4

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 17-JUL-89

ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Y	Yttrium	34	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	34	2 -150	34	CRUSH,PULVERIZE -150	34

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

INVOICE TO: MR. DOUG LEIGHTON

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03751.0

~~DATE PRINTED: 27-JUL-89~~
PROJECT: 110 PAGE 1A

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 COM89-1		<5	<5	294	<230	3	<10	<10	<10	230	<1	5	0.6	
R2 COM89-2		<5	<5	165	<330	2	<10	32	<10	230	<1	4	<0.5	
R2 COM89-3		<5	<5	202	<310	2	<10	<10	<10	310	<1	3	0.7	
R2 COM89-4		31	<5	269	1400	2	<10	<10	<10	990	10	3	2.2	
R2 COM89-5		12	<5	94	200	<1	<10	27	<10	340	2	5	<0.5	
R2 COM89-6		<5	<5	57	<360	<1	<10	30	<10	300	<1	3	0.6	
R2 COM89-7		<5	<5	125	<290	1	<10	35	<10	320	<1	4	1.2	
R2 COM89-8		<5	<5	83	<460	1	<10	39	<10	360	<1	6	<0.5	
R2 COM89-9		<5	<5	89	<370	<1	<10	40	<10	240	<1	6	<0.5	
R2 COM89-10A		<5	<5	11	<350	<1	<10	31	<10	310	1	4	<0.5	
R2 COM89-10B		<5	<5	61	<330	<1	<10	54	<10	320	<1	7	<0.5	
R2 COM89-10C		<5	<5	102	<320	1	<10	62	<10	1200	16	5	0.8	
R2 COM89-11A		<5	<5	32	<100	<1	<10	43	<10	260	<1	6	1.0	
R2 COM89-11B		<5	<5	22	570	<1	<10	46	10	91	4	<2	2.3	
R2 COM89-11C		<5	<5	13	480	<1	<10	48	<10	600	2	6	<0.5	
R2 COM89-12		<5	<5	75	<420	<1	<10	25	<10	300	<1	3	<0.5	
R2 HGR89-32A		<5	<5	45	<370	<1	<10	31	<10	140	<1	4	<0.5	HUNGER (bracketed)
R2 HGR89-32B		<5	<5	55	<390	<1	<10	36	<10	140	<1	3	<0.5	HUNGER (bracketed)
R2 HGR89-32C		<5	<5	80	<100	<1	<10	40	<10	190	<1	4	<0.5	HUNGER (bracketed)
R2 TOM89-1		<5	8	6	<310	9	35	18	<10	390	<1	<2	<0.5	
R2 TVR89-2A		<5	<5	20	770	<1	<10	100	<10	270	<1	7	0.8	BIGHORN (bracketed)
R2 TVR89-2B		<5	<5	24	190	<1	<10	120	<10	240	<1	8	<0.5	BIGHORN (bracketed)
R2 TVR89-2C		<5	<5	22	<230	<1	<10	130	<10	230	2	8	1.2	BIGHORN (bracketed)
R2 TVR89-2D		8	<5	43	410	2	14	92	14	200	6	4	3.1	BIGHORN (bracketed)
R2 TVR89-2E		18	<5	228	<370	5	27	160	27	210	5	6	5.7	BIGHORN (bracketed)
R2 TVR89-2F		18	<5	235	370	4	26	140	25	150	5	5	6.0	BIGHORN (bracketed)
R2 TVR89-2G		17	<5	238	270	6	34	160	29	220	6	4	6.0	BIGHORN (bracketed)
R2 TVR89-2H		18	<5	169	170	5	37	85	19	150	4	3	4.3	BIGHORN (bracketed)
R2 MON89-1A		<5	<5	23	<100	<1	<10	<10	<10	210	<1	<2	<0.5	
R2 MON89-1B		11	<5	27	<100	<1	<10	54	<10	350	2	14	1.1	
R2 MON89-1C		<5	6	22	<100	<1	17	58	<10	330	1	7	0.6	
R2 MON89-1D		<5	9	18	<220	<1	24	74	<10	320	<1	8	<0.5	
R2 PRR89-1A		<5	<5	10	<240	<1	<10	29	<10	220	<1	2	<0.5	BIGHORN (bracketed)
R2 PRR89-1B		<5	<5	6	<280	<1	<10	26	<10	130	<1	<2	<0.5	BIGHORN (bracketed)

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-00751.0

DATE PRINTED: 27-JUL-89
PROJECT: 110

SAMPLE NUMBER	ELEMENT UNITS	Hf PPM	Ta PPM	La PPM	Lu PPM	Mo PPM	Na PCT	Ni PPM	Rb PPM	Sb PPM	Sc PPM	Se PPM	Sm PPM
R2 COM89-1		<2	<100	130	<0.5	<2	<0.05	<50	<10	125.0	5.1	<10	26.7
R2 COM89-2		<2	<100	170	<0.5	<2	0.06	<50	<10	64.5	11.0	<10	21.9
R2 COM89-3		<2	<100	160	<0.5	<2	0.08	<50	<10	90.7	7.8	<10	19.0
R2 COM89-4		<2	<100	170	<0.5	7	0.06	50	43	140.0	12.0	<10	20.5
R2 COM89-5		<2	<100	190	<0.5	<2	0.08	<50	19	50.7	7.6	<10	23.8
R2 COM89-6		<2	<100	180	<0.5	<4	0.09	<50	<10	29.7	5.0	<10	20.0
R2 COM89-7		<2	<100	170	<0.5	4	0.08	<50	13	40.4	7.6	<10	21.1
R2 COM89-8		<2	<100	350	<0.5	<2	0.16	<50	<10	29.1	7.6	<10	50.6
R2 COM89-9		<2	<100	270	<0.5	<2	<0.05	<50	16	14.0	3.9	<10	39.9
R2 COM89-10A		<2	<100	230	<0.5	<2	0.14	<50	15	2.5	3.4	<10	25.3
R2 COM89-10B		<2	<100	300	<0.5	<2	0.10	<50	12	17.0	2.9	<10	46.2
R2 COM89-10C		3	<100	270	<0.5	<2	0.17	120	87	6.9	11.0	<10	29.7
R2 COM89-11A		<2	<100	240	<0.5	<2	0.05	<50	12	3.2	2.5	<10	38.9
R2 COM89-11B		4	<100	30	<0.5	<2	0.12	<50	74	0.8	7.5	<10	6.1
R2 COM89-11C		3	<100	320	<0.5	<2	0.10	<50	38	1.8	7.8	<10	37.3
R2 COM89-12		<2	<100	240	<0.5	<2	0.11	<50	<10	10.0	7.0	<10	25.4
R2 HGR89-32A	HUNGER	4	<100	140	<0.5	<2	<0.05	<50	17	4.8	1.3	<10	22.6
R2 HGR89-32B	HUNGER	4	<100	120	<0.5	<2	<0.05	<50	<10	6.3	1.4	<10	21.3
R2 HGR89-32C	HUNGER	8	<100	140	<0.5	<2	0.05	56	14	2.8	2.7	<10	30.6
R2 IDH89-1		<2	<100	85	<0.5	<2	0.31	70	<10	1.1	1.2	<10	8.6
R2 TVR89-2A	BIGHORN	3	<100	230	<0.5	<2	0.12	<50	17	1.5	18.0	<10	48.3
R2 TVR89-2B	BIGHORN	4	<100	270	<0.5	<2	0.12	<50	38	1.7	22.0	<10	54.3
R2 TVR89-2C	BIGHORN	3	<100	280	<0.5	20	0.16	290	36	2.1	25.0	<10	57.0
R2 TVR89-2D	BIGHORN	6	<100	99	<0.5	219	0.55	1700	98	5.2	21.0	<10	18.0
R2 TVR89-2E	BIGHORN	4	<100	150	<0.5	890	0.58	3550	89	46.4	25.0	24	31.7
R2 TVR89-2F	BIGHORN	4	<100	130	<0.5	912	0.57	3700	71	45.5	22.0	28	26.8
R2 TVR89-2G	BIGHORN	4	<100	140	<0.5	939	0.53	3680	68	53.1	24.0	30	32.3
R2 TVR89-2H		4	<100	69	<0.5	787	0.49	2270	63	37.8	18.0	<10	16.0
R2 MON89-1A		2	<100	5	<0.5	3	<0.05	<50	<10	1.8	0.8	<10	1.0
R2 MON89-1B		5	<100	558	3.1	<2	<0.05	77	<10	1.4	10.0	<10	99.0
R2 MON89-1C		<2	<100	310	<0.5	<2	0.06	<50	13	0.7	6.7	<10	42.4
R2 MON89-1D		<2	<100	360	<0.5	<2	<0.05	<50	<10	0.5	4.2	<10	63.7
R2 PRR89-1A	BIGHORN	5	<100	97	<0.5	<2	<0.05	<50	21	0.7	1.5	<10	14.0
R2 PRR89-1B	BIGHORN	3	<100	80	<0.5	<2	<0.05	<50	<10	0.7	1.0	<10	12.0

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 27-JUL-89

REPORT: V89-03751.0

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 COM89-1		<200	<1	7	<20	2.1	70.3	6	17	<200	<500	350
R2 COM89-2		<200	<1	6	<20	<0.5	101.0	4	21	<200	<500	480
R2 COM89-3		<200	<1	4	<20	1.3	94.4	4	18	<200	<500	385
R2 COM89-4		<200	<1	4	<20	3.1	102.0	14	18	250	<500	300
R2 COM89-5		<200	<1	5	<20	1.9	105.0	5	18	<200	<500	430
R2 COM89-6		<200	<1	4	<20	1.4	109.0	<2	15	<200	<500	370
R2 COM89-7		<200	<1	5	<20	1.3	86.9	<2	16	<200	<500	375
R2 COM89-8		<200	<1	10	<20	3.1	139.0	<2	31	<200	<500	610
R2 COM89-9		<200	<1	8	<20	3.0	110.0	<2	21	230	<500	490
R2 COM89-10A		<200	<1	5	<20	1.2	106.0	<2	16	<200	<500	390
R2 COM89-10B		<200	<1	9	<20	3.4	100.0	<2	23	210	<500	595
R2 COM89-10C		<200	<1	6	<20	6.3	96.2	<2	21	350	570	545
R2 COM89-11A		<200	<1	7	<20	3.4	59.3	3	17	<200	<500	450
R2 COM89-11B		<200	<1	<1	<20	6.7	3.4	<2	<5	<200	<500	86
R2 COM89-11C		<200	<1	7	<20	6.4	50.8	<2	21	<200	<500	540
R2 COM89-12		<200	<1	5	<20	0.7	127.0	<2	19	210	<500	495
R2 HGR89-32A	HUNGER	<200	<1	3	<20	2.2	112.0	<2	7	<200	<500	190
R2 HGR89-32B	HUNGER	<200	<1	3	<20	2.6	117.0	<2	8	<200	<500	180
R2 HGR89-32C	HUNGER	<200	<1	5	<20	7.6	33.0	3	8	<200	<500	215
R2 TDH89-1		<200	<1	2	<20	0.7	91.9	<2	5	430	<500	150
R2 IVR89-2A	BIGHORN	<200	1	10	<20	10.0	48.0	<2	26	<200	<500	555
R2 IVR89-2B	BIGHORN	<200	1	11	<20	12.0	61.2	<2	33	220	<500	710
R2 IVR89-2C	BIGHORN	<200	<1	11	<20	12.0	69.6	<2	34	310	640	690
R2 IVR89-2D	BIGHORN	<200	<1	4	<20	9.1	41.0	<2	12	2000	<500	170
R2 IVR89-2E	BIGHORN	<200	<1	5	<20	12.0	112.0	<2	13	4000	<500	365
R2 IVR89-2F	BIGHORN	<200	1	5	<20	11.0	98.8	<2	9	4000	<500	250
R2 IVR89-2G	BIGHORN	<200	<1	6	<20	12.0	119.0	<2	12	3700	<500	220
R2 IVR89-2H		<200	1	3	<20	10.0	71.4	<2	7	2300	<500	130
R2 MON89-1A		<200	<1	<1	<20	1.2	0.9	2	<5	<200	<500	32
R2 MON89-1B		<200	<1	19	<20	10.0	36.0	<2	51	600	<500	1100
R2 MON89-1C		<200	<1	9	<20	3.2	48.0	<2	31	360	<500	700
R2 MON89-1D		<200	<1	12	<20	3.1	65.2	<2	31	290	<500	730
R2 PRR89-1A	BIGHORN	<200	<1	2	<20	1.9	70.3	<2	<5	<200	<500	115
R2 PRR89-1B	BIGHORN	<200	<1	2	<20	1.9	83.2	<2	<5	<200	<500	105

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03751.0 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-4

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 27-JUL-89

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

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03751.0 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-4

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 27-JUL-89

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	34	2 -150	34	CRUSH,PULVERIZE -150	34

REMARKS: ELEVATED DETECTION LIMITS DUE TO HIGH U
CONTENT.

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

INVOICE TO: MR. DOUG LEIGHTON

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BONDAR-CLEGG

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical Lab Report

REPORT: V89-03651.0 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-3

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 4-JUL-89

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
X OTHER	29	2 -150	29	ASSAY PREP	29

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MS. J. PELL

INVOICE TO: MR. DOUG LEIGHTON

HUNGER

89-5 COMP.

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Certificate of Analysis

REPORT: V89-03804.4

DATE PRINTED: 21-JUL-89
PROJECT: 110 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	P205 PCT	SAMPLE NUMBER	ELEMENT UNITS	P205 PCT
R2 TR89-1-1A		19.30	R2 TR89-3-1B		27.93
R2 TR89-1-1B		25.06	R2 TR89-3-1C		23.95
R2 TR89-1-1C		10.21	R2 TR89-3-1D		16.52
R2 TR89-1-1D		28.56	R2 TR89-3-1E		24.76
R2 TR89-1-1E		18.90	R2 TR89-3-1F		16.31
R2 TR89-1-2A		20.56	R2 TR89-3-2A		21.33
R2 TR89-1-2B		29.13	R2 TR89-3-2B		29.34
R2 TR89-1-2C		13.53	R2 TR89-3-2C		28.59
R2 TR89-1-2D		14.87	R2 TR89-3-2D		19.48
R2 TR89-1-2E		21.20	R2 TR89-3-2E		14.10
R2 TR89-1-2F		4.89	R2 TR89-3-3A		17.80
R2 TR89-1-2G		1.90	R2 TR89-3-3B		14.41
R2 TR89-1-3A		20.92	R2 TR89-3-3C		29.78
R2 TR89-1-3B		22.95	R2 TR89-3-3D		25.95
R2 TR89-1-3C		18.44	R2 TR89-3-3E		22.78
R2 TR89-1-3D		2.96	R2 TR89-3-3F		14.75
R2 TR89-1-3E		12.10	R2 TR89-3-4		14.64
R2 TR89-1-3F		7.65	R2 TR89-4-1A		23.00
R2 TR89-1-4A		18.35	R2 TR89-4-1B		29.97
R2 TR89-1-4B		11.28	R2 TR89-4-1C		29.16
R2 TR89-1-4C		0.72	R2 TR89-4-1D		22.28
R2 TR89-1-5A		24.86	R2 TR89-4-1E		25.75
R2 TR89-1-5B		10.12	R2 TR89-4-1F		4.98
R2 TR89-1-5C		3.83	R2 TR89-4-2A		15.11
R2 TR89-1-5D		3.76	R2 TR89-4-2B		28.00
R2 TR89-1-5E		4.58	R2 TR89-4-2C		23.25
R2 TR89-2-1A		22.93	R2 TR89-4-2D		6.51
R2 TR89-2-1B		20.51	R2 TR89-4-2E		26.32
R2 TR89-2-1C		17.90	R2 TR89-4-2F		23.84
R2 TR89-2-1D		10.22	R2 TR89-4-2G		5.40
R2 TR89-2-1E		2.88	R2 TR89-5-1A		28.25
R2 TR89-2-2A		16.13	R2 TR89-5-1B		24.94
R2 TR89-2-2B		20.97	R2 TR89-5-1C		22.24
R2 TR89-2-2C		16.47	R2 TR89-5-2A		19.41
R2 TR89-2-2D		4.26	R2 TR89-5-2B		15.31
R2 TR89-2-3A		18.05	R2 TR89-5-2C		29.23
R2 TR89-2-3B		22.80	R2 TR89-5-2D		25.94
R2 TR89-2-3C		12.04	R2 TR89-5-3A		18.87
R2 TR89-2-3D		2.56	R2 TR89-5-3B		15.99
R2 TR89-3-1A		16.54	R2 TR89-5-3C		14.43

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Certificate of Analysis

REPORT: V89-03804.4

DATE PRINTED: 21-JUL-89
PROJECT: 110

SAMPLE NUMBER	ELEMENT UNITS	P2O5 PCT
R2 TR89-5-3D		29.07
R2 TR89-5-3E		10.00
R2 TR89-5-4A		29.45
R2 TR89-5-4B		28.52
R2 TR89-5-4C		7.23
R2 TR89-5-4D		29.45
R2 TR89-5-4E		22.59
R2 TR89-5-5A		15.33
R2 TR89-5-5B		29.98
R2 TR89-5-5C		30.50
R2 TR89-5-5D		10.32
R2 TR89-5-5E		22.11
R2 TR89-5-6A		20.94
R2 TR89-5-6B		28.78
R2 TR89-5-6C		14.51
R2 TR89-5-7A		9.60
R2 TR89-5-7B		15.01
R2 TR89-5-7C		9.64
R2 TR89-5-7D		1.65
R2 TR89-5-7E		20.15
R2 TR89-5-7F		13.88

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Certificate of Analysis

REPORT: V89-03804.4 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-5

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	P205	Phosphorous	101	0.01 PCT		Gravimetric

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	101	2 -150	101	ASSAY PREP	101

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03804.0

DATE PRINTED: 24-JUL-89

PROJECT: 110

SAMPLE NUMBER	ELEMENT UNITS	Y PPM	SAMPLE NUMBER	ELEMENT UNITS	Y PPM
R2 TR89-1-1A		630	R2 TR89-3-1B		805
R2 TR89-1-1B		675	R2 TR89-3-1C		810
R2 TR89-1-1C		420	R2 TR89-3-1D		545
R2 TR89-1-1D		910	R2 TR89-3-1E		590
R2 TR89-1-1E		535	R2 TR89-3-1F		450
R2 TR89-1-2A		650	R2 TR89-3-2A		515
R2 TR89-1-2B		880	R2 TR89-3-2B		900
R2 TR89-1-2C		460	R2 TR89-3-2C		775
R2 TR89-1-2D		350	R2 TR89-3-2D		530
R2 TR89-1-2E		475	R2 TR89-3-2E		510
R2 TR89-1-2F		440	R2 TR89-3-3A		680
R2 TR89-1-2G		140	R2 TR89-3-3B		405
R2 TR89-1-3A		535	R2 TR89-3-3C		750
R2 TR89-1-3B		715	R2 TR89-3-3D		855
R2 TR89-1-3C		420	R2 TR89-3-3E		720
R2 TR89-1-3D		140	R2 TR89-3-3F		400
R2 TR89-1-3E		305	R2 TR89-3-4		730
R2 TR89-1-3F		720	R2 TR89-4-1A		630
R2 TR89-1-4A		525	R2 TR89-4-1B		970
R2 TR89-1-4B		310	R2 TR89-4-1C		765
R2 TR89-1-4C		22	R2 TR89-4-1D		560
R2 TR89-1-5A		705	R2 TR89-4-1E		560
R2 TR89-1-5B		360	R2 TR89-4-1F		370
R2 TR89-1-5C		355	R2 TR89-4-2A		510
R2 TR89-1-5D		330	R2 TR89-4-2B		820
R2 TR89-1-5E		415	R2 TR89-4-2C		805
R2 TR89-2-1A		650	R2 TR89-4-2D		345
R2 TR89-2-1B		380	R2 TR89-4-2E		650
R2 TR89-2-1C		480	R2 TR89-4-2F		515
R2 TR89-2-1D		620	R2 TR89-4-2G		325
R2 TR89-2-1F		205	R2 TR89-5-1A		985
R2 TR89-2-2A		435	R2 TR89-5-1B		770
R2 TR89-2-2B		690	R2 TR89-5-1C		405
R2 TR89-2-2C		370	R2 TR89-5-2A		345
R2 TR89-2-2D		200	R2 TR89-5-2B		545
R2 TR89-2-3A		505	R2 TR89-5-2C		790
R2 TR89-2-3B		805	R2 TR89-5-2D		885
R2 TR89-2-3C		390	R2 TR89-5-3A		225
R2 TR89-2-3D		100	R2 TR89-5-3B		420
R2 TR89-3-1A		495	R2 TR89-5-3C		360

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Geochemical Lab Report

DATE PRINTED: 24-JUL-89

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SAMPLE NUMBER	ELEMENT UNITS	Y PPM
R2 TR89-5-3D		340
R2 TR89-5-3E		760
R2 TR89-5-4A		930
R2 TR89-5-4B		900
R2 TR89-5-4C		220
R2 TR89-5-4D		990
R2 TR89-5-4F		760
R2 TR89-5-5A		500
R2 TR89-5-5B		940
R2 TR89-5-5C		950
R2 TR89-5-5D		395
R2 TR89-5-5E		410
R2 TR89-5-6A		515
R2 TR89-5-6B		890
R2 TR89-5-6C		350
R2 TR89-5-7A		245
R2 TR89-5-7B		880
R2 TR89-5-7C		675
R2 TR89-5-7D		120
R2 TR89-5-7E		420
R2 TR89-5-7F		370

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03804.0 (PARTIAL)

REFERENCE INFO: SHIPMENT #89-5

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 24-JUL-89

ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Y	Yttrium	101	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	101	2 -150	101	ASSAY PREP	101

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

INVOICE TO: MR. DOUG LEIGHTON

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 4-AUG-89

REPORT: V89-03804.0

PROJECT: 110 PAGE 1A

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 TR89-1-1A		6	<5	37	<220	1	<10	160	<10	130	3	<2	1.8
R2 TR89-1-1B		<5	<5	29	<220	<1	<10	180	12	160	2	7	1.6
R2 TR89-1-1C		10	<5	34	100	3	<10	160	<10	270	7	4	2.4
R2 TR89-1-1D		<5	<5	19	<220	<1	<10	240	<10	260	2	9	<0.5
R2 TR89-1-1E		<5	<5	40	<240	2	<10	210	14	190	4	5	2.0
R2 TR89-1-2A		<5	<5	35	<200	1	<10	190	<10	190	3	6	1.6
R2 TR89-1-2B		<5	<5	23	<100	1	<10	220	<10	240	2	12	<0.5
R2 TR89-1-2C		<5	<5	30	210	2	<10	150	<10	190	5	5	2.2
R2 TR89-1-2D		<5	<5	23	130	<1	<10	150	<10	120	1	4	0.9
R2 TR89-1-2E		13	<5	78	<310	3	16	220	11	170	3	8	2.5
R2 TR89-1-2F		12	<5	34	200	3	15	280	11	310	10	7	2.7
R2 TR89-1-2G		13	<5	28	250	3	<10	110	21	150	11	2	3.2
R2 TR89-1-3A		<5	<5	36	<220	2	<10	140	<10	120	2	6	2.0
R2 TR89-1-3B		<5	<5	22	<100	2	<10	200	<10	230	2	8	0.9
R2 TR89-1-3C		<5	<5	30	<100	<1	<10	170	<10	110	<1	5	0.9
R2 TR89-1-3D		7	<5	28	220	1	<10	130	16	140	7	<2	2.2
R2 TR89-1-3E		16	<5	76	<260	1	15	220	15	190	4	6	2.6
R2 TR89-1-3F		15	<5	53	<260	2	17	500	11	270	6	11	1.9
R2 TR89-1-4A		<5	<5	22	<100	<1	<10	190	<10	120	2	6	1.2
R2 TR89-1-4B		<5	<5	32	120	1	<10	130	<10	110	4	3	1.5
R2 TR89-1-4C		<5	<5	21	190	<1	<10	34	19	65	8	<2	2.3
R2 TR89-1-5A		<5	<5	24	<100	1	<10	210	<10	140	1	8	<0.5
R2 TR89-1-5B		<5	<5	31	<100	<1	13	180	<10	130	3	4	1.7
R2 TR89-1-5C		11	<5	29	350	<1	12	200	<10	250	7	5	2.3
R2 TR89-1-5D		13	<5	29	210	2	14	210	<10	170	8	6	1.9
R2 TR89-1-5F		14	<5	38	<100	<1	<10	270	<10	230	9	8	2.1
R2 TR89-2-1A		<5	<5	28	<100	<1	<10	200	<10	170	3	7	1.7
R2 TR89-2-1B		9	<5	46	<100	1	<10	180	10	110	3	4	1.7
R2 TR89-2-1C		14	<5	62	<240	2	13	200	16	150	2	6	2.1
R2 TR89-2-1D		15	<5	58	<260	2	<10	370	15	230	4	8	2.1
R2 TR89-2-1E		12	<5	22	290	1	<10	130	<10	240	10	3	2.1
R2 TR89-2-2A		<5	<5	30	<220	<1	<10	130	<10	92	3	4	1.7
R2 TR89-2-2B		<5	<5	22	<100	<1	<10	170	<10	140	2	7	1.1
R2 TR89-2-2C		<5	<5	36	<100	<1	<10	130	<10	120	2	3	1.5
R2 TR89-2-2D		10	<5	36	<100	2	<10	160	<10	200	6	5	2.1
R2 TR89-2-3A		<5	<5	40	<250	1	<10	150	<10	130	3	7	2.3
R2 TR89-2-3B		<5	<5	20	<100	<1	<10	210	10	180	2	8	0.9
R2 TR89-2-3C		<5	<5	22	210	1	<10	150	<10	140	3	4	1.6
R2 TR89-2-3D		6	<5	24	290	<1	<10	70	15	63	7	<2	2.5
R2 TR89-3-1A		<5	<5	23	150	<1	<10	120	<10	130	2	3	1.5

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 4-AUG-89

REPORT: V89-03804.0

PROJECT: 110 PAGE 1B

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 TR89-1-1A		10	<100	190	<0.5	33	0.28	170	69	3.4	19.0	<10	34.7
R2 TR89-1-1B		7	<100	270	<0.5	30	0.25	96	62	2.1	28.0	<10	47.8
R2 TR89-1-1C		6	<100	160	<0.5	56	0.34	360	96	3.0	26.0	<10	33.0
R2 TR89-1-1D		8	<100	330	<0.5	21	0.21	<54	41	1.5	33.0	<10	60.8
R2 TR89-1-1E		5	<100	230	<0.5	49	0.31	230	47	2.5	25.0	<10	44.7
R2 TR89-1-2A		6	<100	230	<0.5	36	0.26	120	42	2.8	25.0	<10	40.5
R2 TR89-1-2B		6	<100	340	<0.5	12	0.19	<53	<22	2.3	32.0	<10	65.7
R2 TR89-1-2C		8	<100	170	<0.5	110	0.42	430	95	2.7	26.0	<10	34.0
R2 TR89-1-2D		5	<100	150	<0.5	23	0.30	<50	36	1.3	21.0	<10	26.4
R2 TR89-1-2E		4	<100	200	<0.5	89	0.20	720	32	4.7	19.0	<10	35.6
R2 TR89-1-2F		3	<100	180	<0.5	80	0.29	410	130	4.9	29.0	<10	43.1
R2 TR89-1-2G		3	<100	77	<0.5	31	0.31	220	150	3.1	17.0	<10	17.0
R2 TR89-1-3A		8	<100	200	<0.5	35	0.27	190	43	3.6	22.0	<10	31.9
R2 TR89-1-3B		5	<100	260	<0.5	18	0.18	79	38	2.4	29.0	<10	50.8
R2 TR89-1-3C		3	<100	180	<0.5	25	0.11	260	<10	1.4	22.0	<10	34.9
R2 TR89-1-3D		3	<100	82	<0.5	52	0.19	800	81	2.6	13.0	<10	20.0
R2 TR89-1-3E		4	<100	150	<0.5	110	0.17	1300	39	4.6	16.0	<10	32.8
R2 TR89-1-3F		5	<100	350	<0.5	140	0.16	810	58	7.7	31.0	<10	79.9
R2 TR89-1-4A		3	<100	200	<0.5	30	0.20	150	36	1.4	22.0	<10	42.5
R2 TR89-1-4B		4	<100	120	<0.5	48	0.21	340	66	2.1	15.0	<10	26.8
R2 TR89-1-4C		3	<100	24	<0.5	10	0.17	72	110	1.9	8.3	<10	5.2
R2 TR89-1-5A		6	<100	290	<0.5	27	0.19	<50	31	2.6	30.0	<10	54.7
R2 TR89-1-5B		5	<100	150	<0.5	62	0.23	220	72	2.5	20.0	<10	31.9
R2 TR89-1-5C		4	<100	150	<0.5	74	0.26	340	110	3.8	22.0	<10	36.2
R2 TR89-1-5D		5	<100	150	<0.5	64	0.25	290	91	3.2	20.0	<10	35.8
R2 TR89-1-5E		3	<100	210	<0.5	78	0.19	340	94	4.0	24.0	<10	49.7
R2 TR89-2-1A		5	<100	260	<1.2	27	0.22	130	46	2.2	24.0	<10	49.7
R2 TR89-2-1B		5	<100	170	<0.5	54	0.22	430	48	2.7	20.0	<10	30.6
R2 TR89-2-1C		3	<100	190	<0.5	81	0.19	650	42	4.0	19.0	<10	36.4
R2 TR89-2-1D		5	<100	280	<1.2	140	0.20	540	69	6.4	27.0	<10	60.7
R2 TR89-2-1E		3	<100	98	<0.5	58	0.30	200	120	2.7	22.0	<10	23.4
R2 TR89-2-2A		7	<100	160	<0.5	28	0.30	210	48	2.7	16.0	<10	29.6
R2 TR89-2-2B		4	<100	240	<1.0	17	0.20	140	24	1.9	26.0	<10	47.3
R2 TR89-2-2C		4	<100	140	<0.5	39	0.21	370	42	1.8	19.0	<10	24.6
R2 TR89-2-2D		3	<100	120	<0.5	84	0.24	450	86	3.6	19.0	<10	28.8
R2 TR89-2-3A		8	<100	170	<0.5	32	0.28	170	52	2.6	17.0	<10	31.7
R2 TR89-2-3B		5	<100	270	<1.1	14	0.19	<50	45	1.6	26.0	<10	56.1
R2 TR89-2-3C		5	<100	140	<0.5	37	0.30	150	56	1.5	19.0	<10	26.7
R2 TR89-2-3D		3	<100	37	<0.5	16	0.27	120	97	1.8	10.0	<10	7.0
R2 TR89-3-1A		10	<100	160	<0.5	29	0.33	<50	67	1.8	22.0	<10	26.6

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 4-AUG-89

REPORT: V89-113804.0

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 TR89-1-1A		<200	<1	9	<20	10.0	68.1	<2	25	<200	<500	630
R2 TR89-1-1B		<200	<1	11	<20	11.0	66.9	<2	37	<200	1100	675
R2 TR89-1-1C		<200	<1	7	<20	13.0	37.0	<2	20	760	<500	420
R2 TR89-1-1D		<200	<1	14	<20	11.0	67.8	<2	49	<200	<500	910
R2 TR89-1-1F		<200	1	9	<20	11.0	73.2	<2	32	530	950	535
R2 TR89-1-2A		<200	<1	9	<20	10.0	63.3	<2	32	<200	<500	650
R2 TR89-1-2B		<200	<1	15	<20	11.0	61.5	<2	51	370	<500	880
R2 TR89-1-2C		<200	<1	8	<20	10.0	39.0	<2	26	340	<500	460
R2 TR89-1-2D		<200	<1	6	<20	6.4	29.0	<2	21	200	<500	350
R2 TR89-1-2E		<200	<1	7	<20	8.1	95.8	<2	23	1100	<500	475
R2 TR89-1-2F		<200	<1	8	<20	15.0	36.0	<2	19	1300	<500	440
R2 TR89-1-2G		<200	1	3	<20	12.0	15.0	<2	9	540	570	140
R2 TR89-1-3A		<200	<1	8	<20	9.1	67.1	<2	29	230	750	535
R2 TR89-1-3B		<200	<1	12	<20	11.0	53.8	<2	38	240	<500	715
R2 TR89-1-3C		<200	<1	7	<20	6.9	41.0	<2	25	440	<500	420
R2 TR89-1-3D		<200	<1	4	<20	8.7	27.0	<2	8	940	<500	140
R2 TR89-1-3E		<200	<1	7	<20	7.3	81.1	<2	17	1400	<500	305
R2 TR89-1-3F		<200	<1	15	<20	14.0	79.7	<2	35	1300	<500	720
R2 TR89-1-4A		<200	<1	9	<20	10.0	48.0	<2	27	230	<500	525
R2 TR89-1-4B		<200	<1	6	<20	8.1	39.0	<2	14	330	800	310
R2 TR89-1-4C		<200	<1	<1	<20	6.9	6.0	<2	<5	<200	<500	22
R2 TR89-1-5A		<200	<1	13	<20	10.0	58.5	<2	42	<200	<500	705
R2 TR89-1-5B		<200	<1	6	<20	8.8	40.0	<2	17	780	<500	360
R2 TR89-1-5C		<200	<1	7	<20	12.0	31.0	<2	16	1100	650	355
R2 TR89-1-5D		<200	<1	6	<20	11.0	32.0	<2	14	920	<500	330
R2 TR89-1-5E		<200	<1	9	<20	14.0	49.0	<2	22	840	<500	415
R2 TR89-2-1A		<200	<1	11	<20	10.0	61.2	<2	39	260	930	650
R2 TR89-2-1B		<200	<1	7	<20	7.3	61.1	<2	23	470	<500	380
R2 TR89-2-1C		<200	<1	8	<20	7.8	73.2	<2	21	910	<500	480
R2 TR89-2-1D		<200	1	11	<20	13.0	78.5	<2	29	1000	<500	620
R2 TR89-2-1F		<200	<1	4	<20	13.0	17.0	<2	10	810	<500	205
R2 TR89-2-2A		<200	<1	7	<20	9.1	66.1	<2	21	460	<500	435
R2 TR89-2-2B		<200	<1	11	<20	9.5	51.7	<2	34	<200	<500	690
R2 TR89-2-2C		<200	<1	5	<20	5.8	37.0	<2	17	500	<500	370
R2 TR89-2-2D		<200	<1	6	<20	12.0	39.0	<2	13	1000	<500	200
R2 TR89-2-3A		<200	<1	8	<20	9.1	77.9	<2	21	340	<500	505
R2 TR89-2-3B		<200	<1	12	<20	11.0	60.5	<2	38	<200	<500	805
R2 TR89-2-3C		<200	<1	5	<20	8.1	35.0	<2	17	370	<500	390
R2 TR89-2-3D		<200	<1	1	<20	7.5	11.0	<2	<5	310	<500	100
R2 TR89-3-1A		<200	1	6	<20	13.0	35.0	<2	25	<200	1000	495

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SAMPLE NUMBER	ELEMENT UNITS	Au PPB	Ag PPM	As PPM	Ba PPM	Br PPM	Cd PPM	Ca PPM	Co PPM	Cr PPM	Cs PPM	Eu PPM	Fe PCT
R2 TR89-3-1B		<5	<5	19	<100	1	<10	210	<10	220	2	8	0.6
R2 TR89-3-1C		<5	<5	18	<100	1	<10	260	<10	230	2	8	0.6
R2 TR89-3-1D		<5	<5	21	<100	<1	<10	140	<10	130	3	4	0.7
R2 TR89-3-1E		<5	<5	20	<100	<1	<10	130	<10	190	2	5	1.2
R2 TR89-3-1F		<5	<5	19	<100	1	<10	160	<10	140	2	3	1.5
R2 TR89-3-2A		<5	<5	22	<100	1	<10	130	<10	160	4	4	0.8
R2 TR89-3-2B		<5	<5	17	<100	1	<10	280	<10	210	1	8	<0.5
R2 TR89-3-2C		<5	<5	15	<270	<1	18	220	<10	200	1	11	1.0
R2 TR89-3-2D		<5	<5	20	<100	<1	<10	140	<10	170	3	5	0.7
R2 TR89-3-2E		<5	<5	16	200	<1	<10	180	11	160	5	6	1.9
R2 TR89-3-3A		<5	<5	39	<200	1	<10	190	<10	150	2	6	0.9
R2 TR89-3-3B		<5	<5	23	<100	<1	<10	100	<10	170	3	4	1.5
R2 TR89-3-3C		<5	<5	20	<210	<1	<10	200	<10	180	<1	6	<0.5
R2 TR89-3-3D		<5	<5	22	<100	2	<10	220	<10	210	2	7	0.6
R2 TR89-3-3F		<5	<5	18	<100	<1	<10	210	<10	190	3	6	1.3
R2 TR89-3-3F		<5	<5	22	<100	<1	<10	120	<10	130	2	3	1.3
R2 TR89-3-4		<5	<5	21	<100	<1	<10	190	<10	150	1	10	1.4
R2 TR89-4-1A		<5	<5	19	<100	<1	<10	160	<10	150	2	6	0.5
R2 TR89-4-1B		<5	<5	17	<200	<1	<10	240	<10	180	<1	12	<0.5
R2 TR89-4-1C		<5	<5	15	<290	<1	<10	220	<10	210	1	10	0.7
R2 TR89-4-1D		<5	<5	37	<230	1	<10	220	<10	170	4	4	1.7
R2 TR89-4-1E		20	<5	85	<300	3	14	270	14	120	<1	7	2.6
R2 TR89-4-1F		13	<5	45	200	4	<10	250	10	290	9	5	2.7
R2 TR89-4-2A		<5	<5	29	<100	<1	<10	140	<10	150	3	4	1.4
R2 TR89-4-2B		<5	<5	21	<200	<1	<10	220	<10	250	2	6	0.6
R2 TR89-4-2C		<5	<5	21	<100	<1	<10	210	<10	260	3	9	0.7
R2 TR89-4-2D		8	<5	26	240	1	<10	110	<10	210	6	3	2.2
R2 TR89-4-2E		<5	<5	28	<100	2	<10	250	<10	140	3	10	1.2
R2 TR89-4-2F		<5	<5	50	<250	1	<10	250	<10	170	2	5	2.0
R2 TR89-4-2G		20	<5	59	<100	2	<10	190	20	200	5	4	2.4
R2 TR89-5-1A		<5	<5	16	<100	<1	<10	260	<10	190	<1	10	<0.5
R2 TR89-5-1B		<5	<5	19	<100	<1	<10	210	<10	230	2	6	1.3
R2 TR89-5-1C		<5	<5	42	<200	2	<10	150	<10	130	2	3	1.9
R2 TR89-5-2A		8	<5	92	<370	3	<10	140	<10	120	<1	3	3.8
R2 TR89-5-2B		<5	<5	18	<100	1	<10	170	<10	170	2	5	1.2
R2 TR89-5-2C		<5	<5	18	<220	2	<10	200	<10	210	2	8	<0.5
R2 TR89-5-2D		<5	<5	17	<200	<1	<10	240	<10	210	2	9	0.5
R2 TR89-5-3A		7	<5	98	<370	3	<10	110	<10	140	<1	<2	3.0
R2 TR89-5-3B		<5	<5	20	<100	1	<10	130	<10	130	1	2	0.6
R2 TR89-5-3C		<5	<5	33	<100	2	<10	96	<10	170	4	4	2.0

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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 TR89-3-1B		6	<100	290	<1.5	25	0.19	<50	44	1.6	33.0	<10	50.6
R2 TR89-3-1C		6	<100	300	<1.4	20	0.23	<50	46	1.3	34.0	<10	60.5
R2 TR89-3-1D		10	<100	170	<0.5	27	0.28	<50	58	1.8	21.0	<10	29.7
R2 TR89-3-1E		7	<100	210	<1.1	24	0.25	78	29	1.7	27.0	<10	32.5
R2 TR89-3-1F		10	<100	150	<0.5	27	0.34	<50	72	1.6	20.0	<10	23.4
R2 TR89-3-2A		9	<100	180	<0.5	27	0.27	<50	51	1.8	24.0	<10	27.6
R2 TR89-3-2B		8	<100	340	1.7	13	0.15	<50	25	1.5	34.0	<10	62.0
R2 TR89-3-2C		3	<100	300	<1.6	5	0.15	<50	22	1.0	34.0	<10	57.9
R2 TR89-3-2D		7	<100	180	<0.5	28	0.29	<50	45	1.9	25.0	<10	31.4
R2 TR89-3-2E		5	<100	180	<0.5	8	0.47	100	72	1.4	23.0	<10	37.4
R2 TR89-3-3A		11	<100	210	<1.0	13	0.29	<50	49	1.7	20.0	<10	41.4
R2 TR89-3-3B		8	<100	120	<0.5	38	0.33	73	77	2.0	19.0	<10	20.0
R2 TR89-3-3C		7	<100	260	<1.2	11	0.15	<50	34	1.6	31.0	<10	44.6
R2 TR89-3-3D		7	<100	270	<1.2	21	0.20	<50	28	1.7	31.0	<10	51.2
R2 TR89-3-3E		6	<100	260	<1.1	19	0.27	76	50	1.5	29.0	<10	53.5
R2 TR89-3-3F		8	<100	120	<0.5	34	0.29	73	72	1.9	17.0	<10	21.5
R2 TR89-3-4		14	<100	240	<0.5	14	0.31	<50	53	1.9	19.0	<10	50.4
R2 TR89-4-1A		8	<100	210	<1.0	17	0.25	<50	33	1.3	24.0	<10	33.6
R2 TR89-4-1B		5	<100	380	2.4	6	0.13	<53	28	1.1	35.0	<10	74.5
R2 TR89-4-1C		4	<100	330	<1.8	<6	0.14	<50	39	0.9	32.0	<10	64.2
R2 TR89-4-1D		7	<100	220	<1.1	52	0.22	100	46	1.8	25.0	<10	42.6
R2 TR89-4-1E		6	<100	270	<1.3	110	0.12	510	35	4.5	27.0	<10	51.9
R2 TR89-4-1F		3	<100	170	<0.5	99	0.24	400	110	4.0	28.0	<10	40.3
R2 TR89-4-2A		9	<100	170	<0.5	23	0.25	51	70	1.7	21.0	<10	30.4
R2 TR89-4-2B		6	<100	330	1.7	17	0.17	<50	33	1.5	33.0	<10	60.4
R2 TR89-4-2C		6	<100	300	<1.3	35	0.22	<50	38	1.4	34.0	<10	58.5
R2 TR89-4-2D		8	<100	110	<0.5	100	0.48	210	100	1.7	24.0	<10	22.5
R2 TR89-4-2E		3	<100	270	<1.2	32	0.19	100	34	1.6	25.0	<10	52.0
R2 TR89-4-2F		4	<100	240	<1.1	67	0.19	370	27	3.1	26.0	<10	47.3
R2 TR89-4-2G		3	<100	140	<0.5	70	0.18	580	80	4.1	20.0	<10	30.5
R2 TR89-5-1A		8	<100	360	2.3	6	0.15	<52	31	1.2	35.0	<10	70.6
R2 TR89-5-1B		7	<100	280	<1.3	16	0.21	67	41	1.4	29.0	<10	53.0
R2 TR89-5-1C		6	<100	140	<0.5	42	0.23	170	45	2.2	17.0	<10	25.7
R2 TR89-5-2A		7	<100	120	<0.5	22	0.17	97	28	1.9	13.0	<10	20.2
R2 TR89-5-2B		11	<100	180	<0.5	14	0.32	<50	60	1.3	18.0	<10	34.6
R2 TR89-5-2C		5	<100	300	<1.6	7	0.15	<50	34	1.3	31.0	<10	55.7
R2 TR89-5-2D		5	<100	340	1.7	7	0.20	<50	53	1.2	36.0	<10	72.6
R2 TR89-5-3A		7	<100	110	<0.5	25	0.16	82	21	2.1	13.0	<10	16.0
R2 TR89-5-3B		9	<100	140	<0.5	21	0.34	<50	54	1.3	20.0	<10	23.3
R2 TR89-5-3C		8	<100	120	<0.5	39	0.33	100	63	1.9	17.0	<10	20.0

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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 TR89-3-1B		<200	<1	12	<20	8.0	61.1	<2	46	<200	<500	805
R2 TR89-3-1C		<200	2	13	<20	12.0	58.4	<2	48	<200	<500	810
R2 TR89-3-1D		<200	<1	7	<20	14.0	37.0	<2	27	<200	670	545
R2 TR89-3-1E		<200	1	8	<20	8.5	52.7	<2	33	<200	<500	590
R2 TR89-3-1F		<200	<1	5	<20	11.0	37.0	<2	22	<200	<500	450
R2 TR89-3-2A		<200	<1	7	<20	9.0	47.0	<2	29	<200	<500	515
R2 TR89-3-2B		<200	<1	14	<20	10.0	58.4	<2	54	<200	<500	900
R2 TR89-3-2C		<200	<1	12	<20	10.0	82.6	<2	45	330	<500	775
R2 TR89-3-2D		<200	<1	8	<20	11.0	50.9	<2	29	<200	<500	530
R2 TR89-3-2E		<200	<1	8	<20	11.0	32.0	<2	25	360	<500	510
R2 TR89-3-3A		<200	<1	10	<20	11.0	61.6	<2	34	<200	<500	680
R2 TR89-3-3B		<200	1	5	<20	14.0	32.0	<2	18	<200	700	405
R2 TR89-3-3C		<200	<1	11	<20	7.5	65.1	<2	41	<200	<500	750
R2 TR89-3-3D		<200	<1	12	<20	10.0	59.0	<2	42	280	<500	855
R2 TR89-3-3E		<200	<1	12	<20	12.0	54.7	<2	36	<200	<500	720
R2 TR89-3-3F		<200	<1	5	<20	14.0	36.0	<2	17	<200	790	400
R2 TR89-3-4		<200	<1	12	<20	12.0	43.0	<2	35	<200	940	730
R2 TR89-4-1A		<200	<1	8	<20	7.5	60.4	<2	34	<200	<500	630
R2 TR89-4-1B		<200	<1	17	<20	12.0	61.2	<2	60	<200	1200	970
R2 TR89-4-1C		<200	<1	14	<20	11.0	88.5	<2	49	310	890	765
R2 TR89-4-1D		<200	<1	9	<20	10.0	69.5	<2	32	260	<500	560
R2 TR89-4-1E		<200	<1	10	<20	8.9	92.7	<2	32	660	<500	560
R2 TR89-4-1F		<200	1	7	<20	16.0	39.0	<2	17	1000	<500	370
R2 TR89-4-2A		<200	<1	7	<20	13.0	44.0	<2	27	230	<500	510
R2 TR89-4-2B		<200	<1	14	<20	10.0	62.0	<2	51	<200	<500	820
R2 TR89-4-2C		<200	<1	13	<20	11.0	57.2	<2	45	<200	<500	805
R2 TR89-4-2D		<200	1	5	<20	11.0	25.0	<2	14	230	630	345
R2 TR89-4-2E		<200	<1	10	<20	11.0	50.2	<2	37	<200	<500	650
R2 TR89-4-2F		<200	<1	10	<20	9.3	75.3	<2	33	720	<500	515
R2 TR89-4-2G		<200	<1	6	<20	9.4	43.0	<2	14	1400	<500	325
R2 TR89-5-1A		<200	<1	15	<20	12.0	54.2	<2	55	<200	<500	985
R2 TR89-5-1B		<200	<1	12	<20	9.4	56.8	<2	45	260	<500	770
R2 TR89-5-1C		<200	<1	6	<20	7.1	61.2	<2	18	260	<500	405
R2 TR89-5-2A		<200	<1	5	<20	5.2	113.0	<2	17	<200	<500	345
R2 TR89-5-2B		<200	<1	8	<20	12.0	42.0	<2	28	<200	750	545
R2 TR89-5-2C		<200	<1	13	<20	9.2	66.4	<2	48	<200	<500	790
R2 TR89-5-2D		<200	<1	15	<20	13.0	61.1	<2	53	<200	920	885
R2 TR89-5-3A		<200	<1	4	<20	4.6	114.0	<2	14	<200	<500	225
R2 TR89-5-3B		<200	<1	6	<20	10.0	36.0	<2	23	<200	1100	420
R2 TR89-5-3C		<200	<1	5	<20	9.3	57.5	<2	19	260	<500	360

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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 TR89-5-3D		<5	<5	19	<220	<1	<10	230	<10	220	2	7	<0.5
R2 TR89-5-3F		<5	<5	36	<100	2	<10	160	10	220	6	5	2.3
R2 TR89-5-4A		<5	<5	17	<100	1	<10	220	<10	220	<1	10	<0.5
R2 TR89-5-4B		<5	<5	16	<240	2	<10	250	<10	190	<1	8	<0.5
R2 TR89-5-4C		<5	<5	26	210	1	<10	140	<10	190	6	3	1.8
R2 TR89-5-4D		<5	<5	18	<220	<1	<10	290	<10	210	2	11	<0.5
R2 TR89-5-4F		12	<5	28	<210	2	<10	250	12	200	2	7	1.6
R2 TR89-5-5A		<5	<5	19	<100	<1	<10	130	<10	140	3	5	1.4
R2 TR89-5-5B		<5	<5	18	<200	<1	<10	210	<10	190	1	9	<0.5
R2 TR89-5-5C		<5	<5	16	<270	1	<10	240	<10	180	<1	6	<0.5
R2 TR89-5-5D		<5	<5	26	<100	2	<10	160	<10	180	6	5	1.6
R2 TR89-5-5E		<5	<5	55	<220	2	<10	190	<10	180	3	5	2.2
R2 TR89-5-6A		<5	<5	37	<240	1	<10	140	10	160	2	4	2.1
R2 TR89-5-6B		<5	<5	18	<230	1	<10	200	<10	230	<1	9	<0.5
R2 TR89-5-6C		10	<5	43	<220	2	<10	170	<10	200	4	4	2.3
R2 TR89-5-7A		10	<5	33	<100	2	<10	110	12	180	5	3	2.1
R2 TR89-5-7B		39	<5	126	<560	5	<10	560	22	260	3	18	4.4
R2 TR89-5-7C		26	<5	82	<360	4	<10	420	25	290	4	10	3.3
R2 TR89-5-7D		11	<5	45	150	3	<10	130	24	98	10	3	3.7
R2 TR89-5-7E		<5	<5	40	<200	2	<10	190	<10	150	2	5	1.9
R2 TR89-5-7F		<5	<5	51	<220	2	<10	140	<10	160	5	3	2.2

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 4-AUG-89

REPORT: V89-03804.0

PROJECT: 110 PAGE 3B

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 TR89-5-3D		6	<100	290	<1.4	12	0.18	<50	<10	1.3	32.0	<10	51.0
R2 TR89-5-3E		7	<100	130	<0.5	110	0.40	380	99	3.7	25.0	<10	27.2
R2 TR89-5-4A		6	<100	350	2.2	10	0.10	<50	35	1.1	32.0	<10	66.7
R2 TR89-5-4B		4	<100	330	<1.7	8	0.16	<50	33	0.9	30.0	<10	67.6
R2 TR89-5-4C		9	<100	110	<0.5	110	0.52	95	110	2.0	22.0	<10	21.9
R2 TR89-5-4D		7	<100	370	1.5	<5	0.15	<51	37	1.2	31.0	<10	73.7
R2 TR89-5-4E		5	<100	280	<1.2	23	0.27	120	53	1.7	31.0	<10	56.3
R2 TR89-5-5A		6	<100	160	<0.5	21	0.32	<50	62	1.3	19.0	<10	27.4
R2 TR89-5-5B		7	<100	330	<1.5	<4	0.14	<50	<21	1.1	33.0	<10	64.1
R2 TR89-5-5C		6	<100	350	<1.7	<5	0.16	<54	36	1.0	33.0	<10	71.4
R2 TR89-5-5D		7	<100	140	<0.5	77	0.41	180	82	1.9	25.0	<10	30.8
R2 TR89-5-5E		5	<100	190	<0.5	37	0.28	160	29	2.3	26.0	<10	33.2
R2 TR89-5-6A		7	<100	180	<0.5	25	0.24	120	49	1.8	22.0	<10	30.9
R2 TR89-5-6B		6	<100	320	<1.7	10	0.16	<50	25	1.2	31.0	<10	63.1
R2 TR89-5-6C		6	<100	140	<0.5	110	0.37	460	68	3.2	25.0	<10	28.4
R2 TR89-5-7A		8	<100	110	<0.5	100	0.48	350	86	2.1	21.0	<10	21.2
R2 TR89-5-7B		3	<100	450	<1.0	273	0.16	2000	68	11.0	38.0	20	83.5
R2 TR89-5-7C		6	<100	310	<1.6	160	0.23	1400	86	7.5	31.0	13	67.5
R2 TR89-5-7D		4	<100	72	<0.5	45	0.19	780	130	4.1	18.0	<10	16.0
R2 TR89-5-7E		6	<100	180	<0.5	56	0.29	320	53	1.9	28.0	<10	33.0
R2 TR89-5-7F		6	<100	150	<0.5	80	0.35	480	82	2.6	25.0	<10	28.0

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 4-AUG-89

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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 TR89-5-3D		<200	<1	12	<20	8.2	65.3	<2	48	<200	<500	340
R2 TR89-5-3E		<200	<1	6	<20	10.0	48.0	<2	17	740	<500	760
R2 TR89-5-4A		<200	<1	15	<20	12.0	57.2	<2	54	<200	<500	930
R2 TR89-5-4B		<200	<1	14	<20	10.0	72.4	<2	48	290	<500	900
R2 TR89-5-4C		<200	<1	5	<20	10.0	28.0	<2	17	260	570	220
R2 TR89-5-4D		<200	<1	16	<20	12.0	65.7	<2	59	<200	<500	990
R2 TR89-5-4F		<200	<1	11	<20	12.0	63.8	<2	42	370	<500	760
R2 TR89-5-5A		<200	<1	6	<20	12.0	36.0	<2	26	<200	<500	500
R2 TR89-5-5B		<200	<1	14	<20	10.0	61.3	<2	51	<200	<500	940
R2 TR89-5-5C		<200	<1	15	<20	12.0	83.0	<2	52	<200	<500	950
R2 TR89-5-5D		<200	1	7	<20	11.0	38.0	<2	19	290	<500	395
R2 TR89-5-5E		<200	<1	7	<20	7.7	65.2	<2	25	270	<500	410
R2 TR89-5-6A		<200	<1	7	<20	8.0	73.9	<2	29	<200	<500	515
R2 TR89-5-6B		<200	<1	14	<20	10.0	70.6	<2	50	<200	930	890
R2 TR89-5-6C		<200	<1	6	<20	9.1	65.7	<2	20	520	<500	350
R2 TR89-5-7A		<200	1	4	<20	9.1	42.0	<2	15	340	<500	245
R2 TR89-5-7B		<200	<1	18	<20	14.0	167.0	<2	38	1800	<500	880
R2 TR89-5-7C		<200	<1	13	<20	14.0	107.0	<2	30	1600	<500	675
R2 TR89-5-7D		<200	<1	3	<20	10.0	22.0	<2	8	950	<500	120
R2 TR89-5-7E		<200	<1	7	<20	8.0	61.3	<2	25	340	<500	420
R2 TR89-5-7F		<200	<1	6	<20	8.2	64.9	<2	19	530	<500	370

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A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical Lab Report

REPORT: V89-03804.0 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-5

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 4-AUG-89

ORDER		ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Au	Gold	101	5 PPB	NOT APPLICABLE	Inst. Neutron Activ.
2	Ag	Silver	101	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
3	As	Arsenic	101	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
4	Ba	Barium	101	100 PPM	NOT APPLICABLE	Inst. Neutron Activ.
5	Br	Bromine	101	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
6	Cd	Cadmium	101	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
7	Ce	Cerium	101	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
8	Co	Cobalt	101	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
9	Cr	Chromium	101	50 PPM	NOT APPLICABLE	Inst. Neutron Activ.
10	Cs	Cesium	101	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
11	Eu	Europium	101	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
12	Fe	Iron	101	0.5 PCT	NOT APPLICABLE	Inst. Neutron Activ.
13	Hf	Hafnium	101	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
14	Ir	Iridium	101	100 PPB	NOT APPLICABLE	Inst. Neutron Activ.
15	La	Lanthanum	101	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
16	Lu	Lutetium	101	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
17	Mo	Molybdenum	101	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
18	Na	Sodium	101	0.05 PCT	NOT APPLICABLE	Inst. Neutron Activ.
19	Ni	Nickel	101	50 PPM	NOT APPLICABLE	Inst. Neutron Activ.
20	Rb	Rubidium	101	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
21	Sb	Antimony	101	0.2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
22	Sc	Scandium	101	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
23	Se	Selenium	101	10 PPM	NOT APPLICABLE	Inst. Neutron Activ.
24	Sm	Samarium	101	0.1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
25	Sn	Tin	101	200 PPM	NOT APPLICABLE	Inst. Neutron Activ.
26	Ta	Tantalum	101	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
27	Tb	Terbium	101	1 PPM	NOT APPLICABLE	Inst. Neutron Activ.
28	Te	Tellurium	101	20 PPM	NOT APPLICABLE	Inst. Neutron Activ.
29	Th	Thorium	101	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
30	U	Uranium	101	0.5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
31	W	Tungsten	101	2 PPM	NOT APPLICABLE	Inst. Neutron Activ.
32	Yb	Ytterbium	101	5 PPM	NOT APPLICABLE	Inst. Neutron Activ.
33	Zn	Zinc	101	200 PPM	NOT APPLICABLE	Inst. Neutron Activ.
34	Zr	Zirconium	101	500 PPM	NOT APPLICABLE	Inst. Neutron Activ.
35	Y	Yttrium	101	5 PPM		X-Ray Fluorescence

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A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-03814.0 (COMPLETE) REFERENCE INFO: SHIPMENT #89-5

CLIENT: BOUNDARY DRILLING LTD. SUBMITTED BY: J. PELL
PROJECT: 110 DATE PRINTED: 4-AUG-89

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	101	2 -150	101	ASSAY PREP	101

REMARKS: ELEVATED DETECTION LIMITS DUE TO HIGH RARE
EARTH ELEMENT AND URANIUM CONTENTS.

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

INVOICE TO: MR. DOUG LEIGHTON

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A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

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PROJECT: 110

SAMPLE NUMBER	ELEMENT UNITS	Y PPM
R2 CRC-89-32		950
R2 CRC-89-1R-1A		675
R2 CRC-89-1R-611A		670
R2 CRC-89-1R-611B		350
R2 1R89-6-1A		645
R2 1R89-6-1B		370
R2 1R89-6-1C		865
R2 1R89-6-1D		385
R2 1R89-6-1E		430
R2 1R89-6-2A		340
R2 1R89-6-2B		770
R2 1R89-6-2C		175
R2 1R89-6-2D		150
R2 1R89-7-1A		300
R2 1R89-7-1B		630
R2 1R89-7-1C		320
R2 1R89-7-1D		600
R2 1R89-8-1A		510
R2 1R89-8-1B		905
R2 1R89-9-1A		420
R2 1R89-9-1B		890
R2 1R89-9-1C		905
R2 1R89-9-1D		210
R2 1R89-9-1E		830
R2 1R89-9-G		1300
R2 1R89-10-1A		510
R2 1R89-10-1B		900
R2 1R89-10-1C		210
R2 1R89-10-1D		390

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 8-AUG-89

REPORT: V89-03859.0

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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-89-32		<5	<5	16	<100	<1	<10	150	<10	200	2	10	<0.5
R2 CBC-89-IR-1A		18	<5	17	1300	2	<10	130	<10	120	2	6	1.1
R2 CBC-89-IR-611A		<5	<5	18	120	<1	<10	130	<10	190	3	8	1.2
R2 CBC-89-IR-611B		<5	<5	19	<210	<1	<10	160	<10	140	3	4	1.3
R2 TR89-6-1A		<5	<5	23	140	2	<10	110	<10	210	3	6	1.6
R2 TR89-6-1B		<5	<5	24	180	2	<10	78	<10	160	3	3	1.6
R2 TR89-6-1C		<5	<5	19	<220	1	<10	140	<10	200	2	7	0.6
R2 TR89-6-1D		7	<5	21	140	1	<10	100	<10	160	5	5	1.8
R2 TR89-6-1F		11	<5	65	<280	3	<10	130	<10	120	2	4	2.4
R2 TR89-6-2A		<5	<5	21	120	<1	<10	82	<10	140	3	2	1.2
R2 TR89-6-2B		<5	<5	21	<230	<1	<10	130	<10	190	<1	7	0.9
R2 TR89-6-2C		7	<5	22	310	1	<10	87	12	210	6	3	2.2
R2 TR89-6-2D		9	<5	56	<270	3	<10	150	<10	140	2	4	2.3
R2 TR89-7-1A		<5	<5	43	<100	5	<10	90	<10	160	2	5	2.7
R2 TR89-7-1B		<5	<5	21	<100	2	<10	120	<10	180	3	8	0.9
R2 TR89-7-1C		<5	<5	20	<100	2	<10	110	<10	180	4	3	2.1
R2 TR89-7-1D		<5	<5	20	<100	2	<10	130	<10	180	4	5	1.7
R2 TR89-8-1A		<5	<5	25	<250	<1	<10	55	<10	210	3	3	1.3
R2 TR89-8-1B		<5	<5	18	<100	<1	<10	150	<10	150	<1	10	<0.5
R2 TR89-9-1A		<5	<5	33	<100	2	<10	86	<10	160	3	3	1.4
R2 TR89-9-1B		13	<5	27	<100	<1	<10	150	<10	210	1	9	<0.5
R2 TR89-9-1C		<5	<5	21	<220	2	<10	160	<10	250	3	7	0.6
R2 TR89-9-1D		<5	<5	28	730	2	<10	120	<10	190	5	<2	2.6
R2 TR89-9-1F		21	<5	195	<700	6	<10	340	26	230	2	14	5.6
R2 TR89-9-G		55	<11	315	<1600	5	17	830	<10	380	2	21	10.0
R2 TR89-10-1A		<5	<5	19	220	<1	<10	120	<10	210	2	6	0.6
R2 TR89-10-1B		<5	<5	20	<100	1	<10	170	<10	200	2	12	<0.5
R2 TR89-10-1C		<5	<5	15	260	2	13	91	<10	150	5	2	1.5
R2 TR89-10-1D		9	<5	46	<100	3	<10	150	<10	150	2	3	2.1

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PROJECT: 110 PAGE 1B

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-89-32		5	<100	360	<1.3	<5	0.12	<50	34	2.4	31.0	<10	79.9
R2 CBC-89-IR-1A		5	<100	270	<1.1	19	0.26	100	36	2.8	28.0	<10	53.4
R2 CBC-89-IR-611A		9	<100	280	<1.2	18	0.19	100	47	1.3	30.0	<10	52.1
R2 CBC-89-IR-611B		6	<100	160	<0.5	56	0.30	250	43	1.3	23.0	<10	27.1
R2 TR89-6-1A		11	<100	230	<0.5	<2	0.34	<50	57	1.0	17.0	<10	47.1
R2 TR89-6-1B		10	<100	120	<0.5	30	0.35	63	56	1.5	19.0	<10	18.0
R2 TR89-6-1C		5	<100	320	<1.4	6	0.11	<50	44	1.6	33.0	<10	57.8
R2 TR89-6-1D		7	<100	140	<0.5	73	0.41	280	110	1.6	22.0	<10	29.3
R2 TR89-6-1F		4	<100	180	<0.5	61	0.22	530	34	2.6	22.0	<10	32.5
R2 TR89-6-2A		7	<100	120	<0.5	33	0.35	58	84	1.7	17.0	<10	18.0
R2 TR89-6-2B		5	<100	270	<1.4	<4	0.16	<50	21	1.2	30.0	<10	48.1
R2 TR89-6-2C		7	<100	81	<0.5	79	0.55	210	97	2.0	20.0	<10	17.0
R2 TR89-6-2D		4	<100	170	<0.5	83	0.31	460	57	3.0	24.0	<10	28.9
R2 TR89-7-1A		9	<100	110	<0.5	4	0.39	68	52	1.1	12.0	<10	19.0
R2 TR89-7-1B		11	<100	230	<0.5	4	0.33	<50	52	1.2	20.0	<10	42.8
R2 TR89-7-1C		9	<100	110	<0.5	22	0.38	75	69	1.6	18.0	<10	17.0
R2 TR89-7-1D		6	<100	200	<0.5	35	0.28	100	47	1.7	24.0	<10	36.5
R2 TR89-8-1A		8	<100	160	<0.5	29	0.26	110	55	2.1	21.0	<10	24.4
R2 TR89-8-1B		5	<100	310	<1.3	6	0.15	<50	36	1.7	30.0	<10	62.9
R2 TR89-9-1A		7	<100	130	<0.5	34	0.22	71	62	2.6	13.0	<10	23.1
R2 TR89-9-1B		5	<100	330	1.0	13	0.13	<50	24	3.1	32.0	<10	67.7
R2 TR89-9-1C		5	<100	340	<1.5	17	0.24	<50	53	2.1	34.0	<10	66.7
R2 TR89-9-1D		7	<100	110	<0.5	110	0.44	200	86	2.5	21.0	<10	19.0
R2 TR89-9-1F		5	<100	390	<3.0	357	0.18	250	44	34.8	32.0	14	79.4
R2 TR89-9-G		3	<100	691	<1.7	824	<0.83	490	50	67.2	50.9	21	150.0
R2 TR89-10-1A		10	<100	170	<0.5	8	0.27	<50	56	1.4	19.0	<10	29.9
R2 TR89-10-1B		5	<100	330	1.1	<4	0.13	<50	27	1.3	34.0	<10	66.4
R2 TR89-10-1C		4	<100	98	<0.5	70	0.34	150	62	1.7	17.0	<10	17.0
R2 TR89-10-1D		6	<100	170	<0.5	37	0.26	270	48	1.9	24.0	<10	29.8

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V7P 2R5
(604) 985-0681 Telex 04-352667

BONDAR-CLEGG

Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-01859.0

DATE PRINTED: 8-AUG-89

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 CBC-89-32		<200	<1	19	<20	15.0	59.3	<2	47	290	<500	950
R2 CBC-89-1R-1A		<200	<1	12	<20	11.0	55.9	<2	38	340	<500	675
R2 CBC-89-1R-611A		<200	<1	12	<20	11.0	67.9	<2	41	<200	<500	670
R2 CBC-89-1R-611B		<200	1	6	<20	7.4	63.0	<2	21	520	670	350
R2 TR89-6-1A		<200	<1	11	<20	12.0	46.0	<2	34	<200	1100	645
R2 TR89-6-1B		<200	<1	4	<20	11.0	34.0	<2	18	210	<500	320
R2 TR89-6-1C		<200	<1	13	<20	10.0	66.8	<2	45	<200	<500	865
R2 TR89-6-1D		<200	2	7	<20	10.0	36.0	<2	22	350	620	385
R2 TR89-6-1F		<200	<1	7	<20	7.4	83.9	<2	24	340	<500	430
R2 TR89-6-2A		<200	<1	4	<20	12.0	32.0	<2	17	300	840	340
R2 TR89-6-2B		<200	<1	11	<20	8.0	70.6	<2	44	<200	<500	770
R2 TR89-6-2C		<200	1	4	<20	10.0	24.0	<2	11	370	700	175
R2 TR89-6-2D		<200	<1	6	<20	7.9	82.7	<2	21	530	<500	350
R2 TR89-7-1A		<200	<1	4	<20	7.6	59.7	<2	15	<200	<500	300
R2 TR89-7-1B		<200	<1	10	<20	11.0	44.0	<2	36	<200	890	630
R2 TR89-7-1C		<200	<1	4	<20	13.0	27.0	<2	17	250	<500	320
R2 TR89-7-1D		<200	<1	9	<20	9.1	50.9	2	30	<200	730	600
R2 TR89-8-1A		<200	<1	6	<20	7.4	77.1	<2	25	<200	<500	510
R2 TR89-8-1B		<200	<1	14	<20	11.0	56.8	<2	44	<200	<500	905
R2 TR89-9-1A		<200	<1	5	<20	9.0	50.0	<2	18	220	570	420
R2 TR89-9-1B		<200	<1	15	<20	12.0	56.2	<2	48	<200	860	890
R2 TR89-9-1C		<200	<1	14	<20	12.0	65.1	<2	48	310	<500	905
R2 TR89-9-1D		<200	<1	4	<20	8.8	39.0	<2	15	540	<500	210
R2 TR89-9-1F		<200	<1	14	<49	14.0	211.0	<2	36	1100	<1100	830
R2 TR89-9-G		<200	<1	28	<20	21.0	433.0	<16	56	1300	860	1300
R2 TR89-10-1A		<200	<1	7	<20	12.0	29.0	<2	25	<200	<500	510
R2 TR89-10-1B		<200	<1	15	<20	11.0	58.9	<2	52	<200	<500	900
R2 TR89-10-1C		<200	<1	4	<20	6.4	28.0	<2	13	300	<500	210
R2 TR89-10-1D		<200	<1	6	<20	7.4	54.5	<2	24	570	630	390

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BONDAR-CLEGG

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical Lab Report

REPORT: V89-03859.0 (COMPLETE)

REFERENCE INFO: SHIPMENT #89-6

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 8-AUG-89

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

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A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

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SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	29	2 -150	29	ASSAY PREP	29

REMARKS: ELEVATED DETECTION LIMITS DUE TO HIGH
URANIUM CONTENT.

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MS. JENNIFER PELL

INVOICE TO: MR. DOUG LEIGHTON

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V87-03957.0 (PARTIAL)

REFERENCE INFO: SHIPMENT #87 6

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 2-AUG-87

ORDER	ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Y Yttrium	29	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	29	2 -150	29	ASSAY PREP	29

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89-6 ~~#~~ COMP.

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DATE PRINTED: 26-JUL-89

REPORT: V89-03859.4

PROJECT: 110

SAMPLE NUMBER	ELEMENT UNITS	P205 PCT
R2 CBC-89-32		29.44
R2 CBC-89-TR-1A		22.21
R2 CBC-89-TR-611A		23.38
R2 CBC-89-TR-611B		17.86
R2 TR89-6-1A		14.47
R2 TR89-6-1B		15.27
R2 TR89-6-1C		29.20
R2 TR89-6-1D		10.97
R2 TR89-6-1E		25.69
R2 TR89-6-2A		14.23
R2 TR89-6-2B		28.87
R2 TR89-6-2C		5.04
R2 TR89-6-2D		19.95
R2 TR89-7-1A		9.35
R2 TR89-7-1B		15.42
R2 TR89-7-1C		12.87
R2 TR89-7-1D		19.48
R2 TR89-8-1A		18.52
R2 TR89-8-1B		28.33
R2 TR89-9-1A		15.57
R2 TR89-9-1B		28.98
R2 TR89-9-1C		24.67
R2 TR89-9-1D		10.26
R2 TR89-9-1E		15.97
R2 TR89-9-G		13.39
R2 TR89-10-1A		14.89
R2 TR89-10-1B		27.01
R2 TR89-10-1C		8.03
R2 TR89-10-1D		20.74

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ORDER	ELEMENT		NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	P205	Phosphorous	29	0.01 PCT		Gravimetric

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	29	2 -150	29	ASSAY PREP	29

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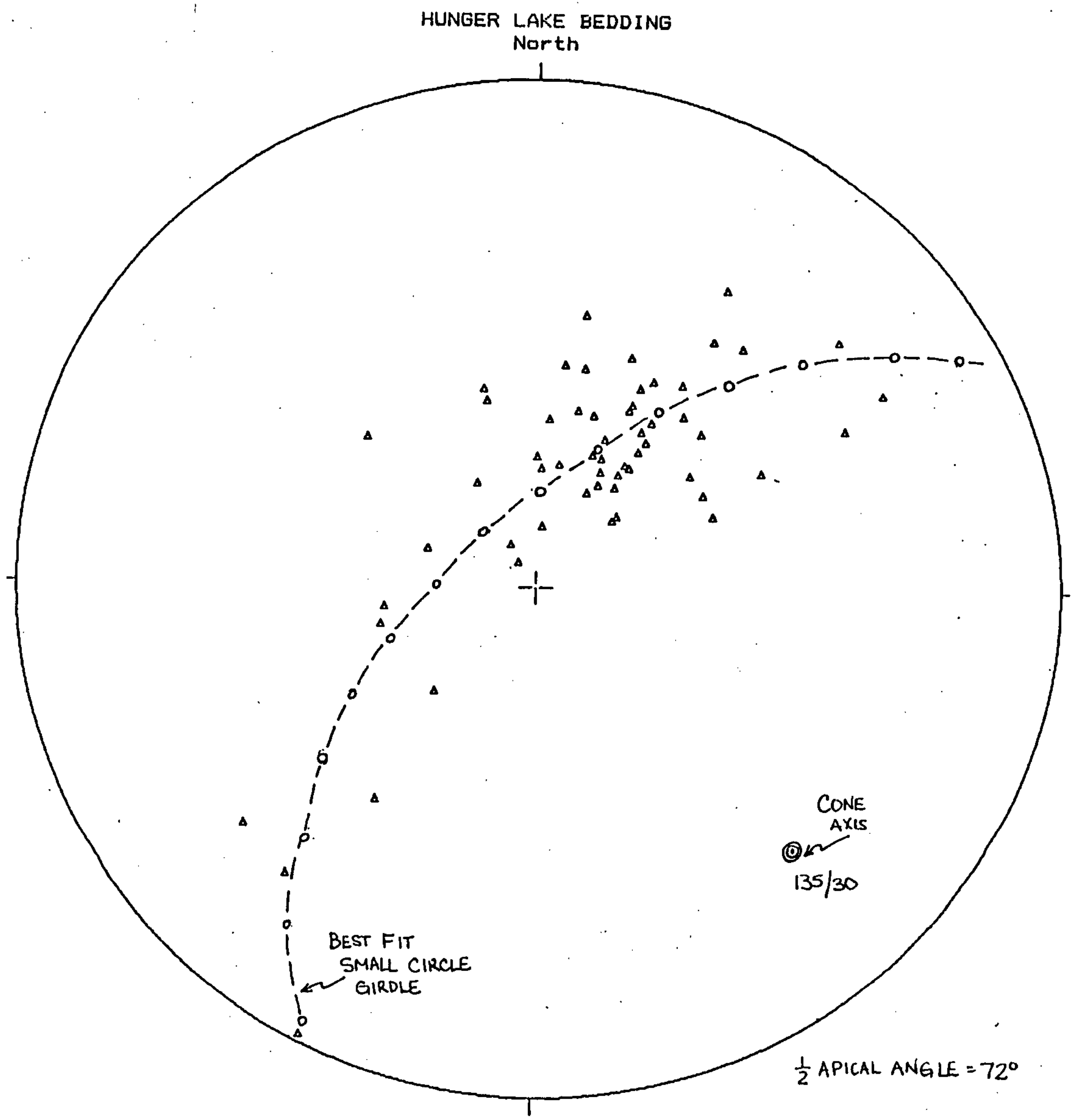
APPENDIX 2

STRUCTURAL ANALYSIS



EQUAL AREA PROJECTION

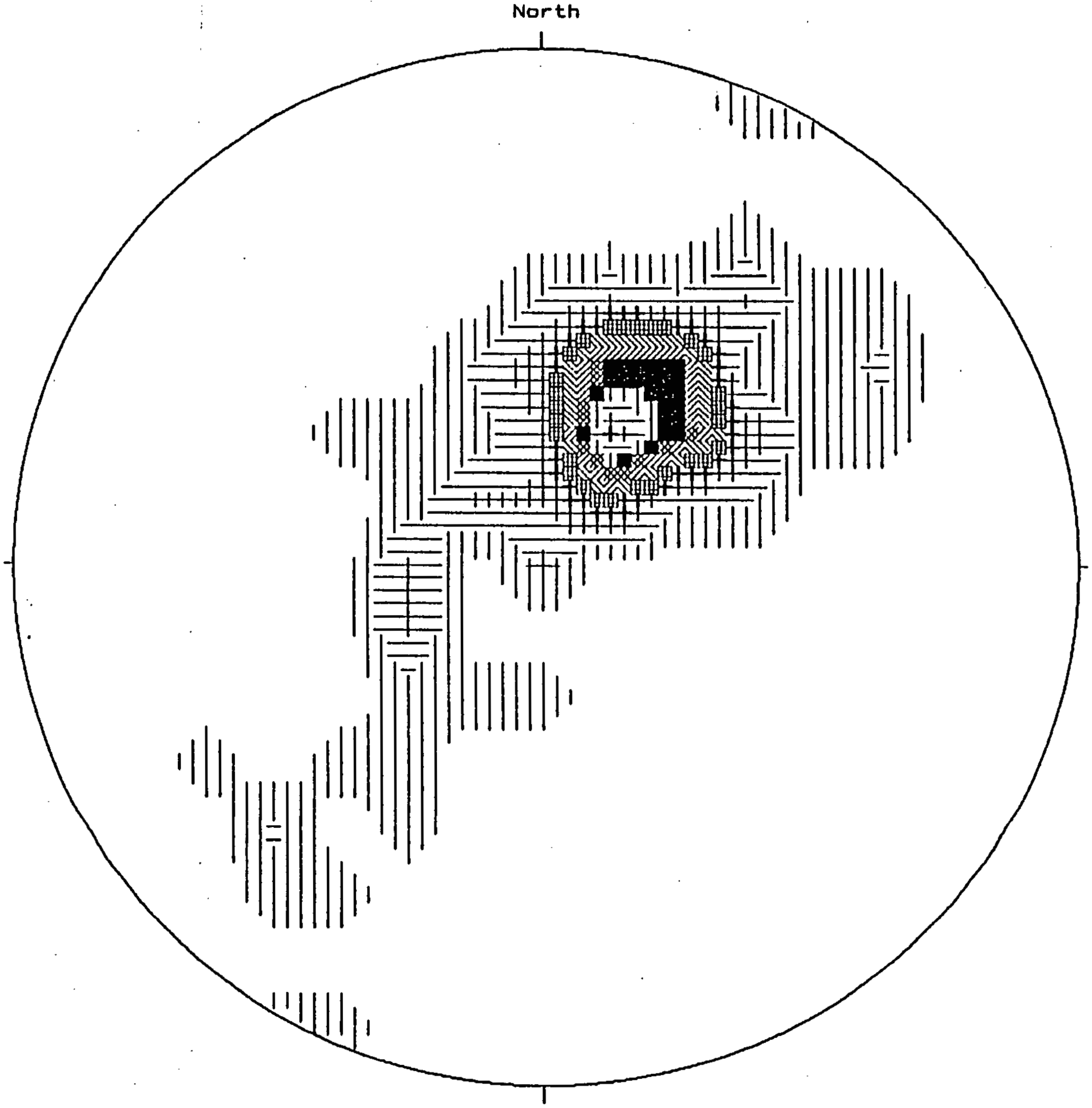
HUNGER LAKE BEDDING

SPLOT by Darton Software

	Symbol
58 Points	Δ
58 Points Total	

NOISE REMOVED

HUNGER LAKE BEDDING



58 Points

LEGEND (for first 9 intervals)

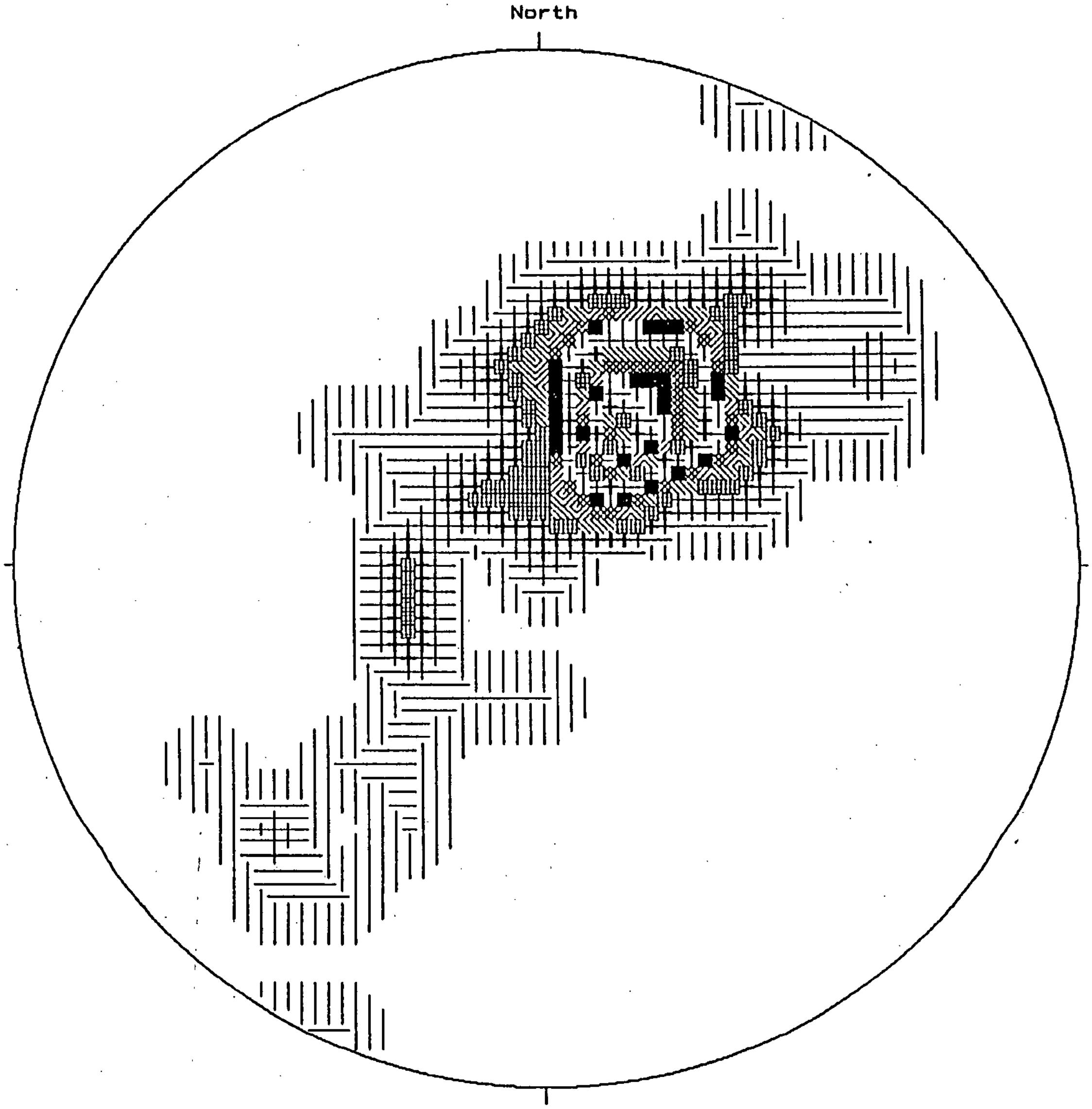
1- 2	11- 12
3- 4	13- 14
5- 6	15- 16
7- 8	17- 18
9- 10	

Contour Method: Schmidt (1925)
Counting Area: 0.010
Contour Interval: 2% Points per 1% Area
Maximum Contour: 26

NOTE: Contour Patterns Repeat Every 9 Intervals

NOISE REMOVED

HUNGER LAKE BEDDING



58 Points

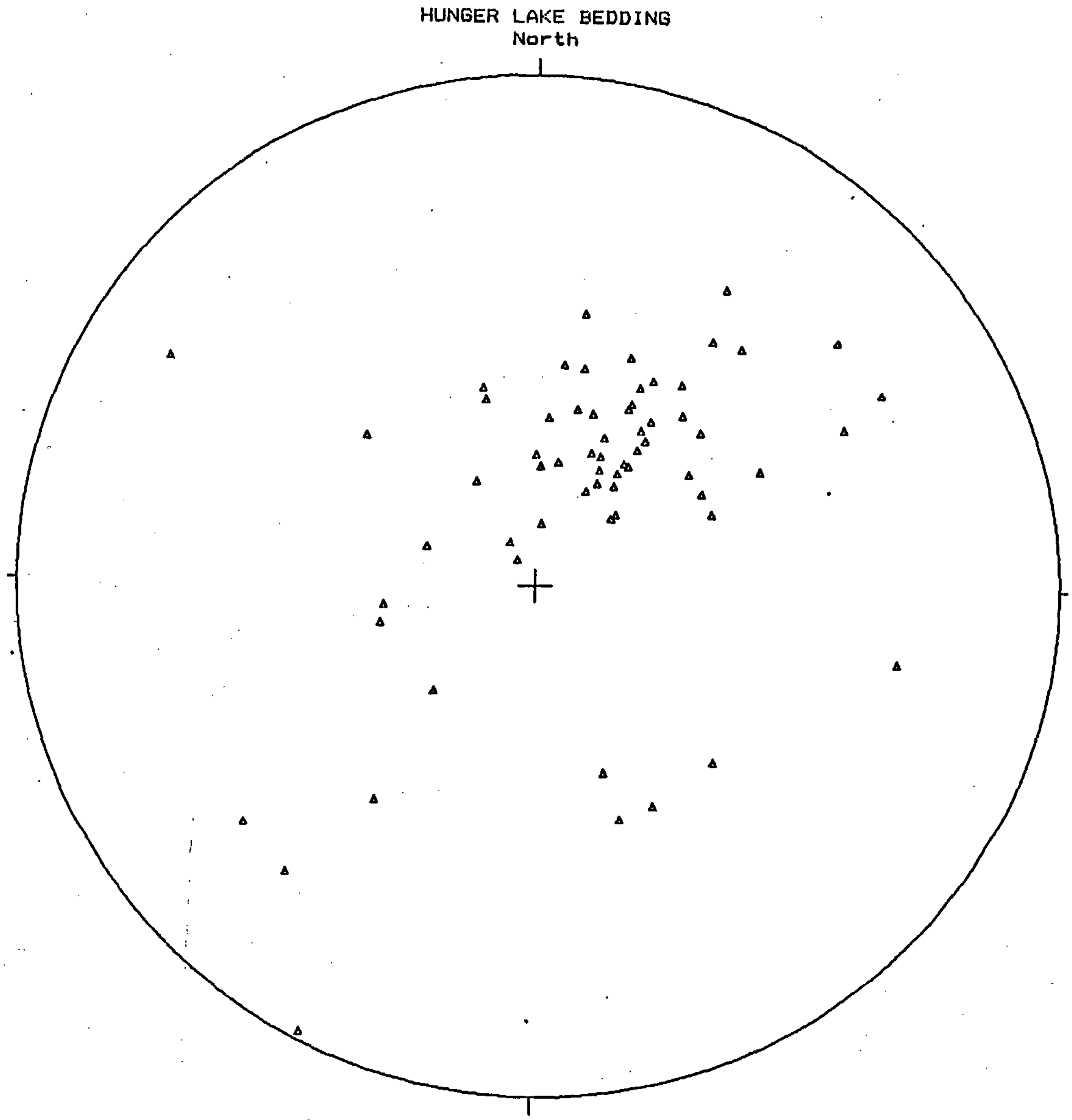
LEGEND (for first 9 intervals)

1- 1	6- 6		
2- 2	7- 7		
3- 3	8- 8		
4- 4	9- 9		
5- 5			

Contour Method: Schmidt (1925)
Counting Area: 0.010
Contour Interval: 1% Points per 1% Area
Maximum Contour: 26

NOTE: Contour Patterns Repeat Every 9 Intervals

NOISE REMOVED



EQUAL AREA PROJECTION

HUNGER LAKE BEDDING

SPLOT by Darton Software

Symbol

64 Points Δ

64 Points Total

ALL DATA

APPENDIX 3

ANALYSES OF BULK SAMPLES

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DATE PRINTED: 28-DEC-89

REPORT: V89-08543.0

PROJECT: 110 PAGE 1A

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 GAY1		<5	12	27	<100	3	98	55	<10	310	1	<2	1.4
R2 GAY2		<5	<5	23	240	9	34	35	<10	1900	4	<2	2.6
R2 GAY3		17	16	15	<100	20	160	<10	<10	2400	7	4	2.4
R2 GAY4		14	16	24	<100	16	180	<48	<10	1300	2	<2	0.8
R2 GAY5		11	6	17	<100	7	120	41	<10	820	2	<2	0.7
R2 GAY6		<5	<5	6	<270	3	71	<33	<10	460	<1	<2	<0.5
R2 TR89-3-BP		<5	<5	14	<230	<1	<10	110	<10	200	2	9	<0.5
R2 TR89-3-B1		<5	<5	19	<220	<1	<10	95	<10	280	2	6	0.8
R2 TR89-3-B2		<5	<5	18	<200	<1	<10	120	10	220	2	9	0.8
R2 TR89-5-BP		<5	<5	12	<100	<1	<10	180	<10	190	<1	12	0.6
R2 TR89-5-B1		<5	<5	18	<100	<1	<10	130	<10	150	1	12	1.1
R2 TR89-5-B2		<5	<5	17	<100	<1	<10	140	<10	260	2	12	1.1

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PROJECT: 110

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 GAY1		5	<100	160	<0.5	4	0.21	66	34	6.2	7.6	<10	12.0
R2 GAY2		6	<100	150	<0.5	<2	0.34	<50	88	6.7	11.0	<10	15.0
R2 GAY3		7	<100	140	<0.5	8	0.14	81	97	9.1	11.0	<10	15.0
R2 GAY4		4	<100	370	<1.1	<5	0.16	51	<24	10.0	10.0	<10	31.2
R2 GAY5		<2	<100	110	<0.5	6	0.30	<50	22	4.8	3.9	<10	6.2
R2 GAY6		<2	<100	97	<0.5	<2	0.57	<50	23	1.9	2.3	<10	5.0
R2 TR89-3-BP		4	<100	350	<1.6	<5	0.14	<50	27	1.2	29.0	<10	57.3
R2 TR89-3-B1		5	<100	320	<1.5	8	0.17	<50	<24	1.6	36.0	<10	52.4
R2 TR89-3-B2		6	<100	310	<1.5	9	0.18	<50	<22	1.4	36.0	<10	53.2
R2 TR89-5-BP		3	<100	420	<1.8	<5	0.14	<50	<26	0.9	28.0	<10	76.2
R2 TR89-5-B1		8	<100	350	<1.6	6	0.18	<50	35	1.3	33.0	<10	65.0
R2 TR89-5-B2		7	<100	360	<1.5	8	0.17	<50	<25	1.2	34.0	<10	67.5

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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 GAY1		<200	<1	3	<20	3.4	74.2	<2	13	1300	<500	195
R2 GAY2		<200	1	3	<20	8.0	39.0	2	11	520	<500	150
R2 GAY3		<200	<1	3	<20	6.9	58.1	<2	12	1400	<500	185
R2 GAY4		<200	<1	7	<20	4.5	107.0	<2	29	830	<500	595
R2 GAY5		<200	<1	2	<20	2.1	78.3	<2	8	1000	<500	135
R2 GAY6		<200	<1	1	<20	<0.5	84.4	<2	8	660	<500	115
R2 TR89-3-BP		<200	<1	14	<20	8.1	71.9	<2	53	<200	1400	810
R2 TR89-3-B1		<200	<1	12	<20	8.9	68.1	<2	50	280	<500	740
R2 TR89-3-B2		<200	<1	13	<20	8.8	63.5	<2	48	<200	960	770
R2 TR89-5-BP		<200	<1	17	<20	12.0	60.8	<2	59	<200	<1100	1000
R2 TR89-5-B1		<200	<1	15	<20	11.0	57.2	<2	52	270	<500	830
R2 TR89-5-B2		<200	<1	14	<20	11.0	57.8	<2	55	<200	1300	860

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PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 7-DEC-89

ORDER	ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	P205 Phosphorous	12	0.01 PCT		Gravimetric

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	12	2 -150	12		

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

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PROJECT: 110 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	P205 PCT
R2 GAY1		23.47
R2 GAY2		12.12
R2 GAY3		7.62
R2 GAY4		21.93
R2 GAY5		28.58
R2 GAY6		35.31
R2 TR89-3-BP		32.83
R2 TR89-3-B1		29.83
R2 TR89-3-B2		29.69
R2 TR89-5-BP		33.66
R2 TR89-5-B1		28.80
R2 TR89-5-B2		29.39

Registered Assayer, Province of British Columbia

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PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 28-DEC-89

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

Bondar-Clegg & Company Ltd.
130 Pemberton Ave.
North Vancouver, B.C.
V7P 2R5
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BONDAR-CLEGG

Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-08543.0 (COMPLETE)

REFERENCE INFO:

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 28-DEC-89

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	12	2 -150	12	FAX CHARGE	1

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

INVOICE TO: MR. DOUG LEIGHTON

Bondar-Clegg & Company Ltd.
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BONDAR-CLEGG

Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-08543.1 (COMPLETE)

REFERENCE INFO:

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PFLL
DATE PRINTED: 9-FEB-90

ORDER		ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	Al203	Alumina (Al203)	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
2	CaO	Calcium (CaO)	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
3	Fe203	Total Iron as Fe203	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
4	K20	Potassium (K20)	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
5	LOI	Loss On Ignition	4	0.01 PCT		Gravimetric
6	MgO	Magnesium (MgO)	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
7	MnO	Manganese (MnO)	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
8	Na20	Sodium (Na20)	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
9	P205	Phosphorous (P205)	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
10	SiO2	Silica	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
11	TiO2	Titanium (TiO2)	4	0.01 PCT	HF-HNO3-HClO4-HCl	DC Plasma Emission
12	Totals	Whole Rock Totals	4	0.01 PCT		

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	4	2 -150	4	SAMPLES FROM STORAGE	4

REPORT COPIES TO: MR. DOUG LEIGHTON
MS. JENNIFER PFLL

INVOICE TO: MR. DOUG LEIGHTON

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Geochemical Lab Report

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

DATE PRINTED: 9-FEB-90

REPORT: V89-08543.1

PROJECT: 110 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Al2O3 PCT	CaO PCT	Fe2O3 PCT	K2O PCT	LOI PCT	MgO PCT	MnO PCT	Na2O PCT	P2O5 PCT	SiO2 PCT	TiO2 PCT	Totals PCT
R2 TR89-3-BP		2.20	45.10	0.89	1.00	3.64	0.29	0.02	0.22	36.50	10.10	0.17	100.13
R2 TR89-3-B1		3.45	42.90	1.42	1.55	3.88	0.39	0.02	0.25	30.90	15.30	0.27	100.33
R2 TR89-5-BP		2.24	45.80	0.91	1.06	3.49	0.25	0.02	0.20	37.90	9.58	0.17	101.62
R2 TR89-5-02		3.63	40.00	1.44	1.75	3.67	0.39	0.03	0.23	32.40	16.80	0.28	100.62

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North Vancouver, B.C.
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(604) 985-0681 Telex 04-352667

BONDAR-CLEGG

Certificate of Analysis

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

REPORT: V89-08543.5 (COMPLETE)

REFERENCE INFO:

CLIENT: BOUNDARY DRILLING LTD.
PROJECT: 110

SUBMITTED BY: J. PELL
DATE PRINTED: 6-FEB-90

ORDER	ELEMENT	NUMBER OF ANALYSES	LOWER DETECTION LIMIT	EXTRACTION	METHOD
1	F Dis FluorineDistillation	4	0.01 PCT		

SAMPLE TYPES	NUMBER	SIZE FRACTIONS	NUMBER	SAMPLE PREPARATIONS	NUMBER
R ROCK OR BED ROCK	4	2 -150	4	SAMPLES FROM STORAGE	4

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

INVOICE TO: MR. DOUG LEIGHTON

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A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Certificate of Analysis

DATE PRINTED: 6-FEB-90

REPORT: V89-08543.5

PROJECT: 110 PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	F Dis PCT
R2 TR89-3-DP		3.61
R2 TR89-3-B1		3.30
R2 TR89-5-DP		3.53
R2 TR89-5-B2		3.25

Registered Assayer, Province of British Columbia

APPENDIX 4

BACKGROUND ON THE PHOSPHATE INDUSTRY

APPENDIX 4

BACKGROUND ON THE PHOSPHATE INDUSTRY

The majority of phosphate ores mined (approximately 90%) is used in the production of fertilizers; some also goes into the production of detergents, animal feed supplements, food preservatives, water treatment substances, anticorrosion agents, cosmetics and fungicides; and minor amounts are used in the metallurgy and ceramics industries. Phosphorus is present in the earths crust in concentrations averaging 0.10 to 0.12 per cent and is the eleventh element in order of crustal abundance. Phosphate is concentrated in three main environments: marine sediments deposited in mid-paleolatitudes within restricted basins where there is upwelling of cold currents from great depths; in basic and ultrabasic alkaline igneous rocks; and in deposits of guano. Marine sedimentary ores account for approximately 80 per cent of the worlds phosphate reserves, igneous deposits for around 18 per cent and the remaining 2 per cent, from guano deposits (Krauss et al., 1984; Russell, 1987).

Sedimentary phosphate ores are commonly referred to as phosphorites. They are nondescript, white to dark greyish-brown to black, shaley to sandy rocks and can contain structureless pellets or have a nodular texture. A bluish-grey "phosphate bloom" may be present on weathered surfaces. Deposits are mined which contain between 4 and 38 per cent P_2O_5. In most cases, ores mined are beneficiated to produce a phosphate concentrate which is often referred to commercially as phosphate rock. Phosphate concentrates commonly contain 29 to 40 per cent P_2O_5. The phosphorus content of ores and concentrates is often referred to, in the industry, as bone phosphate of lime (BPL) or tricalcium phosphate (TCP), which refers to the apatite content or $Ca_3(PO_4)_2$ rather than weight per cent P_2O_5 (Christie, 1978; Krauss et al., 1984). Conversion between the various expressions is as follows:

	P	P_2O_5	BPL (or TCP)
1.0% P	1.0	2.2914	5.0072
1.0% P_2O_5	0.4364	1.0	2.1852
1.0% BPL (or TCP)	0.1997	0.4576	1.0

Nearly 88 per cent of the phosphate rock produced in market economy countries is recovered by surface mining techniques, with strip mining and open pit mining the most commonly used techniques. Commonly, between 2 and 7 tonnes of overburden and waste are moved per tonne of ore mined. Run-of-mine ore production capacity is 0.6 to 1.0 million tonnes per annum in small operations, 1 to 8 million tonnes per annum in medium-sized operations and 8 to 25 million tonnes per annum in large operations. In almost all cases, the run-of-mine phosphate material has to be beneficiated. The basic beneficiation methods employed are sizing, washing, flotation, calcining and calcining with leaching. A phosphate beneficiation plant may use one or more of these techniques to produce a marketable product (Fantel et al., 1984; Krauss et al., 1984).

Most commercial fertilizer plants use a wet acidulation process in the initial stage of fertilizer production. The initial phosphoric acid produced by this process contains between 27 and 29 per cent P_2O_5; it is then evaporated until it contains 52 to 54 per cent P_2O_5 or becomes superphosphoric acid with 68 to 72 per cent P_2O_5. Phosphate rock to be used in fertilizer plants must meet the following specifications:

*P_2O_5 content: 27 to 42 %
*CaO/P_2O_5 ratio: 1.32 to 1.6
*$(Al_2O_3 + Fe_2O_3 + MgO)/P_2O_5$: < 0.1
*MgO content: < 1.0 %
*Cl: < 0.2 %
*BPL/MGO ratio:170 or greater
*$BPL/(Al_2O_3 + Fe_2O_3)$ ratio: 20 or greater
*BPL/CaO ratio: 1.5 or greater

Elevated concentrations of organic matter are also undesirable (but can be removed by calcining), as are trace elements such as cadmium, lead, mercury, arsenic and chromium (Butrenchuk, 1987a; Krauss et al., 1984).

The wet acidulation fertilizer production process involves:

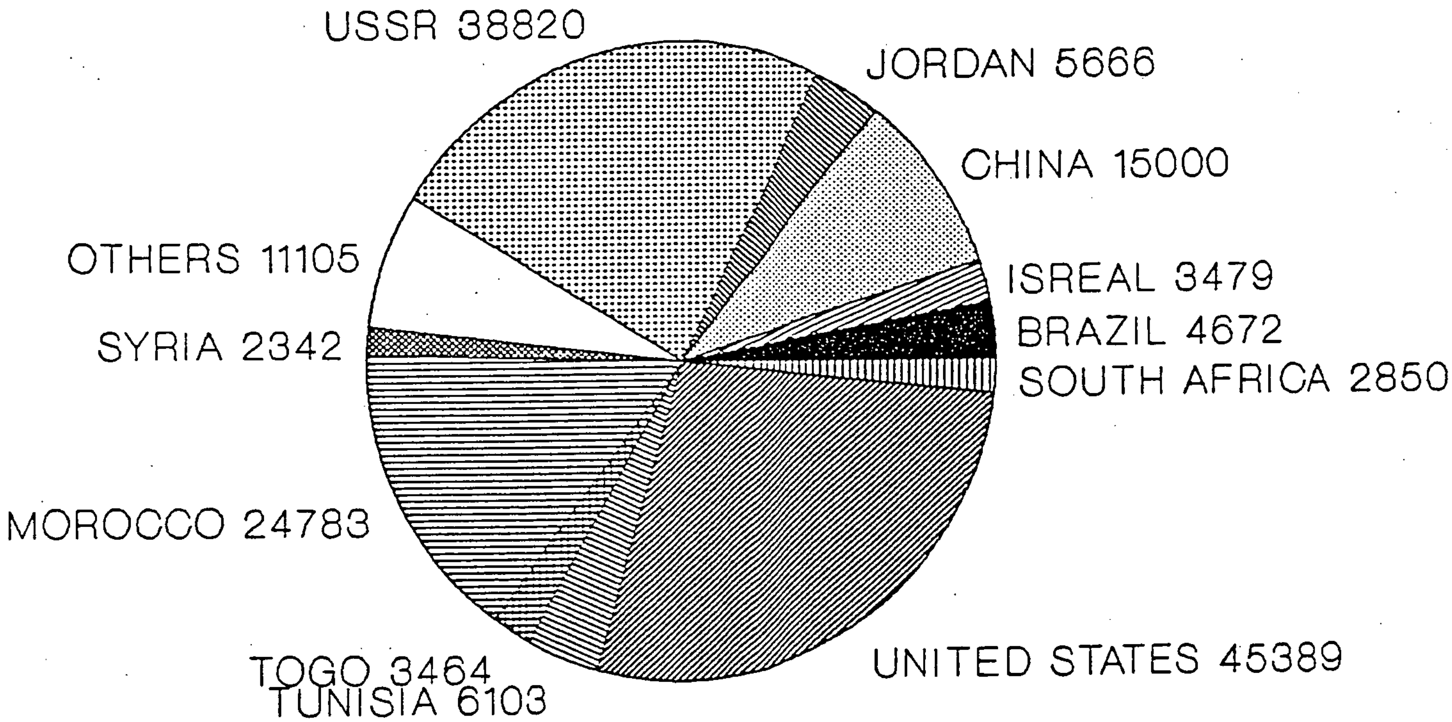
Starting materials: 3.5 tonnes, phosphate concentrate
1 tonne, sulphur
(or 3 tonnes H_2SO_4)
Products: 1 tonne of P_2O_5 in the form of H_3PO_4
5 to 5.5 tonnes of hydrated calcium sulfate*
a maximum of 81 kg of fluorine as HF
(or 102.5 kg of H_2SiF_6 of which 36 kg are recoverable)

*The hydrated calcium sulphate, or phosphogypsum, is generally considered a waste product as it cannot compete with other commercial sources of gypsum due to its fine grain size and numerous impurities (Krauss et al., 1984).

In North Carolina, phosphogypsum has been mixed with flocculated colloidal clays produced in washing plants and used to backfill mined-out excavations; research is also underway to determine if it could be used as a compacted sub-base for highways, secondary roads and parking lots. The economics of calcining phosphogypsum to produce a cement-type clinker and sulphur dioxide, from which elemental sulphur could be recovered, are also being examined (Stowasser, 1988).

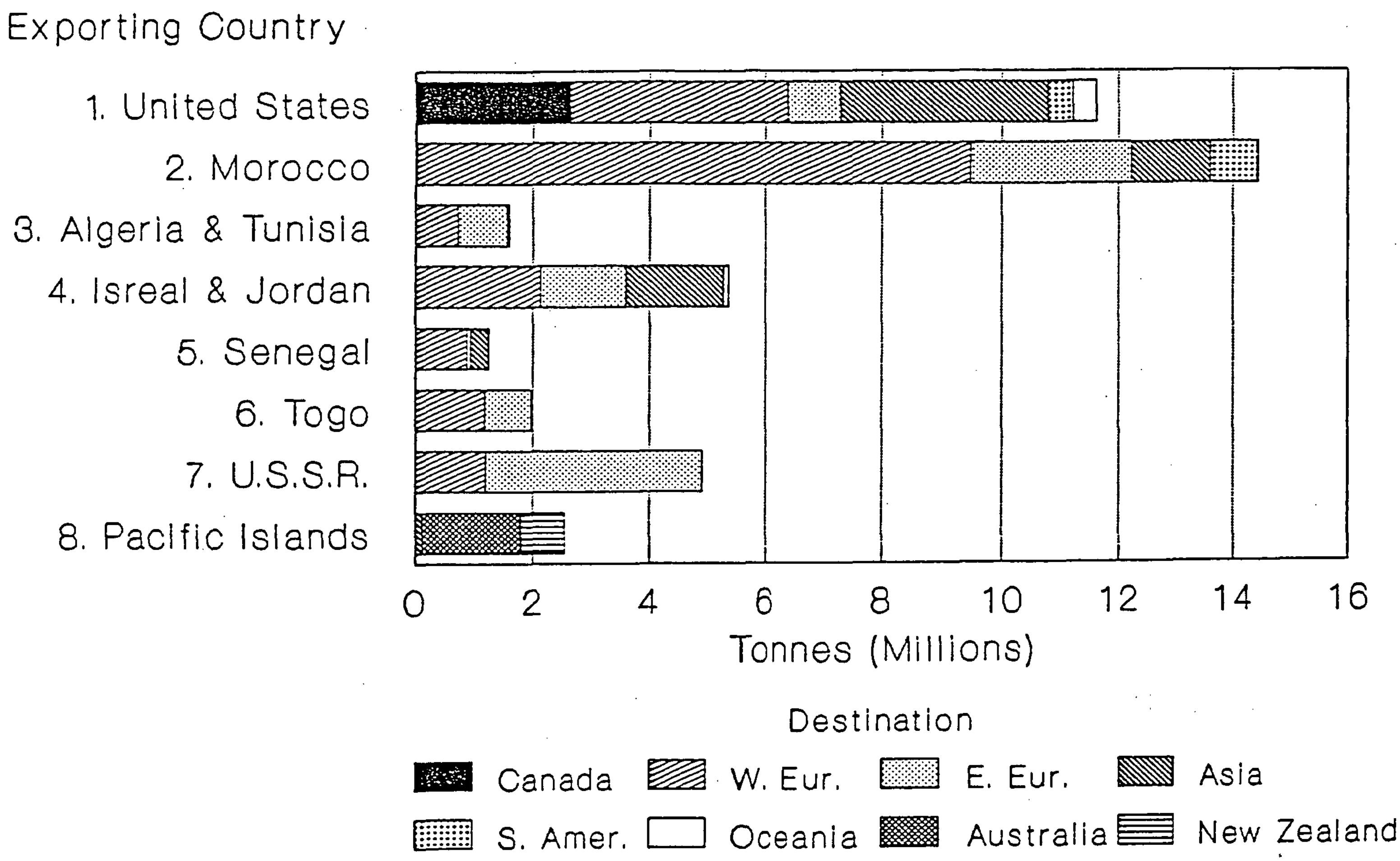
The principal world phosphate producing countries in 1988, as in previous years, were the United States, the U.S.S.R., Morocco and China, in that order (Figure A1). Tunisia, Jordan, Brazil, Israel, Togo, South Africa and Syria also produced significant amounts of phosphate rock (Stowasser, 1988; 1985). More than 50 per cent of the phosphate rock produced in the United States is exported, placing it second to Morocco in exporting countries (Figure A2). Israel, Jordan, the U.S.S.R., the Pacific Islands, and west Africa are also major exporting regions. Western Europe, eastern Europe, Asia, Canada, and Australia are the major phosphate importing regions of the world (Figure A3). Most of Canada's phosphate rock come from the United States (Figure A4) and Canada is the largest importer of U.S. phosphates, followed by Korea and Japan. France, the Netherlands, Poland, Germany, Mexico and Italy are also major importers of U.S. phosphate rock (Figure A5). In recent years, Canada has begun to import phosphate rock from west Africa in increasing amounts. This trend is likely to continue unless new sources, either local or foreign, are found, as experts predict that by the year 2000 the demand on U.S. phosphates will far exceed the capacity (Figure A6, approximately by the predicted amount of phosphate rock exports). This will also have an effect on the other major importers of U.S. phosphate rock, Japan and Korea.

PHOSPHATE ROCK: WORLD PRODUCTION
MAJOR PRODUCERS, 1988



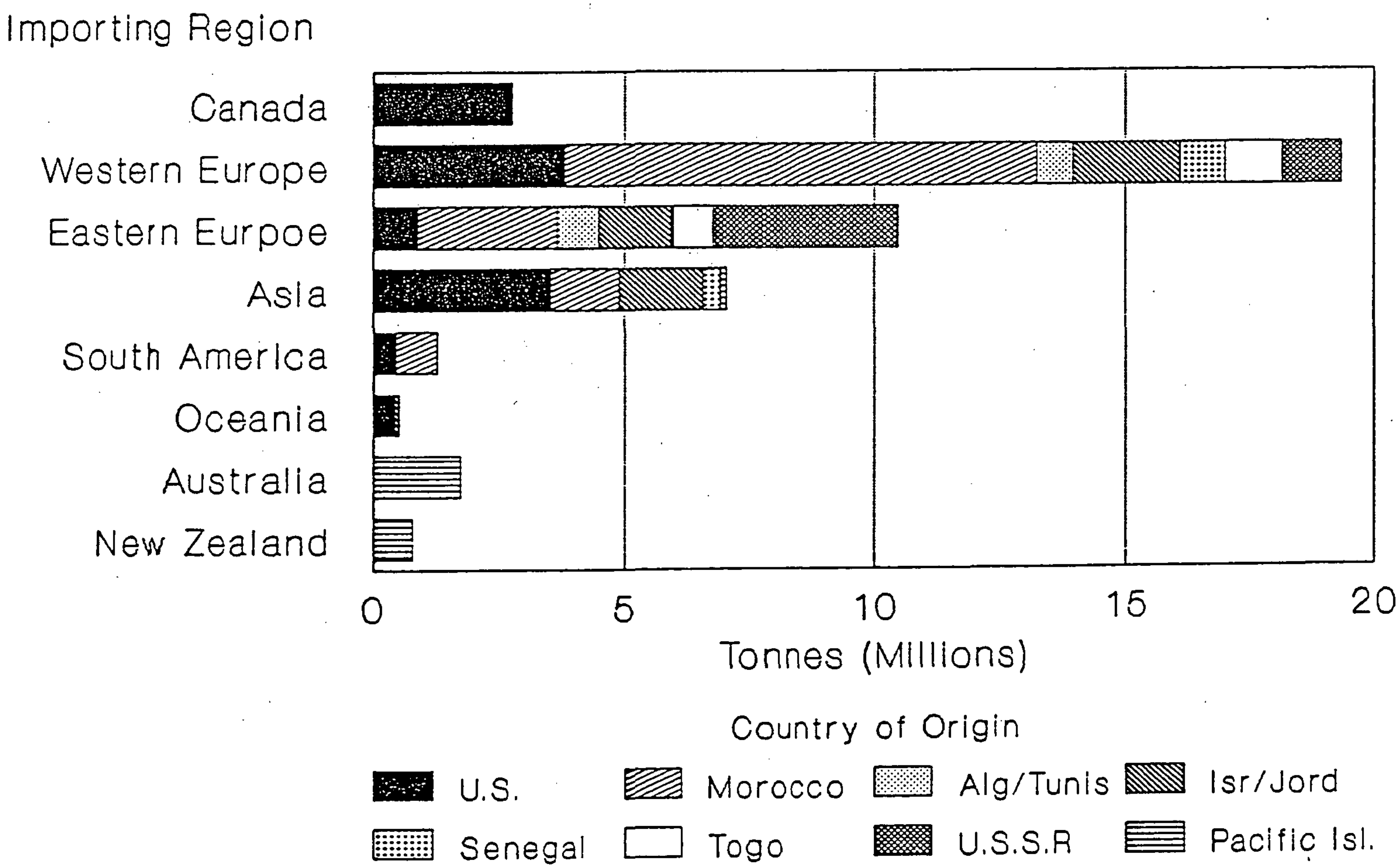
IN THOUSANDS OF METRIC TONNES

PRINCIPAL PHOSPHATE EXPORTING COUNTRIES AND DESTINATIONS



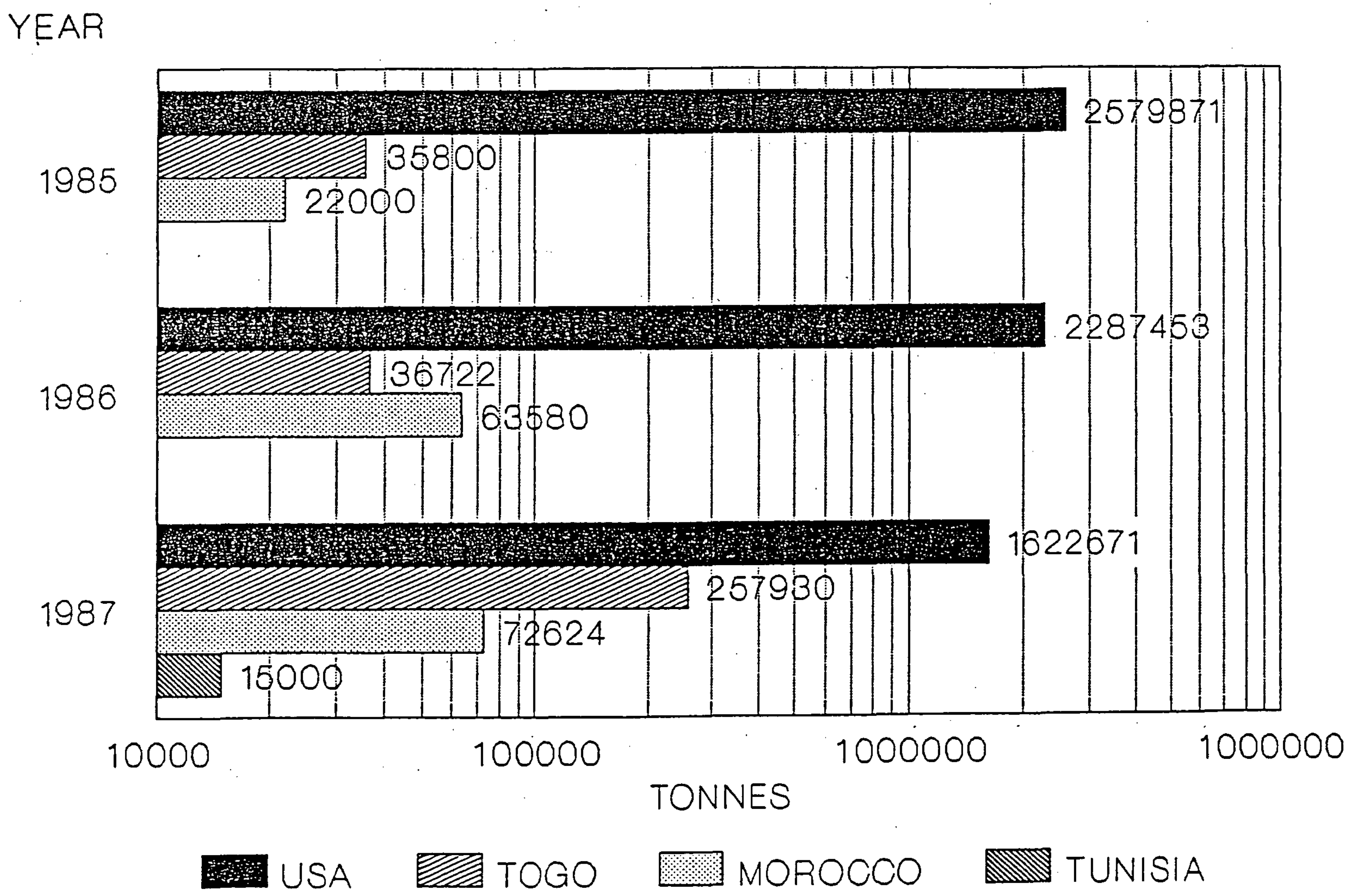
From Stowasser, 1985

PRINCIPAL PHOSPHATE IMPORTING REGIONS BY COUNTRY OF ORIGIN



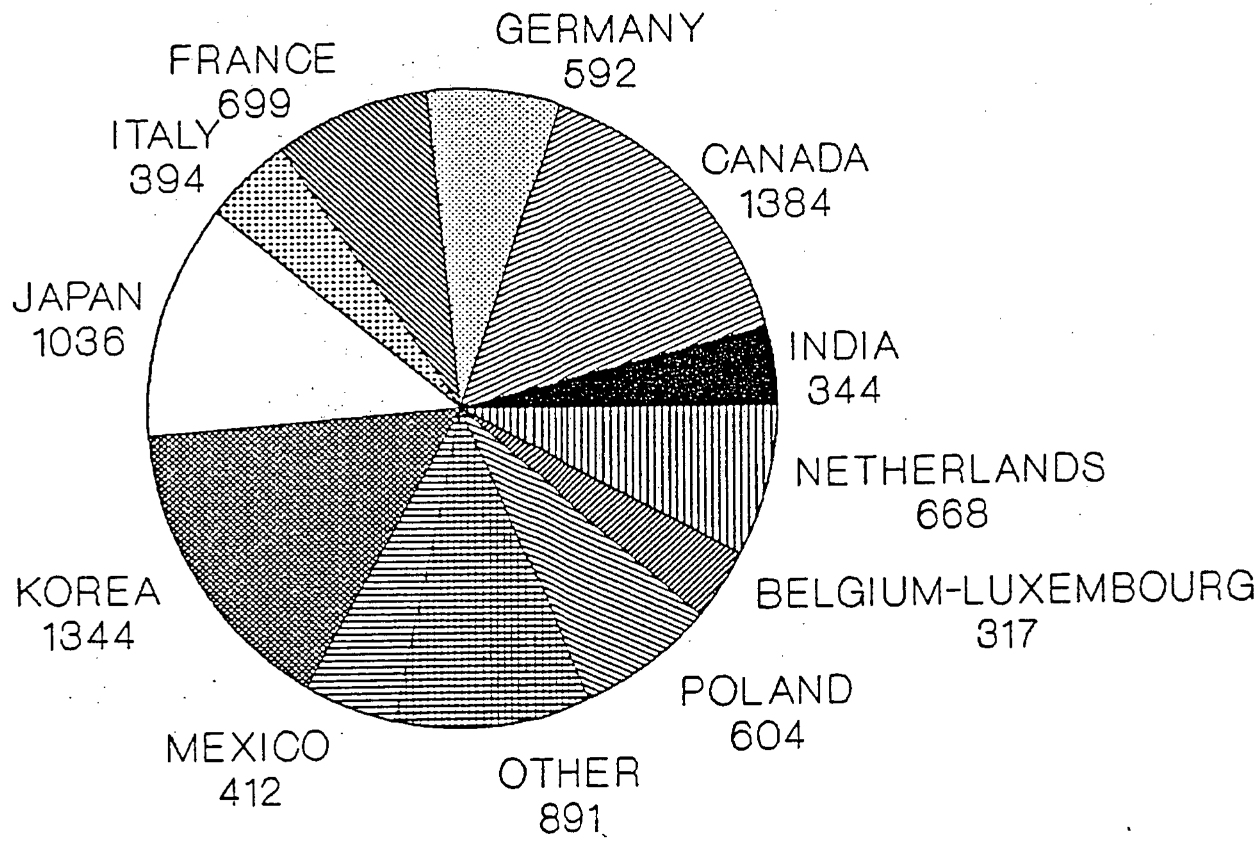
From Stowasser, 1985

CANADIAN PHOSPHATE IMPORTS



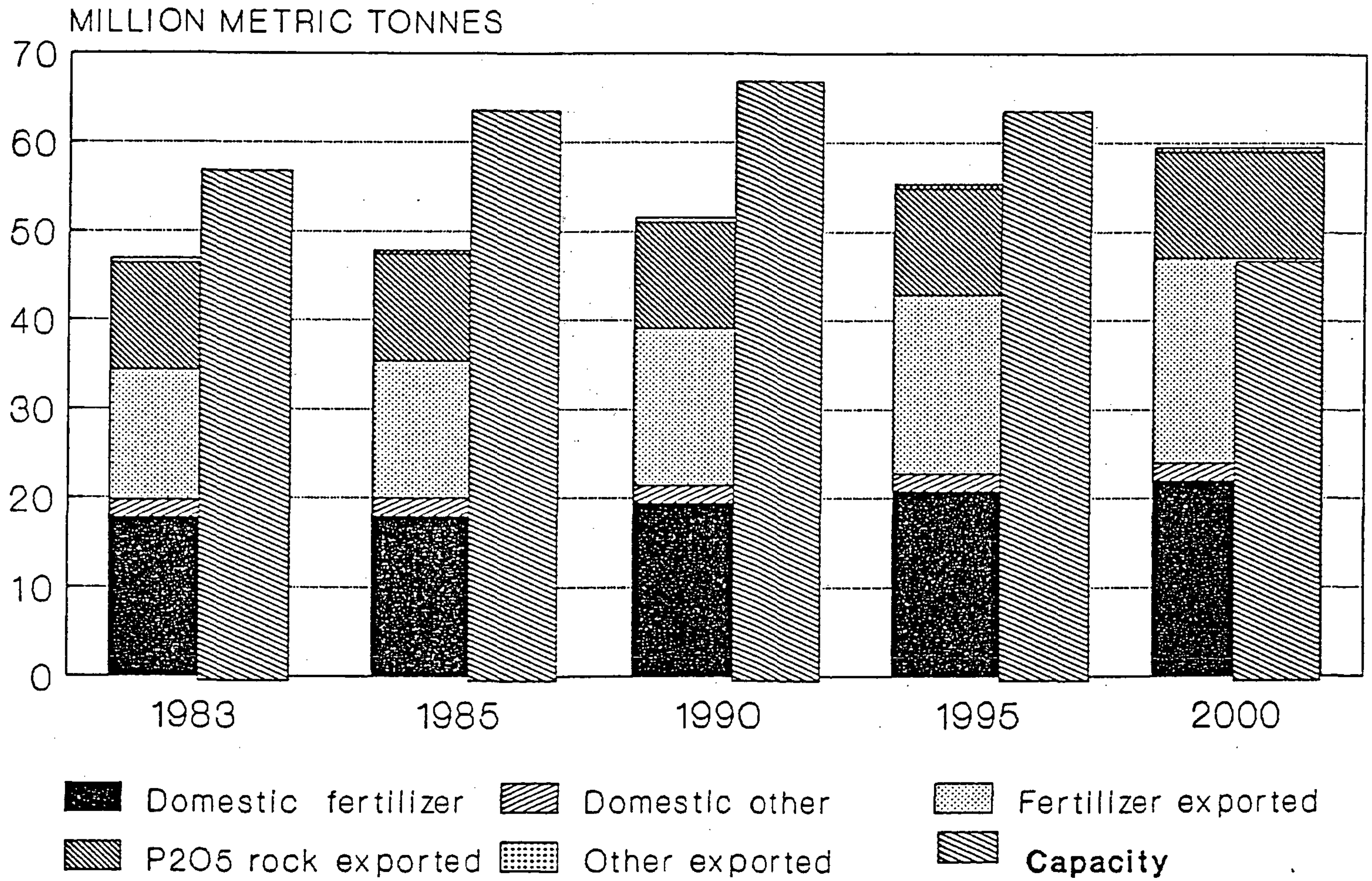
from Barry, 1987

US EXPORTS OF PHOSPHATE ROCK
1988



(IN THOUSANDS OF METRIC TONS)

U.S. PHOSPHATE ROCK SUPPLY-DEMAND FORECAST 1983-2000



(FROM STOWASSER, 1985)

APPENDIX V

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																																		

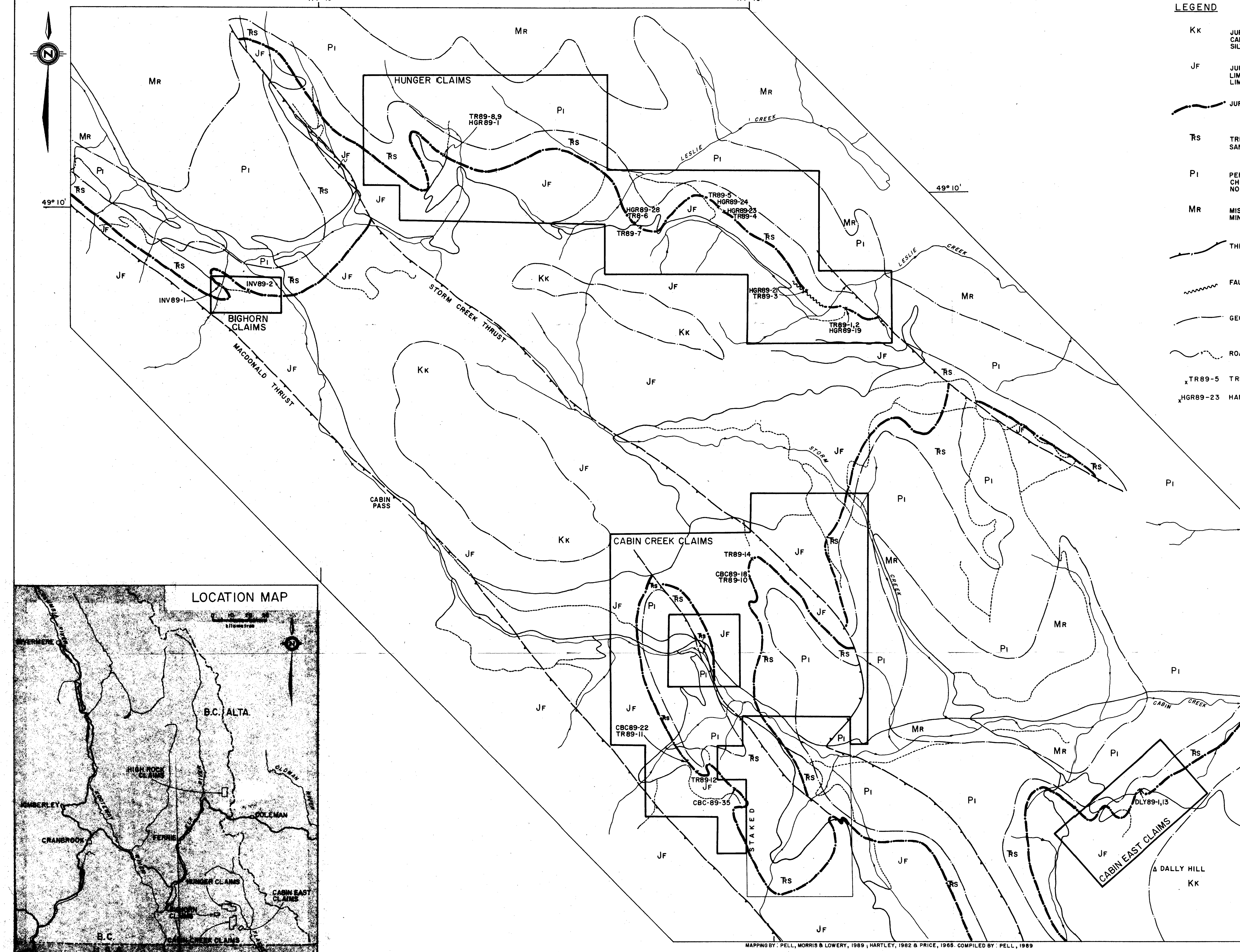
LOCATION	CODE	MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Time Total
Expediting/ Demob., etc.	RL	JULY	X																					X	½	X	X	½						5½
			X																½					X		X	X							
Cabin Creek	RL	JULY															X	X	½	X	X		X											6
													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

TIME SHEET SUMMARY

TRENCHING RECLAMATION
W/JD SS5 BACKHOE

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

Symbol	Description
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.
(heavy dash-dot line)	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
(toothed line)	THRUST FAULT (approximate, assumed)
(wavy line)	FAULT
(dashed line)	GEOLOGICAL CONTACT (approximate)
(dotted line)	ROAD, TRAIL
x TR89-5	TRENCH
x HGR89-23	HAND TRENCH

GEOLOGICAL BRANCH
ASSESSMENT REPORT

19,938

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:

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.

	OUTCROP
21	BEDDING STRIKE & DIP
	GEOLOGICAL CONTACT approximate
	SYNCLINAL AXIS
	ANTICLINAL AXIS
HGR 89-1	SAMPLE NUMBER, HAND TRENCH
TR89-8	TRENCH NUMBER

NOTE: MAPPING BY PELL, MORRIS & LOWERY, 1989; COMPILED BY PELL 1989

0 200 400 600 800 1000 METRES
SCALE 1:12,500

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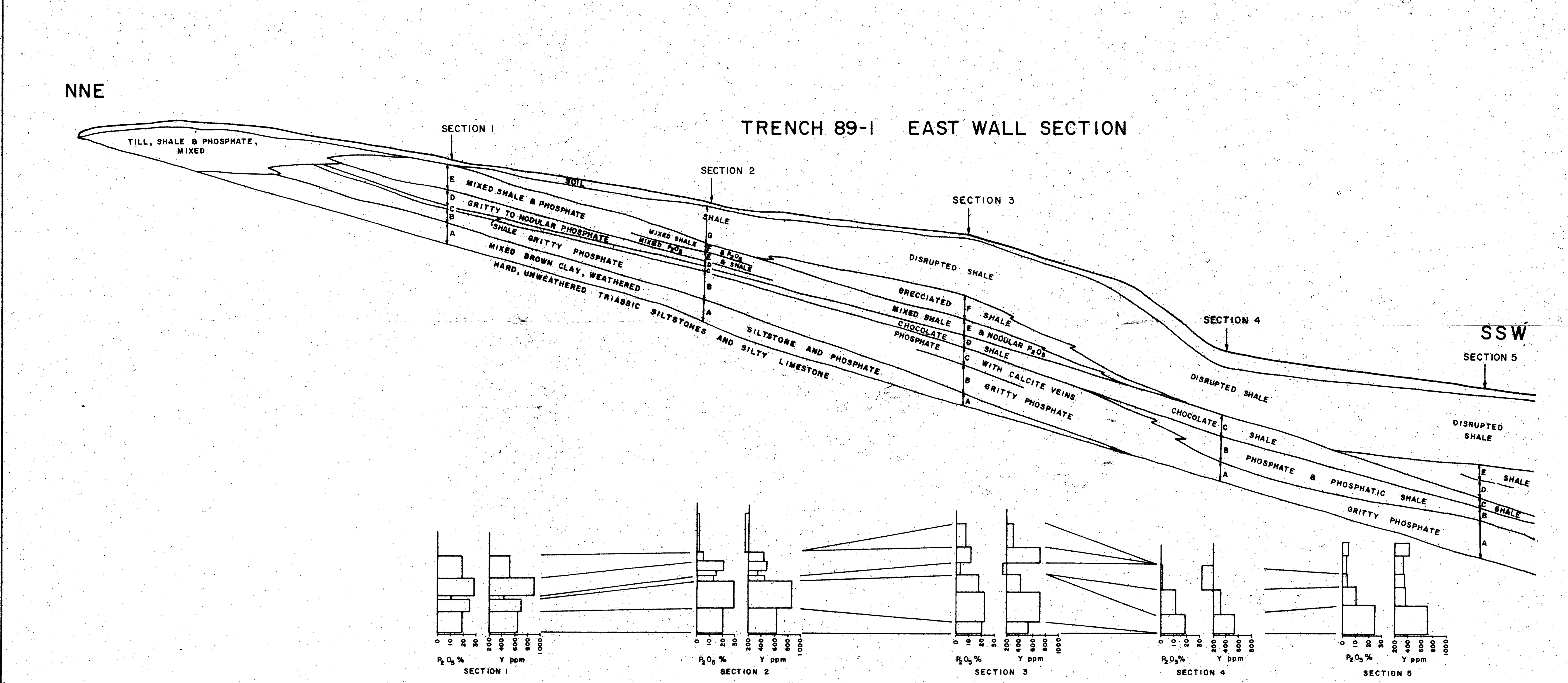
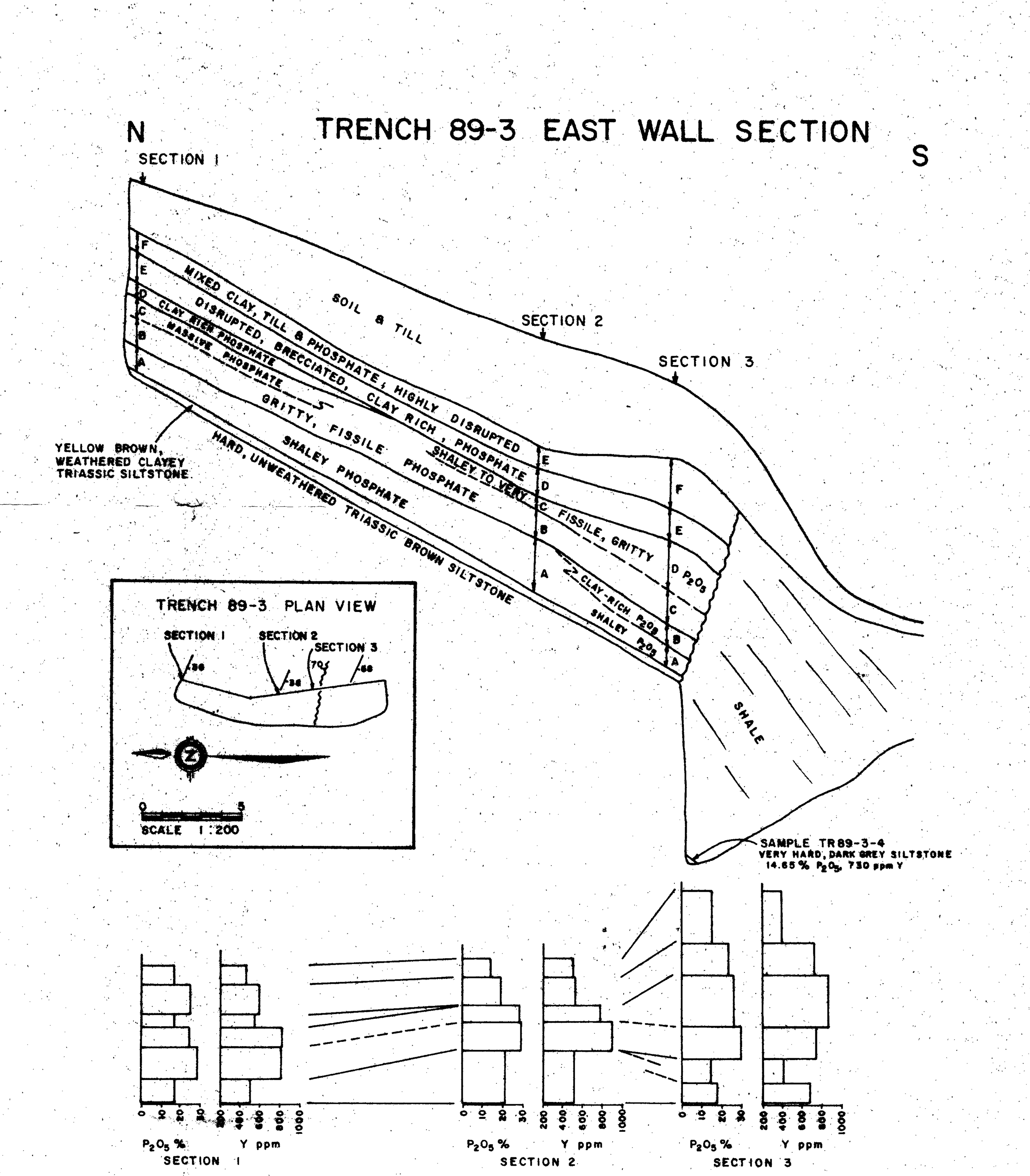
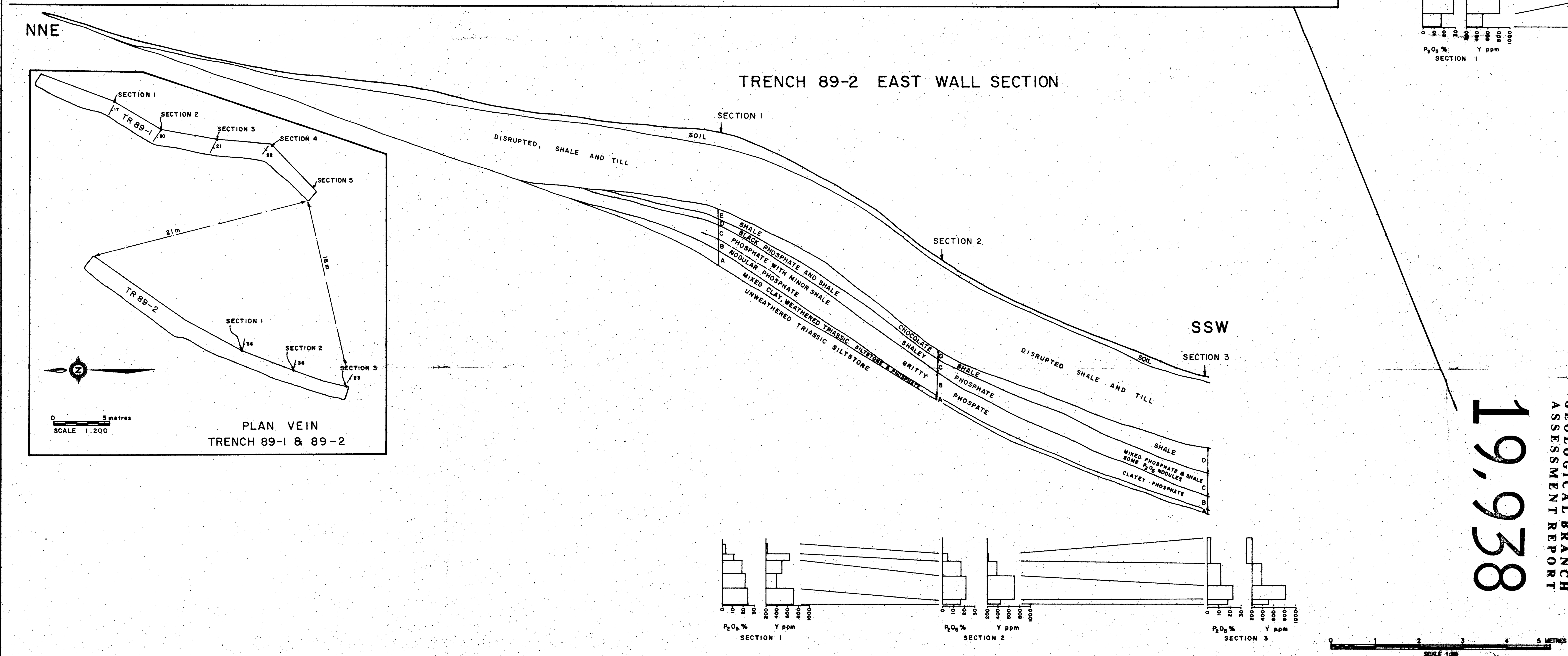
GEOLOGICAL BRANCH
ASSESSMENT REPORT

FORMOSA RESOURCES CORPORATION	
COLUMBIA PROJECT	
HUNGER/BIGHORN CLAIMS	
DETAILED GEOLOGY	
NTS: 82 G/2	DRAWN BY: PELL /rwr
DATE: MARCH, 1990	FIGURE: 6







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GEOLOGICAL BRANCH
ASSESSMENT REPORT

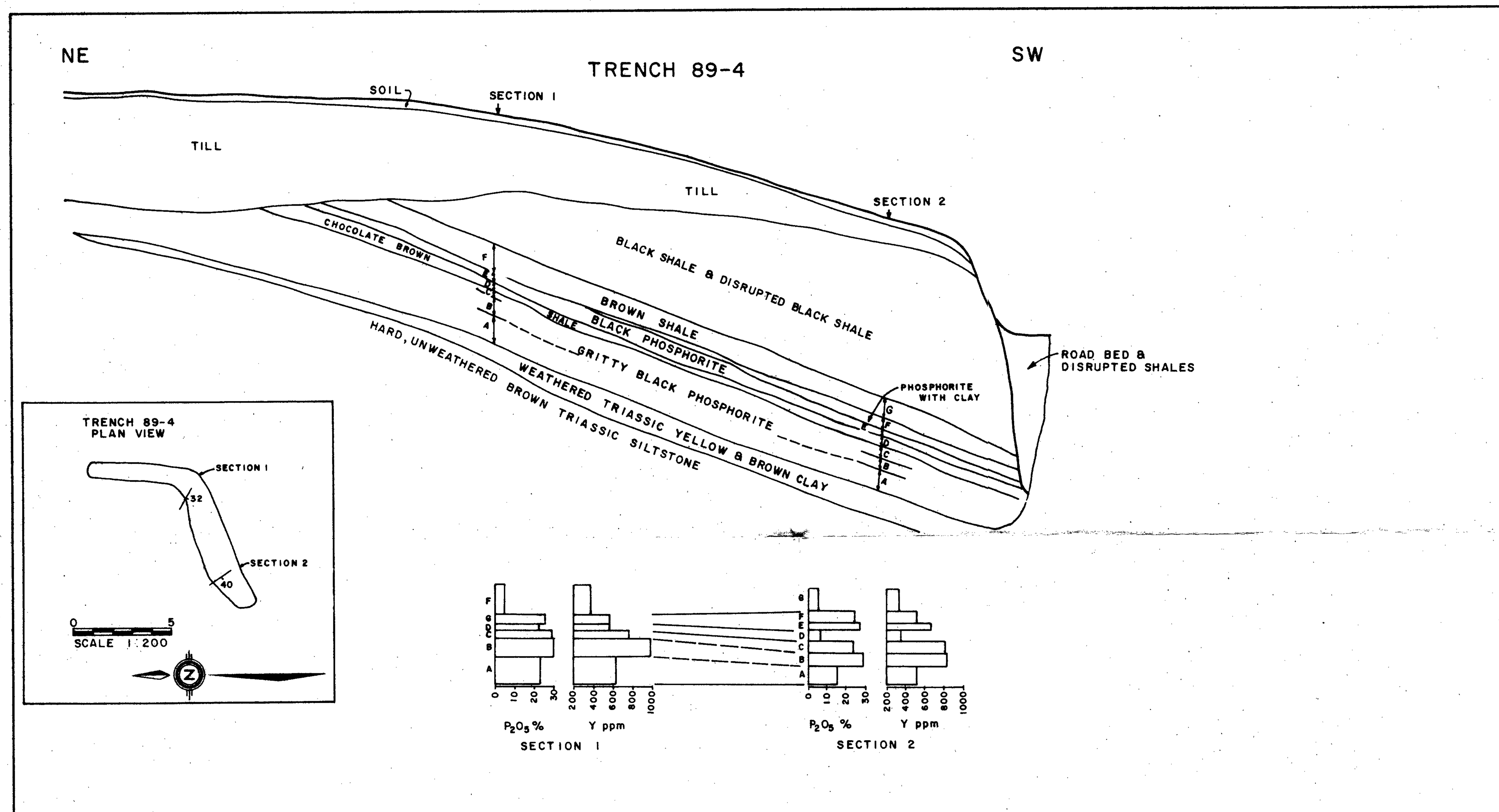
FORMOSA RESOURCES CORPORATION

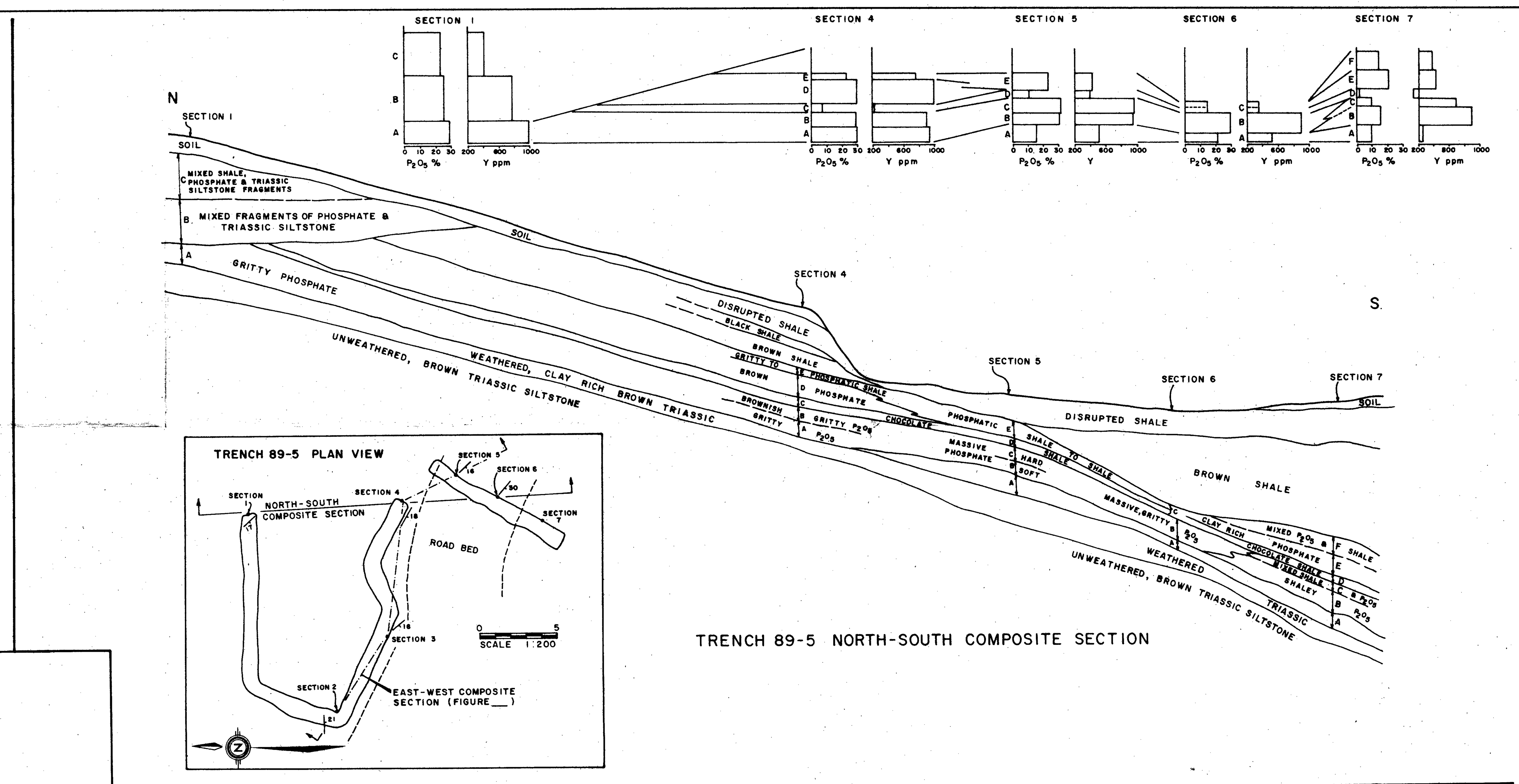
COLUMBIA PROJECT

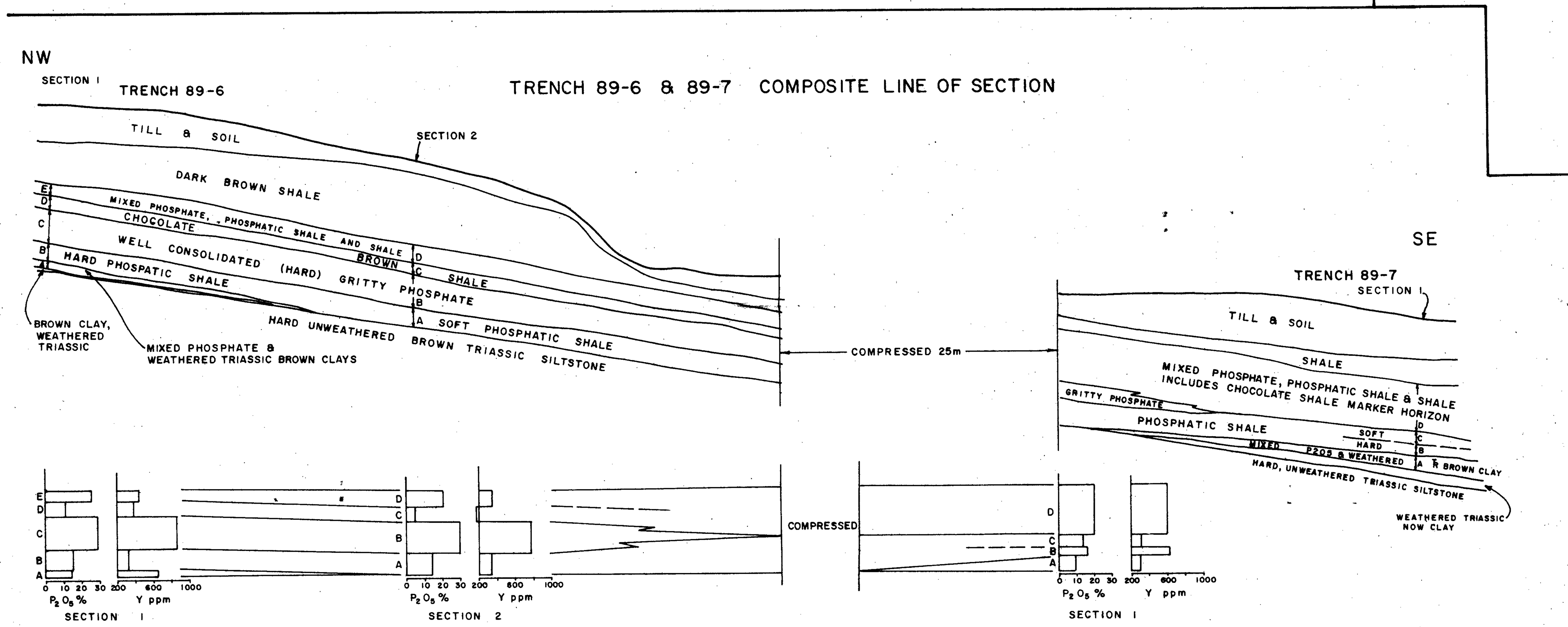
HUNGER CLAIMS

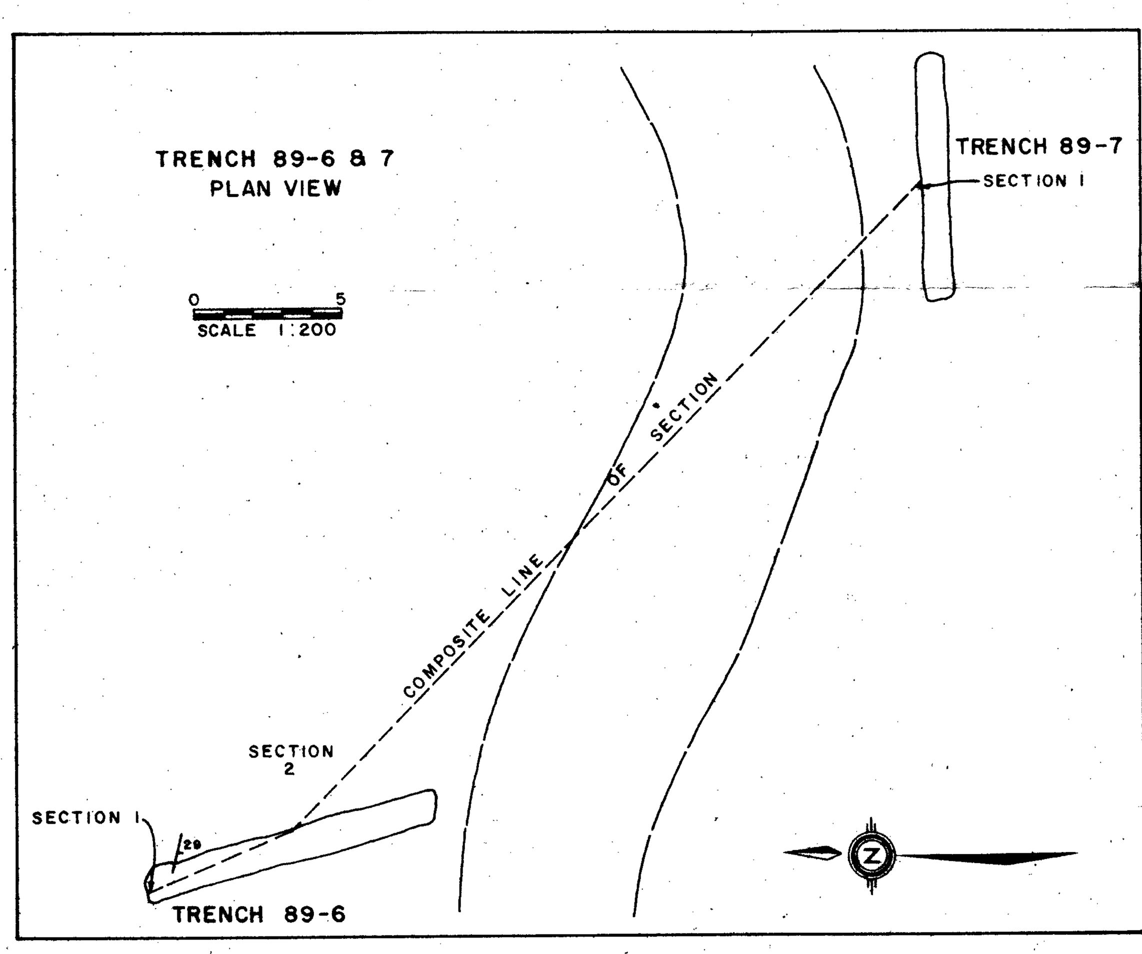
TRENCHES 89-1,2 & 3

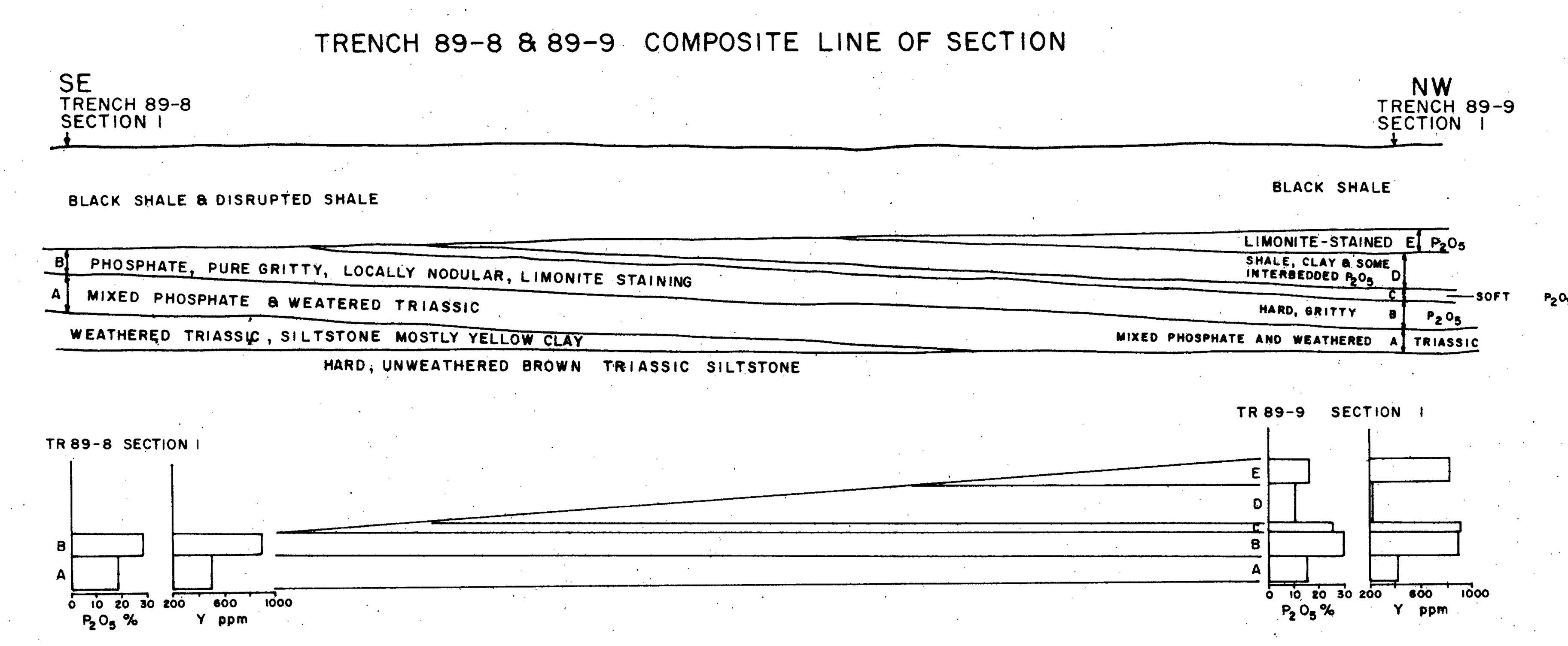
NTS: 82 G/2	DRAWN BY: PELL / rwr
DATE: MARCH, 1990	FIGURE: 8a

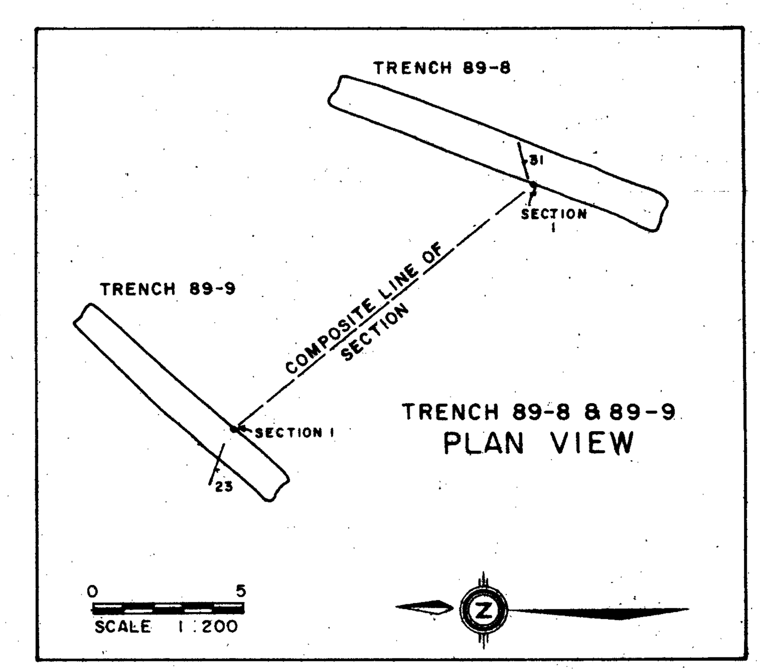












SCALE 1:50

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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FORMOSA RESOURCES CORPORATION	
COLUMBIA PROJECT	
HUNGER CLAIMS	
TRENCHES 89-4 - 9	
NTS: 82 G/2	DRAWN BY: PELL / rwr
DATE: MARCH, 1990	FIGURE: 8b

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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FORMOSA RESOURCES CORPORATION

COLUMBIA PROJECT

HUNGER CLAIMS
EAST-WEST COMPOSITE SECTION
TRENCH 89-5

SCALE 1:25	DRAWN BY: PELL / rwr
DATE: OCTOBER, 1989	FIGURE: 8c